

EASYCHLORGEN

Compact 240/480

On-site Sodium Hypochlorite Generation



Installation & Operation Instructions

EN

(Original Instructions) V1.1 02/21

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1 Notes for the Operator

1.1 Document Guidance

This operating manual assists in the safe and correct operation of the EASYCHLORGEN Compact systems by providing guidance in the following areas:

- Installation
- Operation
- Maintenance & spare parts
- Shutdown procedures
- Transportation
- Potential risks due to matters outside of the manufacturer's control

1.1 Personnel Qualification

All personnel are obligated to read this manual and receive relevant training before operating or performing work on the equipment.

Operator:

- The company responsible for organizing the installation, commissioning, and servicing of the equipment.

Authorised Service Personnel:

- Fully trained by the operator or Lutz-Jesco GmbH for installing, commissioning, and servicing the equipment.
- Skilled persons with relevant qualification and experience for the task.

Users:

- Responsible for basic operation and upkeep of the equipment, they must be trained to carry out their tasks by authorised service personnel.
- Non-skilled persons.

1.2 Operators Responsibility

Ensuring that:

- The EASYCHLORGEN manual is easily accessible and in close proximity to the system at all times.
- The installation room meets all local regulations including fire, safety, and accident prevention laws.
- No alterations to the system and installation that are not detailed in this manual are made.
- Users are instructed in operation and basic maintenance of the system.
- The system is serviced at regulator intervals by authorised personnel.
- Personal protective equipment is available for all users of the system.

1.3 Training Course Assistance

As an operator you are obligated to provide training to all personnel to prevent hazards and misuse of equipment from occurring.

If personnel require further training after the system has been delivered, please contact Lutz-Jesco GmbH.

1.4 Notes on Warranty

The warranty period begins at the date of the invoice.

For a warranty claim to be valid the following requirements must be fulfilled:

- The system must be installed and operated in accordance with the information provided within this manual.
- Maintenance and repairs must be carried out by trained personnel at the intervals stated.
- Replacement parts and maintenance kits are only to be supplied by Lutz-Jesco or authorised distributors and operators.
- The feed water and salt used for the EASYCHLORGEN must meet the specification detailed in this manual.
- The EASYCHLORGEN is not installed in close proximity to acid storage and dosing equipment.

Equipment	Warranty Period (Years)
Wearable items	1
Electronic components	2
Electrodes	5 (pro-rata)

2 Safety

The following warnings are intended to help you to eliminate the hazards that can arise while operating and servicing the equipment. Risk prevention measures always apply regardless of any specific action.

Take note of the signal word and hazard symbols at the start of the sections in this manual.

The EASYCHLORGEN always fails safe, hazards can only occur due to wrong installation or errors made by personnel.

2.1 Signal Words

DANGER!

Imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING!

Potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION!

Potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

NOTICE

Potential risk of damage to the system.

Note: Extra information for the reader.

2.2 Symbols



General warning



Electrical hazard



Explosive atmosphere



Mandatory action



Disconnect before performing work

2.3 Structure of Warning Messages

Warning messages in this manual will be displayed in the following structure:

SIGNAL WORD



Potential hazard

Consequence of not avoiding hazard.

- How to avoid hazard.

2.4 Hazards Due to Misuse

The EASYCHLORGEN must only be used in the ways detailed in this manual. Alterations and modifications of any kind that are not described in this manual are forbidden.

Lutz-Jesco accepts no liability for any damage caused from misuse of the equipment.

2.5 Working in a Safety-conscious Manner

Failure to follow the safety instructions leads to:

- Failure of important functions of the device and of the corresponding system.
- Failure of required maintenance and repair methods.
- Danger to personnel.
- Danger to the environment.

Safety rules and regulations not specified in this manual, which must be adhered to:

- Accident prevention regulations
- Safety and operating provisions
- Environmental protection provisions
- Applicable standards and legislation

2.6 Personal Protective Equipment

The sodium hypochlorite produced by the EASYCHLORGEN is classified as non-hazardous (<1%).

Personal protective equipment in accordance with national safety regulations should be used by all users and personnel when carrying out tasks described in this manual.

2.6.1 Recommended Protective Equipment



Protective clothing:
Chemical safety overalls/PVC apron



Protective gloves:
PVC/Nitrile disposable gloves



Foot protection:
PVC Safety boots



Eye protection:
Safety goggles

3 Transport & Storage

CAUTION!

**Heavy object**

Strain or injury to personnel

- Use a pallet truck to move the EASYCHLORGEN Compact into position.
- Wear safety boots.



NOTICE

**Heavy object**

Risk of damage to the system

- Use a pallet truck to move the EASYCHLORGEN Compact into position.
- Protect EASYCHLORGEN with suitable packaging during transport & installation.

Dimensions and weight of systems are described in section 4.2.1.

3.1 Delivery Damages

If your package has incurred damages due to improper transportation and handling, inform your operator and follow the returns procedure if necessary.

3.2 Transport & Storage Conditions

- Location must meet to the ambient conditions described in section 4.7.
- The EASYCHLORGEN should be protected via packaging where possible to reduce potential damage.
- The system must be empty of all residual chemical solutions.
- Suitable lifting and transport equipment must be used.
- If the system has been in use it must be shut down in accordance with section 9.3.

3.3 Scope of Delivery

- EASYCHLORGEN Compact
- Installation & Operation Manual
- Acid wash connections
- Any accessories ordered

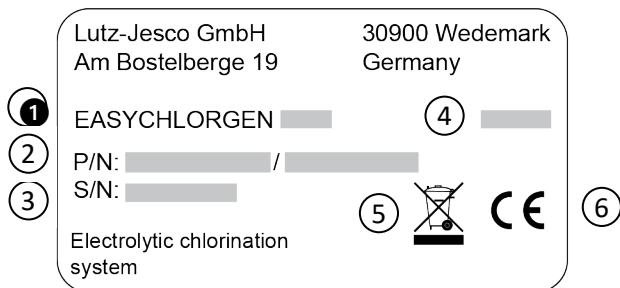
4 Technical Data

4.1 System ID

4.1.1 System Part Numbers

Model	Power Supply
EASYCHLORGEN Compact 240	230V~, 50-60Hz 110V~, 50-60Hz
EASYCHLORGEN Compact 480	230V~, 50-60Hz 110V~, 50-60Hz

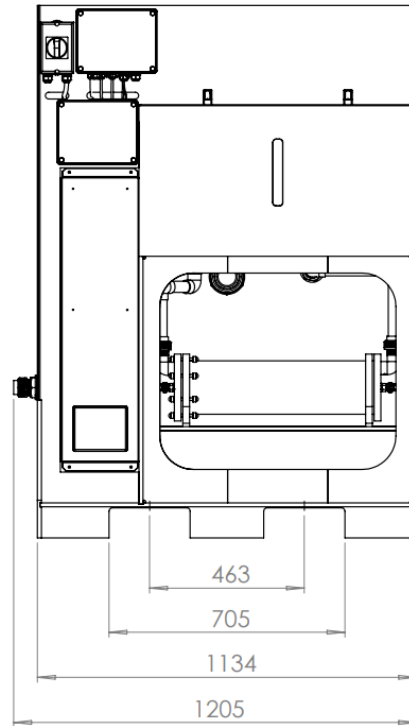
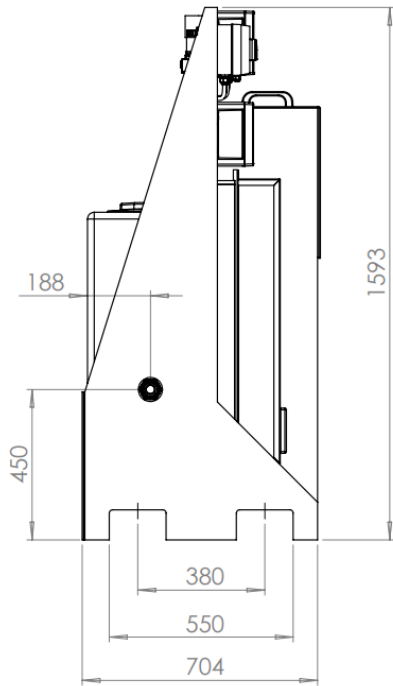
4.1.2 Machine Plate



No.	Description
1	Product name and size
2	Item number
3	Serial number
4	Month/year of manufacture
5	WEEE label
6	Label showing conformity with applicable European directives

4.2 Dimensions & Weight

4.2.1 System Dimensions



4.2.2 Empty Weight

Model	Weight (Kg)
240	131
480	134

4.3 Connections

4.3.1 Main

Connection	Description
Water inlet	8mmOD push-fit tube
Product outlet	1"/32mm
Degassing tank overflow	1/2"/20mm
Vent outlet	2"/63mm UPVC solvent socket

4.3.2 Electrical

Connection	Description
Mains power input	M25 cable gland
Signal input/output	M12/16 cable glands

4.4 Consumption Data

Model:	240	480
Nominal water consumption (L/h)	40	80
Nominal salt consumption (kg/h)	0.72	1.44

4.5 Output Data

Model:	240	480
Chlorine capacity (g/h)	240	480
Chlorine concentration (g/L)	6	6
Liquid product output (L/h)	40	80

4.6 Electrical Specification

Model:	240	480
Rated power (kWh)	1.5	3.0
Power supply	230V~ 50-60Hz 110V~ 50-60Hz	
Protection class	IP5X	

4.7 Operating Conditions and Limits

4.7.1 General

Model:	240	480
Working Humidity (RH)	20-90% (Non-condensing)	
Ambient temperature (°C)	5-40	
Pollution degree	3	

4.7.2 Feed Water Specification

Model:	All
Temperature (°C)	8-20
Max inlet pressure (MPa)	0.4
Turbidity (NTU)	<5
pH	6.5-10
Particle size (µm)	<100
Iron (µg/l)	<200
Manganese (µg/l)	<10
Fluoride (mg/l)	<2
Hardness (mg/l of CaCO ₃)	<20
Hardness (°dH)	<1
Free chlorine (mg/l)	<1

4.7.3 Salt Quality

Element/Compound	Upper Limit (mg/kg)
Arsenic (As)	13
Cadmium (Cd)	1.3
Chromium (Cr)	13
Iron (Fe)	10
Mercury (Hg)	0.26
Nickel (Ni)	13
Manganese (Mn)	10
Lead (Pb)	13
Antimony (Sb)	2.6
Selenium (Se)	2.6
Calcium (Ca)	100
Magnesium (Mg)	100
Bromide (Br-)	100

NOTICE



Damage to the system

Potential for low quality product, damage to the electrolyser and failure of components

- All conditions in this section must be met.



4.8 Materials in Contact with Liquid Media

4.8.1 Cold Water Feed

Description	Material
Solenoid valve	Brass/FPM/SS
Flow sensor	PVDF
Tubing	MDPE (Blue)
Push-fit fittings	PP/EPDM
Eductor	PVDF
Non-return valve	PVDF/Titanium/FPM
Inline strainer	Acetal/EPDM/SS
Pressure reducing valve	PP/EPDM

4.8.2 Brine Feed

Description	Material
Salt saturator	PP
Salt saturator lateral	UPVC
Pipework	UPVC

4.8.3 Product (Generated Solution)

Description	Material
Electrolyser	PVC, Titanium, PTFE, FPM
Degassing tank	MDPE
Pipework	UPVC
Tank level switch	PVDF

5 Product Description

5.1 Intended Use

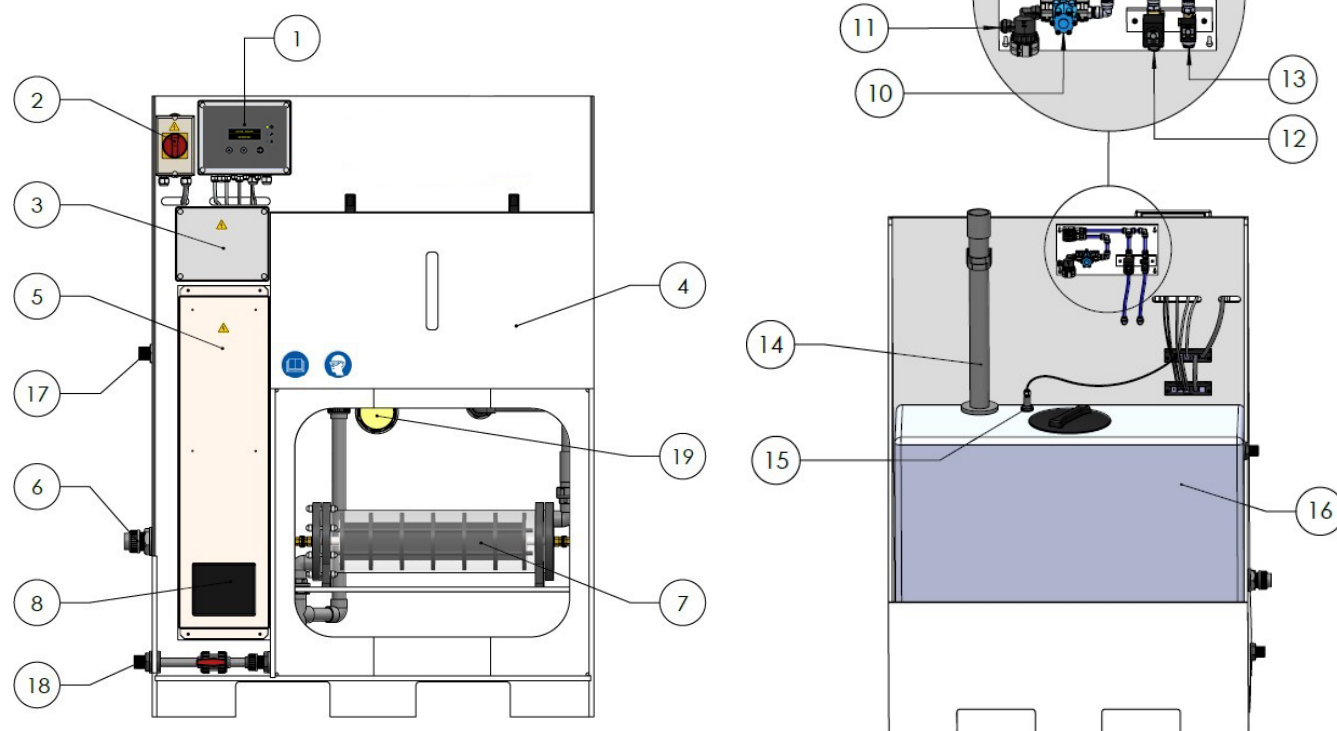
The EASYCHLORGEN Compact is intended for the following purpose: Automatic generation of a sodium hypochlorite solution containing 0.6%wt Cl_2 , using sodium chloride, electrical energy, and softened water. The resulting solution can be used as a disinfection agent for a wide range of applications.

5.2 Design and Function

In normal operation a batch process sequence commences: the brine solenoid [13] opens to allow a set volume of water measured by the flow meter [9] to pass into the salt saturator [4], creating a concentrated brine solution. The water solenoid [12] then opens allowing water to dilute the brine solution to the correct ratio as it enters the electrolyser [7]. The power supply [5] then applies a DC current to the electrolyser to generate sodium hypochlorite which can be tested with the EASYCHLORGEN test kit by retrieving samples from the product sample outlet [18]. As a result of the batching process, generated product is displaced from the electrolyser and is transferred to the degassing tank [16] where any hydrogen is vented to outdoors through the pipework [14] by an air blower [8]. The degassed solution is gravity fed to an external tank via the outlet connection [6], where a suitable metering pump can then dispense the solution into the water treatment process. The status of the batch process cycle is controlled by and displayed on the control panel [1]. This cycle continues until the product tank level switch [15] operates indicating that the degassing tank and attached product tank have reached a common high fill point. When the pump removes solution from the tank system the batch cycle will automatically restart. An overflow outlet [17] is provided to direct overflow discharge to a spill container in the event of tank over filling. When the system needs to be shut down the yellow blanking cap supplied with the system must be inserted into the ventilation port [19].

Description

- | | |
|----|-----------------------------------|
| 1 | Control panel |
| 2 | Isolator switch |
| 3 | Electrical enclosure |
| 4 | Salt saturator |
| 5 | DC PSU & Air blower enclosure |
| 6 | Degassing tank outlet |
| 7 | Electrolyser |
| 8 | Air blower inlet |
| 9 | Flow meter |
| 10 | PRV |
| 11 | Inline strainer |
| 12 | Water solenoid |
| 13 | Brine solenoid |
| 14 | Diluted hydrogen vent |
| 15 | Tank level switch |
| 16 | Product tank |
| 17 | Overflow outlet (See section 6.4) |
| 18 | Product sample outlet |
| 19 | Tank vent blanking cap |



6 Installation

6.1 Location

6.1.1 Requirements



All location conditions are to be met prior to installation, to ensure safe and optimal operation of the system.

Location conditions:

- ✓ *Natural high and low ventilation in the installation room.*
- ✓ *Mechanical ventilation must be used if there is no natural ventilation.*
- ✓ *A firm and level floor is available for the EASYCHLORGEN Compact.*
- ✓ *Access to a softened water supply for permanent connection.*
- ✓ *Environmental conditions are met (see section 4.7).*
- ✓ *There is adequate lighting and room for maintenance work.*
- ✓ *It is safe from unauthorised access.*
- ✓ *It meets all local regulations including fire safety and accident prevention laws.*
- ✓ *Not in the same room as acids or acid dosing equipment (condition of warranty).*
- ✓ *Accessible to users for refilling of the salt saturator.*
- ✓ *Ability to route the ventilation pipework to a termination point outside of the building.*

6.2 Water supply

NOTICE



Incorrect water supply can cause damage to the system

Potential for low quality product and damage to the electrolyser

- Use softened potable water which meets the specification in section 4.7.

Water connected to the EASYCHLORGEN must meet the specifications stated in section 4.7. There must be back-flow prevention which conforms to local water supply regulations and plumbing codes, this should be installed upstream from the entire EASYCHLORGEN system.

Low or inconsistent pressure will affect the water softeners ability to function correctly which will lead to electrolyser scaling. It is recommended that a booster kit is fitted on every installation with poor water pressure.

6.2.1 On-site Softened Water

If there is softened water available on-site which meets the water specification in section 4.7, then it can be used for the EASYCHLORGEN systems water supply.

Installation Steps:

1. Connect the on-site supply to the 8mmOD push-fit fitting on the inline strainer, located on the back side of the unit.

✓ **Water supply installation complete**

6.2.2 Water Softener

A water softener must be installed when softened water is not available on-site.

Installation Steps:

1. Install the softener unit on a firm level base within easy reach of the EASYCHLORGEN and a local wastewater drain point.
2. Follow the installation instructions in the softener manual. Do not install bypass valves.
3. Fit a sample tap downstream of the softener to enable easy testing of the water.
4. Connect the softened water to the 8mmOD push-fit fitting on the EASYCHLORGEN's inline strainer inlet, located on the back side of the unit.
5. To prevent 'low water flow' alarms a simplex softener should be fitted with a regeneration switch and wired into the EASYCHLORGEN control panel to pause production during regen cycles (See section 6.6).

✓ **Softener installation complete**

6.3 Product Day Tank

A product tank may be installed next to the EASYCHLORGEN for storage and dosing of the solution.

As the EASYCHLORGEN production is controlled by the degassing tank level switch, the top of the product tank must be higher or equal with the top of the degassing tank to prevent any overflowing.

✓ **Product tank installation complete**

6.4 Degassing Tank Overflow

The ½"/20mm overflow on the degassing tank can be piped to a container or bund, an air gap must be present to prevent siphoning from occurring. Do not connect to a drain.

6.5 Dosing Pumps

Mount the pump of your choice in a suitable location and install the suction lines directly to the degassing tank outlet or into the external product tank if fitted.

6.6 Electrical

DANGER!



Electrical shock hazard

Death or serious injury

- Disconnect from electricity supply before working on equipment.
- Only authorised service personnel with relevant qualification can perform electrical work.



NOTICE



Damage to the system

Failure of main components.

- Study installation instructions and field wiring diagrams before commencing work.



6.6.1 PCB Terminal Connections

Connections refer to electrical schematics.

Terminal I.D.	Terminal Description	
1	L	
2	N	Mains Out (5A Fused)
3	E	
4	L	
5	N	Mains In (2A Fused)
6	E	
7	N.C	
8	C	Alarm 2 Relay
9	N.O	Volt free alarm output (10A, 250Vac)
10	N.O	
11	C	Alarm 1 Relay
12	N.C	Electrolyser PSU alarm relay
13	C	Run Relay
14	N.O	Electrolyser PSU run relay
15	+	+24Vdc DC output
16	+	Sig amps Analogue signal
17	-	0V
18	+	Sig volts Electrolyser voltage signal
19	-	0V
20	+	Sig air flow Analogue signal
21	+	+24Vdc Output E-Stop Link
22	-	0V
23	-	0V
24	+	Sig flow meter Dilution water flow meter
25	+	+5Vdc Output
26	+	Sig product temp
27	-	0V Analogue signal

Terminal I.D.	Terminal Description	
28	+	Sig hydrogen Analogue signal
29	+	+5VDC Output DC output
30	N.C	Ext Alarm N/C E-Stop link
31	-	0V
32	+	Sig panel temp
33	-	0V
34	+	Emergency Stop
35	-	0V
36	+	Sig softener regen
37	-	0V
38	+	Sig flood
39	-	0V
40	+	Sig door
41	-	0V Digital inputs
42	+	Sig Tank Run/Stop
43	-	0V
44	+	Sig Ext Tank Run/Stop
45	-	0V
46	+	Sig Ext Tank Low Lvl
47	-	0V
48	+	Sig Ext Tank High
49	-	0V
50	+	Potentiometer
51	+	+24Vdc - Brine
52	-	-ve Brine Solenoids - Control output
53	+	+24Vdc - Water
54	-	-ve Water
55	+	+12VDC
56	+	Green LED supply
57	+	Blue
58	+	Red
59	-	0V Digital input
60	+	Site water meter
61	+	Not active
62	+	Not Active Not Active
63	+	Not Active
64	A	EIA-485 (Modbus RTU) Remote monitoring
65	B	
66	+	Auxiliary Alarm
67	-	0V Digital inputs
68	+	Remote Inhibit
69	-	0V

		AC/L	4
	MAINS IN	AC/N	5
		PE	6
		AC/L	1
	MAINS OUT	AC/N	2
		PE	3
		NO	7
	ALARM RELAY 2 (VOLT FREE)	C	8
		NC	9
		NO	10
	ALARM RELAY 1 (VOLT FREE)	C	11
		NC	12
		C	13
		NO	14
			15
		+24V	16
		Sig amps	17
		0V	18
		Sig volts	19
		0V	20
		Sig air flow	21
		+2	22
		4	23
		0	24
		V	25
		0V	26
		Sig flow meter pulses	27
		+5V	28
		Sig product temp	29
		0V	30
		Sig hydrogen	31
		+5V	32
		Ext alarm NC	33
		0V	34
		Sig panel temp	35
		0V	36
		Sig E stop	37
		0V	38
		Sig softener regen	39
		0V	40
		Sig flood	41
		0V	42
		Sig door	43
		0V	44

Remote monitoring

Function:

- Causes change in DI1 state when the system is in alarm

Emergency stop switch (N.C)

Softener regen switch (N.C)

Sig ext tank run/stop	44
0V	45
Sig ext tank low lvl	46
0V	47
Sig ext tank high	48
0V	49
DC amps adj	50
+24V	51
Brine sol	52
+24V	53
Water sol	54
+12	55

-----	DI4	63
EIA- SERIAL	A	64
LINK	B	65

Aux alarm	66
0V	67
Remote inhibit	68
0V	69

A Modbus master device
B

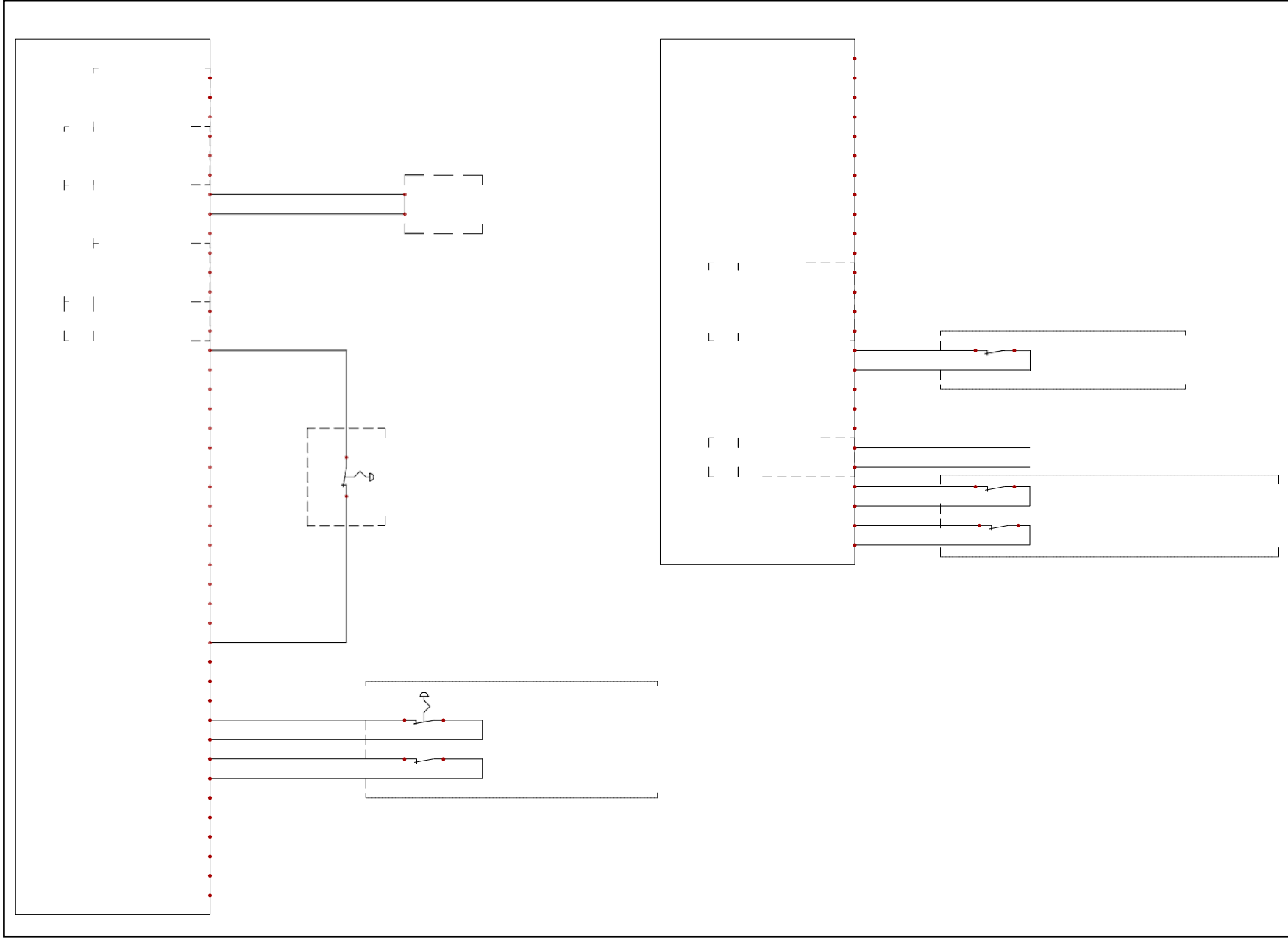
External alarm (N.C)
- Volt free alarm relay e.g Chlorine gas alarm

Remote stop (N.C)
- Volt free contact e.g. PLC control relay

Discrete inputs

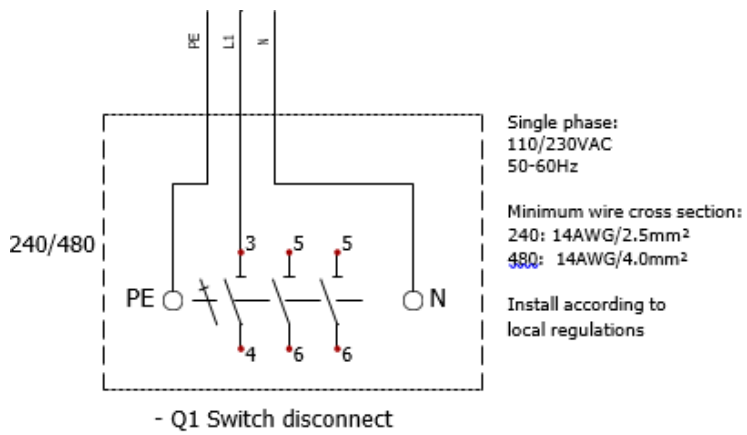
6.6.2 Field Wiring Diagram

EASYCHLORGEN Compact electrical diagram, showing details of connections that can



6.6.3 Mains Power Connection Diagram

EASYCHLORGEN electrical diagram, showing details of connections that can be made on site.



6.6.4 Site Water Meter

A site water meter can be connected to the EASYCHLORGEN system to enable local readings through the controlpanel display, and remote readings via a communications system.

Installation Steps:

1. Isolate power to the system.
2. Route the cable from the flow meter into the EASYCHLORGEN control panel.
3. Use the field wiring diagram to make the connection.
4. Set the K factor in the EASYCHLORGEN software.
5. Set the current value of the water meter in the general display menu (see section 8.3)
6. Press enter to confirm settings.

✓ **Site water meter electrical installation complete.**

6.6.5 Auxiliary Alarm Input

Devices with a normally closed volt free alarm output can be connected to the EASYCHLORGEN to stop the systems operation in the event of an external alarm state. E.g. A gas sensor reaching its upper limit.

Installation Steps:

1. Isolate power to the system.
2. Route the cable from the N.C external alarm contact into the EASYCHLORGEN control panel.
3. Use the diagram to make the connection (see section 6.5.2).
4. Enable the auxiliary alarm option at Program 13 in the EASYCHLORGEN software.

✓ **Auxiliary alarm installation complete.**

6.6.6 Softener Regen

The operation of the EASYCHLORGEN can be inhibited by a switch on a softener during its regeneration cycle. A voltfree normally closed contact is used.

Installation Steps:

1. Isolate power to the system.
2. Route the cable from the softener regen switch into the EASYCHLORGEN control panel.
3. Use the diagram to make the connection (see section 6.5.2).

✓ **Softener regen feature installation complete.**

6.6.7 Modbus Connection

The EASYCHLORGEN parameters and system status can be monitored by use of an optional modbus interface. See the 'Modbus Interface Manual' for installation and operation information.

6.6.8 Remote Inhibit

The operation of the EASYCHLORGEN can be remotely inhibited if required. A volt free contact is used and is normally closed in healthy operation.

Installation Steps:

1. Isolate power to the system.
2. Route the cable from the external switch into the EASYCHLORGEN control panel.
3. Use the diagram to make the connection (see section 6.5.2).
4. Enable the Remote Inhibit option at Program 14 in the EASYCHLORGEN software.

✓ **Remote Inhibit feature installation complete.**

6.6.9 Emergency Stop

A 2-pole normally closed emergency stop switch may be used to immediately stop the operation of the EASYCHLORGEN. One pole will trigger a software alarm and the other pole will remove power to the electrolyser.

Installation Steps:

1. Isolate power to the EASYCHLORGEN.
2. Route the cable from the N.C contact of the switch into the EASYCHLORGEN control panel.
3. Use the diagram to make the connection (see section 6.5.2).

✓ **Emergency stop installation complete.**

6.6.10 Hydrogen Detector

The hydrogen detector is used as a backup safety feature to stop the EASYCHLORGEN generating when there is hydrogen present in the atmosphere, this can only occur through poor installation practices.

Installation steps:

1. Use the fixing bracket to mount the Hydrogen detector above the EASYCHLORGEN at the highest point of the room.
2. Connect the yellow M12 signal cable to the detector.

The detector may be permanently damaged if exposed to:

- Propane or butane gas
- Silicone or silicone-based materials
- Acid gasses and fumes
- Chlorine gas
- Water
- Excessive vibration

✓ **Hydrogen detector installation complete.**

6.6.11 Connecting to the Mains Supply

DANGER!



Electrical shock hazard

Death or serious injury

- Disconnect from electricity supply before working on equipment.
- Only authorised service personnel with relevant qualification can perform electrical work.



NOTICE



Damage to the system

Failure of main components.

- Study installation instructions and field wiring diagrams before commencing work.

The EASYCHLORGEN Compact is intended for use as fixed equipment. The equipment is designated IEC Class 1 and must be earthed in accordance with local regulations.

Installation steps:

1. Check the mains voltage matches with that of the EASYCHLORGEN rating plate.
2. A circuit breaker meeting the requirements of IEC 60947-2, type C or K must be installed externally to protect the final circuit. It must be clearly identified at the distribution board.
3. Route the supply cable to the main disconnect and connect the cable cores in accordance with local wiring rules and the wiring diagram (see section 6.6.2/6.6.3)

✓ **Mains supply connection complete.**

Note:

- **Terminal 1 is permanently live whilst the system is in operation, always isolate power to the EASYCHLORGEN before performing any work.**

6.6.12 Dosing Pump(s)

Power Supply: Dosing pumps need to be individually isolated, fused and labelled according to process.

✓ **Dosing pump electrical installation complete**

6.6.13 Auxiliary Mains Output

A power output connection is provided on the EASYCHLORGEN PCB at terminals 1-3. The voltage output is identical to the mains power supplied to the system.

6.7 Hydrogen Ventilation

DANGER!



Explosive atmosphere

Death or serious injury

- Install vent line and hydrogen sensor in accordance with these instructions.

The EASYCHLORGEN requires the installation of a ventilation pipe duct between the unit and a suitable outside termination vent point in order to safely vent the hydrogen gas liberated from the electrolytic process.

The area around the exterior vent termination point is classified as a Zone 2 hazardous area.

Model	Exterior vent termination point - Zone 2 radius (m)
240	1.0
480	

Installation steps:

1. Find a suitable location for the termination point, it should not be underneath any window or air intake or be within 1.0m of a possible ignition source.
2. The pipework route must always be on an incline from the EASYCHLORGEN towards the termination point. Take note of the diameter pipe needed for the length of the run in the table below.
3. Install the pipework with solvent welded joints only, there should be no union or threaded connections. Use swept elbows where possible.
4. Support the pipework at regular intervals to avoid bowing which could cause a condensation trap and block the air flow.
5. Install a protective steel cage around the termination point.
6. Fit the warning sign provided with the EASYCHLORGEN next to the termination point.
7. Fit the hydrogen warning labels supplied with the EASYCHLORGEN every 2m along the vent pipework.

Vent pipe length (m)	Minimum diameter
≤15	2"/63mmOD
>15	3"/90mmOD
>30	4"/110mmOD

✓ **Hydrogen ventilation installation complete**

7 Commissioning

NOTICE



Damage to the system

Low quality product and premature system failure.



- Commissioning must only be done by authorised service personnel.
- Wear protective clothing, footwear, goggles, and gloves.

7.1 Safety Checks

Check No.	Safety Check	Checked (✓)
1	The installation location criteria are met.	
2	Safety signs and labels are fixed and located to all equipment appropriate to the installation and application.	
5	Water supply can be isolated.	
6	Electrical power supply to EASYCHLORGEN can be isolated.	
7	EASYCHLORGEN has correct electrical protection.	
8	Electrical power supply to dosing pump(s) can be isolated.	
9	Correct personal protective clothing and equipment available for use.	
10	Vent pipework is installed correctly (see section 6.7)	

Check No.	Pre-start Check Up	Checked (✓)
1	Feed water matches specification described in section 4.7.2.	
2	Water softening device is working correctly, confirm with the water hardness test provided in the EASYCHLORGEN test kit.	
3	Salt saturator is filled with salt which matches the specification in section 4.7.3	

Initial Start-Up

Precondition for action:

- ✓ The system has been installed in accordance with the guidance provided in section 6 'Installation'.

Commissioning steps:

1. Check all unions and tank connector fittings are tight. Use the PVC spanner supplied with the system to check the 2" nut inside the electrolyser compartment.
2. Remove the yellow blanking cap from the 2" tank connector inside the electrolyser compartment. Keep this with the system for use in shut down procedures (See section 9.2).
3. Turn on the water supply.
4. Use the switch disconnect to turn the EASYCHLORGEN on. The startup cycle will begin automatically.
5. After the startup cycle the EASYCHLORGEN will begin generating.
6. Check the system parameters match the table below (It may take up to an hour for the voltage to settle if the salt is not already saturated).
7. Set up the high air flow alarm in the software. The alarm point should be 10m³hr⁻¹ higher than the displayed reading.
8. Complete the commissioning sheet in Appendix I.

Model	Volts (Vdc)	H ₂ (%)	Airflow (m ³ hr ⁻¹)
240			
480	21-24	<50	>70

- ✓ **Commissioning complete**

Note:

- See section 8.3 for help with display navigation.

8 Control Panel

8.1 System Control Elements

8.1.1 Control Display

The operation of the system is performed via the universal EASYCHLORGEN control panel.

The current system status is shown by an LCD display and is represented by three LED's.



8.1.2 Button Functions

Symbol	Name	Functions
	Up	- Menu navigation – scroll up - Hold to enter the 'Manual Inhibit' status
	Down	Menu navigation – scroll down
	Enter	- Menu Navigation – Enter/Confirm - Accept/Reset a fault condition

8.1.3 LED & Symbol Description

LED	Symbol	Description
		System Healthy (Normal operation)
		System Warning
		System Fault

8.1.4 Access Codes

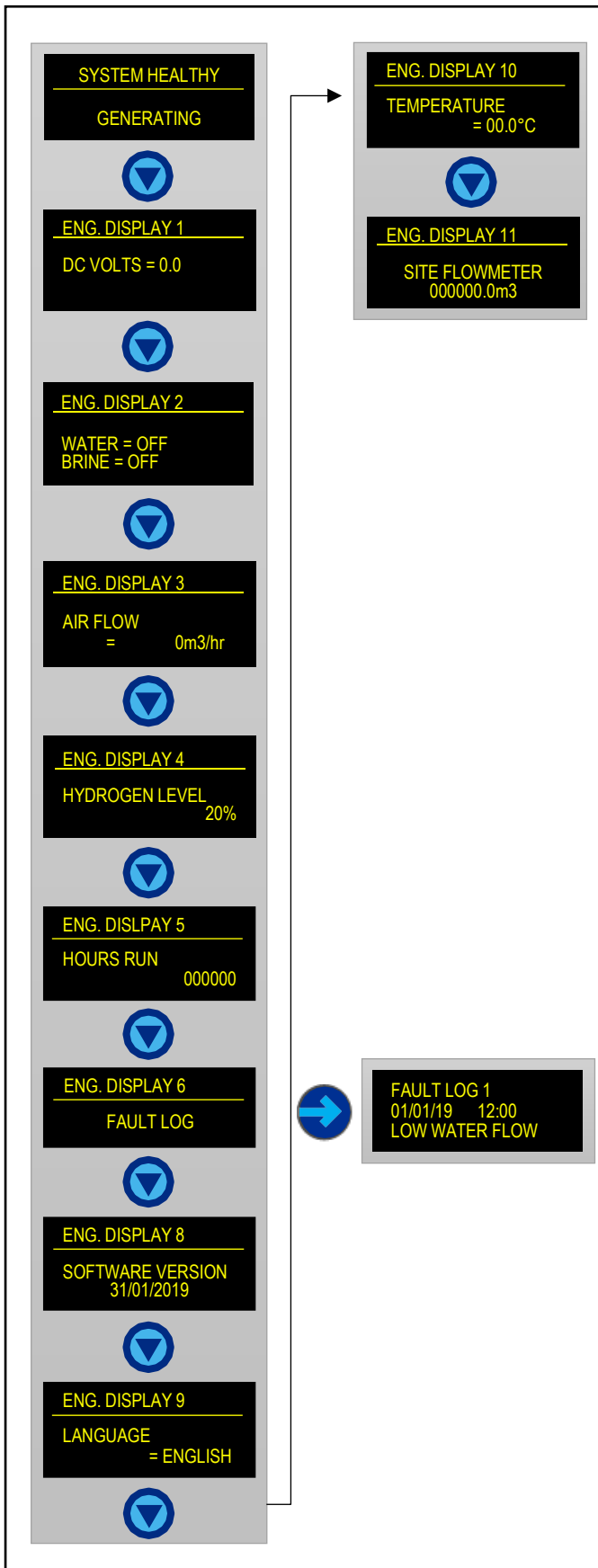
The EASYCHLORGEN software has pin protected menus.

Name	Code	Information
Service Menu 1	Access codes for authorised personnel only,	Gives access to basic settings
Engineers Menu		Gives access to system operation settings

8.2 Manual Inhibit

The operation of the EASYCHLORGEN can be manually inhibited to stop generation. This is performed by holding the up arrow on the control display for 5 seconds. To restart generation and return to normal operation, hold the up arrow again for 5 seconds.

8.3 Engineers Display Menu



8.3.1 DC Voltage

The voltage applied across the electrolyser.

8.3.2 Valve Status

The status of each solenoid valve in real time.

ON = Valve open

OFF = Valve closed

8.3.3 Airflow Reading

The ventilation airflow rate.

8.3.4 Hydrogen Level

The hydrogen detector reading.

100% on the display $\approx$ 1000ppm = 2.5% of LEL

8.3.5 Generating Hours

How many hours the EASYCHLORGEN has been generating for.

8.3.6 Fault Log

The log of system faults, press the enter button to view the last sixteen faults.

8.3.7 Software Version

The current software version of the circuit board.

8.3.8 Language Selection

The language information is displayed in, press the enter button to change the language.

8.3.9 Temperature

The incoming temperature of air entering the power supply enclosure.

8.3.10 Site Flowmeter Reading

Displays the reading of the site flowmeter in m³ if one is connected to the EASYCHLORGEN control panel.

9 Operation

9.1 Control Function Sequences

Diagram 1: Generation process (Normal Operation)

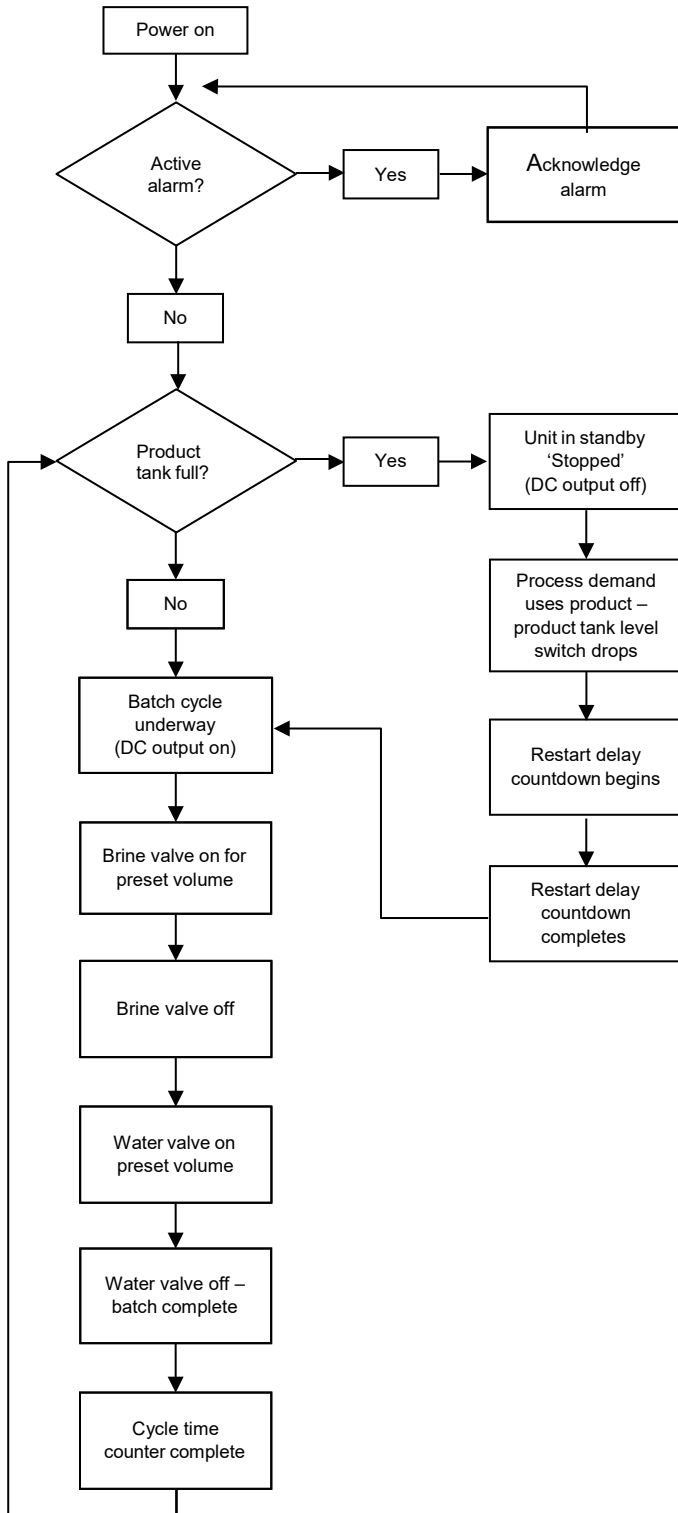


Diagram 2: Alarm/Fault state sequence

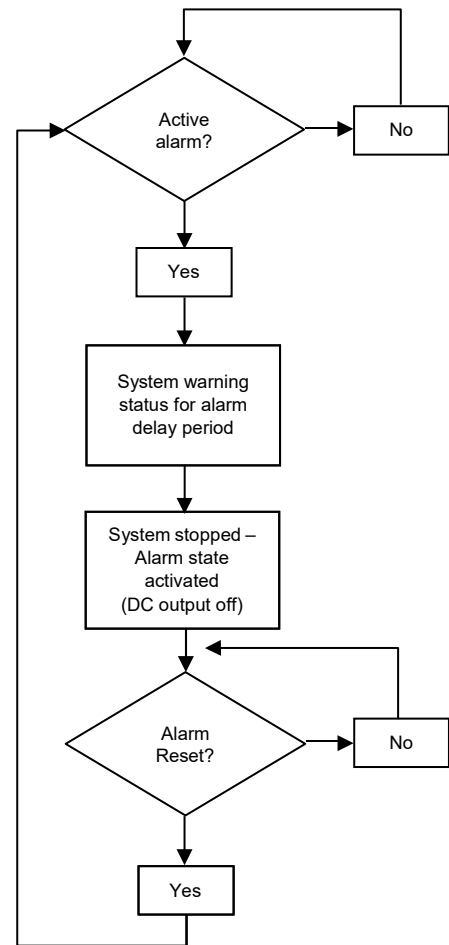
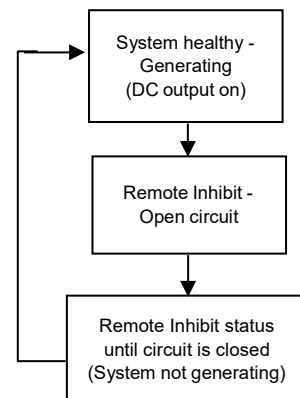


Diagram 3: Remote Inhibit sequence



Note:

- **Diagrams shows simplified EASYCHLORGEN processes.**
- **See section 9.2 for information on system fault/alarm states.**

9.2 System Fault States



Only authorised service personnel with relevant qualification can perform electrical work

Note:

- **Press the enter key on the control panel to reset an alarm if safe to do so (see section 8.1)**

Alarm Type	Cause	Possible Remedy
Voltage High	Resistance across the electrolyser has become too high (Due to lack of brine, loose or corroded connections, or scaling of the cell due to wrong specification of water/salt)	• Fill the saturator with salt • Replace brine solenoid valve • Tighten and clean electrolyser terminal connections, replace the cable and lugs if corroded or damaged. • Perform an acid clean (See section 10.3) • Test water hardness and inspect the site water softener.
Voltage Low	Resistance across the electrolyser has become too low OR the PSU has no output	• Remove debris from solenoid to stop leakage, replace if necessary. • Replace PSU • Replace tank level switch
Ext Tank High	The level of product in the degassing tank has reached the N.C high level tank switch, or the switch has failed open	• Replace Zener barrier if not operating • Service the dosing pump and relevant equipment if process water is backfilling the tank through the pump. • Clean debris from inside the solenoid valves if they are passing water. Replace solenoid valve if necessary. • Check water feed for closed valves, open valves if safe to do so.
Low Water Flow	Dilution water flow meter has seen insufficient amount of pulses during its batch cycle	• Fix leaks or broken pipework on the water feed. • Clean the water inlet strainer • Replace brine solenoid valve if it isn't opening.
Bund Switch	Bund switch float has been raised The electrolyser is leaking	• Locate and fix leak inside the electrolyser compartment. • Replace bund switch.
Auxiliary Alarm	Auxiliary alarm contact has opened	• Reset alarm if safe to do so • Investigate faulty auxiliary equipment • Fix wiring/faulty contacts
Emergency Stop	Emergency stop button has been pressed	• Check why the button has been pressed. Reset alarm if safe to do so • Fix wiring/faulty contacts • Fix wiring inside the control panel
Hydrogen Alarm	Detector is reading 0% or >99%	• Repair vent pipework • Tighten the degassing tank link and replace the gasket if necessary
Low airflow	Low air flow through the ventilation system Failed fan, air blower or DC power supply Steel enclosure lid has been removed Dust filter is blocked	• Replace air blower or DC power supply • Clean sensor head with a dry cloth • Remove blockage from vent pipework • Fit the steel enclosures lid securely • Clean or replace dust filter
High airflow	Too much airflow through the EASYCHLORGEN Degassing tank lid or electrolyser compartment window leaking	• Fit the cell compartment window properly • Tighten the degassing tanks lid
Temperature High	Ambient temperature of installation room is too high (>40°C) or the steel enclosure dust filter is blocked	• Install extra air extraction • Clean or replace dust filter

9.3 Shutdown Procedures

NOTICE



Damage to the system

- Component corrosion and possible failure
- Follow shutdown procedures below.

Note:

- Warranty is void if equipment failure occurs from incorrect shutdown.**

9.3.1 Short-term Shutdown (<2 week)

Precondition for action:

- ✓ EASYCHLORGEN in normal operation.

Shutdown steps:

1. Flush the electrolyser by switching power to the EASYCHLORGEN off and then on. This will initiate its startup cycle sequence.
2. Isolate power to the EASYCHLORGEN.
3. Isolate the water supply upstream from the softening device.
4. If applicable turn off the softening device.

- ✓ **Short-term shutdown complete**

9.3.2 Long-term Shutdown (>2 weeks)

Precondition for action:

- ✓ EASYCHLORGEN in normal operation

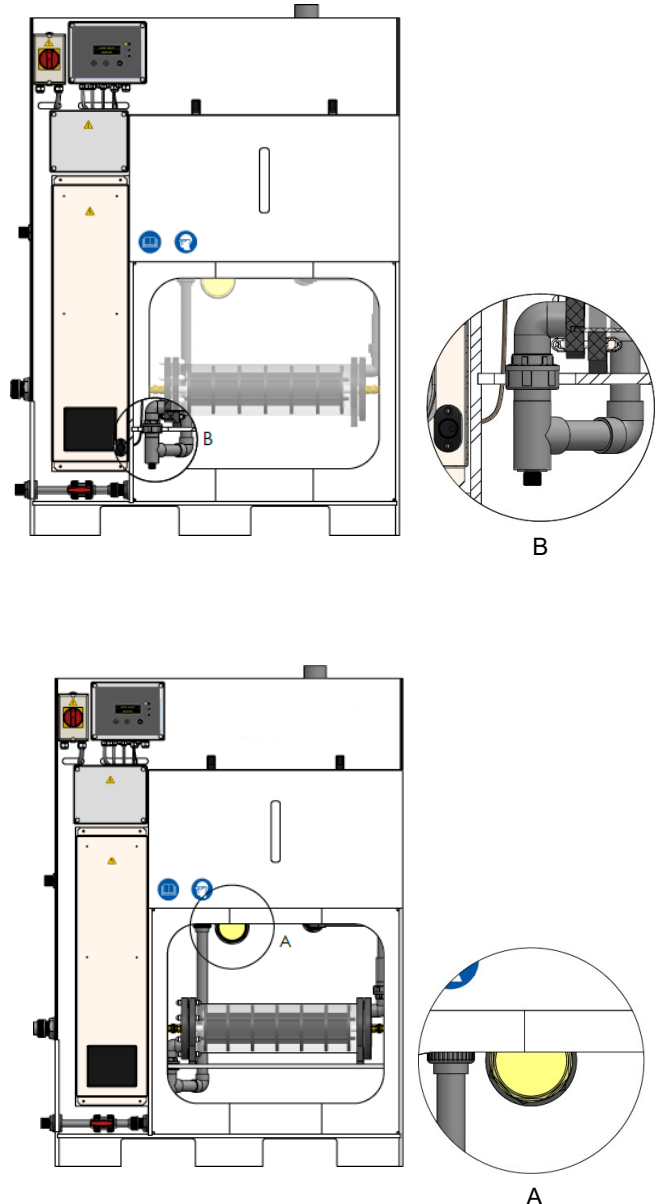
Shutdown Steps:

1. Flush the electrolyser by switching power to the EASYCHLORGEN off and then on. This will initiate its startup cycle sequence.
2. Isolate power to the EASYCHLORGEN.
3. Isolate the water supply upstream from the softening device.
4. If applicable turn off the softening device.
5. Empty and clean the EASYCHLORGEN salt saturator.
6. Empty the electrolyser by removing the drain plug [B]
7. Fit the cap supplied with the EASYCHLORGEN to the tank connector [A] to seal off the degassing tank.
8. Allow the dosing pump to empty the product tank.
9. Place a sign on the EASYCHLORGEN indicating that it will require pre-start up checks and commissioning when being turned back on.

- ✓ **Long term shutdown complete**

9.3.3 Disposal of Old Equipment

- The system must be disposed of in accordance with applicable local laws and regulations. It should not be disposed of as domestic waste.
- As the disposal regulations differ from country to country, please consult the operator for advice.



10 Maintenance

DANGER!



Electrical shock hazard

Death or serious injury

- Disconnect from electricity supply before working on equipment.
- Only authorised service personnel with relevant qualifications can perform electrical work.



NOTICE



Damage to the system

Failure of main components

- Study maintenance instructions before commencing work.
- Only authorised service personnel can perform maintenance tasks.



The EASYCHLORGEN is designed to have a long service life, however some parts are subject to operational wear. This means that regular visual inspections and maintenance are necessary to protect the system and ensure a long service life.

Refer to the 'maintenance booklet' for the explanation of procedures.

10.1 Maintenance Intervals

The EASYCHLORGEN has a 4-year maintenance cycle with 1- year intervals. Once the 4th year is reached the cycle repeats.

10.2 Basic Maintenance

Maintenance which is to be performed regularly by users after being trained by authorised service personnel.

10.2.1 Salt replenishment

When salt runs low a 'Voltage High' alarm may occur. Fill the saturator with salt of the right specification (see section 4.7.3) up to the fill level shown on the saturator. Also check that the water softener saturator is full.

10.2.2 Fan Filter Cleaning

The fan filter located on the steel enclosure should be checked and cleaned regularly to maintain efficient cooling of the power supply and high dilution of hydrogen.

10.2.3 System Checks

Regular checks of the systems parameters should be made to find any issues before failures occur. This can easily be done by completing the system log in 'Appendix II' on a weekly basis.

10.3 Electrolyser Acid Cleaning

WARNING!



Chemical hazard

Mixing hydrochloric acid with sodium hypochlorite releases hazardous chlorine gas

- Only authorised service personnel can perform acid cleaning.
- Acid should be kept away from the EASYCHLORGEN.

If the installed softening device fails or the wrong grade of salt is used the electrolyser can become scaled. Scale reduces efficiency of the process and will eventually cause the EASYCHLORGEN to enter a 'Voltage High' alarm state.

A visual check on the electrolyser can be done to see if it has white calcium deposits on its cathodes. A slow increase in voltage across the cell over time can also indicate that the cell is becoming scaled.

An acid wash kit supplied by Lutz-Jesco should be used to perform a safe and effective clean. An instruction manual is supplied with the kit detailing this method.

Acid wash hose connections are supplied with every system if the operator decides to use their own equipment.

Acid wash kit part number: 41626

Kit contents:

- Manual acid wash pump
- Connectors for electrolyser
- Hoses for electrolyser and pump connections

11 Spare Parts

11.1 General Component Spares

Description	Model	
	240	480
Inline strainer assembly	✓	✓
Pressure reducing valve	✓	✓
Water flow meter	✓	✓
Solenoid board assembly	✓	✓
Degassing tank level switch assembly		✓
24Vdc Air blower	✓	✓
24Vdc Air blower power supply	✓	✓
DC power supply	✓	
DC power supply (2x in each system)		✓
DC power supply		
Air flow sensor	✓	✓
Zener barrier	✓	✓
Hydrogen detector	✓	✓
Enclosure fan filter kit	✓	✓
PCB fuse kit (F1 and F2)	✓	✓
Switchgear fuse kit	✓	✓

12 EU Declaration of Conformity



(DE) EU-Konformitätserklärung

Hiermit erklären wir, dass das nachfolgend bezeichnete Gerät aufgrund seiner Konzipierung und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den einschlägigen grundlegenden Sicherheits- und Gesundheitsanforderungen der aufgeführten EG-Richtlinien entspricht. Bei einer nicht mit uns abgestimmten Änderung am Gerät verliert diese Erklärung ihre Gültigkeit.

(EN) EU Declaration of Conformity

We hereby certify that the device described in the following complies with the relevant fundamental safety and sanitary requirements and the listed EC regulations due to the concept and design of the version sold by us.

If the device is modified without our consent, this declaration loses its validity.

(FR) Déclaration de conformité UE

Nous déclarons sous notre propre responsabilité que le produit ci-dessous mentionné répond aux exigences essentielles de sécurité et de santé des directives CE énumérées aussi bien sur le plan de sa conception et de son type de construction que du modèle que nous avons mis en circulation.

Cette déclaration perdra sa validité en cas d'une modification effectuée sur le produit sans notre accord explicite.

(ES) Declaración de conformidad UE

Por la presente declaramos que, dados la concepción y los aspectos constructivos del modelo puesto por nosotros en circulación, el aparato mencionado a continuación cumple con los requisitos sanitarios y de seguridad vigentes de las directivas de la U.E. citadas a continuación. Esta declaración será invalidada por cambios en el aparato realizados sin nuestro consentimiento.

Bezeichnung des Gerätes:

Elektrolysechlorungsanlage zur Verwendung vor Ort

Description of the unit:

On-site electrolytic chlorination system

Désignation du matériel:

Génération d'hypochlorite de sodium sur site

Descripción de la mercancía:

Typ:

EASYCHLORGEN Compact 240 / 480

Type:

EASYCHLORGEN 180 / 280 / 560 / 1100 / 2200 / 4250 / 8500

EG-Richtlinien:

Maschinenrichtlinie / Machinery (2006/42/EC)

EC directives:

Niederspannungsrichtlinie / Electrical equipment designed for use within certain voltage limits (2006/95/EC)

Elektromagnetische Verträglichkeit / Electromagnetic compatibility (2004/108/EC)

Dokumentationsbevollmächtigter:

Lutz-Jesco GmbH

Authorized person for documentation:

Heinz Lutz
Geschäftsführer / Chief Executive Officer
Lutz-Jesco GmbH
Wedemark, 01.03.2021

Lutz-Jesco GmbH
Am Bostelberge 19
30900 Wedemark
Germany

13 Appendix I

Service & Commissioning sheet

To be completed and kept on Site after commissioning and service visits.

Date of visit (dd/mm/yy)						
Electrolyser Voltage (V)						
Electrolyser Current (DC Amps)						
Displayed Current (Amps)						
Hours Run						
Airflow (m ³ hr ⁻¹)		>70				
Hydrogen (%)		10 - 50				
Product tests	Temperature (°C)	<40				
	Solution strength (%wt Cl ₂)	0.6±0.1				
	Specific gravity	1.016-1.018				
Visual inspection	Electrolyser					
	Vent pipework (Interior & exterior)					
	Leaks					
Replace/clean fan filter element						
Water hardness test (Green/Red)		Green				
Quantity of salt added (kg)						
Notes						
Other site information						
Signed						

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Operating instructions
EASYCHLORGEN Compact