Voltea

Installation, operation and service

DIENTRY RESELLER MANUAL

208M113

The installation, service and maintenance of this equipment should be rendered by a qualified and trained technician. This manual is written specifically for these individuals and is intended for their use. Untrained individuals who use this manual assume the risk of any resulting property damage or personal injury.

The DiEntry system meets the essential safety and health requirements of the European Union. This means that DiEntry can be operated and maintained safely if all safety precautions are considered. However, dangerous situations can occur due to injudicious or negligent use of the system.

NOTE: The DiEntry system is not intended for use with water of unknown quality.
NOTE: The DiEntry system is to be supplied with cold water.

WARNING!

Electrical shock hazard! Prior to servicing equipment, disconnect power supply to prevent electrical shock.

WARNING!

Electrical shock hazard: Located on the flat panel and inside the electrical cabinet. The electrical cabinet may never be opened when the system is producing water.

WARNING!

If incorrectly installed, operated or maintained, this product can cause severe injury. Those who install, operate or maintain this product should be trained in its proper use, warned of its dangers, and should read the entire manual before attempting to install, operate or maintain this product.

CAUTION!

This product is not to be used by children or person with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction.

CAUTION!

If the power cord of the unit looks or becomes damaged, the cord should be replaced by a Voltea service engineer or similarly qualified person to avoid hazard.

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CONTENTS

1 DiEntry Manual

This manual:

- Familiarizes the user with the equipment.
- Explains installation and setup procedures.
- Provides basic programming information.
- Explains the various steps of operation.
- Gives specification information.

Read this manual first: Before you operate DiEntry, read this manual to become familiar with the device.

Through this manual, special symbols will appear:

	NOTE	Is used to emphasize information related with installation, operation and maintenance without highlighting any hazard.
	**WARNING!**	Warning is used to indicate a hazard which could cause injury or death if ignored.
	**CAUTION!**	Caution is used when failure to follow directions could result in damage to equipment or property.

The WARNING and CAUTION signs are not meant to cover all possible conditions and situations that may occur during installation, maintenance and operation. Understand that common sense, caution and careful attention is always needed.

Before installing be sure to check all applicable plumbing codes and ordinances. Local codes and legislation may prohibit the discharge of sanitizing or descaling solution to drain. The system and installation shall comply with applicable state and local regulation.

Always use protective clothing and proper face or eye protection when handling chemicals and tools.

The CapDI system meets the essential safety and health requirements of the European Union. This means that the system can be operated and maintained safely if all safety precautions are observed. However, dangerous situations can occur due to injudicious or negligent use of the CapDI system. If a UL mark is attached to the system, then it has performed to UL standards and is certified.

The DiEntry system conforms to NSF/ANSI 42, for specific performance claims as verified and substantiated by test data.

1.1 General safety precautions

Observe the following general safety precautions:

- Check the proper functioning of the system daily.
- Always replace damaged or defective parts before putting the system into use again.
- Do not make modifications to the system without prior approval of the manufacturer.
- Do not open the electrical cabinet when the system is powered on.
- If chemicals are supplied, the attached safety procedures should be observed.

2 Liability and Warranty

2.1 Liability

Voltea will, under no circumstances be held liable for any consequential damages. The recipient hereby disclaims all representations and warranties, whether expressed or implied with respect to materials and/or prototypes. Including without limitation any warranties of non-infringement, merchantability or fitness for merchantability or fitness for any particular purpose save that such shall have been prepared with reasonable skill and care. The recipient accepts all risks which may be inherent in its use of materials and/or DiEntry system and shall hold harmless and indemnify each of Voltea and its affiliates officers, director, shareholders, employees and agents from and against any and all claims, damage, losses or other liabilities that may arise directly and solely from recipient's use, storage, handling or disposal of the materials and/or systems.

2.2 Warranty

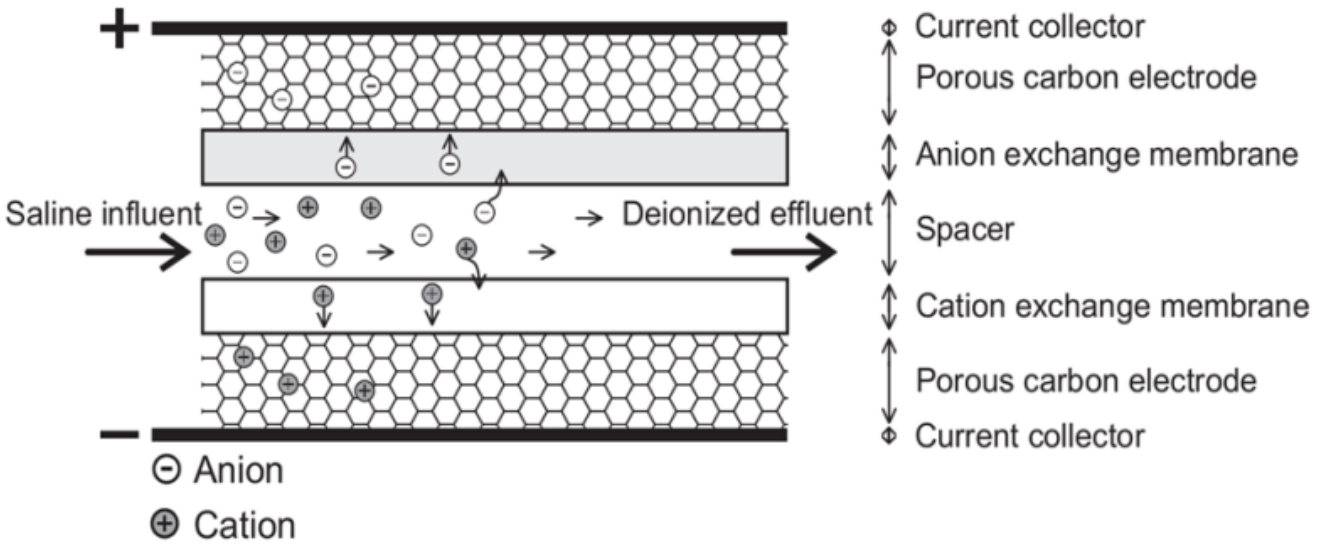
CapDI modules supplied with the DiEntry have been tested and have a guaranteed performance as they have passed Voltea's quality control test (a certificate of analysis will be supplied with each module upon request). Voltea does warrant workmanship (leakage, connections) of the CapDI module for a period of 1 year from shipment provided that the CapDI module is operated within the recommended operational limits as provided in the section 4.2 and 4.3. Voltea does not warrant desalination and other performance aspects of the CapDI modules within the customer application. Voltea warrants the DiEntry for a period of 1 year from shipment provided that the system is operated in accordance with this manual.

3 Voltea CapDI - Membrane Capacitive Deionization

The CapDI system uses Capacitive Deionization technology and its function is the removal of ions from the water.

NOTE: The CapDI system does not disinfect water.

CapDI: A tunable water deionization technology that is designed to remove dissolved salts from a variety of water sources ranging from tap water and brackish groundwater to industrial process water. CapDI achieves this at a lower economic cost and reduced environmental impact than any other available technology.



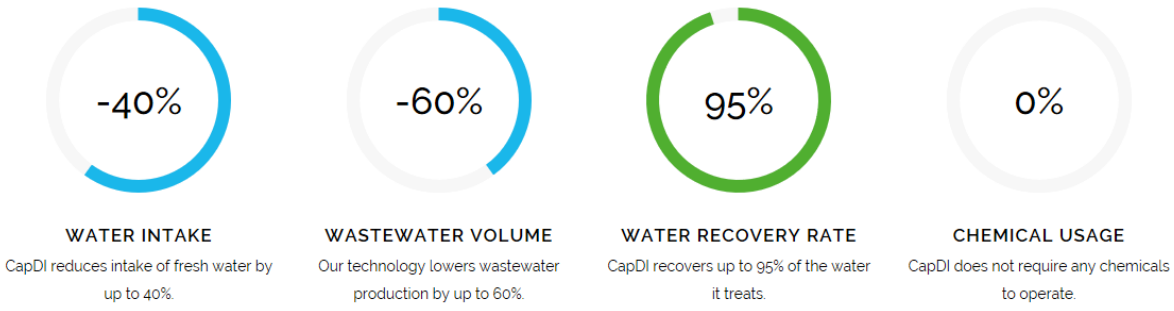
A CapDI module consists of a housing which contains multiple stacks of parallel unit cells. Each unit cell consists of two porous carbon electrodes separated from each other by a spacer. On top of the electrodes, ion exchange membranes are placed. The spacer between the membranes acts as a flow channel to transport the water to be desalinated.

The water flows through a small electrical field of approximately 1.5 volts that is created over a pair of electrodes. Dissolved ions are pulled out of the water stream, toward the electrodes. The electrodes are separated from the water by the membranes that selectively allow only positive or negative ions to pass. CapDI is effective at removing all type of ions from water (e.g. calcium, sodium, chloride, carbonate).

Uniquely: Our technology is environmentally friendly by its low energy consumption and minimal to no chemical usage. Thus, allowing any unrecovered water to flow back into the ecosystem safely.

Scalable: Voltea's technology treats water types ranging from residential consumer appliances to large-scale industrial plants. Our systems are modular, allowing easy expansion to meet any increased water demands.

Tunable: CapDI is tunable, allowing adjustable TDS reduction between 25% - 95% depending on customer needs. Eliminating the requirements for blending to achieve a specific water quality. The customer sets their desired reduction rate and the CapDI maintains this level, continually adjusting itself to account for any fluctuations in feed water characteristics.



4 DiEntry

Voltea's miniaturized version of the CapDI systems, specifically made for the point-of-entry applications. DiEntry softens and desalinates brackish water for homes and businesses at an advantage to traditional desalination technologies due to it being a salt-free, chemical-free alternative.

4.1 Features

- Automated System CIP (Clean-In-Place)
- Built in bypass
- Voltea's Remote Monitoring and Control (option)
- Pure outlet conductivity meters (0 – 10 mS/cm)
- Total flow meter (0 – 30 L/min or 0 – 7.9 gpm)
- Built in display

4.2 Specifications

Performance	Produced flow rate*	1 – 12 L/min (0.3 – 3.2 gpm)
	Instant flow rate*	0.6 – 16 L/min (0.2 – 4 gpm)
	Salt removal	25 – 95 %
	Water recovery	40 – 88 %
System Specifications	Average power requirements	0.31 kW, Single Phase (110 – 240 V AC / 50 - 60 Hz)
	System dimensions (L x W x H)	0.4 x 0.53 x 1.05 m (1'4'' x 1'9'' x 3'6'')
	Power output to modules	0 -125 A / 0 – 2 V DC
	Weight**	30 kg (67 lbs)
	Feed inlet coupling	3/8'' push fit
	Product outlet coupling	1/2'' push fit
	Concentrate/Waste outlet coupling	1/2'' push fit
Operational Requirements	Water feed pressure	3 - 10 bar (44 - 150 psi) System is equipped with a pressure reducer
	Water pressure produced***	≤5,1 bar (75psi)
	Operating ambient air temperature	Max < 35 °C (95 °F)

In/Outputs	Start/Stop	Pressure switch (standard) or external signal (24 V DC)
Cleaning	Procedure	Automated cleaning with citric acid
	Control (auto/manual)	Automatic: on cycles of operation
	Storage	3 L chemical container
Controls	Remote control / Data monitoring	Total flow, average conductivity, average voltage, (2G SIM card with data or locally via laptop)
	Parameter change	Locally

*Depends on TDS reduction and water recovery
**Weight without module
***Depends on flow target

4.3 FEED WATER QUALITY

Parameter	UNIT	RANGE	INTERMITTENT
Removal limit	Δppm	0 – 1300	
Total dissolved solids (TDS)	ppm	0 - 2000	
Total organic carbon	ppm	< 10	
Chemical oxygen demand	ppm	< 20	< 100
Turbidity	NTU	< 4	< 100
Fats, Oils, Greases	ppm	< 0.5	
Total suspended solids (TSS)	ppm	< 4	< 20
Free Chlorine	ppm	< 2	< 25
pH		2 – 10	1 – 12
Iron total	ppm	< 0.5	
Total hardness ($CaCO_3$)*	ppm	< 1000	
M Alkalinity ($CaCO_3$)	ppm	< 1000	
Pre – filtration	µm	5	
Temperature	°C/ °F	1 – 35 / 34 - 95	
Chemicals	Contact Voltea		

*Limit depends on set TDS reduction and water recovery

CAUTION! 5-micron filter is the minimum required pretreatment for the feed water.

5 SYSTEM OVERVIEW

6 SYSTEM INSTALLATION

NOTE: Read this section entirely before starting the installation. Follow all applicable plumbing and electrical instructions.

6.1 PACKING

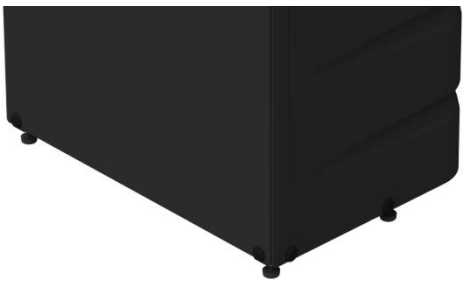
- The DiEntry system is shipped in two boxes.
- One box contains the module, the other the DiEntry frame, spare flow restrictors and the module T-junction.

 Modules weigh 50kg (110 lbs.). It is recommended that the module is carried by two persons.

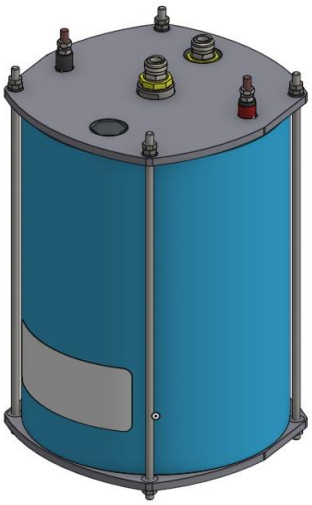
6.2 TOOLS AND MATERIALS

- Safety shoes
- 2x size 13 wrenches
- Flathead screwdriver

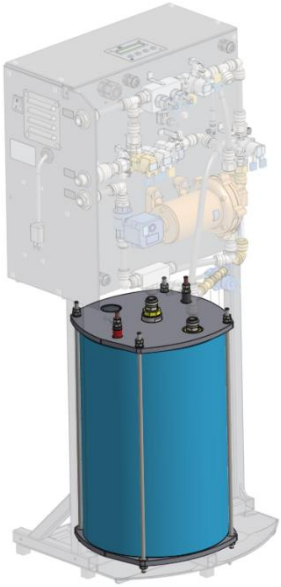
6.3 MODULE INSTALLATION



- Loosen the connections holding the curved cover in place.
- Lift off the curved cover being careful of protruding parts.

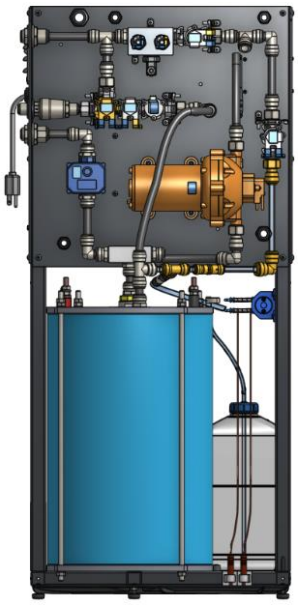


- Remove grey stoppers from module. Add manifold to center of module. The module manifold has flow restrictors preinstalled before each 1/2'' push in fitting.

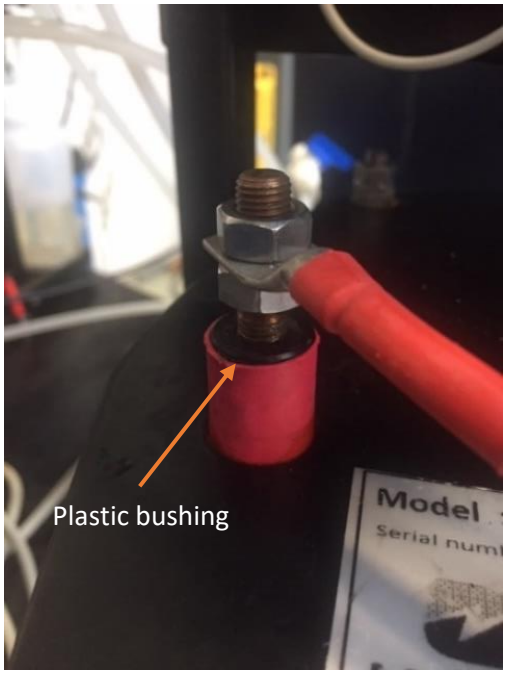


- Rotate the module so the red terminal is on the left and the black terminal is on the right, when facing the water side of the electrical cabinet.
- Push the module on the frame up against the stoppers.

Modules weigh 50kg (110 lbs.) and the system 30 kg (67 lbs.). It is recommended to wear safety shoes during installation.

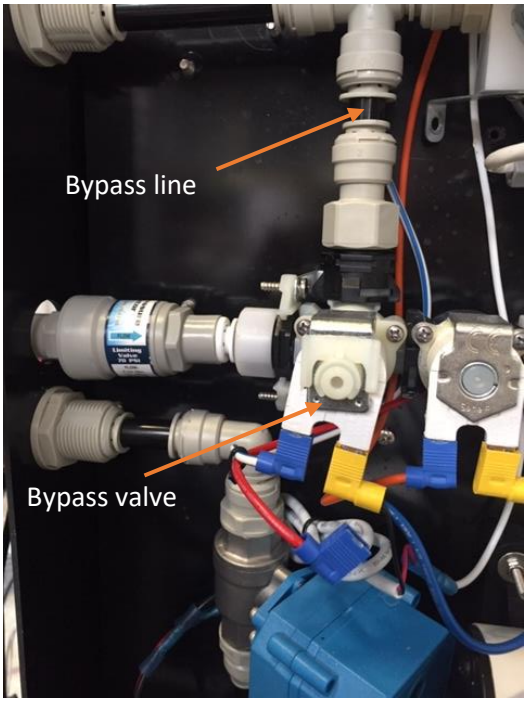


- If done correctly, the module inlet (the connection that is NOT in the middle of the module top) will be facing outward from the system, and the edge of the module will be in line with the edge of the frame.
- The vertical tube that is attached to a T-junction should be pushed into the module outlet. If placed correctly, pulling on the tube firmly should not disconnect it from the module.
- T- junction should be placed with the "waste" sticker facing left and "pure" sticker facing right.



- Each module has one red and one black electrical terminal, with each terminal having two M8 nuts. Unscrew one of the nuts from the red terminal. Place the red cable from the system on the red electrical terminal, then screw the nut back on. Tighten using two size 13 wrenches, one on the top nut and one on bottom nut. Repeat the process with the black terminal and black cable. Be sure the bottom nut isn't sitting on the plastic bushing.

6.4 CLOSING/OPENING THE BYPASS

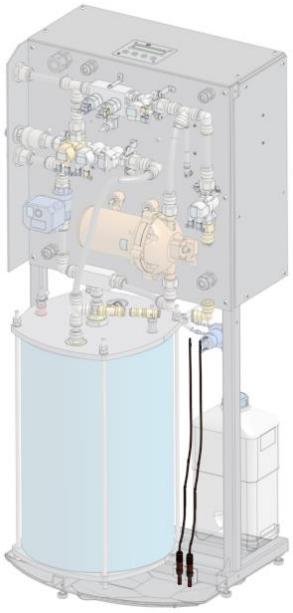


- The bypass valve is normally open. Voltea suggests closing the bypass valve before connecting the module and water connections.

- To close the bypass remove the white cable (blue cable shoe) from the valve connection and connect the red cable (blue cable shoe).

NOTE: Return the bypass valve to its original state (white cable connected) before starting normal operation.

6.5 PLACING LEAK SENSOR



- Take the two sensors and place them in the clamps as shown in the image. The tip of the sensor should be in contact with the leak tray.

NOTE: Leak tray should always be dry to avoid triggering the leakage alarm and stopping the system.

6.6 PLACING THE COVERS

Place the covers back and tighten the connections holding the covers in place being careful of protruding parts (e.g. air filter). Use a flathead screwdriver to tighten the screws holding the covers.

6.7 WATER CONNECTIONS

Size 3/8'' tubing should be used to connect the inlet to the middle connection on the side of the unit. The purified (Out) water is discharged through the top 1/2" connection. Concentrate (Waste) is discharged through the bottom 1/2'' connection.

If a Voltea integration kit has been purchased all water connections should be 1/2". For more information please refer to appendix - DiEntry Installation PFD.

Connections are indicated by stickers.

6.8 POWERING THE SYSTEM UP/DOWN

- A power cable is a part of the system and comes out from the cable gland underneath the air vent.
- Plug in and turn the switch on to power the system.

NOTE: DiEntry systems are specific to either 110V or 240V. If in doubt about the system specifications, please contact Voltea.

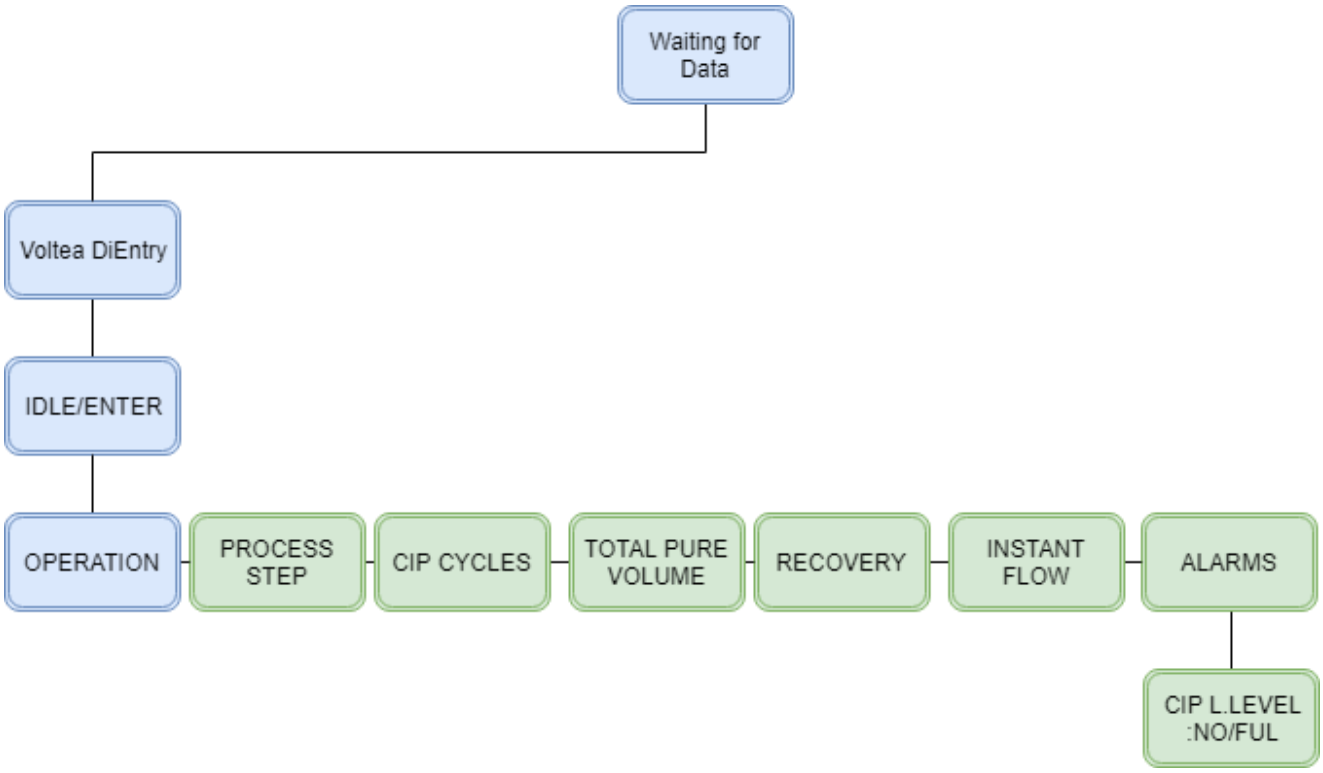
6.9 Replacement of CIP Solution

- Unscrew the lid of the CIP container, being careful of any tension seen in the white tube that could cause splash of the cleaning solution.

WARNING! Acid may splash. Avoid contact with eyes.

CAUTION! If using citric acid powder always use distilled or sterile water for CIP solution preparation.

- Fill container with 50% w/w citric acid solution. The maximum and minimum levels are indicated by stickers.
- Screw the lid of the CIP container back on.
- Go to CIP L.LEVEL in alarms and press enter, the alarm now reads **CIP L.LEVEL : FUL**



NOTE : CIP solution level is calculated based on the CIP's pump capacity to exhaust 3L of CIP solution. For this reason, it is mandatory to reset the CIP alarm once the CIP bottle is refilled. Around 103 ml of CIP solution is used per CIP event.

6.10 Flushing the Module

Before normal operation the modules should be flushed for at least 15-20 minutes. For instruction on module flush please refer to section 12.1.

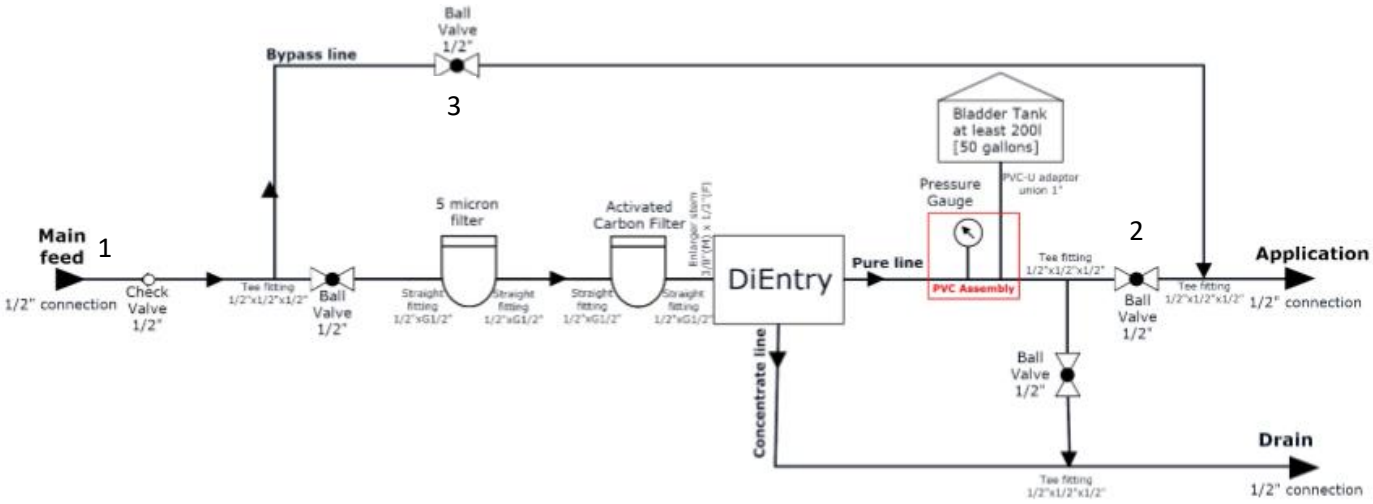
7 System Start Up - Operation

Power the system up. Using the buttons on the LCD screen, press Enter to go from **Voltea DiEntry** to **IDLE-START.** Press Enter again to start operation.

NOTE: To change target output conductivity please refer to chapter 8.4.1

NOTE: If the system is not reaching target pure conductivity, a flow restrictor change may be necessary. Voltea or a trained reseller can assist with choosing the best option for the specific conditions.

When operating for the first time and the house pipping in drained it is advise to fill the tank while the connection to the house(2) is closed, this can take several minutes depended on the pure flow. The house valve (3) and the inlet valve (1) should remain open. When the tank is full and system is in **wait** you can close valve 3 and open valve 2.



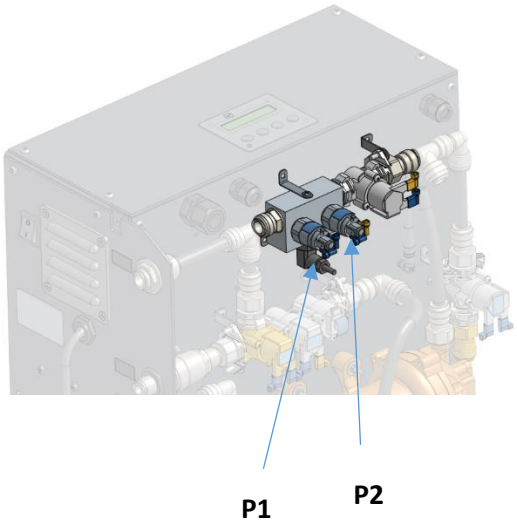
7.1 Operation with Pressurized Tank

- Once the pressure on the outline after the system drops below 3.5 bar (50.7 psi), the system will automatically start producing water.
- When the pressure on the outline increases above 4.8 bar (69.6 psi), the system will immediately stop producing water and it will perform a flush/shunt step for 40 seconds before entering wait mode.

NOTE: Active starting signal for more than 20 minutes will result in a bypass alarm. Bypass alarm is resolved automatically when the starting signal is not active.

7.2 Operation with Atmospheric Tank

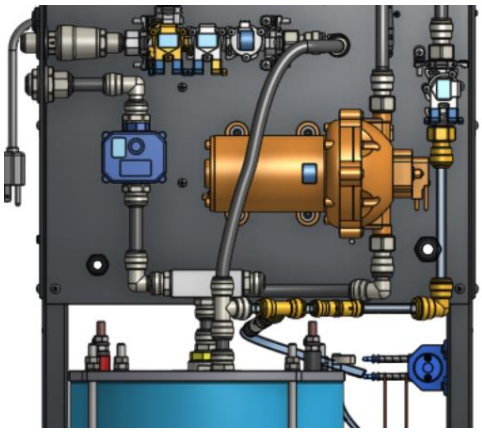
Operating DiEntry with a 24 V DC potential free dry contract will require custom modifications.



- The system can be controlled by any 24 V DC potential free dry contact such as a level sensor.
- To control the start signal with a level sensor, disconnect the electrical cables connected to pressure switch “P2”
- Connect these cables to a level sensor or other selected switch.
- To control the stop signal with a level sensor, disconnect the electrical cables connected to pressure switch “P1”
- Connect these cables to a level sensor or other selected switch.

NOTE: Bypass will open when the starting signal is activated, for more information on bypass functionality please refer to chapter 7.4

7.3 SYSTEM PUMP



- DiEntry is equipped with a system pump to maintain the operational flow.

NOTE: Target flow is a setpoint and should only be changed after consulting Voltea.

- The pump operates during pure and is Idle during prepure and waste steps.
- Depended on the inlet water pressure and the pressure drop through the module the pump adjusts.

NOTE: If the inlet flow is enough for CapDI optimal operation, pump will not start. Pump will start only if pressure compensation is needed.

CAUTION

Operating DiEntry with an inlet pressure lower than 3 bar may result in extensive pump operation and potentially pump failure.

7.4 BYPASS

DiEntry is equipped with an automated bypass. The bypass is controlled by the starting signal - P2 pressure switch. When the pressure drops below 3.5 bar the unit starts operation and the bypass line is open, as soon as the pressure becomes greater than 3.5 bar the bypass line closes. The minimum duration of the bypass line remaining open is 20 seconds. If the bypass line remains open for more than 20 minutes the bypass alarm is triggered. For more information on the bypass logic, please refer to appendix – bypass functionality diagram.

NOTE: If not closed as described in chapter 6.4, the bypass line will remain open and let water pass through even if the system is powered down, based on the logic described above.

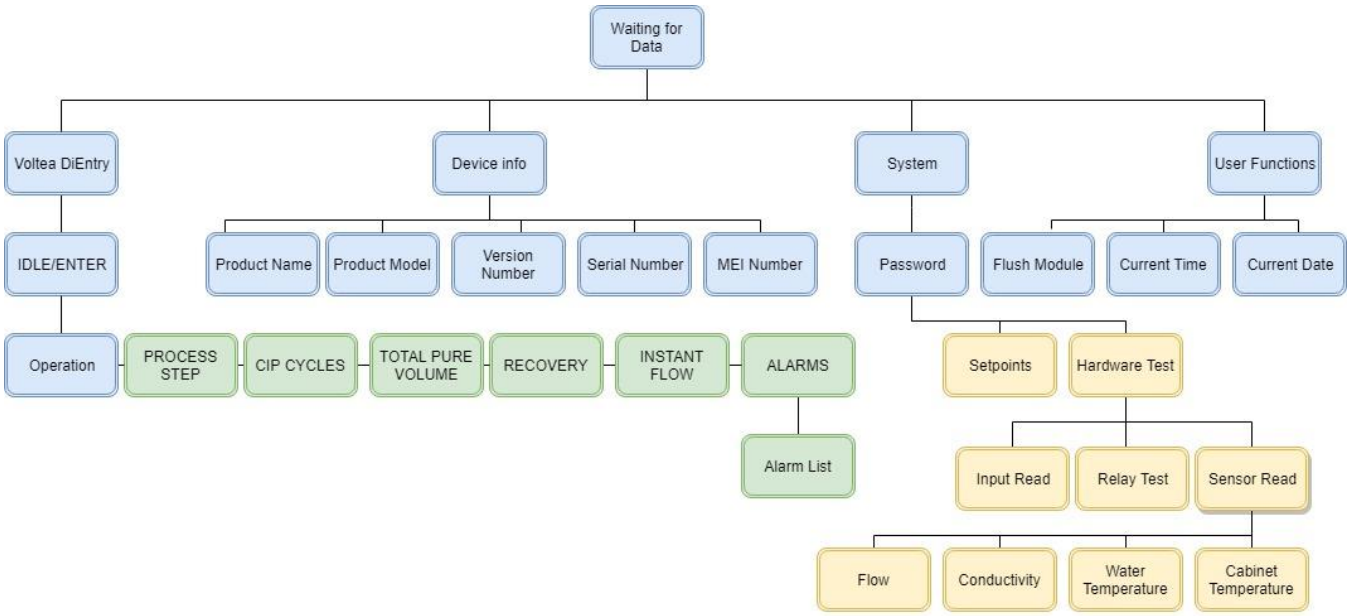
8 SYSTEM CONTROL THROUGH LCD

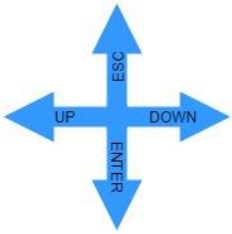
The system can be controlled using the LCD screen and the keypad. Navigate through the screens using the **UP** and **DOWN** buttons, confirm selection with **ENTER**, and return to the previous screen by pressing **ESC.**

NOTE: If the screen is black and not responding please contact Voltea.

8.1 DIENTRY SCREEN NAVIGATION CHART

The flow chart gives an overview of the DiEntry functions and parameters that can be controlled through the LCD.





NOTE: The password is available to authorized dealers.

8.2 VOLTEA DIENTRY

Voltea DiEntry branch		
IDLE/ENTER	**IDLE/Enter** **100 uS/cm**	• This is the initial screen appearing after powering up. System is in IDLE, activate the system by pressing enter. • Average conductivity of the last cycle is also presented.
OPERATION/CLEANING	**OPERATION** **100 uS/cm**	• The system is operating and cycling through the process steps. • Average conductivity of the last cycle is also presented.
	CLEANING **100 uS/cm**	• The system is performing a cleaning in place (CIP). • Average conductivity of the last cycle is also presented.
PROCESS/CIP step	**PROCESS/CIP STEP** **110/110**	• In this screen you can see the process or CIP step currently active. • For a detailed explanation of all the process steps please refer to chapter 8.2.1 • The numbers below the process/CIP step represents the total time of the step and the time remaining in seconds.
CIP CYCLES	Cycle count displays the complete cycles remaining until the next CIP. A CIP occurs by default after 432 cycles. After a complete cycle (Pure - Waste - Prepure) the Cycle counter is reduced by 1. When the Cycle counter reads **Cycle: 0/432** a CIP step will follow.	
TOTAL PURE VOLUME	The total pure volume produced in litres since the start of operation.	
RECOVERY	Recovery rate of the system.	
INSTANT FLOW	Current flow in L/min.	
ALARM	All the alarms are presented in 3 forms: If the alarm never occurred. **Alarm type: NO** **1/1/1 0:0** If the alarm is currently active. **Alarm type: YES** **yy/mm/dd/ time** To acknowledge the alarm press, **Enter.** If the alarm occurred in the past and it is already removed. **Alarm type: NO** **yy/mm/dd/ time** For a more detailed explanation of all the alarms please refer to chapter 8.2.2	

8.2.1 Process steps

PROCESS STEPS		
STEP Name	**LCD Name**	**Description**
Idle	IDLE	System powered but not operating. Press Enter to start system operation.
Prepurify	PRE-PURIFY	Pre-purify phase of cycle. Flushes any remaining waste water from the module.
Purify	PURIFY	CapDI applying power to the module to remove salt and lower conductivity.
Waste	WASTE	Module regenerating. High conductivity, concentrated water being sent to drain.
Check	CHECK	Voltage and current for the next cycle are being calculated – Cabinet temperature check.
Wait	WAIT	Waiting to start operation, when the pressure switch is engaged due to pressure being greater than 3.5 bar / 50.7 psi.
CIP Dosing On	CIP DOSING ON	CIP Pump runs, waste valve is open to release system pressure.
CIP Recirculation	CIP DOSING OFF	CIP solution is being recirculated.
CIP Pulse On	CIP PULSE ON	Feed water flows through the module and is discharged through the waste line.
CIP Pulse Off	CIP PULSE OFF	System pump is activated. Water is being discharged through the waste line.
High Temp	HITP	High temperature, operation is paused until the air temperature drops below the setpoint.
Wait HT	W-HT	Wait until high temperature is lowered. System does a recheck every 600 seconds. When the air temperature is lowered the system automatically restarts.
Flush – Shunt	FLUSH+SHUNT	Flushes the module for 40 seconds while setting the module to 0 Volts. **NOTE:** Flush – Shunt duration cannot be modified in setpoints.

8.2.2 Alarms

OPERATION **100uS/cm!**

If an alarm occurs a "**!**" will appear in the process step screen. Important alarms can result in DiEntry shut down.
Alarm screen will show a binary representation of which alarms are active. Pressing **Enter** will take you to the Alarms list. In the alarms list, it is possible to scroll through alarms and see the date and time at which they last occurred, with any active alarms indicated by a "**Yes".**

Alarms are separated in three categories:

- Alarms that do not stop operation such as the CIP low level alarm and do not resolve automatically. When alarms of this type are triggered they can be acknowledged by navigating to the alarms screen and pressing enter.

- Alarms that do not stop operation and automatically resolve when their triggering condition is no longer active, such as bypass alarm.
- Alarms that force the unit to jump to Idle. These alarms automatically reset when you press Enter while in the Idle screen and the unit resumes operation if the triggering condition is no longer active, for example the leakage alarm.

ALARMS	
Name on screen	**Description**
LOW PURIFY	Low flow during the Purify phase. Set in the Set Points screen. Only triggered at the end of the Purify phase. Unit jumps to Idle, press Enter to resume operation.
LOW WASTE	Low flow during the Waste phase. Set in the Set Points screen. Only triggered at the end of the Waste phase. Unit jumps to Idle, press Enter to resume operation.
BYPASS ALARM	Pure line pressure has dropped below the set point of the starting signal (P2) pressure switch (standard is 3.5 bar / 50.7 PSI) for more than 20 minutes. Alarm automatically resolves when pressure increases above 3.5 bar / 50.7 psi.
CAB. TEMP	System goes to wait due to high temperature within the electrical cabinet. Set in setpoints. Unit jumps to wait until it cools down then resumes normal operation.
LEAKAGE	If the two leakage sensors come into contact with water, this alarm will be triggered, and the system will go to Idle. Dry the area and press Enter to resume operation.
CIP L. LEVEL	CIP solution tank is almost empty. **NOTE:** CIP solution level is calculated based on the CIP's pump capacity to exhaust the 3L of CIP solution. When this alarm is triggered refill the CIP tank and acknowledge the alarm via the alarm screen. The counter resets.
PAE COMM ERR	PCB and power supply not communicating - Resolves automatically
PAE OVP SHUT	Over voltage protection - Resolves automatically.
PAE OLP SHUT	Overload protection – Resolves automatically.
PAE FAN FAIL	Power supply fan failure – Resolves automatically.
PAE SMPS ERR.	Switch mode power supply – Resolves automatically.
PAE OTP SHUT	Module power supply error, over potential – Resolves automatically.
PAE HIGH TEMP	Module power supply error, too high temperature – Resolves automatically.
PAE ACP DOWN	Power supply interrupted – Resolves automatically.
PAE AC IP FZ	Module power supply error, cut off mains power – Resolves automatically.
I2C	EC probe communication interrupted – Resolves automatically.
ZERO EC	Conductivity reading is 0 for more than 5 seconds, unit goes to Idle – Press Enter to resume operation.
TEMP. ERR	Water temperature reading out of range. Unit uses last know temperature – Resolves automatically.

8.3 DEVICE INFO

In this section the product name, product model, firmware version, serial and IMEI number are available.

8.4 SYSTEM

<table>
<tr><th colspan="2">System branch</th></tr>
<tr><td>Password</td><td>To access system, you will be asked for a password. The default password is 1010.</td></tr>
<tr><td>Setpoints</td><td>When advised by Voltea, settings can be adjusted via the LCD.

A cursor can be seen that shows which digit is being edited. UP increases the value, and DOWN decreases it. Press ENTER to move onto the next digit. The edit will only be saved when ENTER is pressed on the final digit.

For a more detailed explanation of all the setpoints please refer to chapter 8.4.1.</td></tr>
<tr><td>Hardware test</td><td>From Hardware Test the Input Read, Relay test and Sensor Test is accessible.

Input read:
<table>
<tr><td>1</td><td>Unassigned</td></tr>
<tr><td>2</td><td>Bypass</td></tr>
<tr><td>3</td><td>Leak sensors</td></tr>
<tr><td>4</td><td>Start signal</td></tr>
</table>
Input variables can have 2 values, Lo and Hi. Hi when the signal is received and Lo when there is no signal. E.g.:
• When the bypass is not active and no leakage while starting signal is active it should read 1Lo 2Lo 3Lo 4Hi
• When the bypass is connected it should read 1Lo 2Hi 3Lo 4Hi
• When there is a leakage it should read 1Lo 2Lo 3Hi 4Hi

Relay test: Gives access to manual operation for the valves, CIP pump and relays.
• MIV: Main inlet valve
• BPAS: Bypass valve
• POV: Pure outlet valve
• WOV: Waste outlet valve
• CIP: CIP pump
• PVR: Shunt relay
• NVR: Polarity changing relay
• PAE: Power supply

Sensor read: Gives access to Flow, Conductivity, Water Temperature and Cabinet temperature live measurements.</td></tr>
</table>

8.4.1 Setpoints

Setpoints have a minimum and a maximum value. Once a setpoint is selected the current setpoint value will be displays amongst minimum and maximum values.

A cursor can be seen that shows which digit is being edited. UP increases the value, and DOWN decreases it. Press ENTER to move onto the next digit. The edit will only be saved when ENTER is pressed on the final digit.

Setpoints					
LCD Label	**Parameter**	**Min Value**	**Max Value**	**Default Value**	**Unit**
PrePurify Time	Pre-Purify Time	0	30	10	s
Purify Time	Purify Time	10	500	110	s
Waste Time	Waste Time	10	500	79	s
Check Time	Check Time	0	500	1	s
CIP Dose	CIP Dosing On Time	0	200	110	s
CIP Dose Rec	CIP Recirculation Time	1	2000	900	s
CIP Dose Total	CIP Dosing and Recirculation Total Time	1001	2000	1010	s
CIP Flow Flush	CIP Flow Flush	1	240	240	s
CIP Flow Rec	CIP Flow Recirculation	1	60	60	s
CIP Flow Total	CIP Flow Total Time	300	7200	1200	s
CIP Flush Time	CIP Flush Time	50	3600	0	s
Wait HT Time	Wait HT Time	30	3600	600	s
P. Flow Target	Flow	0	90	6	L/min
Pure EC Target	Outlet Conductivity	0.0	2000	100	µS/cm
Low Flow P. Alarm	Low Flow Purify Alarm	0	10	3	L/min
Low Flow W. Alarms	Low Flow Waste Alarm	0	10	1	L/min
CIP Cycles	CIP Cycles	5	5000	432	
Temp Alarm	Temperature Alarm High Setpoint	20	60	40	°C
Max CIP P.R.T	Max CIP Pump Runtime	5	4000	2600	S
Pump P-factor	Pump P-factor	0.25	2.00	0.4	
Dyna P-factor	Dynamic P-factor	0	9.99	0.1	
w_value	W value	0.5	2.00	1.05	
Clear Total Volume	-	-	-	-	-

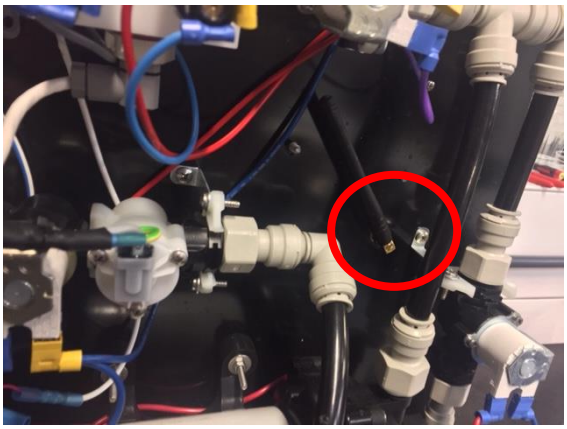
NOTE: Clear total volume is not a setpoint but a system function that resets the total volume of pure water produced by DiEntry since the beginning of operation. For protection, it is located in the set points that are password protected.

8.5 USER FUNCTIONS

User Functions branch	
Flush Module	Starts module flush with feed water.
Current Time	Displays system time in UTC (Coordinated Universal Time) A cursor can be seen that shows which digit is being edited. UP increases the value, and DOWN decreases it. Press ENTER to move onto the next digit. The edit will only be saved when ENTER is pressed on the final digit. **NOTE:** If a SIM card is active, system will automatically synchronize with the network time. For more details on GSM communication refer to chapter 9.1
Current Date	Displays system date. A cursor can be seen that shows which digit is being edited. UP increases the value, and DOWN decreases it. Press ENTER to move onto the next digit. The edit will only be saved when ENTER is pressed on the final digit. **NOTE:** If a SIM card is active, system will automatically synchronize with the network date. For more details on GSM communication refer to chapter 9.1

9 ADVANCE SYSTEM FUNCTIONS

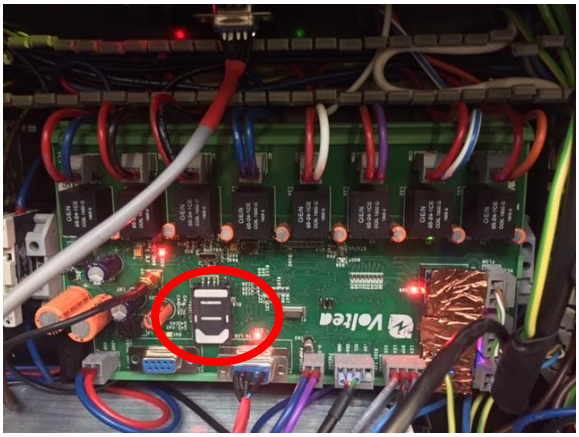
9.1 RECEIVE DATA AND ALARMS REMOTELY



- The system comes with a GSM communication antenna. To utilize this feature, insert a data-ready, unlocked SIM card into the SIM slot. System needs 2G coverage to communicate.

- Once the SIM is placed, use a Laptop and the Docklight software provided by Voltea to put in the email address and phone number of the data/alarm recipient to receive information. For more details please refer to chapter 9.2.4.

NOTE: Nano and micro SIM cards are not compatible with the card reader.



- If an alarm is active the system will automatically send an SMS to every number in the list. The SMS contains only the alarm code.

NOTE: Soft alarms will not trigger an SMS, these soft alarms are PAE alarms, TEMP.ERR and the I2C alarm.

Alarm code	Alarm explanation
1h	LOW PURIFY
2h	LOW WASTE
4h	BYPASS ALARM
8h	CAB. TEMP
10h	LEAKAGE
40h	CIP L.LEVEL
80h	PAE COMM error
100h	PAE OVP SHUT
200h	PAE OLP SHUT
400h	PAE OTP SHUT
800h	PAE FAN FAIL
1000h	PAE SMPS fail
2000h	PAE HIGH TEMP
4000h	PAE ACP DOWN
8000h	PAE AC IP FZ
20000h	I2C
40000h	ZERO EC
80000h	TEMP.ERR

NOTE: These alarms can also occur in combinations. If the code is a combination of more alarms, please use the excel file provided by Voltea to identify the corresponding alarms.

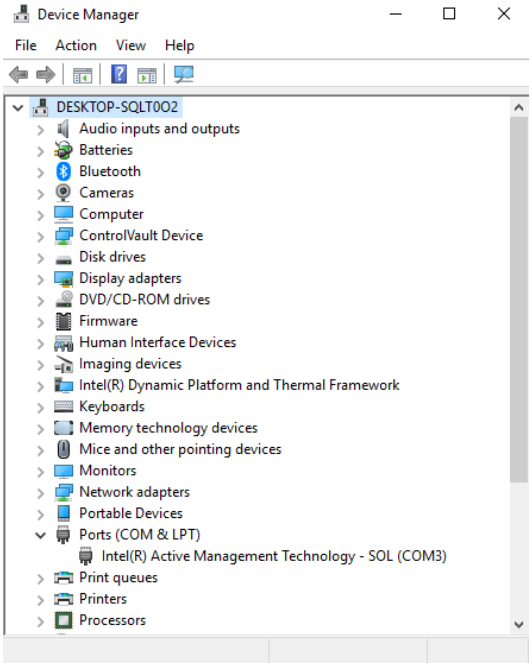
9.2 CONNECTING TO LAPTOP AND UTILIZING DOCKLIGHT

9.2.1 Laptop connection

Before connecting the laptop, power on the unit.

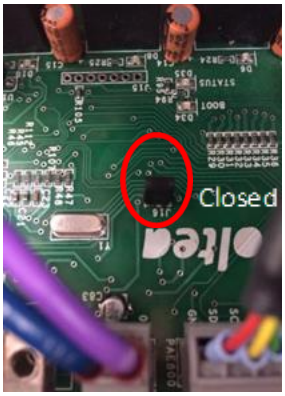
NOTE: These functions are generally not needed for the setup but are required for adding email and SMS monitoring functionality.

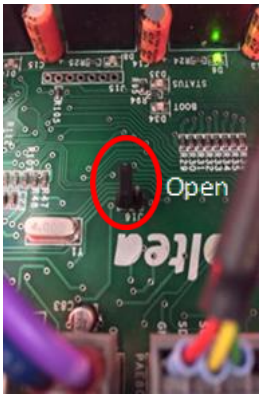
- Connect the laptop to the system using a USB 2.0 cable (micro-USB to USB) place directly into the micro-USB port of the PCB.



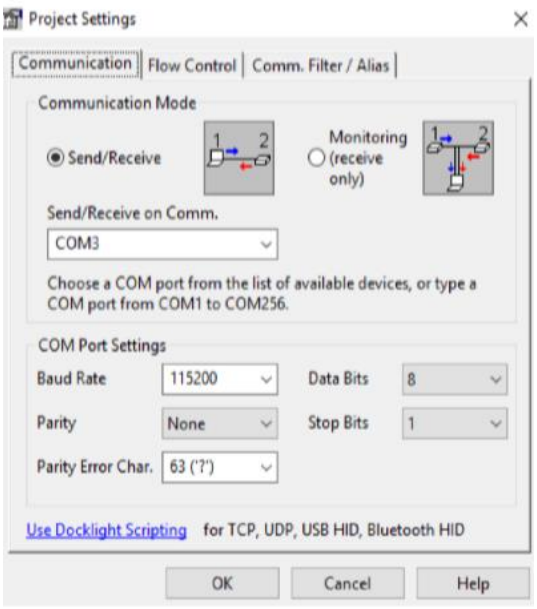
- Open device manager and click the **PORTS** tab. Check the virtual port assigned to connected USB.

NOTE: To connect to laptop, request Voltea's Command program (Docklight).

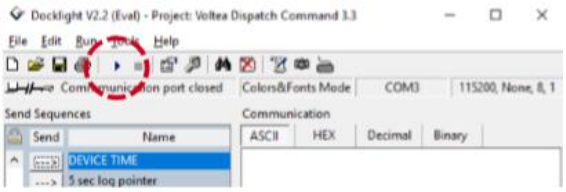




NOTE: The jumper on the PCB should be in the open position before connecting to the laptop. Open position is default for the jumper, check only when unable to connect.

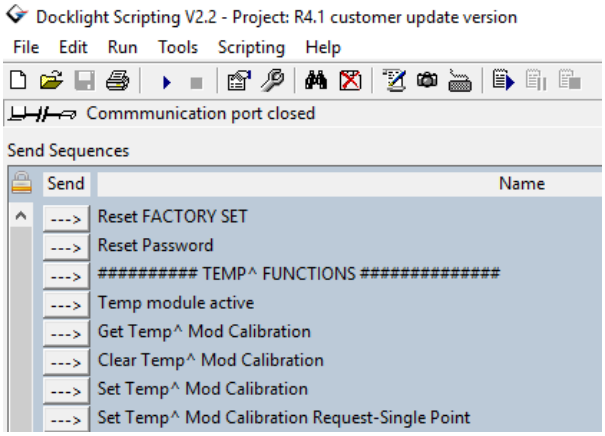


- Open Docklight software.
- Go to **Tools →Project setting**
- In the **Send/Receive on Comm.** field select the virtual port assigned to your USB. Press OK.



- Press the Start button to begin communication. If errors occur after multiple attempts, unplug the USB from the laptop and plug it in again.

9.2.2 Docklight



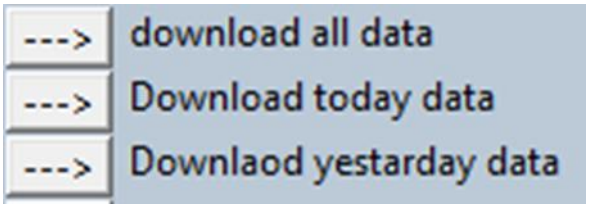
- With Docklight you can calibrate the conductivity probe, set emails and phone numbers for alarms and others. To execute the command click the arrow, located to the left of each command.

COMMANDS	
Reset FACTORY SET	Reset to factory settings
Reset Password	Reset password
TEMP^ FUNCTIONS	
Temp module active	Activates the temperature module
Get Temp^ Mod Calibration	Last calibration is checked
Clear Temp^ Mod Calibration	Clears previous calibration
Set Temp^ Mod Calibration	Adjust the calibration temperature
Set Temp^ Mod Calibration Request – Single Point	Temperature singe point calibration

Get Temp^ Mod Calibration Confirmation	Calibration confirmation
Read Temp^ Mod Current Temperature	Displays current temperature probe reading
CONDUCT^ FUNCTIONS	
Set conductivity Probe Active	Activates the EC probe
Get Conduct^ Probe Type (divide the result by 100)	Displays the EC probe type.
Set Conduct^ Probe Type (multiply actual by 100)	Sets the EC probe type **NOTE:** The EC probe type is set by Voltea and its not advised to change.
Clear Conduct^ Mod Calibration Request	Clears calibration request
Set Conduct^ Mod Calibration Reg	Dry calibration point
Set Conduct^ Mod Calibration Request-Dry	Dry calibration confirmation
Set Conduct^ Mod Calibration Reg 2	Single point calibration. **NOTE:** Voltea suggests a 147µS/cm solution for calibration. Docklight has this solution as a preset. If you want to use a different solution double click on Set Conduct^ Mod Calibration Reg 2 and change the conductivity value.
Set Conduct^ Calibration Request – Single Point	Single point calibration confirmation
Get Conduct^ Mod Calibration Confirmation	Calibration confirmation
Get Conduct^ Mod Conductivity (For actual value divide by 100)	Displays current conductivity reading, for the actual value divide the received value by 100.
Set Conductivity Probe to Hibernate	Deactivated EC probe
FLOW^ FUNCTIONS	
Get Flowmeter Single Reading	Displays current flow
Clear Flowmeter K value	Clears flow meter K value
Get Flowmeter K value	Displays K value
CLEAR Flowmeter Reading	Clear flowmeter reading
Serial Number FUNCTIONS	
Get Serial Info	Displays DiEntry serial number
Get FM unique id	Displays system's unique ID
Set Serial Number	Change Serial Number
Get Serial Number	Display Serial Number
GSM FUNCTIONS	
Set Admin Mobile No	Set administrator mobile number to receive alarms and data
Set User 1 Mobile No	Set user 1 mobile number to receive alarms and data **NOTE:** UP to 10 users possible
Set Admin Email ID	Set administrator email to receive alarms and data
Set User 1 Email ID	Set user 1 email to receive alarms and data **NOTE:** UP to 10 users possible
Email Setting – USERNAME	Internal server username
Email Setting – PASSWORD	Internal server password
Email Setting – SENDER ADDRESS	Sender address
Email- Setting – OUTGOING MAIL SERVER ADDRESS	Mail server address
Email Setting – OUTGOING MAIL SERVER PORT NUMBER	Outgoing mail port number
Set APN Settings	Access Point Name settings for GSM communication
GENARAL SETTINGS	
Get System Time zone	Displays time zone
Write System Time zone	Sets system time zone

Mobile debug ON	Debug sequence enabled
Mobile debug OFF	Debug sequence disabled
Mobile Strength	GSM signal appears on screen, a value above 10 is considered sufficient.
Download all data	Downloads all operational data in a txt. format
Download today's data	Downloads today's operational data in a txt. format
Download yesterday's data	Download yesterday's operational data in txt. format
Email daily report	Triggers the daily report via e-mail
Date wise report displays	Displays on Docklight screen the daily summary report
Log view enable	All operational events, measurements and calculations appear on Docklight screen. 5 seconds log
Log view disable	Disables the on screen event log
Reset Controller	Internal PCB reset
Get Firmware Version	Displays firmware version
Change Password	Changes the password

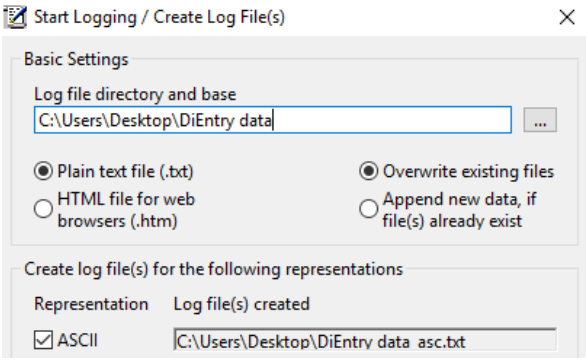
9.2.3 Downloading operational data from the system



Operational data can be downloaded from the system utilizing Docklight, to connect your laptop to the system via Docklight please refer to chapter 9.2.1. Laptop Connection. To download use one of the three commands depending on the timeframe you are interested in, for more information on these 3 commands refer to chapter 9.2.2.

Before downloading select the folder where you want to save data:

- Click Start Communication Logging, button can be found on the ribbon.



- Select the directory to save the txt. file.

NOTE: If the file name is not changed, the file will be overwritten.

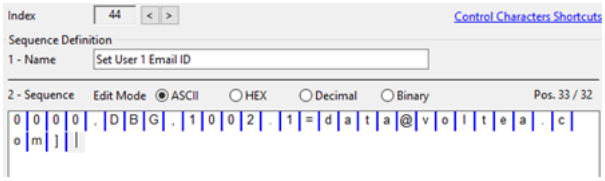
- Click on one of the three commands to download the data.

9.2.4 Adding e-mail and telephone users.

- It is possible to input email addresses and phone numbers into a list that can be used to receive data in the form of daily reports (chapter 9.2.5) and alarms from the system. This list can hold up to 10 addresses and 10 mobile phone numbers.

Set User 1 Email ID

- Using Docklight program, double click on the **Set User email** ID text



- In the dialog box that appears, edit the default e-mail address and press OK.
- To save the email address, press the arrow on the left of the **Set User 1 Email ID** command.

- You can repeat the same process with "**Set User Mobile No.**" to enter the mobile phone number associated with the email address. This number will receive SMS messages with information on the system.

9.2.5 Daily summary report

If an unlocked SIM card with mobile data is installed in the unit, a daily summary report will be sent to all mails stored in the PCB (up to 10 mails). The report will be sent via Voltea's server (data@voltea.com).

The daily summary report consists of 7 columns and is populated daily.

1. **Date**: YY/MM/DD
2. **AvgPV**: Average pure step voltage over the whole day in Volts (V)
3. **AvgWV**: Average waste step voltage over the whole day in Volts (V)
4. **T.Flow**: Total pure flow over the product life time in liters (L)
5. **AvgEC**: Average electrical conductivity of the pure step over the whole day in µS/cm
6. **T.Cyc**: Total cycles completed over the whole day
7. **Alarm**: The hexadecimal sum of all the alarms in one day (e.g. 3h=1h+2h). For more details on alarms please refer to chapter 9.1. If the 0h value appears in the alarm column no alarm was active over the whole day.
   NOTE: Alarms will appear in the daily summary report even if they were resolved.

Below an example of the daily summary report.

Date	*AvgPV*	*AvgWV*	*T.Flow*	*AvgEC*	*T.Cyc*	*Alarm*
18/10/1	*0.19*	*0.32*	*114343.98*	*100.45*	*432*	*0h*
18/10/2	*0.15*	*0.34*	*116712.65*	*100.50*	*421*	*0h*
18/10/3	*0.11*	*0.32*	*119057.95*	*100.68*	*421*	*0h*
18/10/4	*0.15*	*0.41*	*121402.20*	*100.29*	*408*	*0h*
18/10/5	*0.16*	*0.45*	*123735.65*	*100.51*	*421*	*0h*
18/10/6	*0.12*	*0.76*	*126075.63*	*100.89*	*421*	*0h*
18/10/7	*0.14*	*0.80*	*128487.95*	*100.97*	*432*	*0h*
18/10/8	*0.25*	*0.66*	*130848.94*	*101.12*	*170*	*0h*
18/10/9	*0.19*	*0.65*	*133203.69*	*100.08*	*421*	*0h*

9.2.6 Remote control through SMS

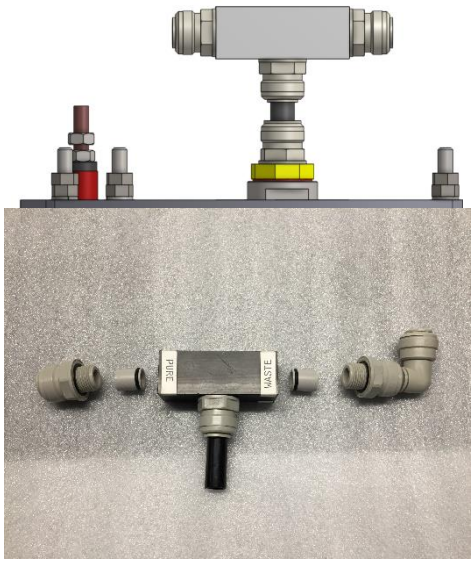
DiEntry can be controlled through SMS utilizing the GSM slot on the PCB.

Up to 10 mobile numbers and e-mail addresses can be used for remote communication.

Table below displays the commands available through SMS.

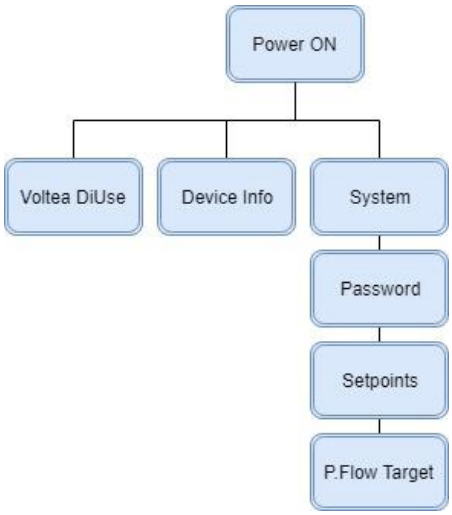
SMS command	Definition
0000,DBG,302.0=?	Query Firmware Version
0000,DBG,325.0=?	Get status of the system
0000,DBG,309=?	Query Device Time Offset
0000,DBG,308=?	Query Device Date
0000,DBG,307=?	Query Device Time
0000,DBG,303.0=?,303.1=?,303.2=?	Query Serial Info
0000,DBG,321.0=?	Query FM Unique ID
0000,DBG,624.0=?	Query current Conductivity value
0000,DBG,351.3=1	Trigger the Email Daily Report Summary
0000,DBG,1002.0=?,1002.1=?	Query User1 Mobile and Email info
0000,DBG,1002.0=xxxyyyzzzz	Set User1 mobile info
0000,DBG,1002.1=xxx@yyy.zzz	Set User1 email info
0000,DBG,1003.0=xxxyyyzzzz	Set User2 mobile info
0000,DBG,1003.1=xxx@yyy.zzz	Set User2 email info
0000,DBG,900.1=1	Press UP key
0000,DBG,900.2=1	Press DOWN key
0000,DBG,900.3=1	Press ENTER key
@a,DBG,900.4=1	Press ESCAPE key
0000,DBG,500.7=?	Get GSM signal strength

10 Changing Flow Restrictors



- DiEntry is shipped with a 2 L/m in the waste line and a 6 L/m flow restrictor in pure line.
- DiEntry is shipped with spare flow restrictors of different colors and flows, for more information refer to appendix.
- To remove the connections holding the flow restrictors in place, unscrew the push fittings on the manifold. Carefully remove the pre-installed flow restrictors.
- Replace these flow restrictors with the desired ones making sure that the “Pure” restrictor is facing towards the pure outlet of the manifold, and the “Waste” restrictor is facing the waste outlet of the manifold.
- Screw the push fittings back onto the manifold assembly .

NOTE: Flow restrictor change is only advised after consulting Voltea.

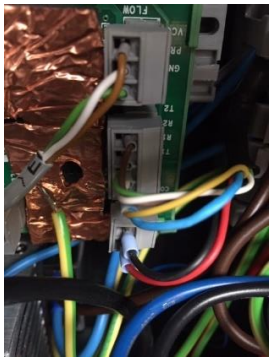


- On the LCD, update the Pure Flow Target set point in Systems/Set Points. This value is only in liters per minute (L./min). If adding an X flow restrictor in the pure line, set the pump to X minus 0.2, i.e. if you add a 2 l/m flow restrictor, set the pump to 1.8L/min.
- After flow restrictor replacement the low flow pure and low flow waste alarm setpoints need to be updated. The new value should be the flow restrictor value divided by 2. More about setpoints in section 8.4.1

11 ELECTRICAL CONDUCTIVITY PROBE CALIBRATION

Equipment needed:

- Temperature probe (capable of reading atmospheric temperature).
- Calibration solution, Voltea recommends 147 µS/cm standard solution.
- Flathead screwdriver.
- Phillips screwdriver.
- External EC probe.
- External mounted EC probe.

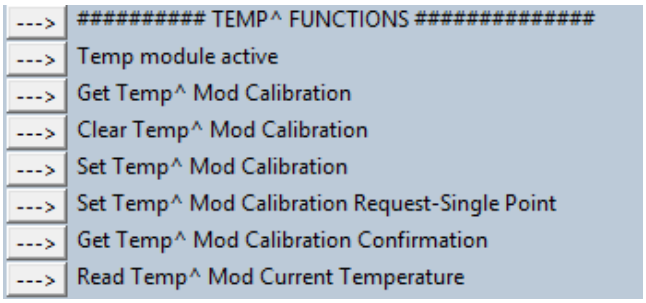


To calibrate the electrical (EC) probe, do the following:

- Remove the covers
- Open the cabinet door
- Disconnect the EC probe connections from the PCB

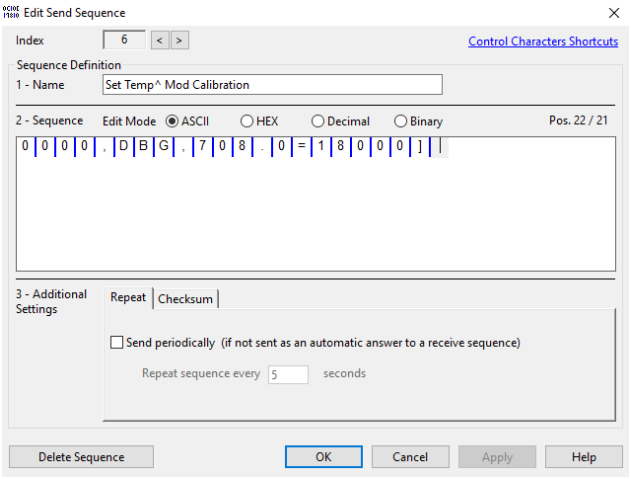
- Connect the external EC probe on the PCB.
- Rinse the EC probe with demineralized water and dry with paper.
- Power on the system

Conductivity probe is calibrated through Docklight. Before EC calibration, temperature has to be calibrated.
For more information on how to use Docklight please refer to chapter 9.2.1. Open the program and perform the following by pressing the **Send** button.



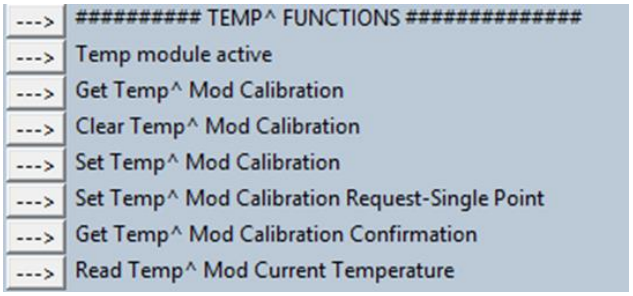
Temperature calibration:

- Click - **Temp module active** to activate the probe.
- Click - **Get Temp^ Mod Calibration.**
- Click – **Clear Temp^ Mod Calibration** to clear any previous calibration request.

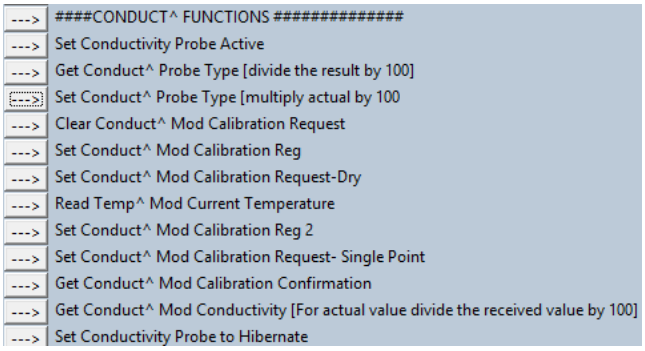


- Read current room temperature using an external probe
- **Click on the text of the Set Temp^ Mod Calibration** to set temperature according to the room temperature measured in previous step. A pop up window will open. By default, the temperature is set to 25 degrees Celsius (25000 in Docklight). Replace this value with the room temperature measured via the external probe, e.g. if the probe reads 18 °C the value in Docklight should be 18000

Note: If the probe is not at room temperature, wait for 5 minutes for it to reach room temperature before calibrating. Clicking the Read Temp^ Mod Current Temperature will display on screen the probe temperature reading. When this reading is stable the probe reached room temperature.

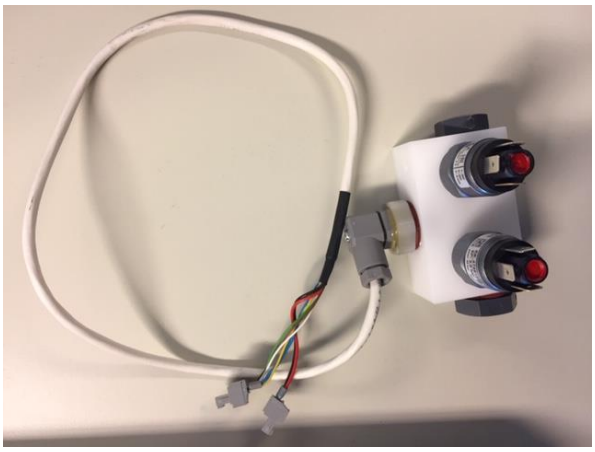


- Click – **Set Temp^ Mod Calibration Request-Single Point** to calibrate the temperature.
- Click – **Get Temp^ Mod Calibration Confirmation** to confirm calibration
- Clicking - **Read Temp^ Mod Current Temperature** will display the temperature reading of the probe.

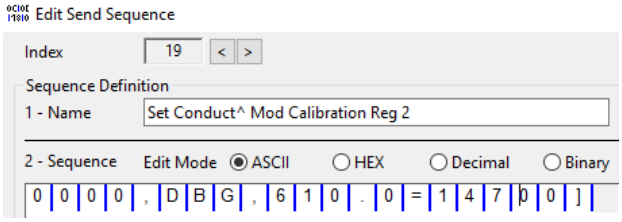


Conductivity calibration:

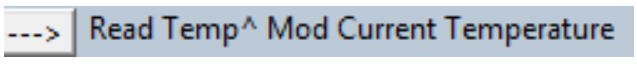
- Click – **Set conductivity Probe Active** to activate the EC probe.
- Click – **Set Conduct^ Probe Type**
- Click – **Get Conduct^ Probe Type**
  Response should be “100”.
- Click – **Clear Conduct^ Mod Calibration Request** to clear previous calibration request.
- Click - **Set Conduct^ Mod Calibration Reg**. Make sure the probe is not in contact with any liquid or surface.
- Click - **Set Conduct^ Request-Dry,** to calibrate for dry.



- Disconnect the external EC probe from the PCB and connect the EC probe mounted on the special manifold. Fill the manifold with the calibration solution. Voltea suggests using a 147µS/cm standard solution.

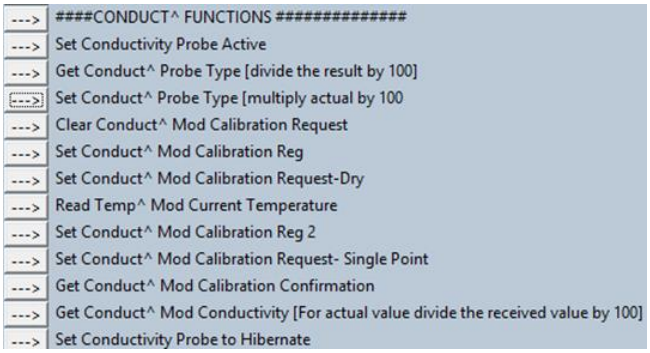


- If a different calibration solution is used, click on the **Set Conduct^ Mod Calibration Reg 2** command. A new window will pop up. Input your desired calibration value and add two times zero at the end. E.g. if a 300 µS/cm calibration solution is used delete the 14700 preset value and add 30000, click OK.



Temperature (°C)	EC (µS/cm)
15	119
16	122
17	125
18	127
19	130
20	133
21	136
22	139
23	142
24	145
25	147
26	150
27	153
28	156
29	159
30	162

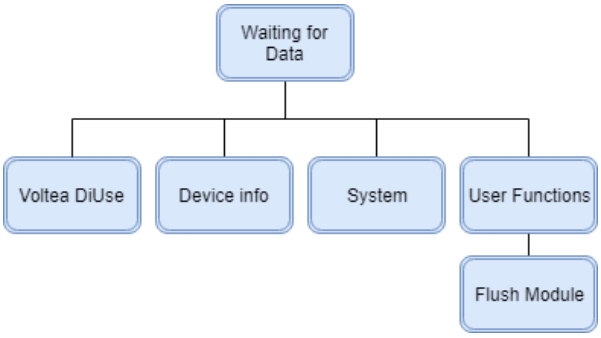
- The calibration value should be uncompensated for temperature. If you don't know the calibration solution temperature, you can use the **Read Temp^ Mod Current Temperature** command to read the calibration solution temperature, e.g the 147 µS/cm solution has this EC only at 25°C. If the solution temperature is 20°C the EC value used for calibration should be 133 µS/cm.



- Click - **Set Conduct^ Mod Calibration Reg 2** to save the conductivity value of the calibration solution used.
- Click **- Set Conduct^ Calibration Request - Single Point** to calibrate the probe.
- Click - **Get Conduct^ Mod Calibration Confirmation** to receive confirmation
- Click - **Get Conduct^ Mod Conductivity** to get a conductivity measurement.
- Click - **Set Conductivity Probe to Hibernate**.
- Click **- Reset controller** to save all changes to the PCB.
- Disconnect the calibration EC probe and re-connect the system EC probe on the PCB. Disconnect the USB cable and close the cabinet. Jumper should remain in the open position.

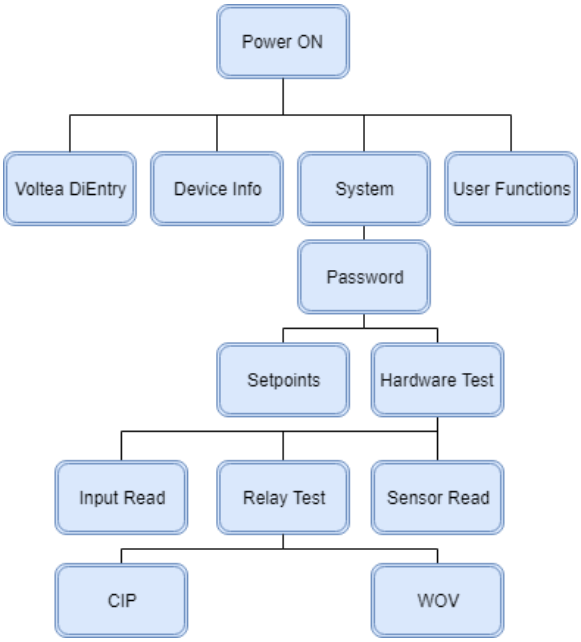
12 Flushing, Bleaching, Storing and Module Disposal

12.1 Flushing the module



Flushing the module is required for at least 15-20 minutes before starting operation for the first time. To flush the module, select the built in function via the LCD screen.

12.2 Bleaching the module



Bleaching the module before storing is highly recemented. To bleach the module a 80-ppm free chlorine solution is needed. Household bleach can serve as the free chlorine source. The free chlorine concentration in a typical household bleach product is 8.5% in this case dilute by adding 3mL of bleach into the 3L of water.

Fill the CIP container with the 80-ppm free chlorine solution. Through the main controls go to **RELAY TEST** and open the CIP Pump (**CIP**) and Waste valve (**WOV**). This will allow the chlorine solution to insert the module and be discharged through the waste line. Close both when the CIP container is empty.

12.3 Storage

In case of module long term storage (>3 days), it is advised that after the last period of operation before the long break, an aqueous solution containing 30g/L NaCl, 2g/L glycolic acid and 1g/L Sodium Benzoate is flushed through the module for 5 minutes. After flushing, the module should be sealed with the grey stoppers.

NOTE: Clean or sterile water should be used for the storage solution.

If the period of no operation is longer than 1 month, the storage solution should be replaced every month.

An alternative solution with a longer storage period using a bio-growth inhibitor is available, please contact Voltea for more information.

12.4 DISPOSAL

When (parts of) the DiEntry has reached the end of its serviceable life time the following must be observed before disposing:

- Some parts may be reused so please contact Voltea before disposing DiEntry.
- The system should be discharged in accordance with legislation in force locally.
- Materials should be reused or disposed in an environmentally friendly manner.
- Throughout operation and depending on the application a CapDI module may have been exposed to and may have accumulated harmful components. The user is responsible for proper disposal in accordance with local legislation.

13 SYSTEM MAINTENANCE

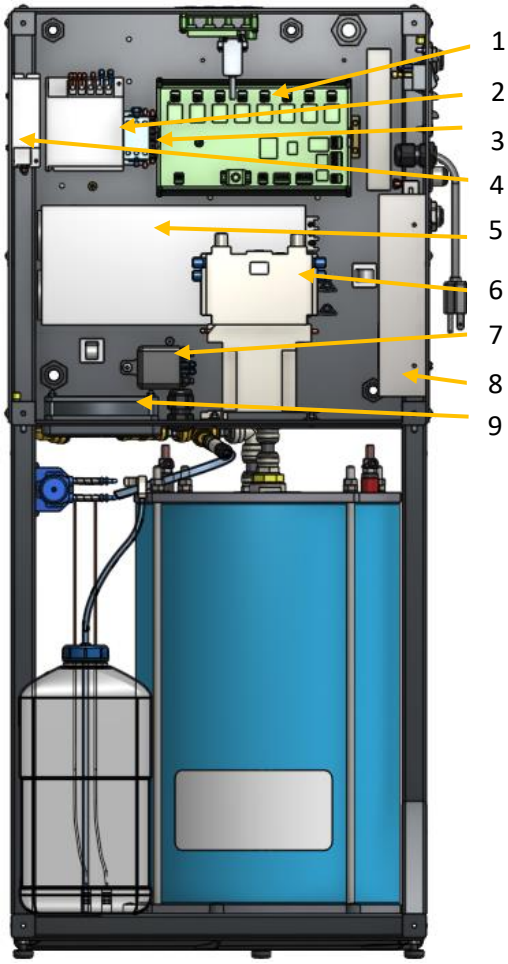
To ensure continuous and untroublesome operation, Voltea suggests a weekly check. You can find the weekly check form in the Appendix.

Pure electrical conductivity, the alarm list and the CIP solution level is advised to be checked weekly.

Fan filter (bottom of the electrical cabinet) and flow restrictors should be checked at least every 6 months.

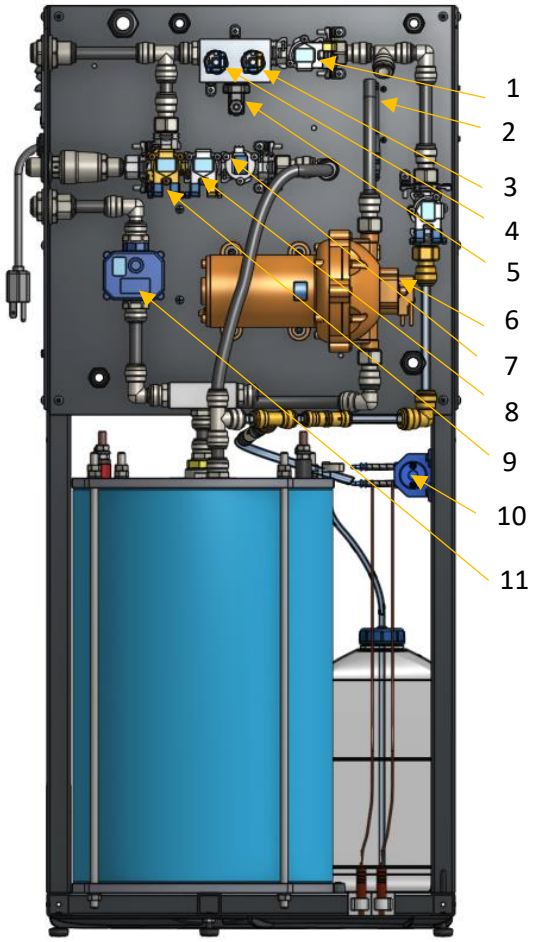
14 SYSTEM COMPONENTS

14.1 ELECTRIC CABINET



1. PCB
2. Power supply (24V - 50W)
3. Relay
4. Power supply (24V - 50W)
5. Power supply (12V - 1500W)
6. Relay
7. Shunt Relay
8. Power supply (24V - 300W)
9. Fan

14.2 VALVES, SWITCHES AND PUMPS



1. Solenoid valve
2. GSM antenna
3. Pressure switch 3.5 bar (50.7 psi)
4. Pressure switch 4.8 bar (69.6 psi)
5. EC probe
6. System pump
7. Flow sensor
8. Solenoid valve
9. Solenoid valve
10. CIP pump
11. Motor valve

APPENDIX

FLOW RESTRICTOR COLOR AND FLOW

Order number	Colour	Flow (L/m)	Flow (gpm)	Availability
102509	olive	2.0	0.52	Pre-installed in Waste line
102539	brown	3.0	0.79	Shipped with DiEntry
102590	grey	4.0	1.05	Shipped with DiEntry
102536	yellow	5.0	1.32	Shipped with DiEntry
102538	black	6.0	1.58	Pre-installed in Pure line
102540	green	7.0	1.84	Shipped with DiEntry
102591	natural	8.0	2.11	Shipped with DiEntry
102537	orange	9.0	2.37	Shipped with DiEntry
102510	light blue	10.0	2.64	Shipped with DiEntry
102592	red	12.0	3.17	Shipped with DiEntry
102593	pink	14.0	3.69	Shipped with DiEntry
102594	lime	15.0	3.96	Shipped with DiEntry
101467	blue	16.0	4.22	Shipped with DiEntry

SPARE PARTS LIST

Voltea part #	Description
101839	Motor valve
102013	Flow meter
102683	Pressure switch 3.5 bar
102684	Pressure switch 4.8 bar
102460	Flow meter
102459	Bypass solenoid valve B
102018	Solenoid valve A
102377	Acid peristaltic pump
102028	Acid check valve
101414	Nut M8 fine thread
101477	Nut M8
102522	C-12-24 DDRG
102677	PCB 1.3
102461	System pump
102477	Relay 125 A
102474	1500W power supply
102024	300W power supply
102644	PAE relay DiEntry
102066	50W power supply
102453	Shunt relay DiEntry

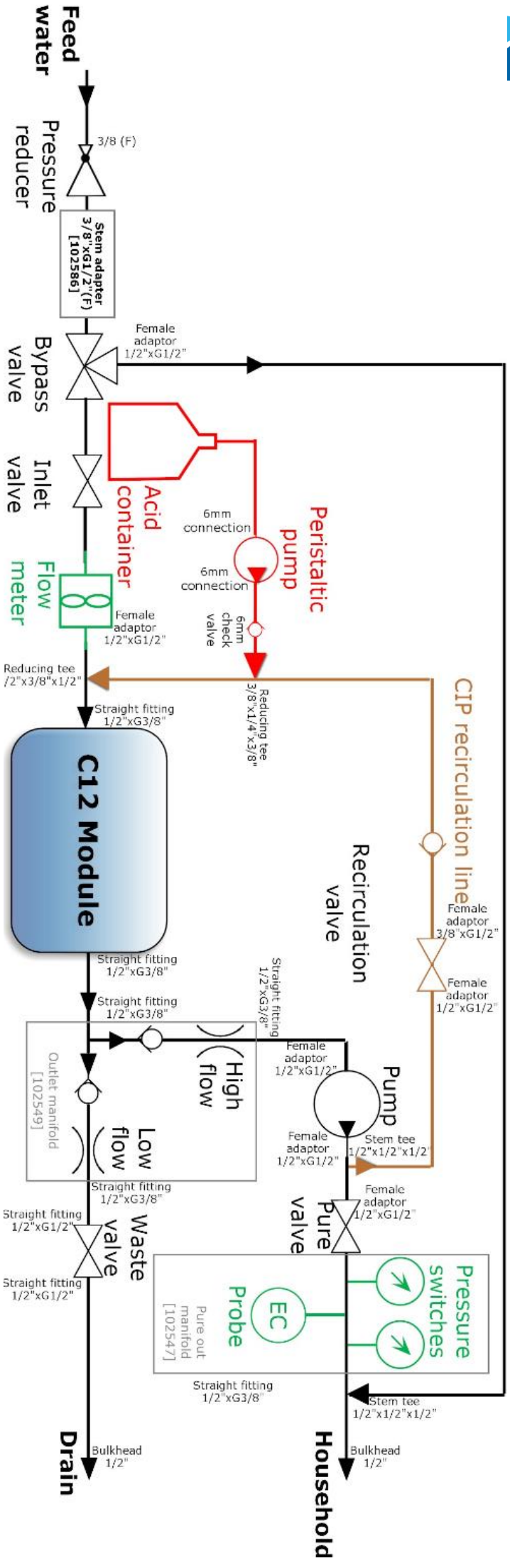
50% W/W CITRIC ACID SOLUTION PREPARATION

1. Required materials
    a. Citric acid (solid, >95%, no specific grade)
    b. 3L (0.79 gallons) graduated container
    c. Stirring rod or stirring device
    d. Personal protective equipment, as described in the citric acid data sheet.
    e. Distilled/sterile water
2. Fill the container with 1500 ml (0.39 gallons) distilled/sterile water
3. Weigh out 1.872g (4.12pounds) of citric acid.
4. Add acid to water and gradually stir.

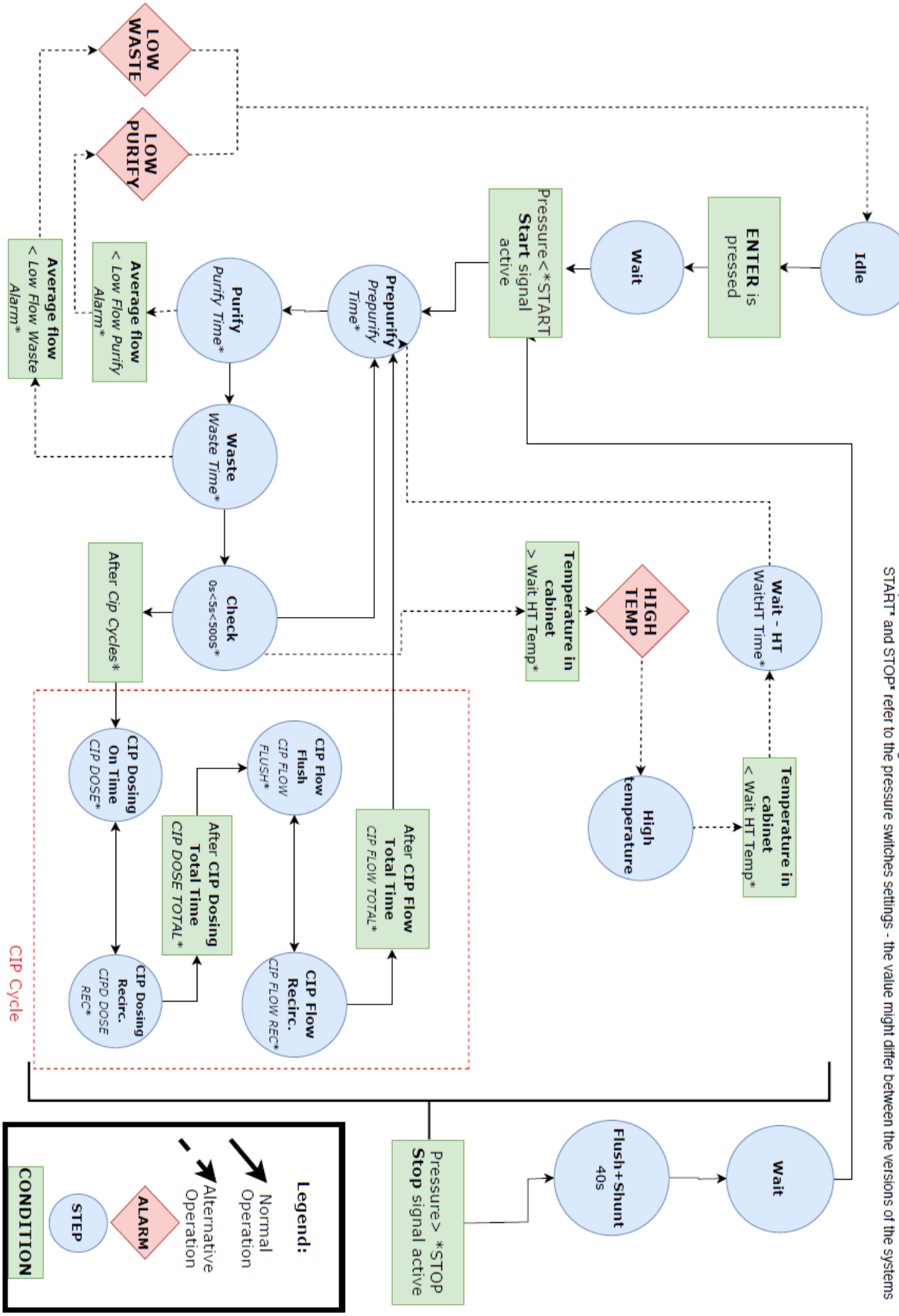
    NOTE: Add acid to water instead of water to acid to reduce the risk of splashing corrosive solution.
    NOTE: It expected that the solution will become colder. If citric acid stops dissolving gently heat the solution to increase solubility.

5. Once all the citric acid is dissolved fill the container with distilled/sterile water and stir.

P&ID


Feed water
Pressure reducer
3/8 (F)
Stem adapter 3/8"xG1/2"(F) [102586]
Female adaptor 1/2"xG1/2"
Bypass valve
Inlet valve
Acid container
6mm connection
Peristaltic pump
6mm connection
Flow meter
Female adaptor 1/2"xG1/2"
6mm check valve
Reducing tee /2"x3/8"x1/2"
Reducing tee 3/8"x1/4"x3/8"
Straight fitting 1/2"xG3/8"
C12 Module
CIP recirculation line
Recirculation valve
Female adaptor 3/8"xG1/2"
Female adaptor 1/2"xG1/2"
Straight fitting 1/2"xG3/8"
Straight fitting 1/2"xG3/8"
Straight fitting 1/2"xG3/8"
Outlet manifold [102549]
High flow
Low flow
Female adaptor 1/2"xG1/2"
Pump
Female adaptor 1/2"xG1/2"
Stem tee 1/2"x1/2"x1/2"
Straight fitting 1/2"xG3/8"
Female adaptor 1/2"xG1/2"
Straight fitting 1/2"xG1/2"
Waste valve
Pure valve
Straight fitting 1/2"xG1/2"
Pure out manifold [102547]
EC Probe
Pressure switches
Straight fitting 1/2"xG3/8"
Stem tee 1/2"x1/2"x1/2"
Drain
Bulkhead 1/2"
Bulkhead 1/2"
Household

PROCESS FLOW DIAGRAM

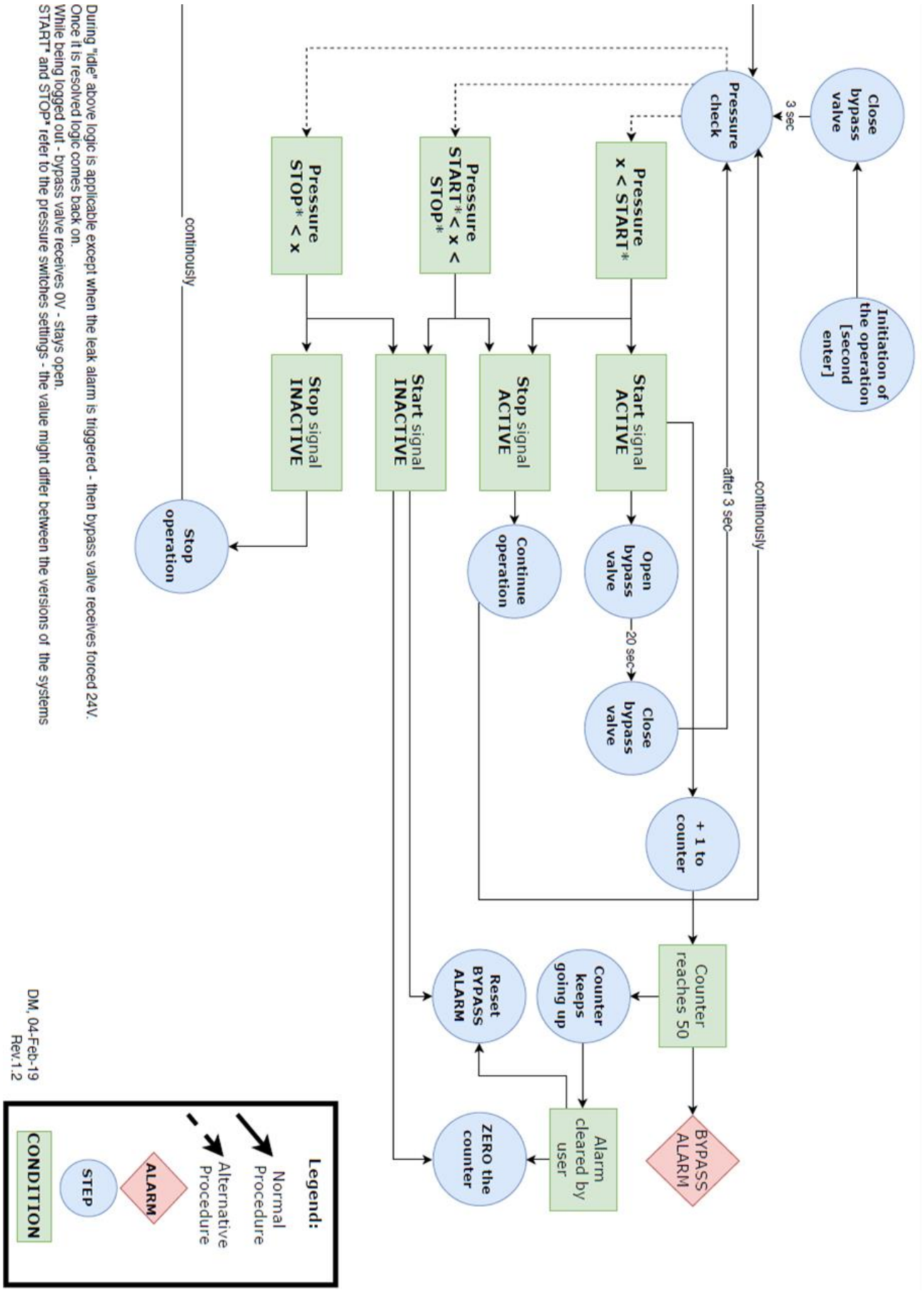


DiEntry - operation flow chart Rev. 1.0

*Setpoint can be altered through the screen

START* and STOP* refer to the pressure switches settings - the value might differ between the versions of the systems

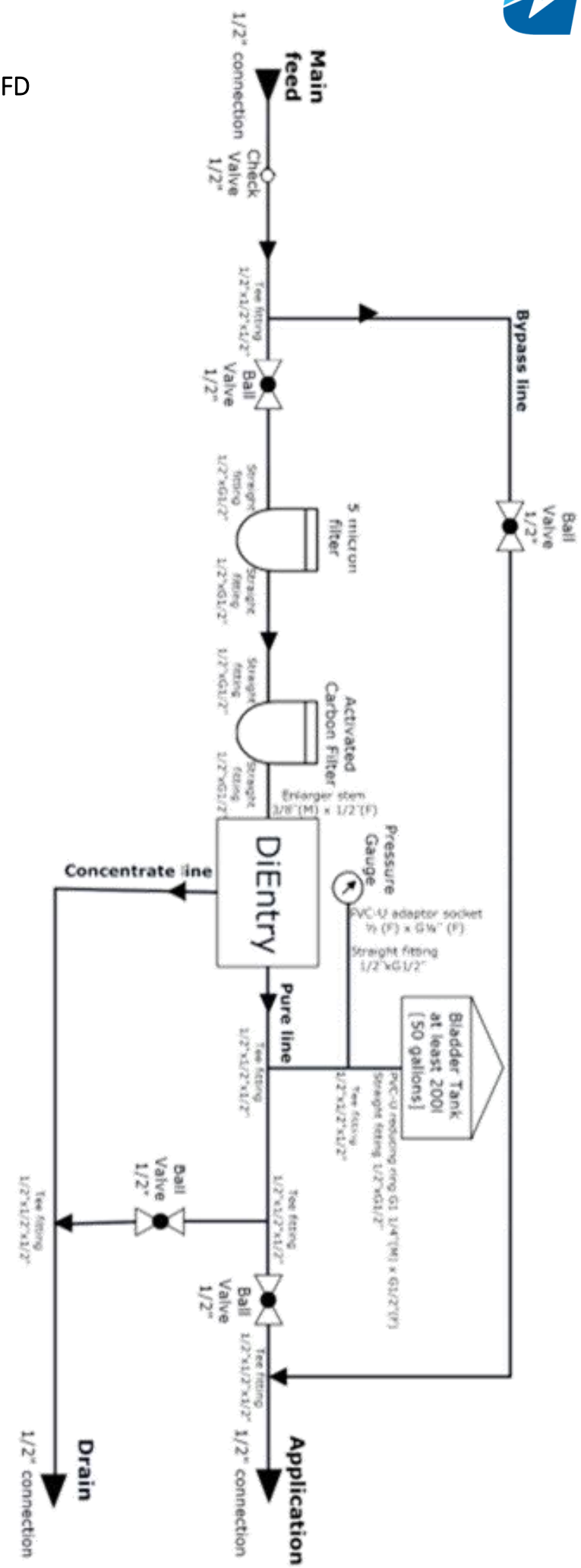
BYPASS FUNCTIONALITY DIAGRAM



During "idle" above logic is applicable except when the leak alarm is triggered - then bypass valve receives forced 24V.
Once it is resolved logic comes back on.
While being logged out - bypass valve receives 0V - stays open.
START* and STOP* refer to the pressure switches settings - the value might differ between the versions of the systems

DM, 04-Feb-19
Rev.1.2

DIENTRY INSTALLATION PFD



WEEKLY CHECKLIST SHEET

Date _____

1 Alarms

No Alarms ☐

Alarms: _____

_____

_____

_____

2 Water

EC on target ☐

EC (µs/cm) _____

3 CIP solution

CIP solution above minimum level ☐

4 Notes

_____

_____

_____

_____

_____

_____

_____

_____

_____

Completed by _____

Signature _____