INSTALLATION AND MAINTENANCE MANUAL

Original instructions

ECOi-W AQUA-Z

70 / 75 / 85 / 100 / 115 / 130

Air Cooled Water Chillers and Heat Pumps

These air cooled water chillers and heat pumps use the refrigerant R32.

Model No.

Size	Standard Cooling only	Standard Heat pump
70	P-AQAZ0070C	P-AQAZ0070H
75	P-AQAZ0075C	P-AQAZ0075H
85	P-AQAZ0085C	P-AQAZ0085H
100	P-AQAZ0100C	P-AQAZ0100H
115	P-AQAZ0115C	P-AQAZ0115H
130	P-AQAZ0130C	P-AQAZ0130H

Read through the Installation Instructions before you proceed with the installation. In particular, you will need to read under the “ IMPORTANT ! ” section at the top of the page.

As part of our ongoing product improvement programme, our products are subject to change without prior notice. Non contractual photos.

English

Français

Deutsch

Italiano

Español

CONTENTS

IMPORTANT!

Please Read Before Starting

This Chiller must be installed by the sales dealer or installer.

This information is provided for use only by authorized persons.

For safe installation and trouble-free operation, you must:

Carefully read this instruction booklet before beginning.

- Follow each installation or repair step exactly as shown.
- This Chiller shall be installed in accordance with National Wiring Regulations.
- This equipment complies with the requirements of the following EU legislation:
- 2014/30/EU (EMC), 2006/42/EC (Machinery),
- 2014/68/EU (PED), 2011/65/EU (RoHS),
- 2009/125/EC (ErP) and all applicable Standards (see EC Declaration for details).
- Pay close attention to all warning and caution notices given in this manual.

WARNING This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

CAUTION This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If Necessary, Get Help

These instructions are all you need for most installation sites and maintenance conditions. If you require help for a special problem, contact our sales/service outlet or your certifi ed dealer for additional instructions.

In Case of Improper Installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

Notice

The English text is the "Original language".

The content of this document is intended for use by the manufacturer professional personnel only.

SPECIAL PRECAUTIONS

CAUTION When Wiring

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM.

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked.
- Highly dangerous electrical voltages are used in this system. Carefully see the wiring diagram and section 2 when wiring. Improper connections and inadequate grounding can cause **accidental injury or death.**
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Provide a power outlet to be used exclusively for each unit.
- ELCB must be incorporated in the fixed wiring. Circuit breaker must be incorporated in the fixed wiring in accordance with the wiring regulations.
- Provide a power outlet exclusively for each unit, and full disconnection means having a contact separation by 3mm in all poles must be incorporated in the fixed wiring in accordance with the wiring rules.
- To prevent possible hazards from insulation failure, the unit must be grounded.
- This equipment is strongly recommended to be installed with Earth Leakage Circuit Breaker (ELCB) or Residual Current Device (RCD). Otherwise, it may cause electrical shock and fi re in case of equipment breakdown or insulation breakdown.

When Transporting

- It may need two or more people to carry out the installation work.
- Care should be taken when lifting or moving the chiller to reduce the chance of serious injury. Do not attempt to move the equipment without the correct means of lifting.

When Installing…

Select an installation location which is rigid and strong enough to support or hold the unit, and select a location for easy maintenance.

…In Moist or Uneven Locations

Use a raised concrete pad or concrete blocks to provide a solid, level foundation for the outdoor unit. This prevents water damage and abnormal vibration.

…In an Area with High Winds

Securely anchor the outdoor unit down with bolts and a metal frame. Provide a suitable air baffle.

…In a Snowy Area (for Heat Pump-type Systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Provide snow protection.

When Servicing

- Turn the power OFF at the main power box (mains), wait at least 10 minutes until it is discharged, then open the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after you fi nish, remembering to check that no metal scraps or bits of wiring have been left inside the unit.

WARNING

- This product must not be modified or disassembled under any circumstances. Modified or disassembled unit may cause fire, electric shock or injury.
- Users must not clean inside the unit. Engage authorized dealer or specialist for cleaning.
- In case of malfunction of this unit, please contact to the sales dealer or service dealer for a repair and disposal.
- Any operation carried out by unauthorized personnel is prohibited and can cause serious damage to people and things.

CAUTION

- Ventilate any enclosed areas when installing or testing the refrigeration system. Leaked refrigerant gas, on contact with fi re or heat, can produce dangerously toxic gas.
- Confirm after installation that no refrigerant gas is leaking. If the gas comes in contact with a burning stove, gas water heater, electric room heater or other heat source, it can cause the generation of toxic gas.

Others

When disposal of the product, comply with national regulations.

CAUTION

- Do not touch the air inlet or the sharp aluminum fins of the outdoor unit. You may get injured.

- Do not sit or step on the unit, you may fall down accidentally.

- Do not stick any object into the FAN CASE. You may be injured and the unit may be damaged.

1.4. EQUIPMENT SAFETY DATA

Safety Data	Difluoromethane R32
Toxicity level	Low
In contact with skin	Skin contact with the rapidly evaporating liquid may cause tissue chilblains. In case of skin contact with the liquid, warm the frozen tissue with water and call a doctor. Remove contaminated clothing and footwear. Wash the clothing prior to re-use.
In contact with eyes	Vapours have no effect. Liquid splashes or sprays may cause freeze burns. In these cases rinse your eyes with running water or with a solution for eye lavages for at least 10 minutes. Immediately contact a doctor.
Ingestion	In this case, burns may result. Do not attempt to make the patient vomit. If the patient is conscious, rinse the mouth with water. Call a doctor immediately.
Inhalation	In case of inhalation, move the patient to an area with fresh air and provide oxygen if necessary. Perform artificial respiration if the patient has stopped breathing or lacks air. In case of cardiac arrest, perform external cardiac massage. Call a doctor immediately.
Further Medical Advice	Exposure to high concentrations can be dangerous for individuals with cardiac problems, as the presence of catecholamines such as adrenalin in the bloodstream may lead to increased arrhythmia and possible cardiac arrest.
Occupational exposure limits	R32: Recommended limits: 1,000 ppm v/v 8 hours TWA.
Stability	Stable product
Conditions to avoid	Increased pressure due to high temperatures may cause the container to explode. Keep out of the sun and do not expose to a temperature >50°C.
Hazardous reactions	Possibility of dangerous reactions in case of fire due to the presence of F and/or Cl radicals
General precautions	Avoid the inhalation of high concentrations of vapours. The concentration in the atmosphere shall be kept at the minimum value and anyway below the occupational limits. Since vapours are heavier than air and they tend to stagnate and to build up in closed areas, any opening for ventilation shall be made at the lowest level.
Breathing protection	In case of doubt about the actual concentration, wear breathing apparatus. It should be self-contained and approved by the bodies for safety protection.

Safety Data	Difluoromethane R32
Conditions for safe storage, including any incompatibilities	All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere. Segregate from oxidant gases and other oxidants being stored. Containers should not be stored in conditions likely to encourage corrosion. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible material.
Protection clothes	Wear boots, safety gloves and glasses or masks for facial protection.
Behaviour in case of leaks or escapes	Never forget to wear protection clothes and brething apparatus. Isolate the source of the leakage, provided that this operation may be performed in safety conditions. Any small quantity of refrigerant which may have escaped in its liquid state may evaporate provided that the room is well ventilated.In case of a large leakage, ventilate the room immediately. Stop the leakage with sand, earth or any suitable absorbing material. Prevent the liquid refrigerant from flowing into drains, sewers, foundations or absorbing wells since its vapours may create an asphyxiating atmosphere.
Disposal	The best procedure involves recovery and recycle. If this is not possible, the refrigerant shall be given to a plant which is well equipped to destroy and neutralise any acid and toxic by-product which may derive from its disposal.
Fire-fighting measures	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Contact supplier immediately for specialist advice. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. If involved in fire, shut off flow immediately if it can be done without risk. If this is impossible, withdraw from area and allow fire to burn. Fight fire from protected location or maximum possible distance. Eliminate all ignition sources if safe to do so.
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. For incidents involving large quantities, thermally insulated undergarments and thick textile or leather gloves should be worn.
Containers	If they are exposed to the fire, they shall be constantly cooled down by water sprays. Containers may explode if they are overheated.

2. INSPECTION AND STORAGE

At the time of receiving the equipment carefully cross check all the elements against the shipping documents to ensure that all the crates and boxes have been received. Inspect all the units for any visible or hidden damage.

In the event of shipping damage, write precise details of the damage on the shipper's delivery note and send immediately a registered letter to the shipper within 48 hours, clearly stating the damage caused. Forward a copy of this letter to the manufacturer or his representative.

Never store or transport the unit upside down. It must be stored indoors, completely protected from rain, snow etc. The unit must not be damaged by changes in the weather (high and low temperatures). Excessively high temperatures (above 60 °C) can harm certain plastic materials and cause permanent damage. Moreover, the performance of certain electrical or electronic components can be impaired.

Environmental conditions must be within the following limits:

- Minimum ambient temperature : -20 °C
- Maximum ambient temperature : +60 °C
- Maximum R.H. : 95% not condensing

Storage at a temperature below the minimum can cause damage to the components, instead at a temperature above the maximum causes a pressure increasing that could be above the limit (Ps). High humidity atmosphere may damage electrical components.

3. DISPOSAL

Units must be disposed of in accordance with local regulations

Information for Users on Collection and Disposal of Old Equipment and Used Batteries

These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.

For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2012/19/EU of 4 July 2012 on waste electrical and electronic equipment (WEEE).

By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

[Information on Disposal in other Countries outside the European Union]

These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.

Note for the battery symbol

This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

The disposal of refrigerating systems and their component parts must be carried out in accordance with applicable local and national regulations.

Used refrigerant which is not going to be reutilized must be treated as a waste material requiring safe disposal.

The discharge of refrigerants is only permissible when there will be no harm to persons, property or the environment, and provided it is in accordance with legal requirements.

Used oil that cannot be reprocessed must be stored in a suitable separate container and must be treated as a waste material requiring safe disposal.

Other components of the refrigerating system which contain refrigerant and oil must also be disposed of in an appropriate manner.

If necessary, you should seek the advice of a competent person on the disposal of waste refrigerant and oil products.

INFORMATION

For additional information on the recovery, reutilization and disposal of refrigerating systems, please see NF EN 378-4, sect. 6.

4. WARRANTY

The appliances are delivered fully assembled, factory tested and ready to operate.

Any modification to the units without the manufacturer's prior approval, shall automatically render the warranty null and void.

The following conditions must be respected in order to maintain the validity of the warranty:

- ➢ Commissioning shall be performed by specialised technicians from technical services approved by the manufacturer.
- ➢ Maintenance shall be performed by technicians trained for this purpose.
- ➢ Only Original Equipment spare parts shall be used.
- ➢ All the operations listed in the present manual shall be performed within the required time limits.

THE WARRANTY SHALL BE NULL AND VOID IN THE EVENT OF NON-COMPLIANCE WITH ANY OF THE ABOVE CONDITIONS.

5. PRESENTATION

All the models in the **ECOi-W AQUA-Z** liquid coolers range are produced to state-of-the-art design and manufacturing standards. In this way, they offer guarantees of high performance and reliability as well as the capability of adapting to all types of air conditioning installations operating with both chilled water and glycol solutions (and with hot water for the Heat pump units). The unit, designed for an outdoor mounted application, is not suitable for any use other than those specified in the present manual.

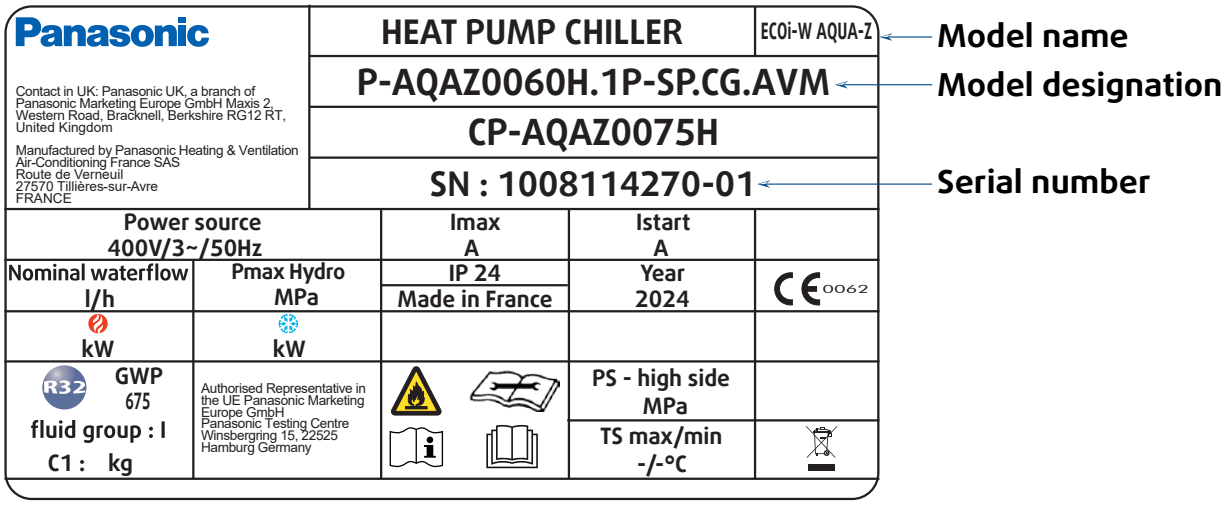
Improper usage of the unit or a use for purposes other than those originally intended, without the prior approval by the manufacturer or its agents, could result in the unit functioning outside its safe operating limits and could present risks to both personnel and property.

ECOi-W AQUA-Z are packaged units, optimized for air conditioning applications.

After the units are assembled, the refrigerating and electrical circuits are tested at the factory in order to guarantee correct operation.

The are filled with an operational refrigerant fluid charge and are subjected to pressure tightness tests.

5.1. NAME PLATE



5.2. MODELS DESIGNATION

P-AQAZ0070	1P-SP	STD	AC	CG	T
①	②	③	④	⑤	⑤

REP.		Description	
①	Size	**P-AQAZ0070H** :size 70 - Heat pump **P-AQAZ0075H** :size 75 - Heat pump **P-AQAZ0085H** :size 85 - Heat pump **P-AQAZ0100H** :size 100 - Heat pump **P-AQAZ0115H** :size 115 - Heat pump **P-AQAZ0130H** :size 130 - Heat pump	**P-AQAZ0070C** :size 70 - Cooling only **P-AQAZ0075C** :size 75 - Cooling only **P-AQAZ0085C** :size 85 - Cooling only **P-AQAZ0100C** :size 100 - Cooling only **P-AQAZ0115C** :size 115 - Cooling only **P-AQAZ0130C** :size 130 - Cooling only
②	Hydraulic circuit	Empty: Without pump **1P-SP**: Single pump standard pressure **1P-HP**: Single pump high pressure	**2P-SP**: Double pump standard pressure **2P-HP**: Double pump high pressure
③	Acoustics	**STD**: Standard	**S**: Super Low Noise
④	Fan type	**AC**: Standard AC fans	**EC**: EC fans **HPF**: High pressure fans
⑤	Option	**CG**: Outdoor coil protection grid **WPS**: Low water pressure sensor **AVS**: Spring dampers **AVM**: Rubber pads **VI**: Water isolation valves **KM**: Refrigerant gauge **T**: Buffer tank **SS**: Soft Starter **PFC**: Power factor capacitor	**CC**: Container transport **VS**: Variable pump double speed / constant ΔT **VS +**: Variable pump constant outlet pressure / constant ΔT / constant ΔP **DES**: Desuperheater **EH12**: Electric heating 12kW **EH24**: Electric heating 24kW **EH36**: Electric heating 36kW **4G**: 4G Modem

The nameplate on the machine provides the complete reference and ensures that the unit matches the model that was ordered. It also includes the following information:

➢ Overall information
- ✔ Serial number
- ✔ Year of manufacture
- ✔ IP protection rating

➢ Electrical data
- ✔ Supply voltage
- ✔ Maximum operating intensity
- ✔ Starting current

➢ Thermodynamic data
- ✔ Type of refrigerant fluid
- ✔ Refrigerant load in each circuit
- ✔ Service pressure in the cooling circuit
- ✔ Service temperatures in the cooling circuit

➢ Hydraulic data
- ✔ Nominal flow rate
- ✔ Maximal water pressure

6. CONTENTS OF PACKAGE

1 **ECOi-W AQUA-Z**

1 Water filter

1 Bag with the documentation

6.1. OPTIONALS ACCESSORIES

Anti-vibration rubber pads
Spring pads
Isolating valve
Lack of water pressure switch
Hydraulic pressure transducer

On opening the box, check that all of the accessories required for installation are present.

CAUTION The packaging around the ECOi-W AQUA-Z unit must be opened in an outdoor area in case any refrigerant has leaked out in transit.

7. DIMENSIONS

SEE APPENDIX

8. WEIGHT

8.1. HANDLING

8.1.1. NET WEIGHT

			P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Without pump		**kg**	621	637	701	731	813	815
Single pump	**Standard Pressure**	**kg**	+33	+33	+41	+41	+44	+44
	High Pressure	**kg**	+34	+34	+44	+44	+44	+44
Double pump	**Standard Pressure**	**kg**	+44	+44	+63	+63	+71	+71
	High Pressure	**Kg**	+47	+47	+70	+70	+74	+74
Fans	**EC**	**kg**	+25	+25	+25	+25	+25	+25
	HPF	**Kg**	+33	+33	+33	+33	+33	+33
S version		**kg**	+21	+21	+21	+21	+21	+21
Desuperheater		**kg**	+12	+12	+12	+12	+12	+12
Buffer tank	**without electric heating coil**	**kg**	+115*	+115*	+115*	+115*	+115*	+115*
	with electric heating coil	**kg**	+120*	+120*	+121*	+121*	+121*	+121*

Note: The values are indicative. Actual data are indicated on the unit label.
* including extra metal frame.

8.1.2. GRAVITY CENTER POSITION

8.1.2.1. WITHOUT BUFFER TANK

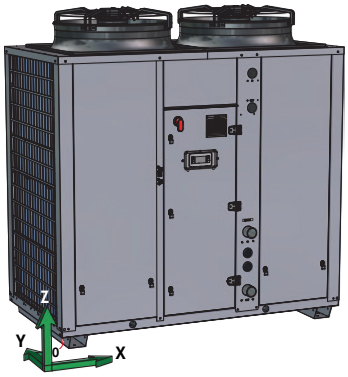
		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
X_G	mm	970	956	986	968	947	944
Y_G	mm	521	530	571	561	610	619
Z_G	mm	893	893	978	966	964	964

ECOi-W AQUA-Z 70-75

8.1.2.2. WITH BUFFER TANK AND DOUBLE PUMP

		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
X_G	mm	1 225	1 208	1 215	1 195	1 163	1 162
Y_G	mm	512	520	532	526	568	568
Z_G	mm	823	818	900	892	892	891

ECOi-W AQUA-Z 85-130



8.2. GENERAL MAINTENANCE

The method of handling depends on the model of **ECOi-W AQUA-Z** and its final destination.

- ➢ Take care to avoid any rough handling or impacts when unloading and moving the appliance.
- ➢ Before hoisting into position, test lift to insure stability and balance. Avoid twisting or uneven lifting of the units.
- ➢ The units shall be carefully inspected before unit installation to make sure this has not happened.
- ➢ ll these sections have been inspected before leaving the factory. It is therefore important to insure that no bolts, screws or other fixing system are loosened or missing before the commissioning.

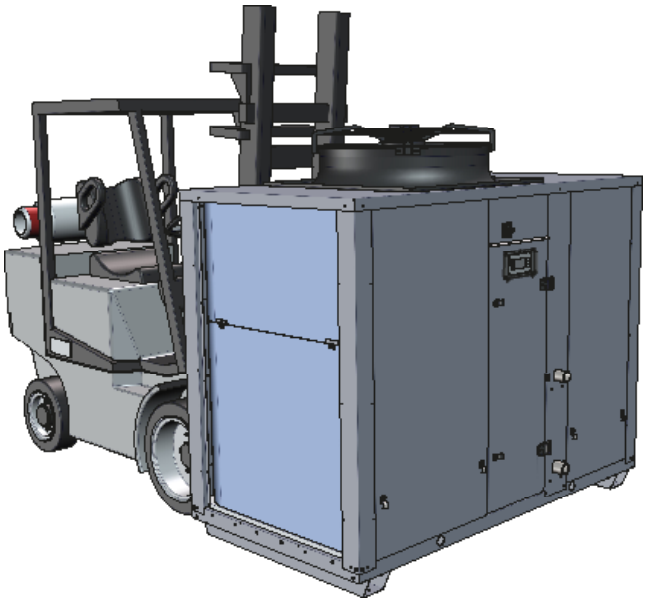
CAUTION Never submit the metal work (panels, posts) of the ECOi-W AQUA-Z to handling constraints, as only its base is designed for that purpose.

CAUTION Do not tilt the ECOi-W AQUA-Z 45° or more during handling, as it would be damaged irreversibly.

CAUTION Never move the ECOi-W AQUA-Z on rollers.

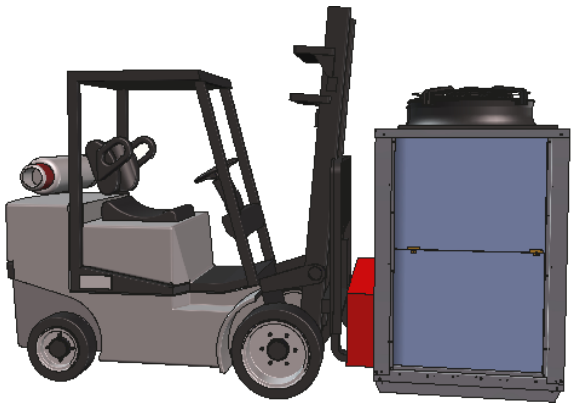
CAUTION When handling the ECOi-W AQUA-Z, beware not to damage the finned coil block. Protect it with cardboard or particle panels.

8.1.3. HANDLING WITH A FORKLIFT



When a forklift is used to handle the **ECOi-W AQUA-Z 70/75/85/100/115/130** units, lift them only along their width.

Place a safety wedge between the unit base and the fork lift truck to avoid damaging the unit's structure and casing.



ECOi-W AQUA-Z 70-130

8.2.1. HANDLING BY SLINGING

Lifting is also possible by slinging.

Holes implemented at each end of the unit allow inserting slinging bars along the chassis width.

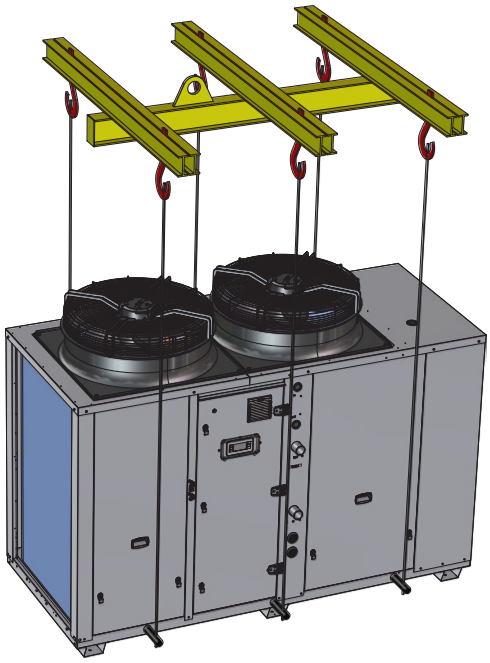
A spreader must be used to prevent damage to the machine edges.

		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Hole diameter	mm	47	47	47	47	47	47

CAUTION Slings must never touch the unit casing of ECOi-W AQUA-Z.

ECOi-W AQUA-Z 70/75/85/100/115/130

ECOi-W AQUA-Z 70/75/85/100/115/130 WITH BUFFER TANK



9. TECHNICAL SPECIFICATIONS

9.1. PHYSICAL CHARACTERISTICS - ECOI-W AQUA-Z C - AC VERSION

			70 AC	75 AC	85 AC	100 AC	115 AC	130 AC
Cooling capacity (1)		kW	69.7	78.2	82.8	100.0	116.0	126.0
Power input (1)		kW	22.4	24.0	26.8	31.4	37.4	42.3
Total EER 100% (1)			3.11	3.26	3.09	3.18	3.10	2.98
SEER (2)			4.61	4.72	4.45	4.88	4.59	4.43
ηsc (2)		%	181.3	185.6	175.0	192.3	180.5	174.2
ELECTRICAL POWER SUPPLY								
Power supply			400V/3~/50Hz					
Startup type			Direct					
Maximum operating current		A	60	69	75	87	94	104
Startup current	Without Soft Starter	A	200	209	215	326	333	343
	With Soft Starter	A	156	160	168	234	246	257
REFRIGERANT								
Type / GWP			R32					
Number of refrigerant circuit			1					
Charge		kg	10.3	10.6	12.8	10.9	13.0	15.0
COMPRESSORS								
Number / Type			2 / Scroll					
Part load steps		%	0/40/60/100	0/46/54/100	0/50/50/100	0/35/65/100	0/44/56/100	0/50/50/100
Crankcase heater		W	70/66	66/66	66/66	66/66	66/66	66/66
EVAPORATOR								
Number / Type			1 / Plate					
Cooling mode	Water flow	m^3/h	11,99	13,45	14.24	17.2	19.95	21.67
	Water pressure drop	kPa	33.0	38.2	22.6	33.4	46.5	58.0
Water volume		L	8.4	8.4	11.7	11.7	11.7	11.7
Antifreeze heater		W	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30
FINNED COIL								
Number			2	2	2	2	2	2
Frontal surface		m^2	5.6	5.6	6.4	6.4	6.4	6.4
Number of rows			2	2	2	2	3	3
FAN								
Number			2	2	2	2	2	2
AC	Air flow	m^3/h	30 000	30 000	41 300	41 300	41 300	41 300
	Rotational speed	rpm	690	690	870	870	870	870
	Power input each fan	kW	1.0	1.0	2.1	2.1	1.6	1.6
WATER CONNECTIONS								
Plate heat exchanger	Type		Male gas threaded					
	Inlet diameter	inch	2"	2"	2"1/2	2"1/2	2"1/2	2"1/2
	Outlet diameter	inch	2"	2"	2"1/2	2"1/2	2"1/2	2"1/2
Desuperheater	Type		Male gas threaded					
	Inlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
	Outlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
BUFFER TANK (OPTION)								
Volume		L	300	300	300	300	300	300
DIMENSIONS								
Length without / with tank		mm	2 180/2 680	2 180/2 680	2180/2680	2180/2680	2180/2680	2180/2680
Width		mm	1 160	1 160	1 160	1 160	1 160	1 160
Height		mm	1 986	1 986	2 286	2 286	2 286	2 286
WEIGHT								
Operating weight (STD)		kg	629	645	713	743	825	827
ACOUSTIC DATA								
Sound power level		dB(A)	81.3	81.3	84.4	86.0	87.0	87.4
Sound pressure level (*)		dB(A)	49.5	49.5	52.5	54.1	55.1	55.5

(1) According EN14511: chilled water inlet/outlet temperature: 12/7°C, outdoor ambient temperature 35°C DB.

(2) According EN14825 and Following COMMISSION REGULATION (EU) 2016/2281.

(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO 3744 standard, parallelepiped shape.

ECOi-W AQUA-Z 70-130

PHYSICAL CHARACTERISTICS - ECOi-W AQUA-Z C - EC / EC S VERSION

			70 EC/EC S	75 EC/EC S	85 EC/EC S	100 EC/EC S	115 EC/EC S	130 EC/EC S
Cooling capacity (1)		kW	69.7	78.2	82.8	100.0	116.0	126.0
Power input (1)		kW	21.2	22.9	25.6	30.3	36.2	41.1
Total EER 100% (1)			3.29	3.41	3.23	3.30	3.20	3.07
SEER (2)			5.19	5.29	4.96	5.19	5.01	4.71
ηsc (2)		%	204.7	208.7	195.6	204.9	197.3	185.6
ELECTRICAL POWER SUPPLY								
Power supply			400V/3~/50Hz					
Startup type			Direct					
Maximum operating current		A	62	71	74	86	93	103
Startup current	Without Soft Starter	A	202	211	214	325	332	342
	With Soft Starter	A	158	162	167	233	245	256
REFRIGERANT								
Type / GWP			R32					
Number of refrigerant circuit			1					
Charge		kg	10.3	10.6	12.8	10.9	13.0	15.0
COMPRESSORS								
Number / Type			2 / Scroll					
Part load steps		%	0/40/60/100	0/46/54/100	0/50/50/100	0/35/65/100	0/44/56/100	0/50/50100
Crankcase heater		W	70/66	66/66	66/66	66/66	66/66	66/66
EVAPORATOR								
Number / Type			1 / Plate					
Cooling mode	Water flow	m³/h	11.99	13.45	14.24	17.2	19.95	21.67
	Water pressure drop	kPa	33.0	38.2	22.6	33.4	46.5	58.0
Water volume		L	8.4	8.4	11.7	11.7	11.7	11.7
Antifreeze heater		W	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30
FINNED COIL								
Number			2	2	2	2	2	2
Frontal surface		m²	5.6	5.6	6.4	6.4	6.4	6.4
Number of rows			2	2	2	2	3	3
FAN								
Number			2	2	2	2	2	2
AC	Air flow	m³/h	30 000	30 000	41 300	41 300	41 300	41 300
	Rotational speed	rpm	620	620	780	780	780	780
	Power input each fan	kW	0.6	0.6	0.8	0.8	1.0	1.0
WATER CONNECTIONS								
Plate heat exchanger	Type		Male gas threaded					
	Inlet diameter	inch	2"	2"	2"1/2	2"1/2	2"1/2	2"1/2
	Outlet diameter	inch	2"	2"	2"1/2	2"1/2	2"1/2	2"1/2
Desuperheater	Type		Male gas threaded					
	Inlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
	Outlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
BUFFER TANK (OPTION)								
Volume		L	300	300	300	300	300	300
DIMENSIONS								
Length without / with tank		mm	2 180/2 680	2 180/2 680	2180/2680	2180/2680	2180/2680	2180/2680
Width		mm	1 160	1 160	1 160	1 160	1 160	1 160
Height		mm	2 034	2 034	2 334	2 334	2 334	2 334
WEIGHT								
Operating weight (STD)		kg	650	666	846	848	1 309	1 323
ACOUSTIC DATA								
Sound power level		dB(A)	78.3	78.2	81.7	83.2	84.0	84.4
Sound pressure level (*)		dB(A)	46.5	46.4	49.8	51.3	52.1	52.5
Sound power level (EC / S)		dB(A)	89.2	89.3	89.3	89.7	90.0	90.2
Sound pressure level (EC / S) (*)		dB(A)	57.4	57.5	57.4	57.8	58.1	58.3

(1) According EN14511: chilled water inlet/outlet temperature: 12/7°C, outdoor ambient temperature 35°C DB.

(2) According EN14825 and Following COMMISSION REGULATION (EU) 2016/2281.

(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO 3744 standard, parallelepiped shape.

PHYSICAL CHARACTERISTICS - ECOi-W AQUA-Z H - AC VERSION

			70 AC	75 AC	85 AC	100 AC	115 AC	130 AC
Cooling capacity (1)		kW	69.0	77.4	82.0	99.3	115.0	125.0
Power input (1)		kW	22.6	24.3	27.1	31.8	37.7	42.7
Total EER 100% (1)			3.05	3.19	3.03	3.12	3.05	2.93
SEER (2)			4.51	4.61	4.33	4.77	4.44	4.23
ηsc (2)		%	177.5	181.5	170.3	187.7	174.6	166.0
Heating capacity (3)		kW	71.8	78.5	86.5	107.6	122.3	137.5
Power input (3)		kW	22.1	24.2	27.2	32.5	37.0	41.0
Low temperature application W30/35°C	**SCOP (4)**		3.47	3.65	3.60	3.64	3.66	3.72
	hsh (4)		135.6	143.2	141.2	142.5	143.2	145.7
	Energy class SCOP		A+	A+	A+	A+	A+	A+
ELECTRICAL POWER SUPPLY								
Power supply			400V/3~/50Hz					
Startup type			Direct					
Maximum operating current		A	60	69	75	87	94	104
Startup current	**without Soft Starter**	A	200	209	215	326	333	343
	with Soft Starter	A	156	160	168	234	246	257
REFRIGERANT								
Type / GWP			R32					
Number of refrigerant circuit			1					
Charge		kg	10.3	10.6	12.8	10.9	13.0	15.0
COMPRESSORS								
Number / Type			2 / Scroll					
Part load steps		%	0/40/60/100	0/46/54/100	0/50/50/100	0/35/65/100	0/44/56/100	0/50/50/100
Crankcase heater		W	70/66	66/66	70/66	66/66	66/66	66/66
PLATE HEAT EXCHANGER								
Number / Type			1 / Plate					
Cooling mode	**Water flow**	m³/h	11.87	13.31	14.11	17.08	19.78	21.5
	Water pressure drop	kPa	33.0	38.2	22.6	33.4	46.5	58.0
Heating mode	**Water flow**	m³/h	12.47	13.64	15.03	18.69	21.24	23.88
	Water pressure drop	kPa	34.4	42.8	23.6	35.3	48.4	59.7
Water volume		L	8.4	8.4	11.7	11.7	11.7	11.7
Antifreeze heater		W	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30
FINNED COIL								
Number			2	2	2	2	2	2
Frontal surface		m²	5.6	5.6	6.4	6.4	6.4	6.4
Number of rows			2	2	2	2	3	3
FAN								
Number			1	1	2	2	2	2
Air flow		m³/h	30 000	30 000	41 300	41 300	41 300	41 300
Rotational speed		rpm	620	620	780	780	780	780
Power input each fan		kW	0.6	0.6	0.8	0.8	1.0	1.0
WATER CONNECTIONS								
Plate heat exchanger	**Type**		Male gas threaded					
	Inlet diameter	inch	2"	2"	2"	2"	2"	2"
	Outlet diameter	inch	2"	2"	2"	2"	2"	2"
Desuperheater	**Type**		Male gas threaded					
	Inlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
	Outlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
BUFFER TANK (OPTION)								
Volume		L	300	300	300	300	300	300
DIMENSIONS								
Length without / with tank		mm	2 180/2 680	2 180/2 680	2 180/2 680	2 180/2 680	2 180/2 680	2 180/2 680
Width		mm	1 160	1 160	1 160	1 160	1 160	1 160
Height		mm	1 986	1 986	2 286	2 286	2 286	2 286
WEIGHT								
Operating weight (STD)		kg	629	645	713	743	825	827
ACOUSTIC DATA								
Sound power level (EC)		dB(A)	81.3	81.3	84.4	86.0	87.0	87.4
Sound pressure level (EC) (*)		dB(A)	49.5	49.5	52.5	54.1	55.1	55.5

(1) According EN14511: chilled water inlet/outlet temperature: 12/7°C, outdoor ambient temperature 35°C DB.

(2) According EN14825 and Following COMMISSION REGULATION (EU) 2016/2281.

(3) According EN14511: warm water inlet/outlet temperature: 40/45°C, outdoor ambient temperature 7°C DB/6°C WB.

(4) According EN14825 and Following COMMISSION REGULATION (EU) No 813/2013: Climate average - low temperature application.

(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO 3744 standard, parallelepiped shape.

ECOi-W AQUA-Z 70-130

PHYSICAL CHARACTERISTICS - ECOi-W AQUA-Z H - EC / EC S VERSION

			70 EC/EC S	75 EC/EC S	85 EC/EC S	100 EC/EC S	115 EC/ECS	130 EC/EC S
Cooling capacity (1)		kW	69.0	77.4	82.0	99.4	115.0	125.0
Power input (1)		kW	21.4	23.1	25.9	30.6	36.6	41.6
Total EER 100% (1)			3.22	3.35	3.17	3.25	3.14	3.00
SEER (2)			5.04	4.99	4.80	4.93	4.82	4.51
ηsc (2)		%	198.8	196.7	188.9	194.1	190.0	177.2
Heating capacity (3)		kW	72.0	80.2	86.7	108.3	122.3	137.5
Power input (3)		kW	21.0	23.5	26.3	31.4	35.7	40.2
Low temperature application W30/35°C	SCOP (4)		3.71	3.80	4.02	4.10	4.02	3.97
	hsh (4)		145.3	148.8	157.8	160.9	157.9	155.9
	Energy class SCOP		A+	A+	A++	A++	A+	A++
ELECTRICAL POWER SUPPLY								
Power supply			400V/3~/50Hz					
Startup type			Direct					
Maximum operating current		A	60	69	74	86	93	103
Startup current	without Soft Starter	A	200	209	214	325	332	342
	with Soft Starter	A	156	160	167	233	245	256
REFRIGERANT								
Type / GWP			R32					
Number of refrigerant circuit			1					
Charge		kg	10.3	10.6	12.8	10.9	13.0	15.0
COMPRESSORS								
Number / Type			2 / Scroll					
Part load steps		%	0/40/60/100	0/46/54/100	0/50/50/100	0/35/65/100	0/44/56/100	0/50/50/100
Crankcase heater		W	70/66	66/66	66/66	66/66	66/66	66/66
PLATE HEAT EXCHANGER								
Number / Type			1 / Plate					
Cooling mode	Water flow	m³/h	11.87	13.31	14.11	17.08	19.78	21.5
	Water pressure drop	kPa	33.0	38.2	22.6	33.4	46.5	58.0
Heating mode	Water flow	m³/h	12.51	13.93	15.06	18.81	21.24	23.88
	Water pressure drop	kPa	34.4	42.8	23.6	35.3	48.4	59.7
Water volume		L	8.4	8.4	11.7	11.7	11.7	11.7
Antifreeze heater		W	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30	2 x 30
FINNED COIL								
Number			2	2	2	2	2	2
Frontal surface		m²	5.6	5.6	6.4	6.4	6.4	6.4
Number of rows			2	2	2	2	3	3
FAN								
Number			1	1	2	2	2	2
Air flow		m³/h	30 000	30 000	41 300	41 300	41 300	41 300
Rotational speed		rpm	620	620	780	780	780	780
Power input each fan		kW	0.6	0.6	0.8	0.8	1.0	1.0
WATER CONNECTIONS								
Plate heat exchanger	Type		Male gas threaded					
	Inlet diameter	inch	2"	2"	2"	2"	2"	2"
	Outlet diameter	inch	2"	2"	2"	2"	2"	2"
Desuperheater	Type		Male gas threaded					
	Inlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
	Outlet diameter	inch	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4	1"1/4
BUFFER TANK (OPTION)								
Volume		L	300	300	300	300	300	300
DIMENSIONS								
Length without / with tank		mm	2 180/2 680	2 180/2 680	2 180/2 680	2 180/2 680	2 180/2 680	2 180/2 680
Width		mm	1 160	1 160	1 160	1 160	1 160	1 160
Height		mm	1 986	1 986	2 286	2 286	2 286	2 286
WEIGHT								
Operating weight (STD)		kg	629	645	713	743	825	827
ACOUSTIC DATA								
Sound power level (EC)		dB(A)	81.3	81.3	84.4	86.0	87.0	87.4
Sound pressure level (EC) (*)		dB(A)	49.5	49.5	52.5	54.1	55.1	55.5
Sound power level (EC / S)		dB(A)	89.2	89.3	89.3	89.7	90.0	90.2
Sound pressure level (EC / S) (*)		dB(A)	57.4	57.5	57.4	57.8	58.1	58.3

(1) According EN14511: chilled water inlet/outlet temperature: 12/7°C, outdoor ambient temperature 35°C DB.

(2) According EN14825 and Following COMMISSION REGULATION (EU) 2016/2281.

(3) According EN14511: warm water inlet/outlet temperature: 40/45°C, outdoor ambient temperature 7°C DB/6°C WB.

(4) According EN14825 and Following COMMISSION REGULATION (EU) No 813/2013: Climate average - low temperature application.

(*) Sound pressure levels calculated at 10 meters. Sound pressure levels refer to ISO 3744 standard, parallelepiped shape.

9.2. REFRIGERATION SPECIFICATIONS

9.2.1. REFRIGERANT CIRCUIT DIAGRAM

SEE APPENDIX

9.2.2. REFRIGERANT CHARGE

CAUTION This equipment contains fluorinated gas with greenhouse gas effects covered by the Kyoto agreement.

The type and quantity of refrigerating fluid per circuit are indicated on the product plate.

The installer and end user will get informed on local environmental regulations for the installation, operation and disposal of the equipment ; more particularly, for the collection of substances hazardous for the environment (refrigerating fluid, oil, antifreeze, etc.). A refrigerating fluid, whatever it is, must not be vented. Refrigerating fluids must be handled by skilled personnel.

CAUTION ECOi-W AQUA-Z units use the R32 HFC refrigerant which is a flammable gas classified A2L (Slightly flammable). This gas is subject to significant safety regulations due to its flammability, so some precautions are required to prevent accidental build-up of refrigerant, especially during the unit charge. Manufacturers recommend use of extract fans while charging, particularly if the outdoor unit is used in an enclosed area. The standard EN378 defines requirements for safe concentration levels of the refrigerants.

CAUTION According to the Pressure Equipment Directive (PED) 2014/68/UE and the harmonized standard EN378 (1 to 4), the ECOi-W AQUA-Z units are ranked Category III.

9.3. ELECTRIC SPECIFICATIONS

9.3.1. ECOi-W AQUA-Z WITHOUT PUMP WITH AC FANS

		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Power supply		400V / 3~ / 50Hz					
Maximum current	**A**	57	61	69	81	94	104
Total starting current (without soft starter)	**A**	212	216	224	320	332	343
Total starting current (with soft starter)	**A**	156	160	168	234	246	257

9.3.2. ECOi-W AQUA-Z WITHOUT PUMP WITH EC/HPF FANS

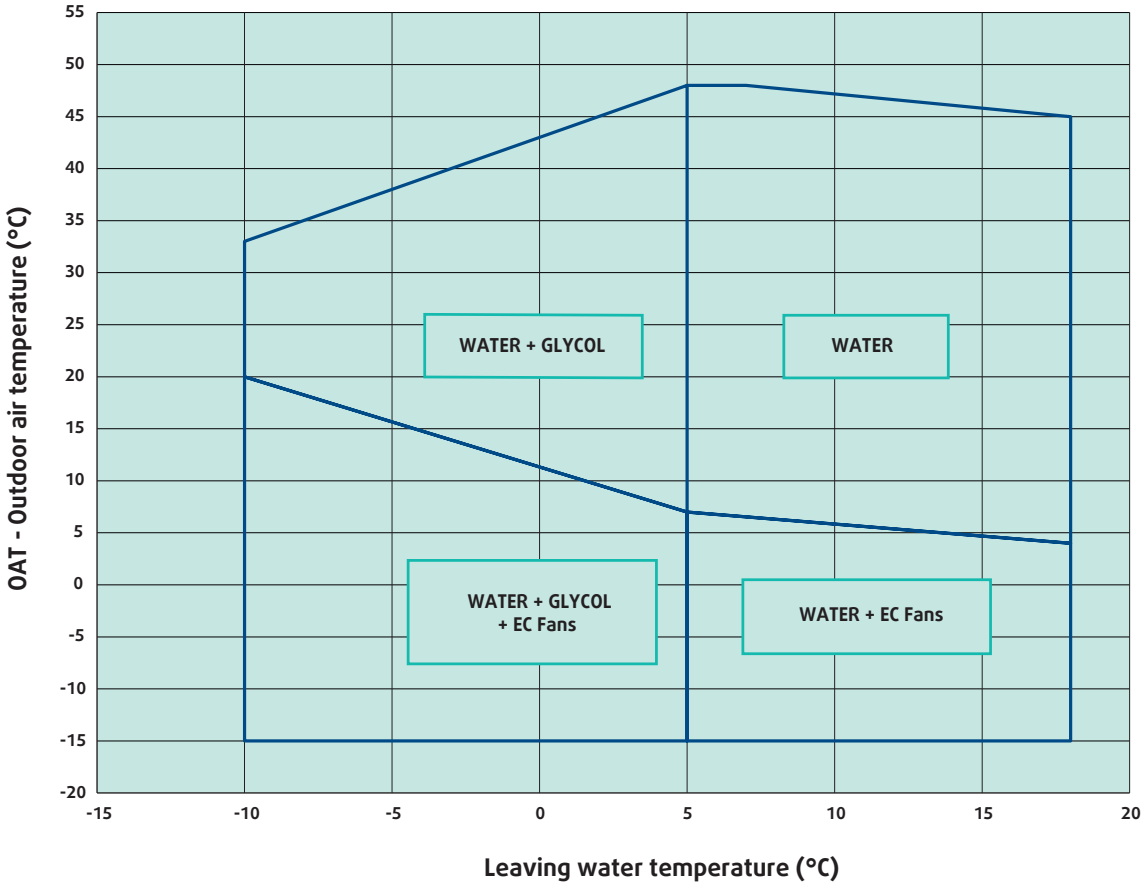
		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Power supply		400V / 3~ / 50Hz					
Maximum current	**A**	59	63	68	81	93	103
Total starting current (without soft starter)	**A**	214	218	223	319	331	342
Total starting current (with soft starter)	**A**	158	162	167	233	245	256

9.3.3. ELECTRIC HEATING COIL

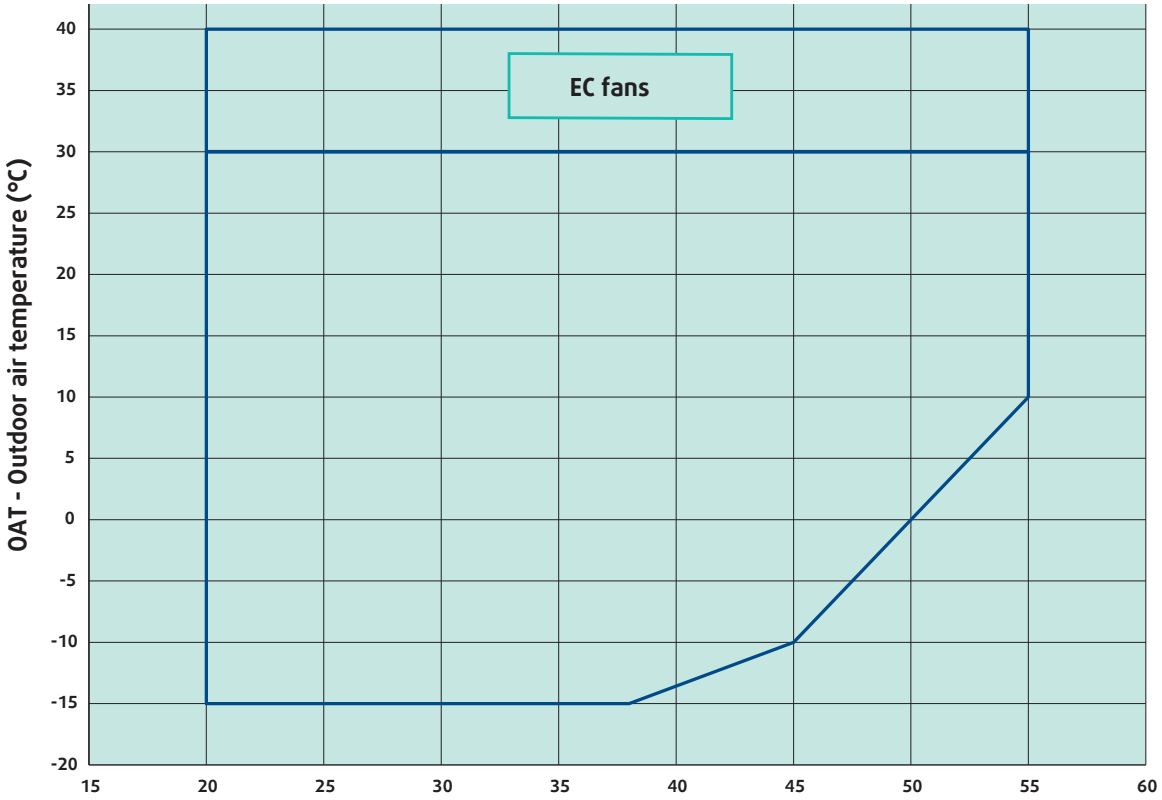
			P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Power supply			400V / 3~ / 50Hz					
Low power heating	**Power**	**kW**	12	12	24	24	24	24
	Maximum intensity	**A**	19	19	38	38	38	38
High power heating	**Power**	**kW**	24	24	36	36	36	36
	Maximum intensity	**A**	38	38	57	57	57	57

9.4. OPERATING LIMITS

9.4.1. ECOI-W AQUA-Z C / ECOI-W AQUA-Z H COOLING MODE



9.4.2. ECOI-W AQUA-Z H HEATING MODE



10. INSTALLATION

10.2. OPERATIVE

10.2.1. GROSS WEIGHT

CAUTION

The unit is not designed to withstand weights or stresses from adjacent equipment, pipe work or constructions. Any foreign weight or stress on the unit structure could lead to a malfunction or a degradation with dangerous consequences for personnel and property. In such an event, the warranty shall be null and void.

CAUTION

The unit base shall be arranged as indicated in the manual. There could be a risk of personal injury or damage to property in the event of the unit being incorrectly supported.

10.1. SITING THE INSTALLATION

According to the standard EN378-1 §5.1, the **ECOi-W AQUA-Z** units are Access category a with a class III in terms of location.

The **ECOi-W AQUA-Z** must be installed outdoors with sufficient surrounding clearance to enable unobstructed air circulation through the appliance and access for maintenance work.

Refrigeration systems installed outdoors must be located in such a way that no refrigerant leakage can enter the building or endanger persons and property. The refrigerant must not be able to spill into a ventilation duct, under a door, a hatch or similar opening in the event of a leak. When a shelter is provided for refrigeration equipment situated in the open air, this shelter must be equipped with a natural or forced ventilation device.

INFORMATION

ECOi-W AQUA-Z units can also be installed in a machine room in accordance with local and national regulations and the standards of EN 378-3:2016. This regulation also applies to machines installed outside where any release of refrigerant may stagnate.

CAUTION

Do not expose the ECOi-W AQUA-Z to rejections from chimneys or vents. Fumes charged with soot or grease as well as acid rejections are likely to clog or damage the condenser irreversibly. This would cancel the warranty.

10.1.1. SITING DEPENDING ON PREVAILING WIND

In the case of the unit being sited in areas exposed to high winds, you must avoid the wind hitting the fan blowing surface areas directly to avoid any risk of recycling cooled air. Exchanger fan operation can be disrupted by strong winds, which can cause de-icing problems and fan malfunctions.

CAUTION

Unit operation depends on air temperature. Any recycling of air extracted by the fan lowers the air intake temperature across the exchanger fins and alters the standard operating conditions.

10.1.2. CONDENSATE WATER MANAGEMENT IN HEATING MODE

Depending on temperature and outdoor air humidity conditions, water vapour contained in the air can condense on the finned heat exchanger and even form ice under low outdoor temperature conditions (around < 5°C). This condensate water and defrosted water runs off via outlets provided under the exchanger. To aid water run-off and avoid frozen water remaining in the appliance in winter, we recommend that it is mounted at a height of around 10cm off the ground. In this way, these water can run off freely and be absorbed into the ground or channelled to a basin built under the appliance in order to protect the environment.

In areas where outdoor temperatures fall below 1°C, the system can be equipped with a condensate anti-freeze protection system (e.g. a heated pipe sheath, Not supplied).

10.2.2. REDUCTION OF NOISE POLLUTION

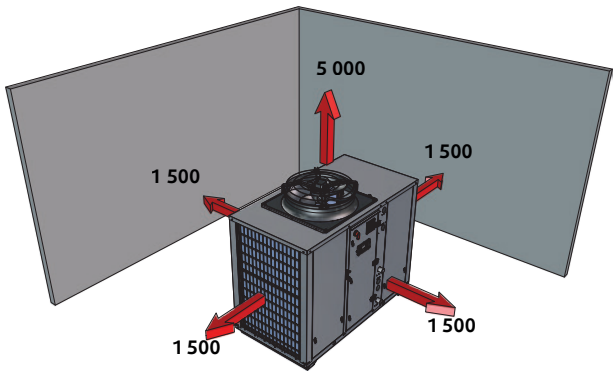
In order to contain noise levels, we equip our appliances with quiet fans and encase the technical compartment in sound-proofed panels. However, noise levels can be reduced even further by following a few installation precautions:

- ➢ Do not install the appliance near a window.
- ➢ Do not install the unit in enclosed or confined yards, narrow locations where noise may be reflected on walls.
- ➢ Install the rubber pads supplied or anti-vibration pads (available as an option) under the appliance.
- ➢ Do not join the concrete slab supporting the appliance to the structure of the dwelling (structure- borne noise transmission).
- ➢ Electrical and hydraulic connections to the unit must be flexible to avoid transmitting vibrations.

INFORMATION The operator must ensure that hearing protection (PPE and CPE) is properly implemented in the event of prolonged work near the unit.

10.3. CLEARANCE

When choosing the location for the **ECOi-W AQUA-Z**, take care to leave sufficient free clearance on all sides to ensure easy access for maintenance work. The minimum free clearance dimensions indicated must be observed to ensure both proper system operation and allow access for maintenance and cleaning.



CAUTION When several ECOi-W AQUA-Z units are installed, ensure proper clearance is implemented around the condensers specific to each machine.

10.4. ATTACHMENT TO THE GROUND

The surface of the floor or structure located under the **ECOi-W AQUA-Z** must be flat, and with sufficient strength to withstand the unit's weight with its full liquid load, and occasional presence of maintenance equipment.

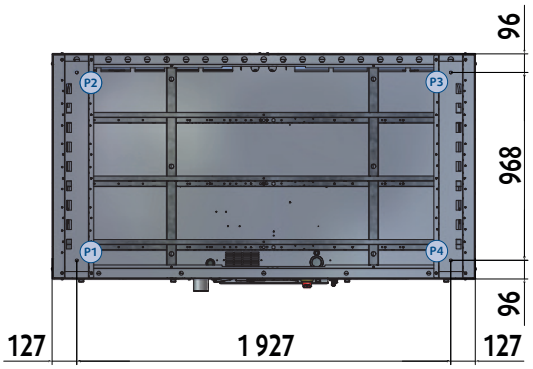
The **ECOi-W AQUA-Z** does not require anchoring on the foundations, except in regions exposed to a high earthquake risk or if the device is installed on a high level on a steel frame.

For normal applications, rigidity of the **ECOi-W AQUA-Z** and the positions of supports allow for an installation minimizing vibrations. However, the installers can use anti-vibration rubber pads (supplied in option).

When fitting anti-vibration pads, refer to the manual supplied with the kit.

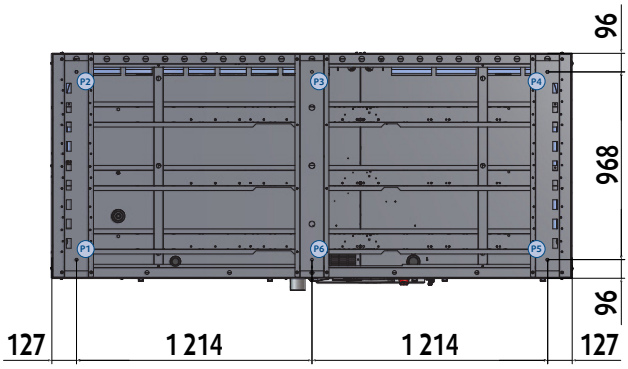
10.4.2.1. WITHOUT BUFFER TANK

		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
M	kg	621	637	701	731	813	815
X_G	mm	970	956	986	968	947	944
Y_G	mm	521	530	571	561	610	619
Z_G	mm	893	893	978	966	964	964
P1	kg	190	194	195	210	218	215
P2	kg	155	164	189	196	242	247
P3	kg	124	128	156	157	186	188
P4	kg	152	152	161	168	167	165
P5	kg	-	-	-	-	-	-
P6	kg	-	-	-	-	-	-



10.4.2.2. WITH BUFFER TANK AND DOUBLE PUMP

		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
M	kg	1 061	1 077	1 160	1 188	1 269	1 271
X_G	mm	1 547	1 530	1 514	1 492	1 448	1 447
Y_G	mm	455	462	475	472	507	507
Z_G	mm	714	712	779	776	784	783
P1	kg	193	196	229	234	250	250
P2	kg	133	135	154	158	168	168
P3	kg	126	128	156	159	171	171
P4	kg	169	171	158	162	173	174
P5	kg	253	257	233	239	255	255
P6	kg	186	189	230	236	252	253



NOTE: for the antivibration position (P1 to P6):

SEE APPENDIX

11. HYDRAULIC LINKS

CAUTION When choosing and installing water pipes, you must consult and observe all current local standards, regulations and instructions.

11.1. MAIN HYDRAULIC CIRCUIT

CAUTION The mains hydraulic circuit will provide a constant water flow on the refrigerating fluid/ water plate exchanger and in case of load variation.

You must design the pipe network with the minimum number of bends and keep the number of changes in height to the strict minimum. This will reduce installation costs and ensure optimum system performance. The pipe network must include:

- A vibration elimination system (e.g.: link hoses) on all pipes connected to the appliance in order to reduce vibrations and noise transmitted to the building fabric.
- A balancing valve on the water outlet pipe in order to adjust the water flow.
- Stop cocks to isolate the hydraulic circuit during maintenance.
- Manual or automatic bleed valves at the highest point on the water circuit.
- Draining connectors at all low points to allow complete circuit draining.
- A circulation pump guaranteeing flow necessary for the operation of the **ECOi-W AQUA-Z** unit if the model does not already include a pump.
- A diaphragm expansion tank fitted with a safety and draining valve must be visible.
- A low water pressure sensor to secure the water pump against cavitation if the water pressure in the circuit decreases.
- The installation of thermometers and pressure gauges on the heat exchanger inlet and outlet to facilitate day-to-day controls and system maintenance.
- An element ensuring ground continuity of all piping. An unbalance of grounding connection points can cause corrosion electrolytic.

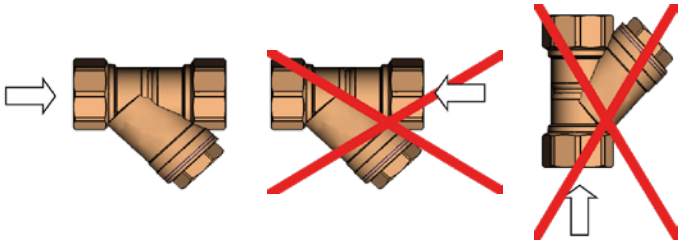
CAUTION The expansion tank must be dimensioned to be able to absorb an expansion corresponding to 2% total volume of water contained in the installation (exchanger, piping, installations and buffer tank, if present).

CAUTION The warranty does not cover damage due to corrosion resulting from electrolytic phenomena.

11.2. ANTI-CLOGGING PROTECTION

CAUTION To avoid any risk of foreign bodies entering the appliance and to guarantee operating performance, IT IS IMPERATIVE TO INSTALL WATER FILTER on the ECOi-W AQUA-Z inlet pipe.

Failing that, **ECOi-W AQUA-Z's** heat plate exchanger would clog up soon after being commissioned. Proper operation of the **ECOi-W AQUA-Z** would be disturbed by a reduced water flow or the partial blockage of certain heat plates. The heat plate exchanger could be **IRREVERSIBLY** damaged if the water flow were not sufficiently high. A link smaller than or equal to 800µm is recommended



CAUTION The manufacturer's warranty is void if the filter supplied with the ECOi-W AQUA-Z is not installed to protect the appliance

11.5. MINIMUM WATER VOLUME REQUIREMENTS

To ensure that the system operates correctly you must use suitably sized and properly routed pipes for the hydraulic links between the **ECOi-W AQUA-Z** and the mains network. Proper operation of the regulation and safety devices is ensured only when the water volume is sufficient.

For refrigeration only units, the total the total volume at the primary water circuit must never be below

➢ comfort application

✔ 3.5 L/kW in reference to the cooling nominal capacity of the unit

➢ process application

✔ 6.5 L/kW in reference to the cooling nominal capacity of the unit

For reversible units, a water volume equal to 6.5 L/kW, in reference to the heating nominal capacity of the unit, is recommended, so that energy reserves are full enough to ensure the defrosting cycle without any discomfort for the end user.

If the total volume of the primary hydraulic circuit does not allow to reach these recommendations, a buffer tank must be added to the installation to increase the water volume up to the value required.

If the unit runs with a low volume of water (with air treatment plant…) or if it is used for industrial processes, a buffer tank is compulsory to guarantee sufficient thermal inertia and satisfactory temperature stability.

		70	75	85	100	110	130
Buffer tank (optional)	L	300	300	300	300	300	300

11.2.1. ECOI-W AQUA-Z COOLING ONLY VERSION

INFORMATION It is recommended that the hydraulic circuit be sized by a thermal engineer

			P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Minimum water volume in the system application air conditioning	without buffer tank	L	244	274	290	350	406	441
	with buffer tank	L	0	0	0	50	106	141
Minimum water volume in the system application process	without buffer tank	L	453	508	538	650	754	819
	with buffer tank	L	153	208	238	350	454	519

11.2.2. ECOI-W AQUA-Z HEAT PUMP VERSION

			P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Minimum water volume in the system	without buffer tank	L	474	525	563	710	805	898
	with buffer tank	L	174	225	263	410	505	598

11.3. MAXIMUM WATER VOLUME REQUIREMENTS

The maximum water volume is limited by the sizing of the unit's expansion tank and/or the expansion tank present in the facility's hydraulic circuit. Expansion tanks must be sized according to the glycol percentage in the hydraulic circuit.

The expansion tank should be installed at the pump suction, and the pressure inside will be adjusted by taking into account the whole hydraulic circuit.

The volume of the expansion tanks selected with Single pump and double pump options is:

		P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
Volume of the expansion tank supplied with hydraulic options	L	12	12	18	18	18	18

11.4. RINSING THE CIRCUIT

CAUTION Before filling the installation, check it and remove any contamination such as sand, stone, welding chips and other materials likely to damage the ECOi-W AQUA-Z.

Fully rinse all water pipes before final connection to the **ECOi-W AQUA-Z**.

When using an off-the-shelf acid rinsing solution, implement a temporary branching around the **ECOi-W AQUA-Z** to prevent damaging internal components (particularly the plate exchanger, flow switch, pump...).

11.6. FROST PROTECTION

If the **ECOi-W AQUA-Z** is exposed to ambient temperatures between 1°C and -18°C, protect the water circuit against frost.

CAUTION The use of a glycol-based solution is the only effective frost-protection means

The glycol-based water solution must be sufficiently concentrated to ensure appropriate protection and prevent ice from forming at the minimum outdoor temperatures planned for the installation. Take precautions when using non inert MEG antifreeze solutions (Mono Ethylene Glycol or MPG Mono Propylene Glycol). With this type of antifreeze solution, corrosion may occur in the presence of oxygen.

Contact glycol resellers to ensure that its characteristics are compatible with environmental directive applicable on site (this is not under manufacturer responsibility).

CAUTION The glycol percentage in the installation's hydraulic circuit must be entered in the regulation upon start-up. This parameter setting changes the safety and alarm triggering threshold limits. An incorrect value may cause malfunctions and a destruction of the unit's heat exchanger.

WARNING It is strongly recommended to post, on the electric box of the unit, glycol type and concentration in the hydraulic circuit.

The glycol-based solution slightly modifies the installation's performance, particularly in terms of load loss:

% glycol	Freezing point (°C)	Thermodynamic power		Power input	Water flow	Pressure drop
		Cooling mode	Heating mode			
0	0	1.000	1.000	1.000	1.000	1.000
10	-4	0.992	1.000	1.007	1.028	1.110
20	-10	0.986	1.000	1.013	1.056	1.272
30	-17	0.975	1.000	1.020	1.085	1.461
40	-26	0.965	1.000	1.033	1.115	1.679

Example for a solution with 20% Glycol:

- Increase the pressure drop: with glycol = 1.272 x without glycol
- Increase the flow rate: with glycol = 1.056 x without glycol
- Decrease the cooling capacity: with glycol = 0.986 x without glycol

Draining the water circuit is not recommended for frost protection, for the following reasons:

- The water circuit will rust, which will shorten its lifetime.
- Water will remain at the bottom of the plate exchangers and freezing may cause damage.

CAUTION Never fill the hydraulic circuit with pure glycol. Maximum glycol concentration is 40%. The water and glycol mixture must be precisely prepared before filling the hydraulic circuit. If the mixture is too much concentrated, the hydraulic could be damaged and the unit ECOi-W AQUA-Z should not perform normally. **In this case, the unit warranty will be automatically voided.**

CAUTION For heat pump models, if the outdoor temperature is likely to fall below +1°C, provide a system to prevent the condensates from freezing (e.g. heating cord).

11.7. WATER QUALITY

The water must be analyzed; the hydraulic network system installed must include all elements necessary for water treatment: filters, additives, intermediate exchangers, drain valves, vents, check valves, etc., according to the results of the analysis.

CAUTION The ECOi-W AQUA-Z must not run on a network with open loops, likely to cause incidents related to oxygenation, or with non treated table water.

Using improperly treated or non treated water in the **ECOi-W AQUA-Z** may cause scaling, erosion, corrosion or algae or sludge deposits in the exchangers. Refer to a specialist skilled in water treatment to determine any treatment to apply. The manufacturer will not be held liable for damages caused when non treated or improperly treated water, demineralized water, salty water or sea water are used.

Apply the following guidelines:

- No NH_4^+ ammonium ions in the water, highly detrimental to copper. <10mg/l
- Cl- chloride ions are detrimental to copper with a risk of puncture by picking corrosion. <10mg/l.
- SO_4^{2-} sulphate ions may cause perforating corrosion. < 30mg/l.
- No fluoride ions (<0.1 mg/l)
- No Fe^{2+} and Fe^{3+} ions, particularly in case of dissolved oxygen. Fe< 5mg/l with dissolved oxygen < 5mg/l. The presence of these ions with dissolved oxygen indicates corrosion of steel parts, likely to generate corrosion of copper parts under Fe deposits, particularly in the case of multitubular exchangers.
- Dissolved silica: silica is an acid element of water and may also cause corrosion. Content < 1mg/l.
- Water hardness: Values between 10°fH and 30°fH may be recommended. This facilitates scaling deposits likely to limit copper corrosion. Excess TH values may lead to clogging the pipes.
- TAC<100
- Dissolved oxygen: Prevent any sudden change in the water's oxygenation conditions. Also, avoid deoxygenating water by sparging inert gas as well as overoxygenating it by pure oxygen sparging. Disturbing oxygenation conditions destabilizes copper hydroxides and particle salting-out.
- Electrical Resistivity - Conductivity: The higher the resistivity, the slower the corrosion. Values above 3000 ohm/cm are preferred. A neutral environment favours maximum resistivity. For electrical conductivity, values around 200-600 S/cm can be recommended.
- pH: neutral pH at 20°C (7 < pH < 9)

CAUTION If the water circuit is to be drained for a time exceeding one month, the circuit must be fully charged with nitrogen to prevent any risk of corrosion by differential venting.

CAUTION The manufacturer is not liable for recommendations in terms of water treatment (call a specialized company).

However, this matter has a critical nature, and particular care must be given to ensure that the type of treatment applied is effective.

The liability of the manufacturer or its representative will not be sought when non treated water or non compliant quality water is used.

11.8. HEAT INSULATION

To guarantee proper energy efficiency and compliance with current standards, water pipes passing through uninhabited zones should be properly lagged to retain heat.

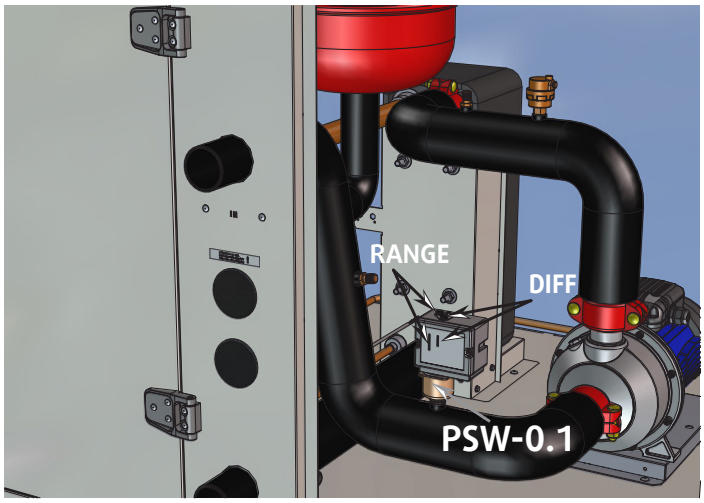
To achieve correct insulation with conductivity of 0.04 W/mK, lag the pipes with insulating material with a radial thickness between 25mm and 30 mm.

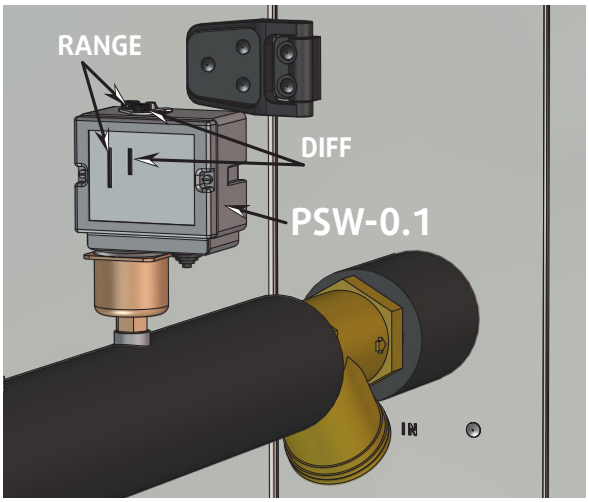
11.9. WATER LOW PRESSURE SWITCH

The optional low-water pressure switch (PSW-0.1) can be installed inside or outside the machine. It must be set to the following specifications:

- RANGE: 1bar
- DIFF: 0.5bar

If the pressure in the circuit drops below 0.5 bar, the machine stops. When the pressure rises above 1.5 bar again, the machine restarts.





For installation inside the unit, a 3/8" pressure test point fitting is provided on the pump supply pipe.

INFORMATION In the case of a **ECOi-W AQUA-Z** without a pump, the “Water low pressure switch" (PSW-0.1) must be fitted to the external pump supply pipes

INFORMATION The low water pressure switch (PSW-0.1) must be connected to terminals 24 and 25 on terminal block Y.

11.10. DIFFERENTIAL PRESSURE TRANSDUCER

The differential pressure transducer (PTWDP-0.1) supplied with the "**VS+**" option must be fitted between the water return and flow pipes.

INFORMATION The pressure taps of the differential pressure transducer (PTWDP-0.1) must be positioned in the middle of a straight pipe at least 40 cm long.

INFORMATION The differential pressure transducer (PTWDP-0.1) must be connected to terminals 18, 19 and 20 of terminal block Y.

INFORMATION In the case of a ECOi-W AQUA-Z without a pump, the “lack of water” pressure switch must be fitted to the external pump supply pipes and wired to terminals 24 and 25 on the unit.

11.11. FILLING THE SYSTEM WITH WATER

CAUTION **The water circuit must be filled and drained by skilled persons using the appropriate devices provided on the external hydraulic circuit by the installer.**

It is important to ensure that the mains water supply pressure is sufficient to fill the installation.

Once the installation is complete and after cleaning and rinsing the circuit network, you must fill the water circuit in accordance with current professional standards until you obtain the service pressure which will be:

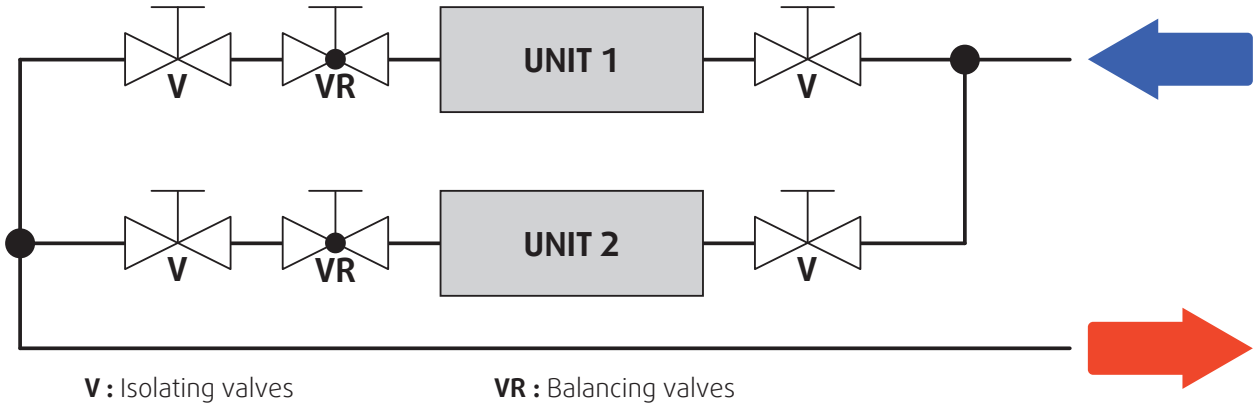
0.5 bar < Service Pressure < 3.0 bar

A valve set at 3.0 bar is supplied with the "single pump" or "double pump" options.

A valve set at 6.0 bar is supplied with the buffer tank option.

Always check that manual or automatic air drains are installed at all the high points of the hydraulic network.

When two or three units are connected in parallel, it is advisable to reverse the return circuit connections (Tichcelmann loop) in order to reduce the pressure loss in each unit's circuit.

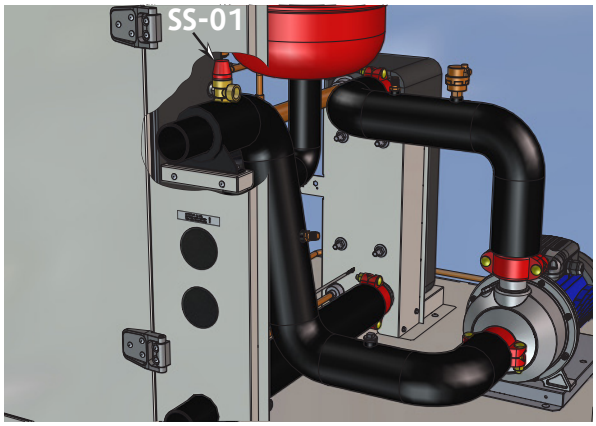


V : Isolating valves **VR :** Balancing valves

Install a balancing valve on the output pipe to adjust the water flow.

CAUTION The water inlets and outlets must be connected as described on the labels affixed near the connections.

When the hydraulic pump option is selected, a safety valve, set to 3.0 bar, (SS-01) is mounted at the water circuit inlet to prevent overpressure in the circuit. The installer must install a pipe at the safety valve outlet for water evacuation.



When the unit is fitted with a buffer storage tank, a safety valve (SS-02), set at 6.0 bar, is installed at the storage tank inlet. The installer must connect a tube to the valve to drain the water away from the machine.

12. WIRING DIAGRAM AND LEGEND

12.1. WIRING DIAGRAM

SEE APPENDIX

12.2. LEGEND

SE4945	models 70 / 75 / 85 / 100 / 115 / 130	Power / Control	400V/3~/50Hz

12.2.1. POWER SUPPLY

Power cable must be connected to the main power supply switch QG (Copper cable is recommended).

The supply is protected at the head by an FFG main fuse holder supplied by the installer. It must be fitted next to the unit. Refer to the § **Electric specifications**, page 17

The electrical installation and wiring of this unit must comply with local electrical installation standards.

➢ Three phase 400 V~ 50Hz + Ground :

On the L1, L2, L3 terminals of the QG section switch
On the ground screw of the earth cable.

12.2.2. WIRING DIAGRAM KEY DESCRIPTIONS

SEE APPENDIX

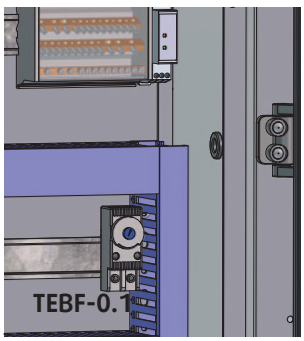
12.2.3. RANGE AND SETTINGS OF THEMAL PROTECTION / NOMINAL INTENSITY OF THE CONTACTORS (CLASSE AC3)

MODELS				P-AQAZ0070	P-AQAZ0075	P-AQAZ0085	P-AQAZ0100	P-AQAZ0115	P-AQAZ0130
KC-1.1	AC	Range	A	24-32	24-32	24-32	37-50	37-50	37-50
		Setting	A	31	31	31	49	49	49
	EC	Range	A	24-32	24-32	24-32	37-50	37-50	37-50
		Setting	A	31	31	31	49	49	49
KC-1.2	AC	Range	A	17-23	24-32	24-32	24-32	37-50	37-50
		Setting	A	22	26	31	26	39	49
	EC/HPF	Range	A	17-23	24-32	24-32	24-32	37-50	37-50
		Setting	A	22	26	31	26	39	49
FTOF-1.1	EC/HPF	Range	A	4-6.3	4-6.3	6-10	6-10	6-10	6-10
		Setting	A	5	5	7	7	7	7
FTWP-0.1	Pump SP	Range	A	4-6.3	4-6.3	4-6.3	4-6.3	4-6.3	4-6.3
		Setting	A	5	5	5	5	5	5
	Pump HP	Range	A	4-6.3	4-6.3	4-6.3	4-6.3	4-6.3	4-6.3
		Setting	A	5	5	5	5	5	5
	SP VAR	Setting	A	6.3	6.3	6.3	6.3	6.3	6.3
	HP VAR	Setting	A	6.3	6.3	6.3	6.3	6.3	6.3

12.3. CRANKCASE HEATER THERMOSTAT ADJUSTMENT RANGE

The crankcase heater thermostat (TEBF-0.1) enables the crankcase heaters to be activated when the compressors are stopped and the outside temperature is below 7 °C (recommended minimum value). That value can be adjusted depending on the installation site.

The manufacturer declines any responsibility and the warranty becomes void if these instructions are not complied with.



13. ELECTRICAL CONNECTIONS

WARNING

BEFORE CARRYING OUT ANY WORK ON THE EQUIPMENT, MAKE SURE THE ELECTRICAL POWER SUPPLY IS DISCONNECTED AND THERE IS NO POSSIBILITY OF THE UNIT BEING STARTED INADVERTENTLY. ALSO MAKE SURE THAT THE ALARM INDICATOR CABLES ARE DISCONNECTED.

NON-COMPLIANCE WITH THE ABOVE INSTRUCTIONS CAN LEAD TO INJURY OR DEATH BY ELECTROCUTION.

The electrical installation must be performed by a fully qualified electrician, and in accordance with local electrical standards and the wiring diagram corresponding to the unit model.

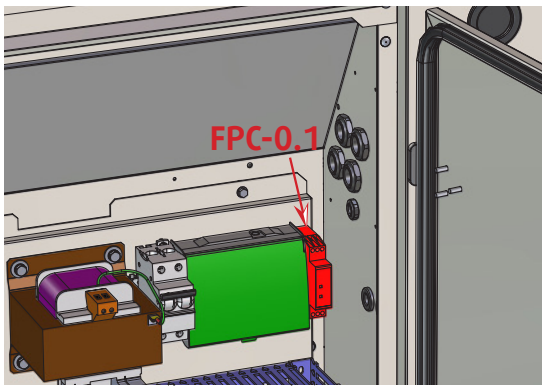
Any modification made without our consent will void the unit's warranty.

The power supply cable section must be sufficient to provide the appropriate voltage to the unit's power supply terminals, both at start-up and under full load operating conditions.

The power supply cable shall be selected in accordance with the following criteria:

1. Power supply cable length.
2. Maximum current draw of unit in operation.
3. Maximum current draw of unit at start-up
4. Installation method of power supply cables.

It is recommended to provide short circuit protection by means of a type aM fuse or a circuit breaker with high breaking capacity on the distribution board. Protection must be selected according to the current values shown in § Electric specifications, page 16



VERY IMPORTANT:

3N~400V-50HZ

The outdoor unit is equipped as standard with a phase sequence and cut-out controller located in the electrical box.

THE LEDS INDICATE THE FOLLOWING CONDITIONS:

Green LED = 1

Yellow LED =1

Power ON

The compressor rotation direction is correct.

Green LED = 1

Yellow LED =0

Phase inversion or phase absent (L1)

The compressor and the fans do not start.

Green LED = 0

Yellow LED =0

Phase absent (L2 or L3)

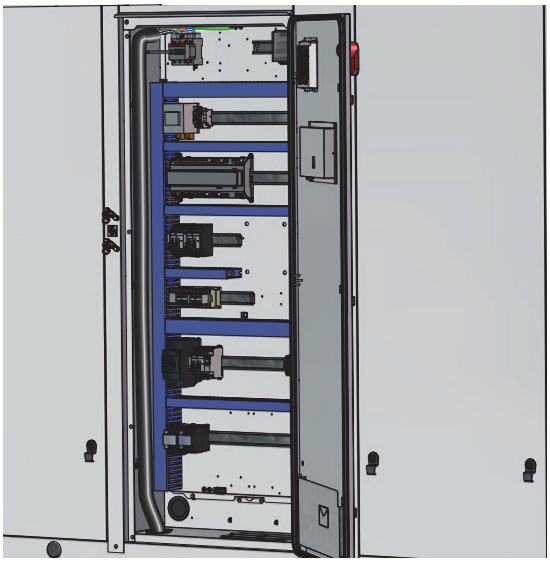
The compressor and the fans do not start.

CAUTION Supplying the unit with a line with an unbalance exceeding the acceptable value results in cancelling the warranty.

CAUTION Correction of the excessive centralized power factor (>0.95) may generate transient phenomena dangerous for the motors and contactors of the unit during the start and stop phases. Check instant voltages during these phases.

These units are equipped with a local switch used as general terminal board.

13.1. UNIT POWER SUPPLY

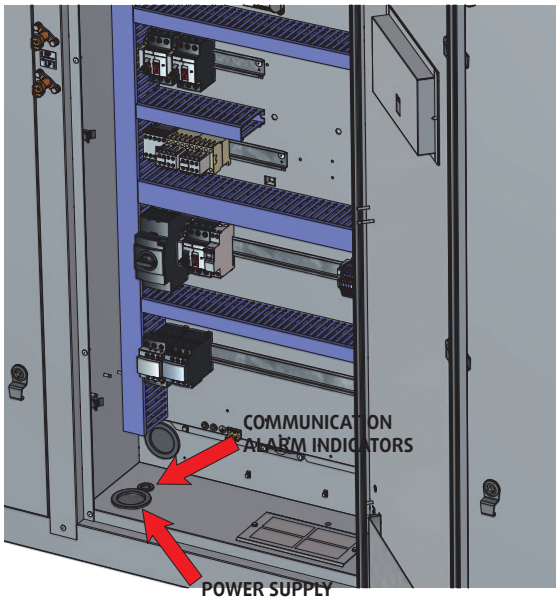


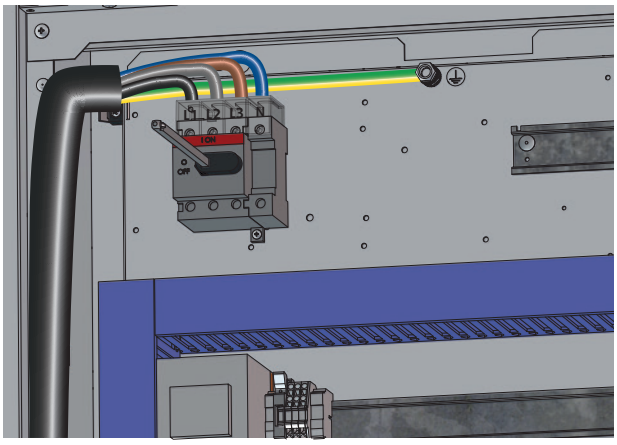
The supply cables of the units must be routed up to the section switch through the grommets present at the base of the electrical unit.

To ensure proper contact, fit the end pieces adapted to the cross-section of the connecting cable.

Maximum cross-section of the power supply cables (for copper cable only):

- ECOi-W AQUA-Z 70 – 85: 35 mm²
- ECOi-W-AQUA-Z 115 - 130: 50mm²



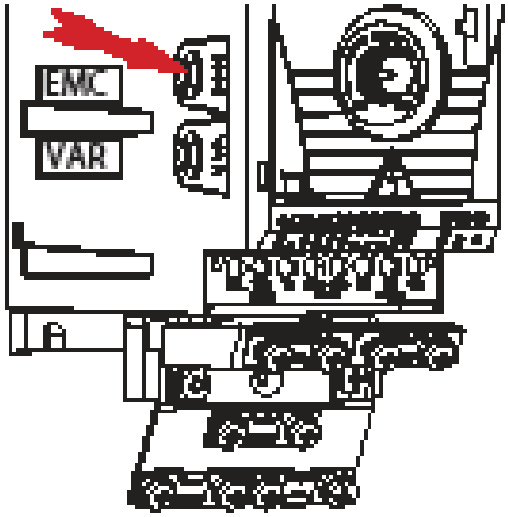


The illustration shows the wiring of 3N~400V-50Hz

INFORMATION The wire grommets on the front panels of units must be replaced with cable glands for any cable transits to ensure proper sealing.

13.2. OPTIONS ALL SEASONS AND VARIABLE FLOW PUMP

If you have an IT (ungrounded) system or corner-grounded TN system, disconnect the internal EMC filter by removing the EMC screw.



CAUTION

Disconnect the internal EMC filter when installing the drive on an IT system (an ungrounded power system or a high-resistance-grounded [over 30ohms] power system), otherwise the system will be connected to ground potential through the EMC filter capacitors. This may cause danger or damage the drive.

Disconnect the internal EMC filter when installing the drive on a corner-grounded TN system, otherwise the drive will be damaged.

13.3. ELECTRIC HEATING OPTION

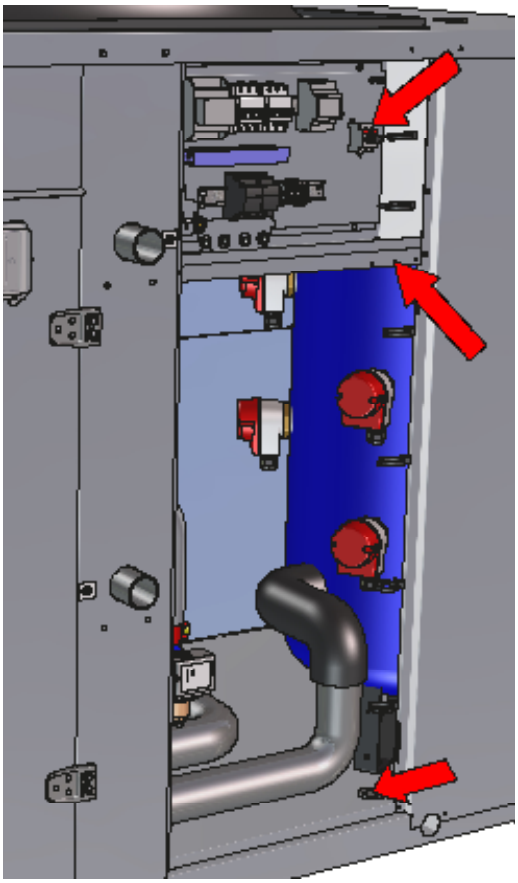
The power cable for the electric heating must be routed to the disconnecting switch through the cable glands at the bottom of the unit.

To ensure proper contact, fit the end pieces adapted to the cross-section of the connecting cable.

Maximum cross-section of the power supply cables:

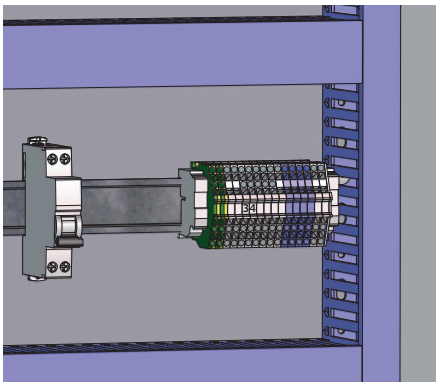
- 12kW 10mm²
- 24kW / 36kW 35mm²

copper cable only



13.4. ALARM INDICATORS

The **ECOi-W AQUA-Z** control system has a dedicated alarm indicator. This information is available via a dry contact (Normally Closed) by connecting to the unit's terminals 3 and 4.



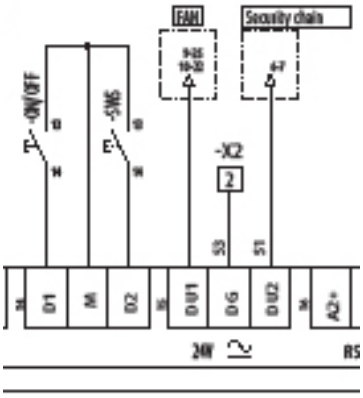
CAUTION

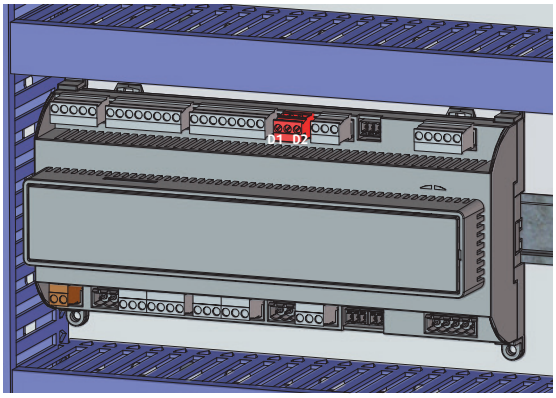
The unit must only be rendered accessible for maintenance if the client cables connected to terminals 3 and 4 are locked out/tagged out (disconnected or rendered inoperative upstream of the unit).

13.5. REMOTE CONTROL

The **ECOi-W AQUA-Z** has two remote controls operating via dry contacts (not supplied):

- ON/OFF function connected to terminals D1 and M on the controller
- operating mode selection (SWS) connected to terminals D2 and M on the controller

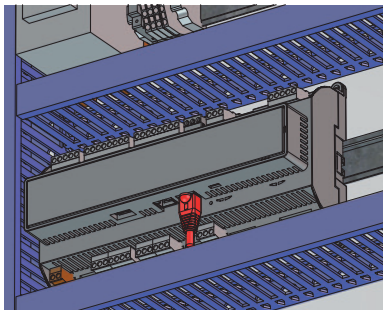




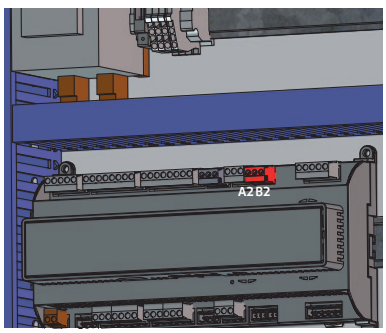
13.6. COMMUNICATION

The **ECOi-W AQUA-Z** has four different communication protocols:

- Modbus TCP/IP
- BACNet IP
- Modbus RTU
- BACNet MS/TP



Modbus TCP/IP or BACNet IP communications are via an RJ45 connector and Ethernet type connector.



Modbus RTU or BACNet MS/TP communications are via the RS485 connection on the controller (terminals A2 and B2) and a BUS type cable (1 twisted pair, shielded) with a 0.22 mm² cross-section.

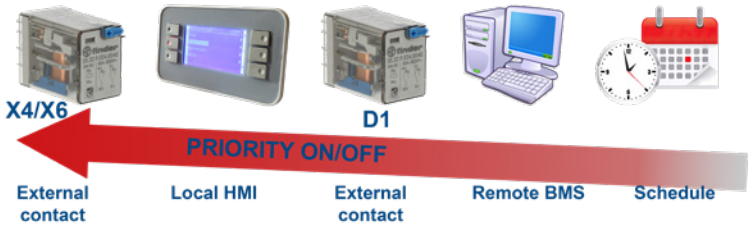
14. REGULATION

ECOi-W AQUA-Z units are fitted with an electronic control system. It provides the command, control and alarm functions.

14.1. ORDER OF PRIORITY FOR CONTROL SYSTEMS

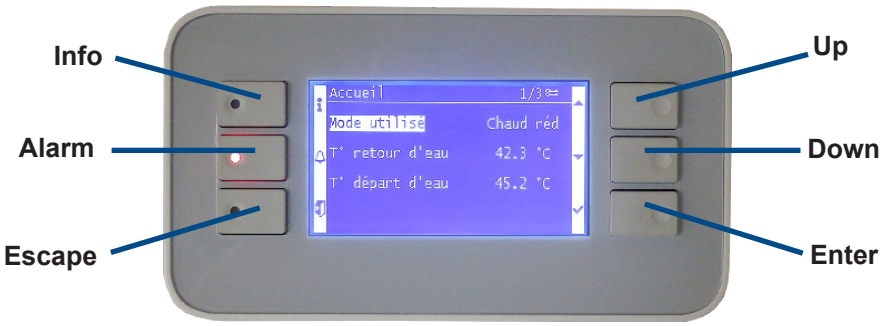
The **ECOi-W AQUA-Z** can be controlled by various interfaces and systems. The order of priority for each drive system is as follows:

1. The HMI: the commands are given by the user directly on the unit (integrated display) or remotely (remote display)
2. Digital inputs: the client can transmit commands electro-mechanically over 2 dry contacts:
   - ✔ Input D1: ON/OFF
   - ✔ Input D2: configurable
3. The BMS: the remote supervision transmits it commands according to the communication protocols
4. Timing programming: this scheduling is integrated in the regulator



14.2. USER INTERFACE

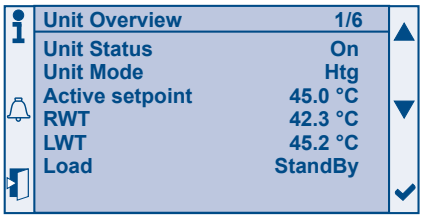
This terminal has a liquid crystal display and has 6 buttons.



14.2.1. KEYPAD

INFO	From any screen, this button returns the user to the main menu or home screen and, like the ESCAPE button, invalidates a current modification.
ALARM	When pressing the alarm button (the red LED flashes if an alarm is active), the alarm management menu is displayed. (see § alarms)
ESCAPE	Returns to the previous level in the menu tree. Pressing this button during modification invalidates the change being made and returns the user to the previous menu. This function is very important if a setting is inadvertently modified.
UP/DOWN	These buttons have two functions. **1.** In a menu, they are used to move up and down the list of possible options. **2.** They can change the value of a setting when it has been selected.
ENTER	This button has three functions **1.** It is used to access a submenu **2.** Activate the modification of a setting **3.** Validate the modification of a setting

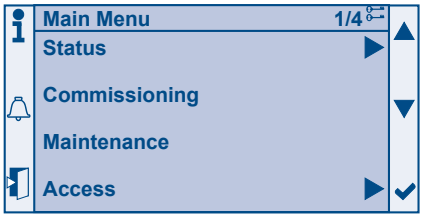
14.2.2. HOME PAGE



The home page is used to display quickly:

- ➢ the unit status (On/Off/Delegated/Reduced mode)
- ➢ the operating mode (cold/hot)
- ➢ the setpoint temperature
- ➢ the inlet water temperature (RWT)
- ➢ the flow water temperature (LWT)
- ➢ the unit load.

14.2.3. MAIN MENU

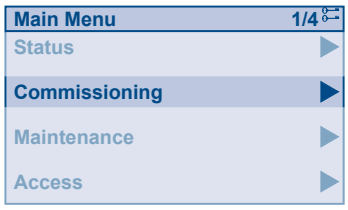


Pressing the "Info" button displays this screen directly.

The authorized menus are displayed according to the access level selected:

Access level	Final user	Installer	Maintenance
"Access" menu	✔	✔	✔
"Status" menu	✔	✔	✔
"Commissioning" menu	✘	✔	✔
"Maintenance" menu	✘	✘	✔
"Alarms" menu	✔	✔	✔

14.2.4. MENUS



The display has several menus. The "Status" menu is freely accessible. The other "Commissioning" and "Maintenance" menus can be displayed and accessed according to the access level.

To change the access level, go to the "Access" menu and enter the password corresponding to the level.

The first line of all the screens integrates the following information:

- ➢ Screen title
- ➢ Number of the active line/number of lines of the menu
- ➢ Access level
  - ✔ Final user
  - ✔ Installer
  - ✔ Maintenance

14.3. INITIAL SETTINGS

Open the electrical box and check that all circuit breakers are open except for **FTCC-0.1**

Before starting up the **ECOi-W AQUA-Z** for the first time, the "Installation" menu must be configured.

14.3.1. LANGUAGE SETTINGS

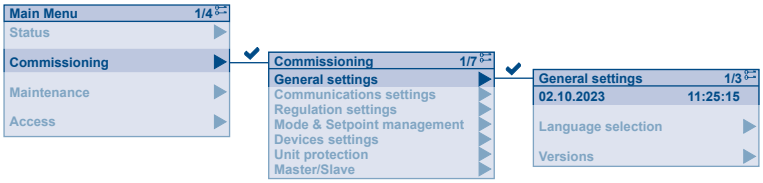
Select the languages required according to the application.

14.3.2. TIME SETTINGS

CAUTION **If the date and time are not set, the unit will function in degraded mode or may not even be able to start.**

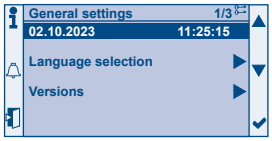
Start by configuring the date and time.

To do so, switch to the "Installer" or "Maintenance" profile in the "General settings" section. The first line of the menu is used to set the date and time.



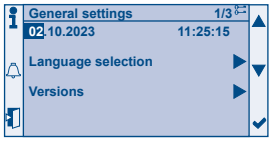
The date and time line will appear as highlighted.

Press the "Enter" button ✔ to activate the change in date.



The ▲ and ▼ buttons are used to change the highlighted setting.

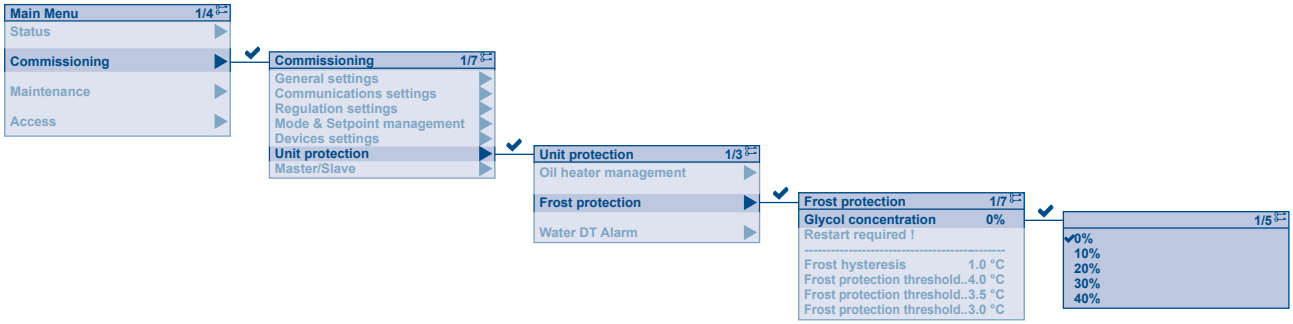
Press once on the ✔ button to approve the defined value and move on to the next setting.



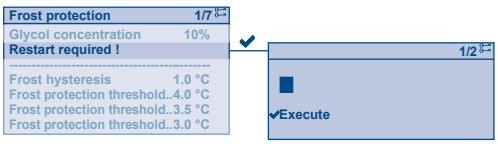
INFORMATION Power outage lasting longer than 8hrs will lead to a loss of the time setting. It is important to set the unit back to the right time after such an event.

14.3.3. DEFINING THE GLYCOL RATE

Define the glycol content present in the installation water circuit.



CAUTION **The settings are not changed until the controller is restarted**



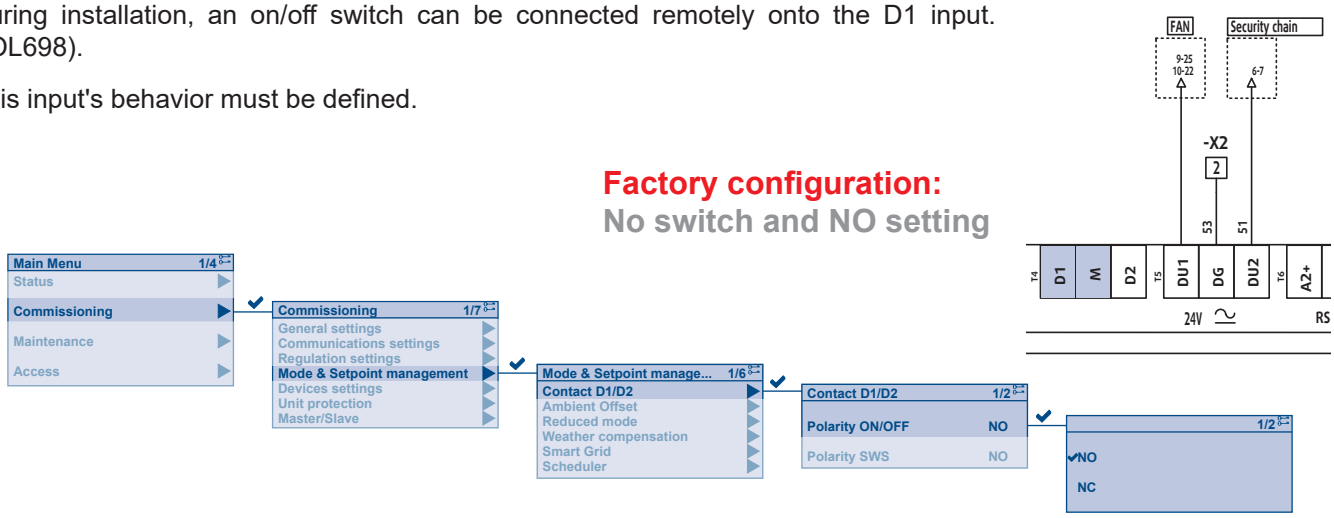
14.4. LAUNCHING THE ECOI-W AQUA-Z SYSTEM

14.4.1. CONFIGURING INPUT ON/OFF (D1)

During installation, an on/off switch can be connected remotely onto the D1 input. POL698).

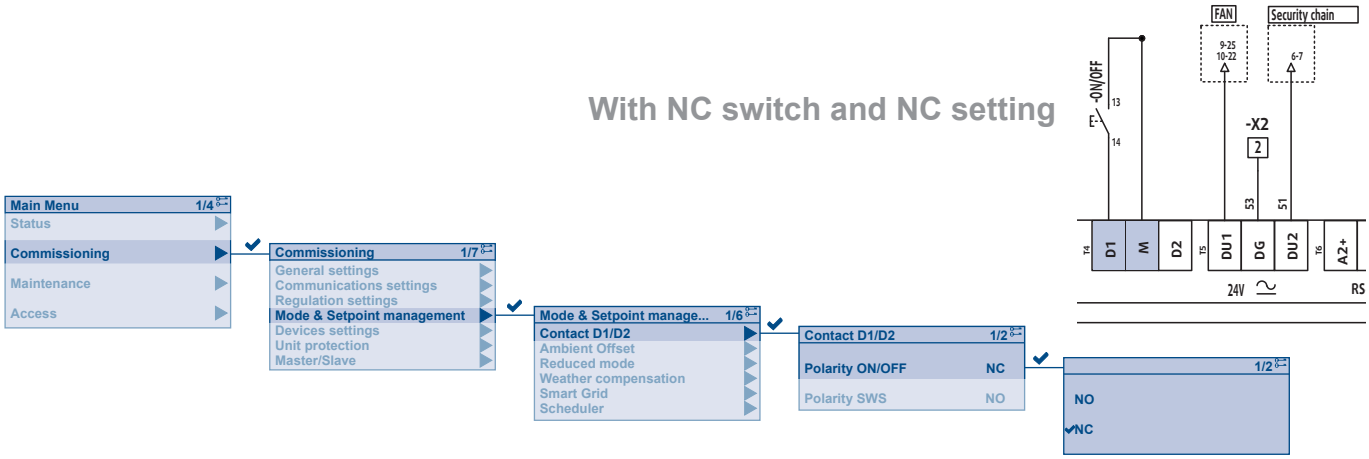
This input's behavior must be defined.

Factory configuration:
No switch and NO setting



NO: the **ECOi-W AQUA-Z** can only be started if the contact is open.

With NC switch and NC setting

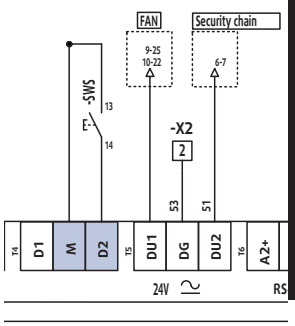


NF: the **ECOi-W AQUA-Z** can only be started if the contact is closed.

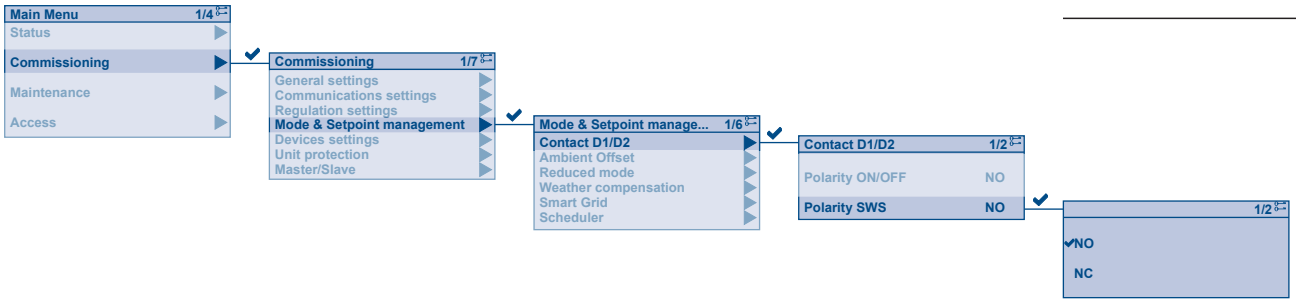
Configuration	Contact open	Contact closed
Normally Open NO	Operation order (ON)	Stop order
Normally Closed NC	Stop order	Operation order (ON)

14.4.2. CONFIGURING INPUT SUMMER/WINTER (D2)

During installation, a switch SWS can be connected to the D2 digital input (POL698). It is essential to set the switch type (NO or NC) to obtain the desired operating mode.



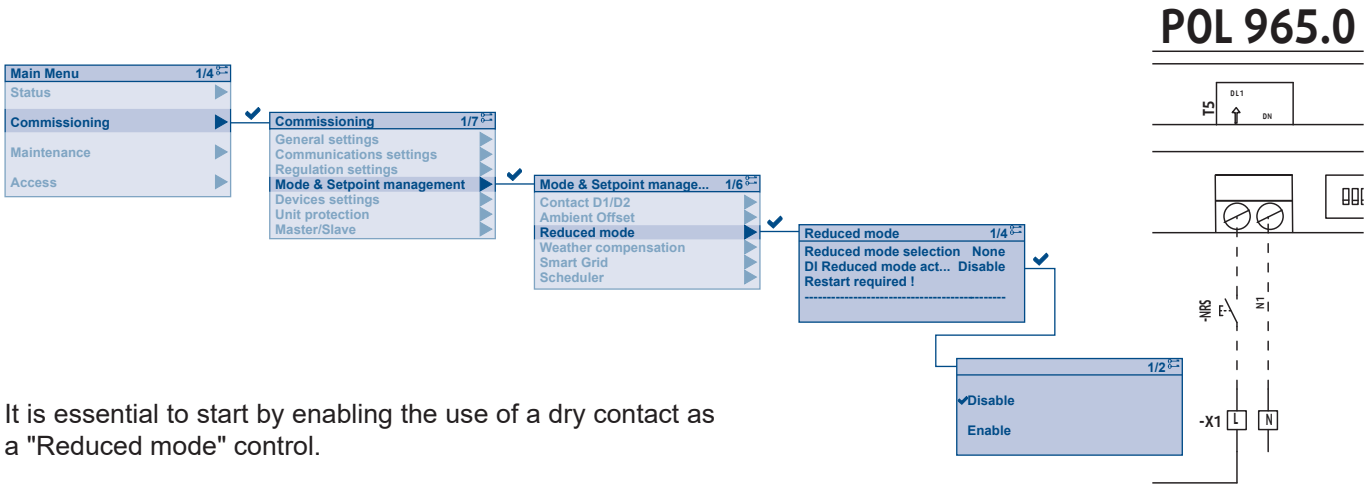
Configuration	Contact open	Contact closed
Normally Open NO	Cooling mode	Heating mode
Normally Closed NC	Heating mode	Cooling mode



14.4.3. CONFIGURING INPUT REDUCED MODE (DL1)

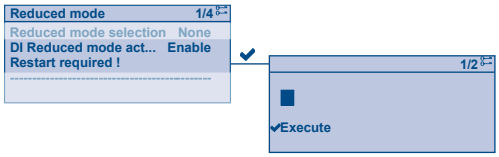
During installation, a switch NRS can be connected to the DL1 digital input (POL965).

The reduced mode defined for this input takes priority over all control systems such as the HML, BMS or calendar.

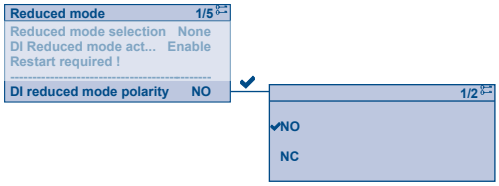


It is essential to start by enabling the use of a dry contact as a "Reduced mode" control.

CAUTION **The settings are not changed until the controller is restarted**



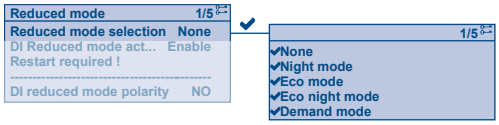
Secondly, you need to set the switch type (NO or NC) to enable or disable reduced mode.



Configuration	Contact open	Contact closed
Normally Open NO	Normal mode	Reduced mode
Normally Closed NC	Reduced mode	Normal mode

Reduced mode can be configured with the function values defined below.

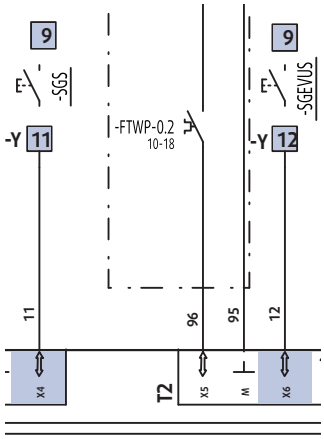
- ➢ None
- ➢ Night mode
- ➢ Eco mode
- ➢ Eco night mode
- ➢ Demand mode

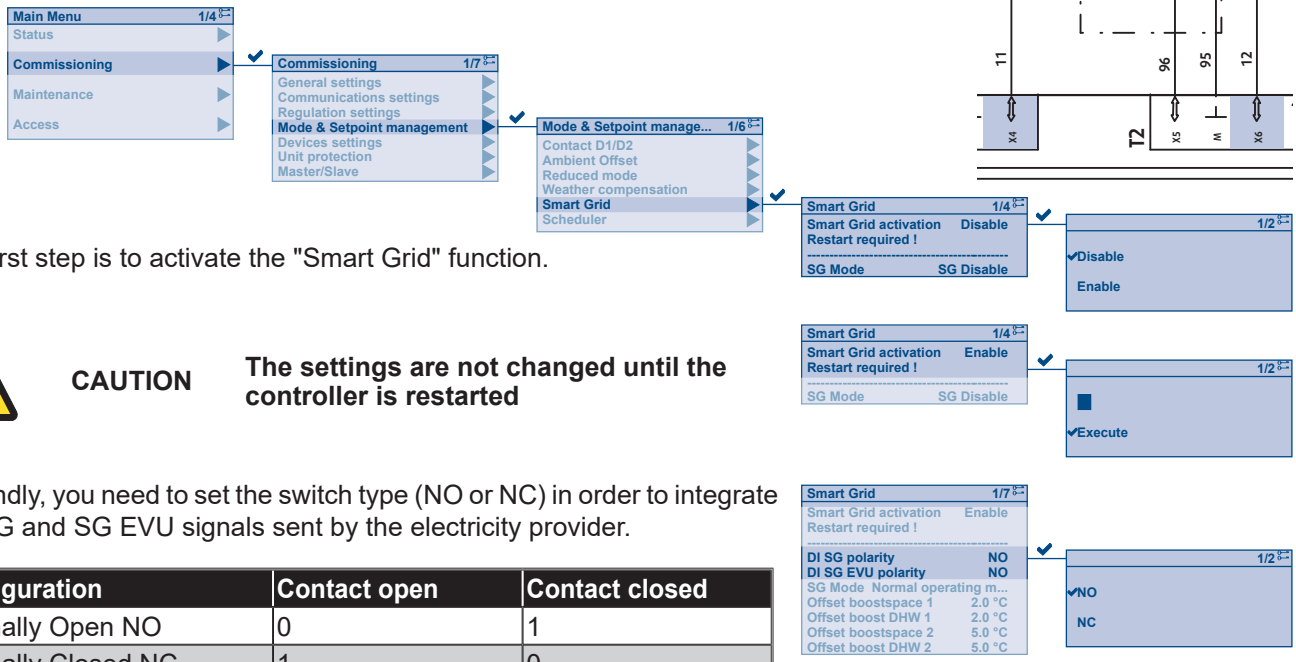


14.4.4. CONFIGURING SMART GRID INPUT (X4 AND X6)

During installation, the switches SGS and SGEVU can be connected onto the X4 and X6 (POL965) digital inputs.

The "Smart grid" mode defined for these inputs takes priority over all control systems such as the HMI, BMS or calendar.





The first step is to activate the "Smart Grid" function.

CAUTION **The settings are not changed until the controller is restarted**

Secondly, you need to set the switch type (NO or NC) in order to integrate the SG and SG EVU signals sent by the electricity provider.

Configuration	Contact open	Contact closed
Normally Open NO	0	1
Normally Closed NC	1	0

Depending on the combination of SG and SG EVU signals, four operating modes are possible:

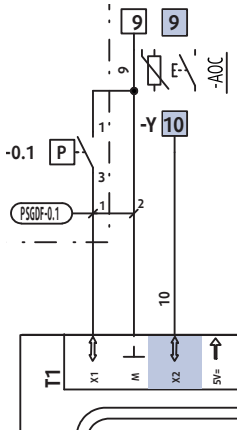
SG (1)	SG EVU (1)	OPERATING MODE
0	0	Normal operating mode
1	0	Forced OFF
0	1	Boost mode 1
1	1	Boost mode 2

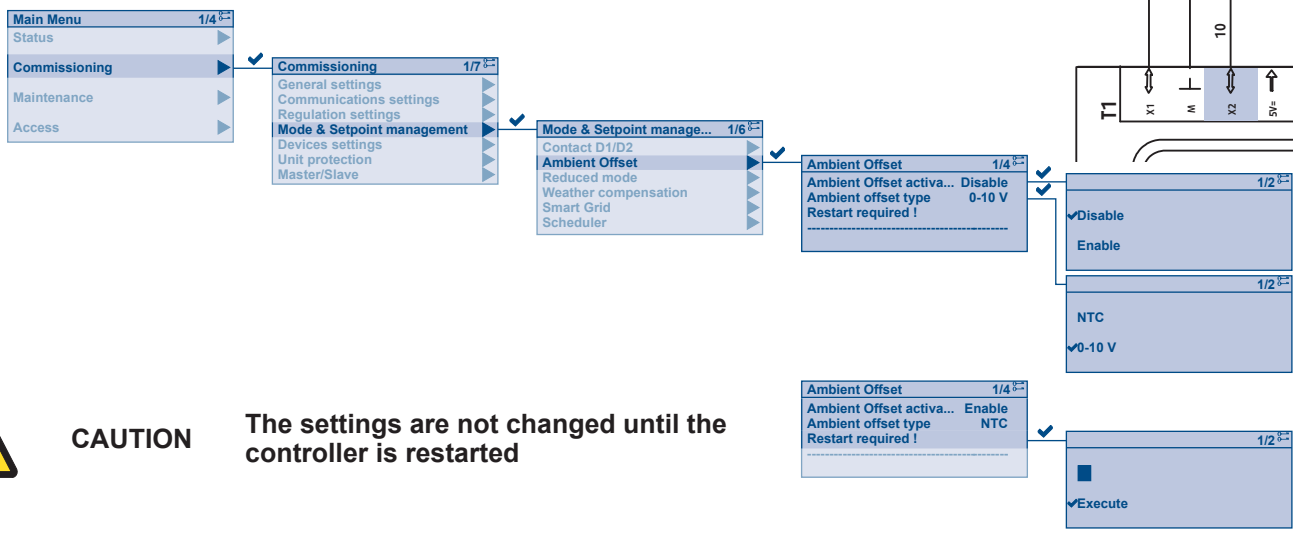
(1) SGS and SGEVU contacts are configured as NO.

14.4.5. CONFIGURATION OF AIR LAW INLET (X2)

During installation, an air temperature sensor can be connected onto the X2 (POL965) digital input.

The use of a remote air temperature sensor must be enabled. The type of sensor installed must be configured in the controller.



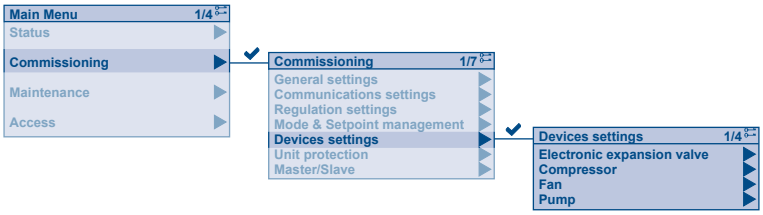


CAUTION **The settings are not changed until the controller is restarted**

14.5. LAUNCHING THE ECOI-W AQUA-Z SYSTEM

The settings for the various modes and operating instructions are detailed in the machine's user manual.

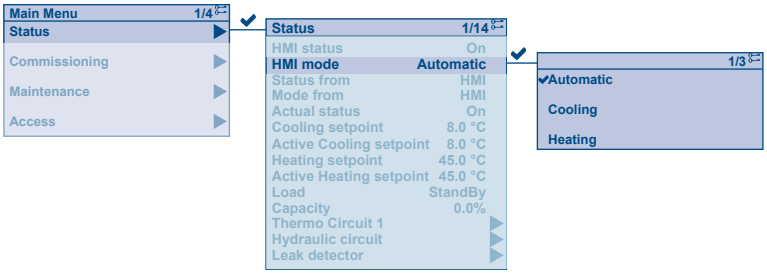
The settings and controls for the various components are described in detail in the machine's user manual.



14.5.1. SELECTING THE OPERATING MODE

The operating mode can be chosen in the "HMI mode":

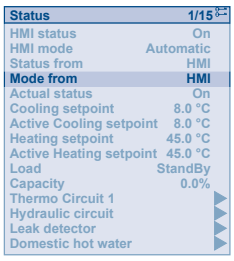
- ➢ **Automatic:** delegated to the BMS/Auto-change-over (refer to the UM)
- ➢ **Cooling:** request for cool mode
- ➢ **Heating:** request for heat mode



INFORMATION Selection of the Automatic/Cooling/Heating mode is only possible in reversible units. This menu does not exist in the "cool only" versions.

The "Mode from" line states what is the trigger for the current operating mode:

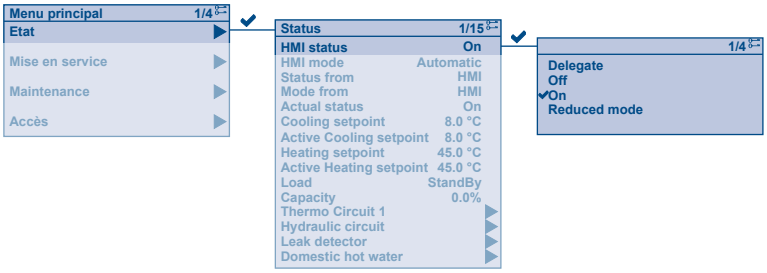
- ➢ **DHW**
- ➢ **DI S/W**
- ➢ **HMI**
- ➢ **BMS**
- ➢ **CascadeBMS**
- ➢ **Cascade**



14.5.3. SELECTING THE OPERATING STATUS

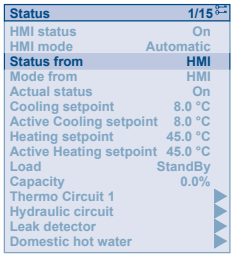
To launch the unit, the user must select the desired mode in the menu:

- **Delegate:** the current mode is determined by the BMS or by default by the calendar (refer to the user manual)
- **Off:** Unit is stopped
- **On:** System is launched
- **Reduced mode**



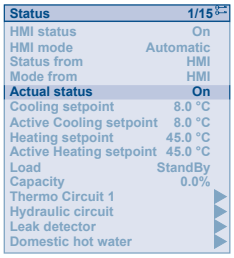
The "Status from" line states what is the trigger for the current status:

- **Scheduler**
- **DI On-Off**: **D1** on/off digital input
- **Reduced DI: DL1** configurable digital input (for “Night mode”, “Eco mode”, “Night eco mode” or “Request mode”)
- **SG:** Smart Grid mode
- **HMI**
- **BMS**
- **Cascade**



The “Actual status” line shows the current status:

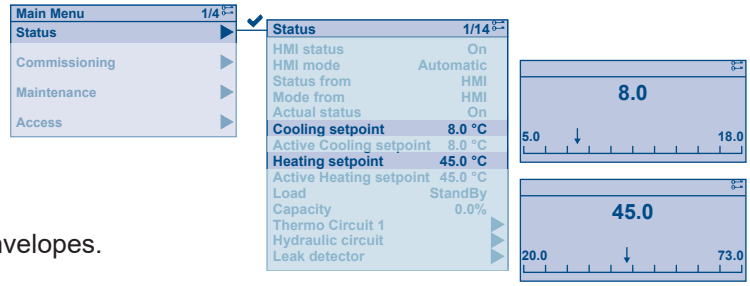
- **On**
- **Off**
- **Reduced mode**



14.5.2. USER TEMPERATURE SETPOINTS AND ACTUAL SETPOINTS

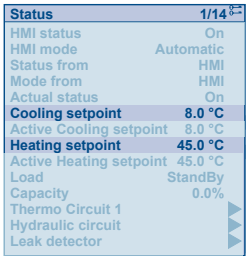
In the Status menu, the user can set start or return temperature setpoints, according to the control mode selected:

- **Cooling setpoint** : temperature setpoint for the cool mode
- **Heating setpoint** : temperature setpoint for the heat mode



These setpoints are limited to the unit’s operating envelopes.

- **Active Cooling setpoint** : current setpoint for cooling mode
- **Active Heating setpoint** : current setpoint for heating mode



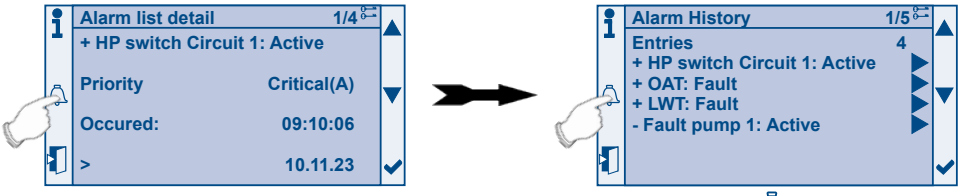
Adjustment by activating the "Smart Grid", "Reduced mode", "Ambient Offset" or “Water law” options will cause the setpoints to vary automatically according to external conditions.

Actual heating and cooling setpoints match the values utilized in real time for optimal operation of units

INFORMATION Regardless of the adjustment, the resulting setpoint is restricted to the operating limits to protect the unit.

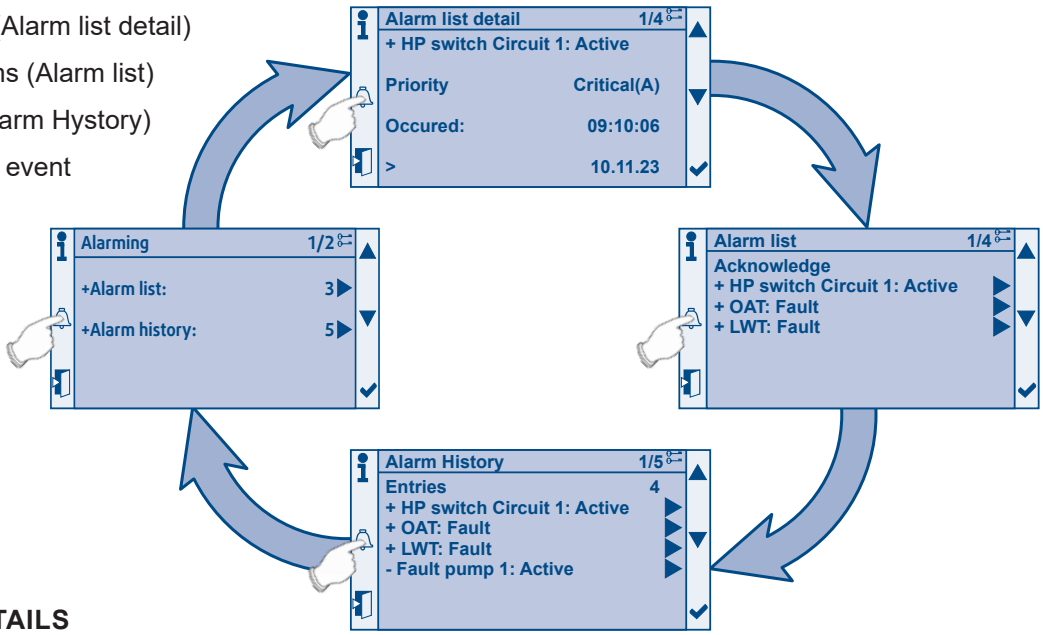
14.6. ALARMS

If no alarm is active, pressing the "Alarm" button takes you to the alarm history



If at least one alarm or event is active, the alarm button flashes. Pressing the "alarm" button, will display successively :

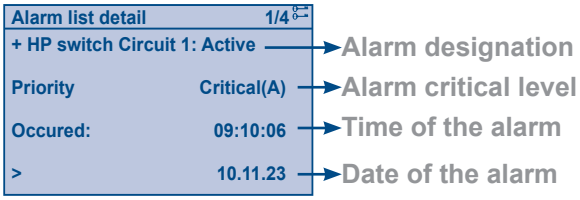
- The last active alarm (Alarm list detail)
- The list of active alarms (Alarm list)
- The alarms history (Alarm Hystory)
- The alarms menu and event (Alarming)



14.6.1. ALARM DETAILS

This page is displayed :

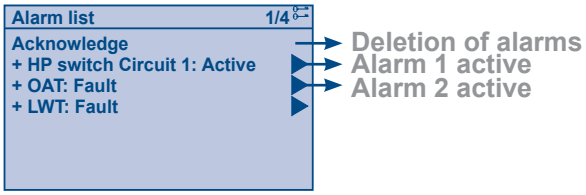
- Details of the last active alarm
- If you request the details of an alarm in the list of active alarms
- If you request the details of an alarm in the alarms history



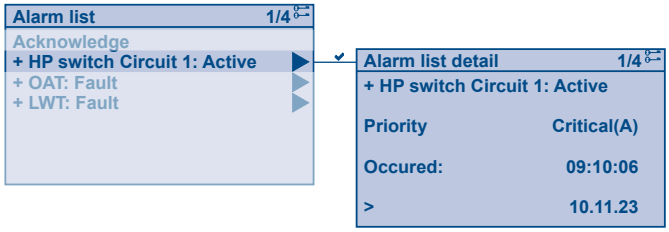
14.6.2. THE LIST OF ACTIVE ALARMS

The list of active alarms allows visualization of current alarms

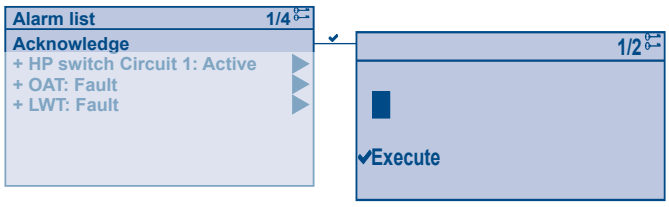
The first line shows the number of active alarms (3 in the example below)



You can access the alarm details by selecting an alarm and pressing the "Enter" button ✔.



With installation or maintenance level access, you can acknowledge active blocking alarms. To do this select delete, confirm and select "Execute". Only the alarms that are no longer active will be deleted from the list.

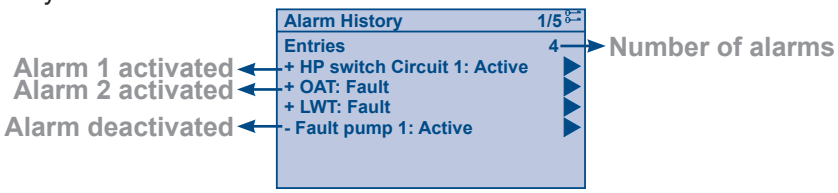


14.6.3. ALARMS HISTORY

This history reports the 150 most recent activation or deactivation of alarms:

➢ Activation of an alarm will be indicated by a "**+**"

➢ Deactivation of an alarm will be indicated by a "**-**"



For the activation and deactivation time of an alarm, select the alarm and press the "enter" button ✔.

15. COMMISSIONING

INFORMATION The commissioning form available in the annex must be completed, handed to the operator and sent to the manufacturer as a prior condition for the warranty to apply.

CAUTION

When performing startup and service, thorough safety precautions shall always be taken.

Only a skilled person who is trained in the handling of refrigerating systems (as per standard EN13313) and flammable fluids (certified and with proof of relevant training) may carry out this work.

15.1. PRE-START CHECK LIST

Before commissioning the system, you must carry out a certain number of installation checks to ensure that the appliance will operate in the best possible conditions. The following list of checks is not exhaustive and only serves as a minimum reference guide.

1. Make sure that no source of ignition is present in the work area
2. Make sure that the work area is adequately ventilated
3. Make sure that suitable fire extinguishing equipment is available and within reach
4. Make sure that the concentration of R32 in the atmosphere of the work area is continuously controlled in order to be able to warn people of a potentially hazardous situation.
5. Check that the equipment installed, including options, matches the order
6. Check that the oil heating resistors have been energized for at least 12 hours.

15.1.1. VISUAL CHECK

1. Check the lack of debris or cardboard in the unit.
2. Check free clearances around the unit :
   - ✔ exchanger air intake
   - ✔ exchanger air outlet
   - ✔ access or maintenance work.
3. Unit mounted as specified.
4. Check that the unit is level and that condensates drain freely away from the unit (for Heat pump units).
5. Check that there is no possibility of blown air being recycled through the fans due to wind exposure.
6. In arduous climates (sub-zero temperature, snow, high humidity), check that the appliance is raised 10 cm off ground.
7. For loose or missing bolts or screws.
8. For refrigerant leaks in connections and components.

15.1.2. ELECTRICAL CHECK

1. Electrical installation has been carried out according to unit wiring diagram and the Supply Authority Regulations in effect.
2. Size fuses or circuit breaker has been installed at the main switchboard.
3. Supply voltages as specified on unit wiring diagram.
4. **Check that all of the appliance's electrical connections have been tightened.**
5. Check that the electric motors are planned for the network supply voltage.
6. The cables and wires are clear of or protected from pipework and sharp edges.
7. Check the electrical grounding of the appliance.
8. Check that the frequency inverters are consistent with the neutral point treatment of the unit (Refer to the § **Options all seasons and variable flow pump**, page 31)

15.1.3. HYDRAULIC CHECK

1. Check that the external water circuit components (pumps, user equipment, filters, expansion tank and reservoir if supplied) have been correctly installed in accordance with the manufacturer's recommendations and that the water inlet and outlet connections are correct.
2. Check that the water quality complies with the indicated standards (Refer to the § **Water quality**, page 25).
3. Check that draining caps have been properly closed.
4. Check that the air vent in the unit has been opened.
5. **Check the presence, direction and position of the water filter upstream of the appliance (mailles ≤ 800µm).**
6. Check the presence and position of the stop valves to isolate the unit during maintenance periods.
7. Check that the hydraulic circuit is filled correctly and that the fluid flows freely without any signs of leaks or air bubbles. When glycol anti-freeze is used, check that the concentration level is correct.
8. Check that the pump liners are not stuck. The shaft of the motor must turn freely "by hand". If necessary, free up the shaft using a tool.
9. Check the direction of rotation of the pump and leave the fluid to circulate for at least 12 hours for each pump. Then clean the pump inlet water filter.
10. Adjust the water flow in order to comply with the specifications.

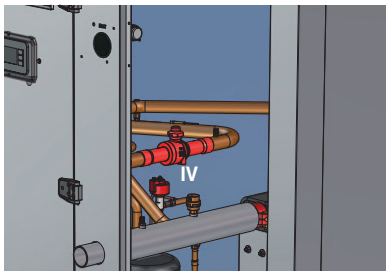
15.1.4. REFRIGERATION CHECK

1. Leak test of the refrigeration circuit at the unions and on the various parts. The desired result is 5g/year maximum
2. Check that the fluid indicator is green (set by the factory) indicating absence of humidity.

CAUTION

The refrigeration circuit is equipped with a IV isolating valve between the plate exchanger and the compressor.

This valve used during the assembly process is open and MUST NOT BE CLOSED UNDER ANY CIRCUMSTANCES DURING OPERATION.



15.1.5. ELECTRICAL CHECK

1. Electrical installation has been carried out according to the unit wiring diagram and the Supply Authority Regulations in effect.
2. A correctly sized fuse or circuit breaker has been installed at the main switchboard.
3. Supply voltages as specified on the unit wiring diagram.
4. **Check that all of the appliance's electrical connections have been tightened.**
5. Check that no cables are in contact with pipes and/or sharp edges.
6. Check the electrical grounding of the appliance.

15.2. UNIT START-UP

15.2.1. PHASE ROTATION PROTECTION

If the phase of the power supply is not correct, the phase rotation protection device will prevent the machine from starting (Refer to the § **ECOi-W-AQUA-Z 115 - 130: 50mm2**, page 30).

If phase rotation is correct, close all circuit breakers.

15.2.2. FIRST START-UP

When starting up the unit, it is necessary to first energize the compressor casing resistors to evaporate the fluid and oil. The resistors are activated when the unit is switched on (including in standby mode). The controller will prevent start-up if the system is not ready.

INFORMATION The panel on the safety fan side must be present to prevent the machine performing a safety shutdown (checking of DP of fan MV)

INFORMATION Every time the ECOi-W AQUA-Z is powered up, a 3-minute safety cycle runs to check the gas detection board is working correctly. During that cycle, the extractor fan (MV) is tested and the ECOi-W AQUA-Z cannot start up. The RC Card alert is displayed. At the end of the checking cycle the alarm is canceled automatically and the thermodynamic cycle can start.

Depending on the time of year and the customer requirement:

1. Configure hot/cold mode
2. Start up the unit in manual mode: ON (Refer to the § **Selecting the operating mode**, page 40).

15.2.3. OPERATING CHECK LIST

1. Cheek for any unusual noises or vibration in the running components.

2. Leak check of the refrigeration circuit in operation. The desired result is 5g/year maximum.

3. Adjust the water flow according to the desired DT for the water (in § **PRESSURE LOSSES OF THE PLATE HEAT EXCHANGER**, page XXII).

- ✔ Check pressure at the inlet and outlet of the plate exchanger
- ✔ Determine the water flow using a flowmeter or the load loss of the plate exchanger

4. Take a reading of the currents at the compressor, fan and pump terminals.

5. Check there is no dampness during operation: green fluid indicator

6. Take a temperature reading of the cooling and hydraulic circuits after 20 minutes of stabilization, using the controller display.

- ✔ Check the operating pressures are within normal limits.
- ✔ Check discharge, suction and liquid temperatures
  - Discharge temperature on the cooling cycle should normally not exceed 115°C.
  - Suction superheat should be 6K ±2K.
  - Suction subcooling should be 5K ±2K.

INFORMATION It is very important that the unit should operate with a water flow that conforms to the recommendations shown in § **Physical characteristics - ECOi-W AQUA-Z C - AC version**, page 13. It is dangerous to leave the unit running with a low water flow; this could cause irreparable damage to the components and the plate exchanger. If the unit operates with insufficient flow, its performance will not be optimal.

15.2.4. PUMP MANAGEMENT

In the case of double pump option, both pumps never operate simultaneously: second pump will be started only in case of failure of the first one.

Both pumps are marked with numbers 1 and 2 corresponding to the pump selection switch in the HMI.

The pump change is not automatic. A qualified technician must operate manually. (Refer to the § **Procedure to switch from one pump to other**, page 55)

1.1.1. FINAL CHECK

1. All panels and fan guards are in place and secured.
2. Unit clean and free of any installation material.

It is the installer's responsibility to complete the "ON-SITE INFORMATION" form provided in the annex and to hand it to the operator. That document explains what to do in the event of an emergency.

The installer must also provide suitably protected documentation that must remain close to the refrigerating system operating site and be clearly legible.

16. IN CASE OF WARRANTY - MATERIAL RETURN PROCEDURE

Material must not be returned without permission of our After Sales Department.

To return the material, contact your nearest sales office (Refer to the § **ECOi-W-AQUA-Z 115 - 130: 50mm2**, page 30) and ask for a "return form". The return form shall be sent with the returned material and shall contain all necessary information concerning the problem encountered.

The return of the part is not an order for replacement. Therefore, a purchase order must be entered through your nearest distributor or regional sales office. The order should include part name, part number, model number and serial number of the unit involved.

Following our personal inspection of the returned part, and if it is determined that the failure is due to faulty material or workmanship, and in warranty, credit will be issued on customer's purchase order. All parts shall be returned to our factory, transportation charges prepaid.

17. ORDERING SERVICE AND SPARE PARTS ORDER

The part number, the order confirmation and the unit serial number indicated on the name plate must be provided whenever service works or spare parts are ordered.

For any spare part order, indicate the date of unit installation and date of failure. Use the part number provided by our service spare parts, if it not available, provide full description of the part required.

18. MAINTENANCE

Simple preventive maintenance ensures longevity of your **ECOi-W AQUA-Z** :

- ➢ Better refrigeration performance
- ➢ Reduced power consumption
- ➢ Accidental component breakage prevention
- ➢ Prevention of heavy, late, and expensive interventions
- ➢ Environment protection

Depending on actual operational constraints and regulatory changes, the installer might recommend increased maintenance operations and more frequent inspections.

Prior to carrying out any work on the unit, the following precautions should be adhered to:

1. Make sure that no source of ignition is present in the work area
2. Make sure that the work area is adequately ventilated
3. Make sure that suitable fire extinguishing equipment is available and within reach
4. Make sure that the concentration of R32 in the atmosphere of the work area is continuously controlled in order to be able to warn people of a potentially hazardous situation.
5. Make sure that all electrical power sources are switched off.

CAUTION The user is responsible for ensuring that the unit is in perfect working order and that the technical installation and minimum maintenance operations have been performed by a qualified technician in accordance with the procedures described in the present manual.

18.1. WEEKLY CHECK

Inspect the entire running installation, while paying particular attention to :

- ➢ any damage on the **ECOi-W AQUA-Z** housing
- ➢ any traces of oil (sign of refrigerating fluid leak)
- ➢ any water leak
- ➢ the presence of removed protections, doors or lids improperly closed
- ➢ the coil's cleanliness.

Check:

- ➢ the oil level of the compressors (use sight glass on the oil equalization pipe of compressor tandems)
- ➢ the humidity rate of the refrigerating fluid using the fluid indicator
- ➢ the operating pressure of the installation
- ➢ the water temperature at the plate exchanger inlet and outlet.

When the **ECOi-W AQUA-Z** is running, perform a sound check of the compressors, pump and fans. Also check that no vibration can cause breakage or wear by vibrating contact.

It is essential to keep an up to date maintenance booklet to record temperature and pressure readings and all checks and maintenance operations performed on the **ECOi-W AQUA-Z**.

CAUTION

All refrigerating fluid charging, sampling and draining operations must be performed by a skilled technician using equipment adapted to the unit, in agreement with authority regulation in effect on site.

Any inappropriate handling may cause uncontrolled fluid venting into the atmosphere.

WARNING

Isolate unit from power supply before working on unit.

WARNING

Opening the refrigeration circuit then involves vacuum drawing, checking the circuit sealing and recharging refrigerating fluid. For any intervention on the refrigerating fluid circuit, first drain the unit's charge using a refrigerating fluid collection station.

18.2. PERIODIC TABLE OF SERVICE AND MAINTENANCE

Tasks per components		Actions	1 month	3 months	6 months	12 months	24 months
			Recommended inspection and maintenance interval				
1 - Casing							
1.1	Control possible contaminations, damage and/or corrosion.	Clean and repair if required.				✘	
1.2	Check the possible presence of water (condensates, leakages,...).	Clean and look for the cause, then repair.			✘		
1.3	Verify thermal insulation aspect	Replace if required.				✘	
1.4	Check the state of the anti-vibration pads	Replace if required.				✘	
1.5	Check the condition of door gasket.	Replace if required.	At each inspection				
2 - REFRIGERANT CIRCUIT							
2.1	Verify oil compressor level when compressors are off			✘			
2.2	Check the lack of gas bubbles in the fluid line			✘			
2.3	Check the lack of humidity in the refrigerating fluid			✘			
2.4	Check the pipes or capillaries do not rub and vibrate.				✘		
2.5	Check the compressors do not emit abnormal noise or vibration.			✘			
2.6	Check the backflow temperature.		✘				
2.7	Record the operating pressure	Check it is above or below those recorded when the unit was started up.	✘				
2.8	Check the compressor fastening screws are tight.				✘		
2.9	Check the crankcase heater are powered on during the stop cycle.		✘				
2.10	Check the cleanliness of the coil.	Clean if required.		✘			
2.11	Test the oil for contamination.	Change the oil if required.				✘	
2.12	Check the filter drier clogging.	Replace if required		✘			
2.13	Check the operation of the high pressure switch.	Replace if required	✘				
2.14	Check the lack of refrigerating fluid leak (visuel + détecteur si nécessaire)	Repair				✘	
2.15	Check the cycle reversal valve				✘		
2.16	Check the condition of the anti-vibration studs	Replace if required			✘		
3 - HYDRAULIC CIRCUIT							
3.1	Check the state of the function, check there is no damage nor corrosion.	Clean and repair.		✘			
3.2	Check the condition of the exchanger, in terms of corrosion and functionality.	Clean and repair.			✘		
3.3	Check the tightening of the pipe connections and fastening	Readjust and repair if necessary.				✘	
3.4	Verify the pressure value of the hydraulic circuit					✘	
3.5	Bleed the air.					✘	
3.6	Run the isolation valves						
3.7	Check there is no ice set.					✘	
3.8	Check the state of the piping thermal insulation.	Repair and replace if required.					
3.9	Check the frost protection devices (glycol-based water, thermostat, …).	Repair and replace if required. When air temperatures are wintery, and after general stoppage of the installation, the water contained in the plate exchanger may freeze. To prevent such problems, fully drain the unused plate exchanger or protect it by pouring an antifreeze solution into the hydraulic circuit or other devices. ⚠ The manufacturer waives any liability for damage to the plate exchanger caused by water freezing inside the unit.	Whenever there is a risk of freezing				

Tasks per components		Actions	1 month	3 months	6 months	12 months	24 months
			Recommended inspection and maintenance interval				
3.10	Check filter cleanliness.	Clean	✘				
3.11	Check that the hydraulic circuit is filled properly		✘				
3.12	Check the condition of the expansion tank (presence of excess corrosion, or gas pressure loss)	Replace if required.	✘				
3.13	Check the water pump	If the unit has not been used for a long time, manually rotate the pump shaft and check that it turns freely. For a unit equipped with a double pump, it is recommended to switch from one pump to the other every month or to check that the pump shaft turns freely to prevent the liners sticking.	✘				
		Change the pump liner after 15,000 hours running with anti-freeze or 25,000 hours running with water.		✘			
3.14	Verify that low water pressure sensor works perfectly		✘				
3.15	Record the water temperatures at the plate exchanger inlet and outlet.		✘				
4 - ELECTRIC CIRCUIT							
4.1	Check the electrical voltage applied to the unit, which must remain stable within the tolerances specified in the information plates.			✘			
4.2	Check that the main supply cable is void of alterations likely to impact the insulation.	Replace if required.		✘			
4.3	Check the grounding of the metallic structure	Repair if required.	✘				
4.4	Inspect the contacts.	Replace if required.	✘				
4.5	Check that all electrical connections of the device are tight	Tighten if required.	✘			✘	
4.6	Check the thermal protection relays of the motors	Replace if required.	✘				
4.7	Check the nominal intensity and condition of the fuses.		✘				
4.8	Check the condition of the condensers.		✘				
4.9	Clean the compressed air electrical unit to remove any dust or other contaminants building up.			✘		✘	
4.10	Check the motor windings are insulated.			✘			
5 - FAN(S)							
5.1	Check the lack of contamination, corrosion or damage.	Clean if required			✘		
5.2	Check proper fastening of the fan.	Tighten if required.			✘		
5.3	Check the vanes to guarantee balancing.	Clean if required.				✘	
5.4	Check the bearings for noise.	Repair if required.	✘				
5.5	Check the condition of the grease and greasers (unless if permanently lubricated).	Re-grease if required (Lithium soap grease DIN 51825-K3N for fans type K, K1, K2).		T>70 °C	✘		
5.6	Check the condition of the fan motor.			✘			
6 - REGULATION							
6.1	Check the condition of the alarms	Acknowledge them after taking them into consideration	✘				
6.2	Check the setting points		✘				
6.3	Check the operation of all probes		✘				

18.3. MAINTENANCE PROCEDURES

18.3.1. GENERALITIES

This equipment must be submitted for sealing checks **at least once per year, by a professional authorized to perform such an operation**. Refer to national requirements for the frequency of these checks.

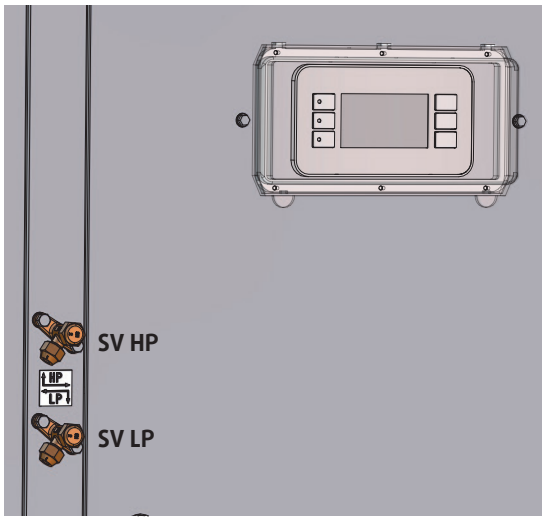
CAUTION Any brazing operation on the cooling circuit must be performed with constant flowing nitrogen.

18.3.2. REFRIGERANT FLUID DRAINING

CAUTION Never use the compressor as a vacuum pump to drain the installation.

Before opening the refrigeration circuit, use the SV HP/SV LP service valves to:

1. drain the unit's charge using a recovery unit compatible with flammable refrigerants (non-sparking electrical components) until a residual pressure of 0.3 bar absolute is obtained.
2. purge the circuit with nitrogen
3. expel at a pressure of 30 kPa absolute
4. perform a second nitrogen purge
5. open the circuit.

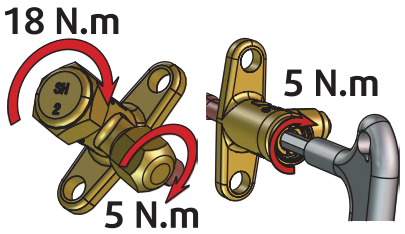


CAUTION When opening the refrigeration circuit, be particularly alert to the presence of residual oil in the circuit. That oil may contain dissolved refrigerant and be potentially flammable.

18.3.3. REFRIGERANT FLUID CHARGE

The R32 charging procedure must be carried out by a qualified technician using the SV HP/SV LP service valves.

1. Create a vacuum in the refrigeration circuit to obtain at least 270Pa. The time it takes to create the vacuum depends on the person performing the task, as well as choosing the right moment to break the vacuum.
2. Fill with R32 up to the amount indicated on the product plate.
3. Close the SV HP and SV LP valves
   - ✔ valve tightening torque: 5N.m
   - ✔ plug tightening torque: 18N.m or 5N.m
4. Perform a leak check of the refrigeration circuit after charging. The desired result is 5g/year maximum.
5. Check for the absence of humidity: green fluid indicator.
6. Run the unit in refrigerating mode to determine whether the group's charge is correct by checking the sub-refrigeration (Refer to the § **Operating check list**, page 46).



18.3.4. REPAIRS

CAUTION Only the competent person trained in handling flammable refrigerants (demonstrated by proof of suitable training) is authorized to open or shut off the refrigerant circuit.

Repairs to components containing refrigerant must be undertaken by a competent person in accordance with the following sequence, if appropriate:

1. carry out a risk assessment and gauge the level of risk for the proposed repair.

2. inform the operator of the unit.

3. obtain authorization to proceed with the repair.

4. drain the fluid (Refer to the § **Refrigerant fluid draining**, page 52).

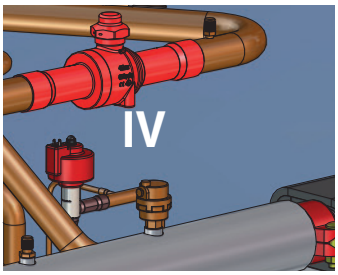
5. disconnect and make safe the components which are to be repaired.

6. clean and purge with nitrogen.

7. carry out the repair.

8. subject the repaired component to testing and verification (test with nitrogen at service pressure, leak testing).

CAUTION The maximum authorized pressure at the compressor intake (BP) is 17 bar. For all service pressure testing, the pressure should be held at 17 bar, the isolating valve (IV) closed, and finally service pressure attained.
The isolating valve and non-return valve at the compressor exhaust isolate it and protect it as a whole unit.



CAUTION The maximum authorized pressure differential at the expansion valve is 35 bar.

9. open the isolating valve (IV).

10. charge with refrigerant (Refer to the § **Refrigerant fluid charge**, page 52).

11. subject the unit to testing and verification (leak test and operating test).

18.3.5. SPECIFIC COMPONENTS

18.3.5.1. COMPRESSORS

Oil for refrigeration equipment is light and transparent. It maintains its colour for a long operating period.

As a refrigeration system designed and installed properly will run without problem, the compressor oil does not require replacement, even after a long operating period.

Blackened oil has been exposed to impurities in the refrigeration piping system, or excess temperatures on the compressor backflow side, which inevitably degrades oil quality. Blackening oil or degradation of its qualities may also be caused by humidity in the system. Change the oil when its colour changes or when it is degraded.

In this case, before restarting the unit, the refrigeration circuit must be emptied.

CAUTION Compressors use polyester oil. During maintenance interventions on the compressor, or if the refrigeration circuit has to be opened in any point, do not forget that this type of oil is highly hygroscopic, and avoid exposing it to the atmosphere during long periods, which would require to change the oil.

WARNING Protect the ECOi-W AQUA-Z frame so as to get back oil that could flow out accidentally.

18.3.5.2. FILTER DRIER

Refrigeration circuits are fitted with filters drier.

The fluid indicator is used to check the refrigeration flow and humidity rate of the refrigerating fluid. The presence of bubbles indicates that the filter drier is clogged or the charge insufficient.

If you notice that air bubbles are still there even after the filter has been replaced, this means the device has lost part of its cooling product in one or several places, which will need to be detected and repaired.

The glass window contains a colour indicator. Comparing the indicator colour with the scale present on the glass window allows to calculate the humidity rate of the refrigerating fluid. If excessive, change the filter, run the system for one day, then check the humidity rate again.

A humidity rate within the preset limits requires no further intervention. If the humidity rate remains too high, change the filter drier again, start the unit, and run it for another day.

18.3.5.3. AIR COOLED CONDENSER

CAUTION Fin edges are sharp and can cause injury hazard. Avoid contact with them.

Condenser coils are composed of copper tubes and aluminium fins. In case of leaks due to damage or shock, the coils must be repaired by one of the authorized Support Centres. To guarantee the best possible operation of the condenser bank, the condenser surface must be maintained as clean as possible, and it must be void of foreign materials (leaves, wires, insects, slag, etc.). A dirty coil will see its absorbed electrical power increase. In addition, condensation pressure could increase and trigger a high pressure alarm.

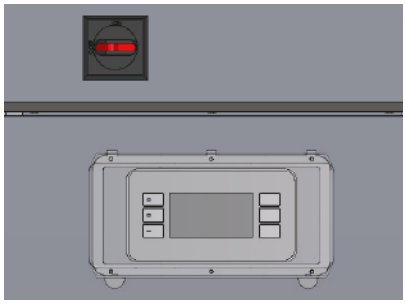
Clean the air exchanger using a special product for aluminium-copper coils and rinse with water. Do not use hot water nor steam, as these may increase the refrigerating fluid's pressure.

CAUTION Avoid damaging the aluminium fins during cleaning. Never use pressurized water without a wide diffuser. Concentrated and/or rotating water jets are strictly forbidden.

18.3.5.4. PLATE HEAT EXCHANGER

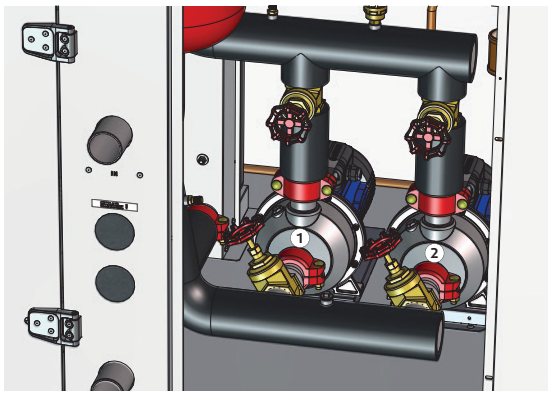
Verify the pressure difference between the inlet and the outlet of the heat plate exchanger. If the water pressure and flow rate values do not correspond to the pressure loss curves available Refer to the § **HYDRAULIC PUMPS CURVES**, page XXIII , the heat plate exchanger may be foul up. To clean it, use a non corrosive solvent to remove calcareous deposits. The equipment used for the external water flow, the quantity of solvent and safety measures applied must be approved by the company supplying the cleaning products, or the one performing these operations.

18.3.5.5. PROCEDURE TO SWITCH FROM ONE PUMP TO OTHER

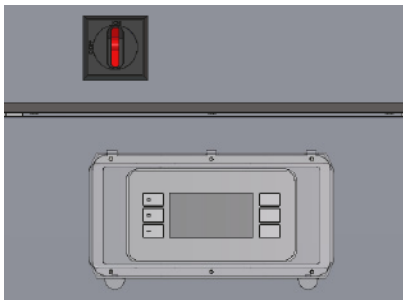


The procedure to switch from one pump to the other is the following in case of pump 1 failure (for example) :

1. Turn the main power switch of the **ECOi-W AQUA-Z** in position OFF



2. Close the upstream and downstream valves of the pump 1 (see photo)
3. Open the upstream and downstream valves of the pump 2
4. Toggle the pump selection in the HMI to pump 2
5. Turn the main power switch of the **ECOi-W AQUA-Z** in position ON to restart.



18.3.6. WINTER PROTECTION

In winter, after a general stoppage of the installation or a regulation malfunction, the water contained in the hydraulic circuit may start freezing.

To prevent any problems if the hydraulic circuit is not glycolated, it is recommended to fully drain any circuits not used and to pressurize them with nitrogen or protect them by adding an anti-freeze solution or other measures.

The concentration of anti-freeze solution must be regularly and carefully checked before each winter season.

CAUTION

The manufacturer waives any liability for damage of a plate exchanger caused by water freezing of water contained inside does not engage the responsibility of the manufacturer with respect to this incident (low winter temperature or water start temperature below 5°C in summer mode).

19. TROUBLE SHOOTING

Problem	Probable cause	Solution
Unit operates continuously but without generating cooling	Insufficient refrigerant fluid charge.	Top up the refrigerant fluid charge.
	Clogged dehumidification filter.	Replace the dehumidification filter.
	Reduced output from one or both circuits	Check the compressor valves and change them if necessary.
Frozen intake line	The overheating setting on the thermostatic pressure relief valve is too low.	Increase the setting.
		Check the refrigerant fluid charge
Excessive noise	Vibrating pipe work	Attach the pipe work correctly.
		Check the pipe work attachments.
	Whistling noise from the thermostatic pressure relief valve	Top up the refrigerant fluid charge.
		Check and replace the dehumidification filter if necessary.
	Noisy compressor	Check the condition of the valves.
		Seized bearings. Replace the compressor
		Check the tightness of the compressor attachment nuts.
Low oil level in the compressor	Presence of one or several oil or gas leaks in the circuit	Locate and repair the leaks
	Mechanical compressor damage.	Contact an approved Service Centre.
	Sump oil heater resistance fault.	Check the electrical circuit and the condition of the resistance. Replace defective parts if necessary.
One or both compressors do not operate.	Electrical circuit cut.	Check the electrical circuit and seek out any grounding and/or short- -circuits. Check the fuses.
	High pressure pressostat activated.	Reset the pressostat from the control panel and restart the unit. Identify and eliminate the causes of this activation.
	Control circuit fuse blown.	Check the control circuit and seek out any grounding and/or short-circuits. Replace the fuses.
	Connection problem	Check the tightness of all the electrical connection terminals.
	Electrical circuits thermal protection cuts in.	Check the operation of the control and safety devices. Identify and eliminate the cause of the activation.
	Incorrect wiring.	Check the wiring of the control and safety devices.
	Mains voltage too low.	Check the power line. Eliminate any possible problems associated with the system. If the problem is due to the network, inform the Electricity Company.
	Compressor motor short–circuited.	Check the continuity of the motor winding.
	Compressor seized	Replace the compressor.
Circuit stoppage further to the low pressure thermostat being activated.	Presence of a leak.	Identify and repair the leak.
	Insufficient refrigerant fluid charge.	Top up the refrigerant fluid charge.
	Pressostat operating fault.	Replace the pressostat.

Problem	Probable cause	Solution
Circuit stoppage further to the high pressure thermostat being activated.	Incorrect operation of the high pressure pressostat.	Check the operation of the pressostat. Replace it if required.
	Outlet valve partially closed.	Open the valve. Replace it if required.
	Non-condensable particles in the circuit.	Bleed the circuit
	Condenser fan(s) not operating.	Check the wiring and the motors. Repair and replace if required.
Liquid line too hot	Insufficient refrigerant fluid charge.	Locate and eliminate the causes of charge losses and top up the refrigerant fluid charge.
Liquid line frozen	Liquid line valve partially closed.	Checking the opening of all the valves.
	Clogged dehumidification filter.	Replace the filter cartridge.
Fans do not operate.	Electrical circuit problems.	Check the connections.
	Internal circuit thermal cut-out activated.	Contact an approved Service Centre.
Reduced output in both Heating and Cooling mode	Compressor operating fault	Contact an approved Service Centre.
	Dirt in the evaporator water circuit.	Chemical cleaning of the evaporator water circuit.
	Condenser battery blocked.	Clean the condenser battery.
	Insufficient refrigerant fluid charge.	Top up the refrigerant fluid charge.
Evaporator heater is not operating.	No power supply.	Check the main fuse and the auxiliary fuses.
	Heater circuit open	Check the heater and replace if required.
No/ little control over water temperature.	Incorrect thermostat setting.	Check the temperature setting on the control panel.
	Incorrect temperature differential between evaporator inlet and outlet.	Check the water flow and the quantity of liquid in the water circuit.
	Electronic control system malfunction.	Contact an approved Service Centre.
Insufficient water circulation.	Air in the circuit	Bleed the air via the safety valve.
	Deposits or impurities in the evaporator.	Wash out the evaporator by back-flushing.
Unit not operating, no alarm activation	Water circulation fault	Check the pump.
	Flow controller inoperable.	Check the flow controller.
	Differential pressostat inoperable.	Check the differential pressostat.

CAUTION

BEFORE CARRYING OUT ANY OPERATION ON THE EQUIPMENT, CHECK THAT THE ELECTRICAL POWER SUPPLY IS SWITCHED OFF AND THAT IT CANNOT BE SWITCHED ON INADVERTENTLY.

IT IS RECOMMENDED THAT THE DISCONNECT SWITCH BE PADLOCKED

Panasonic Heating & Ventilation Air-Conditioning France SAS
Route de Verneuil
27570 Tillières-sur-Avre
FRANCE
✆ : +33 (0)2 32 60 61 00
🖷 : +33 (0)2 32 32 55 13

J581976EN

IMM ECOi-W AQUA-Z 02-N-1EN
Part number : **J581976EN**
April 2024
Supersedes : **IOM AQA R32 02-N-1GB**

APPENDIX
ANNEXE
ANLAGE
ALLEGATO
ANEXO

APPENDIX

ANNEXE

ANLAGE

ALLEGATO

ANEXO

DIMENSIONS
DIMENSIONS
ABMESSUNGEN
DIMENSIONI
DIMENSIONES

English

F Electrical power supply
I Gauge kit (optional)
L Main switch
M Control keypad / display
D Desuperheater (optional)
S Safety valve discharge
P1/P2/P3/P4 AVM position (optional)

Français

F Alimentation électrique
I Kit de jauge (en option)
L Sectionneur général
M Afficheur/clavier régulateur
D Récupération de chaleur partielle
S Échappement soupape de sécurité
P1/P2/P3/P4 AVM emplacement (optionnel)

Deutsch

F Stromversorgung
I Messgerätesatz (optional)
L Hauptschalter
M Bedientastatur / Display
D Enthitzer
S Auslass Sicherheitsventil
P1/P2/P3/P4 AVM-Position (optional)

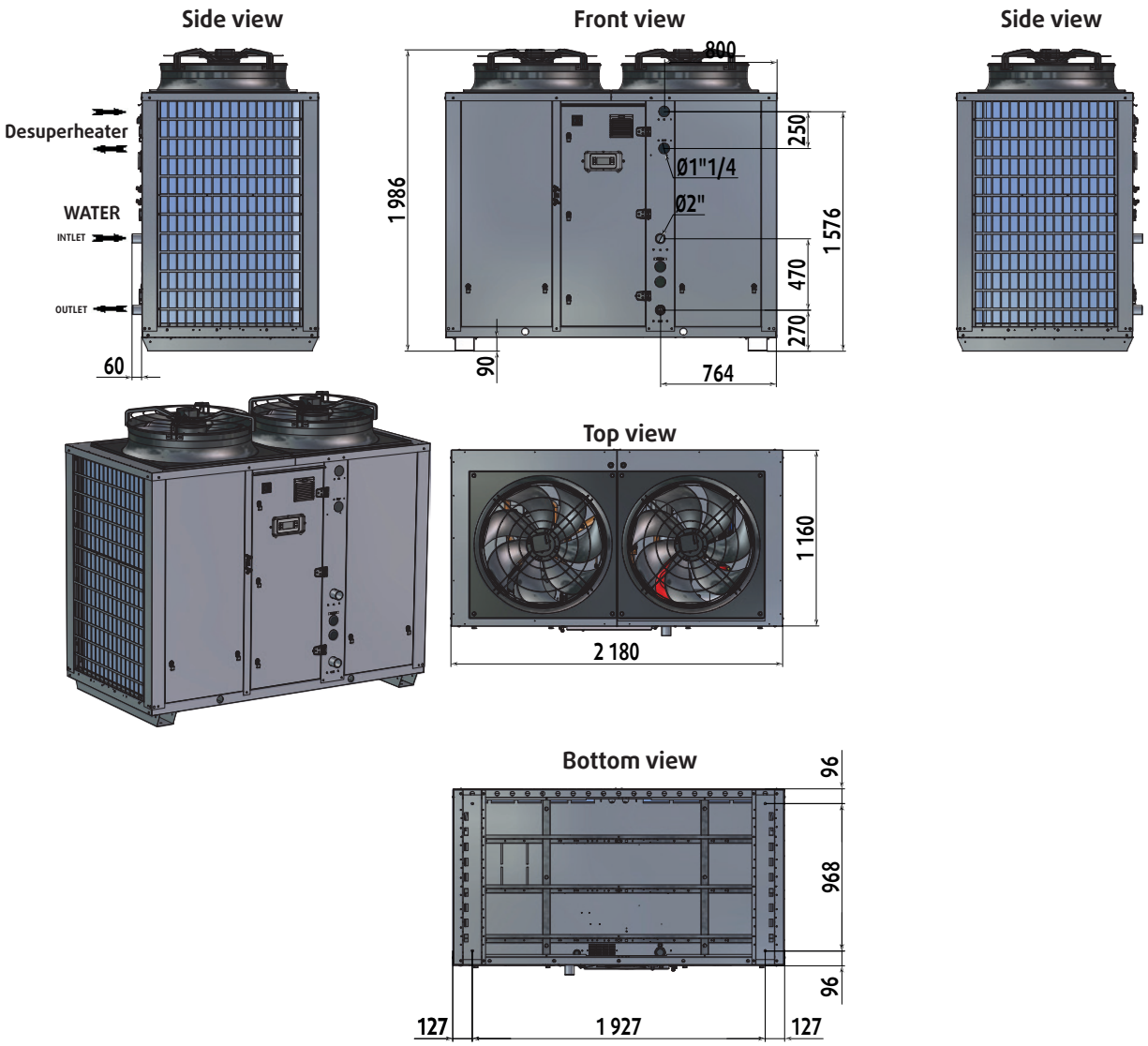
Italiano

F Alimentazione elettrica
I Kit manometro (opzionale)
L Interruttore principale
M Tastiera/display di controllo
D Desurriscaldatore (opzionale)
S Scarico valvola di sicurezza
P1/P2/P3/P4 Posizione AVM (opzionale)

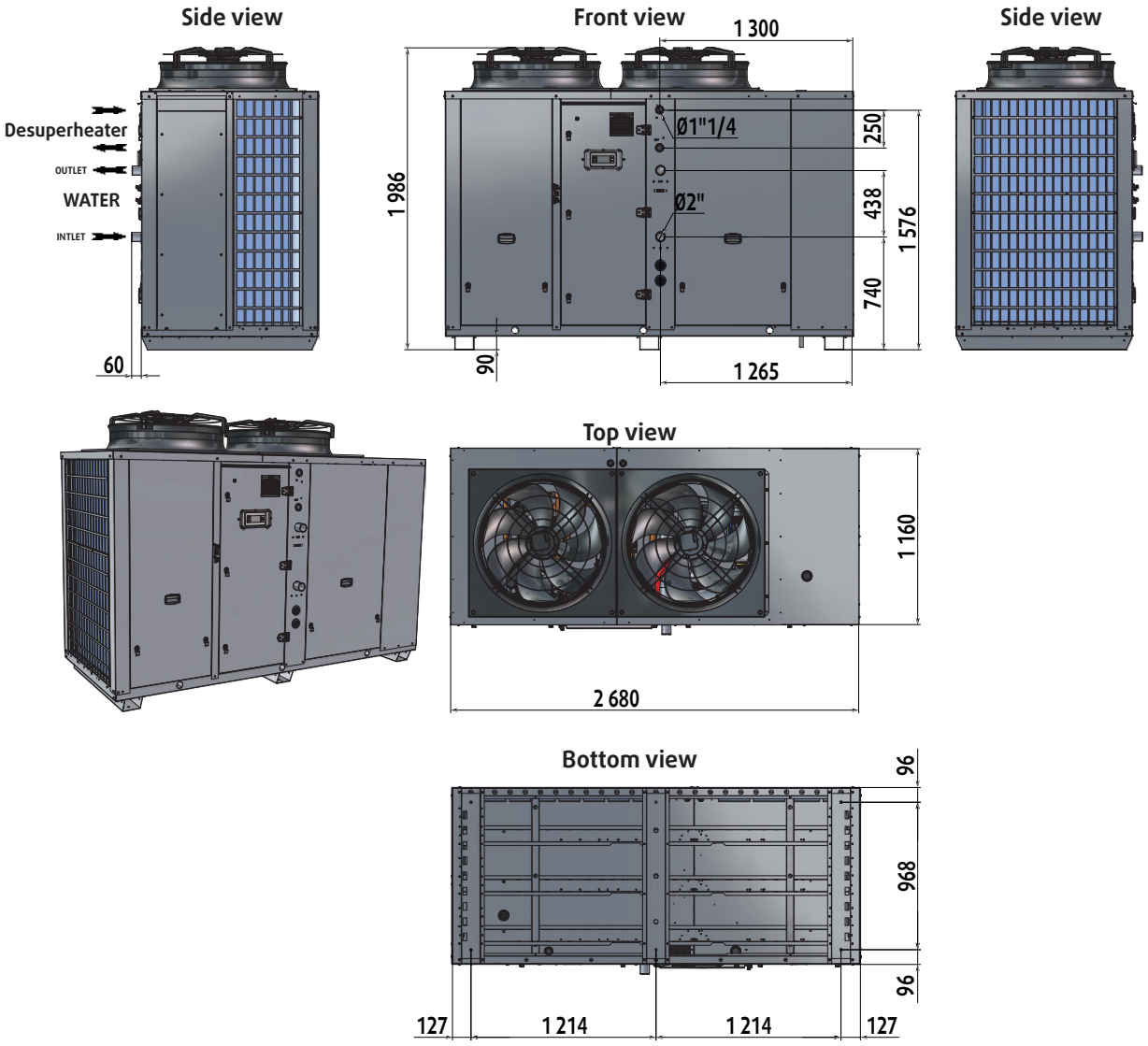
Español

F Alimentación
I Kit medidor (opcional)
L Interruptor general
M Teclado / pantalla de control
D Desobrecalentador
S Válvula de descarga de seguridad
P1/P2/P3/P4 Posición AVM (opcional)

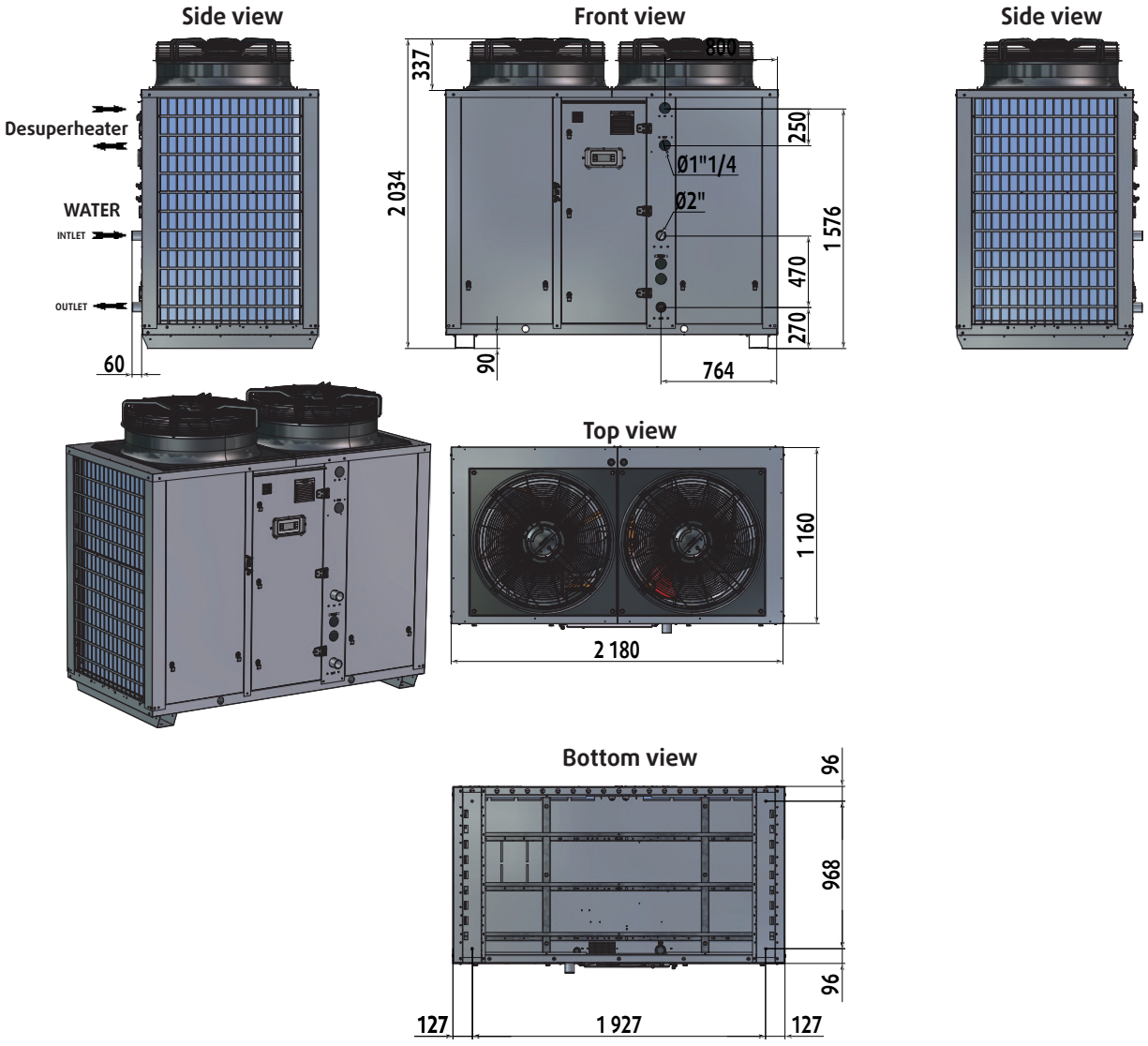
ECOI-W AQUA-Z 70 - 75 AC FANS



ECOI-W AQUA-Z 70 - 75 AC FANS WITH BUFFER TANK



ECOI-W AQUA-Z 70 - 75 EC FANS



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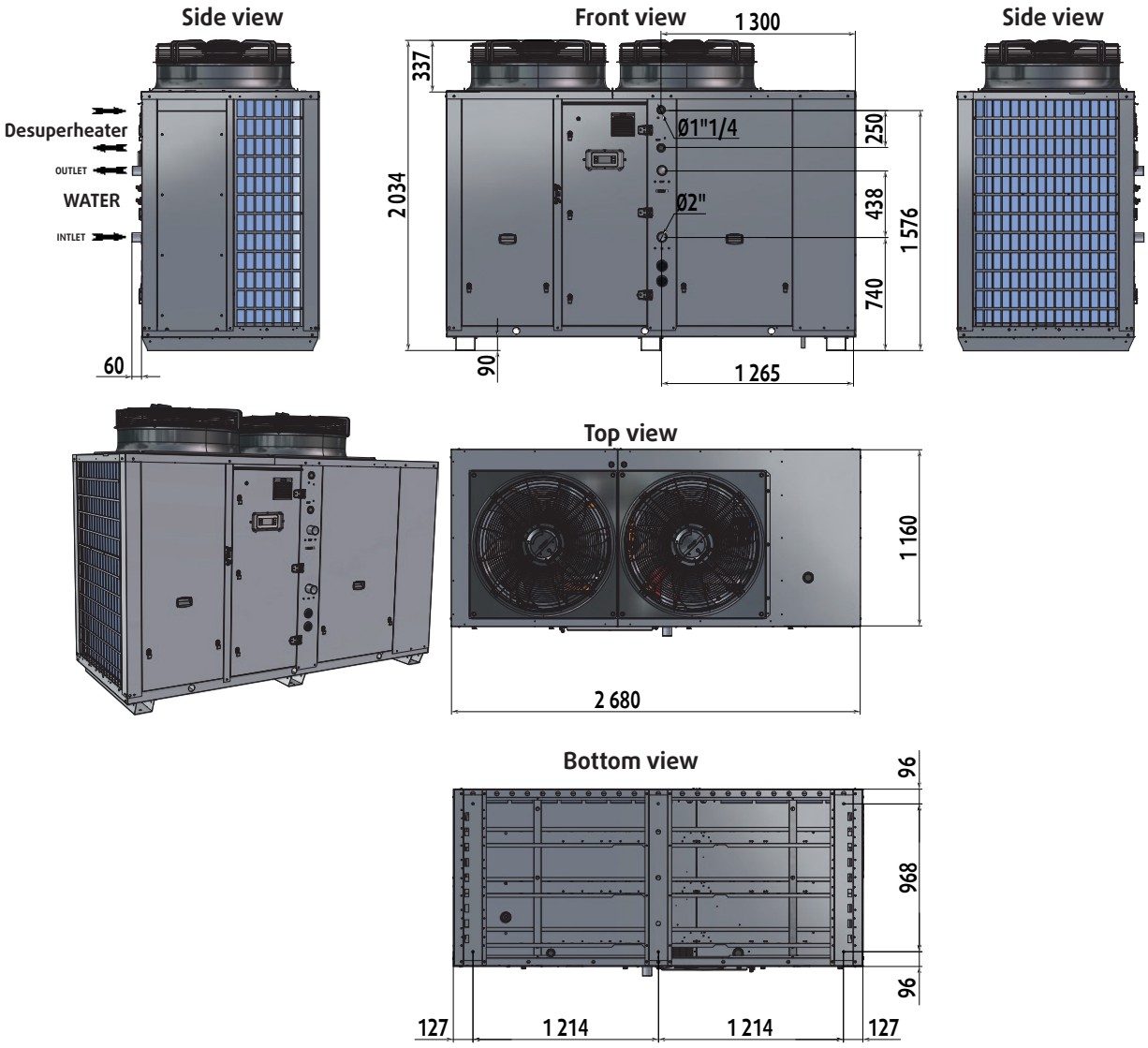
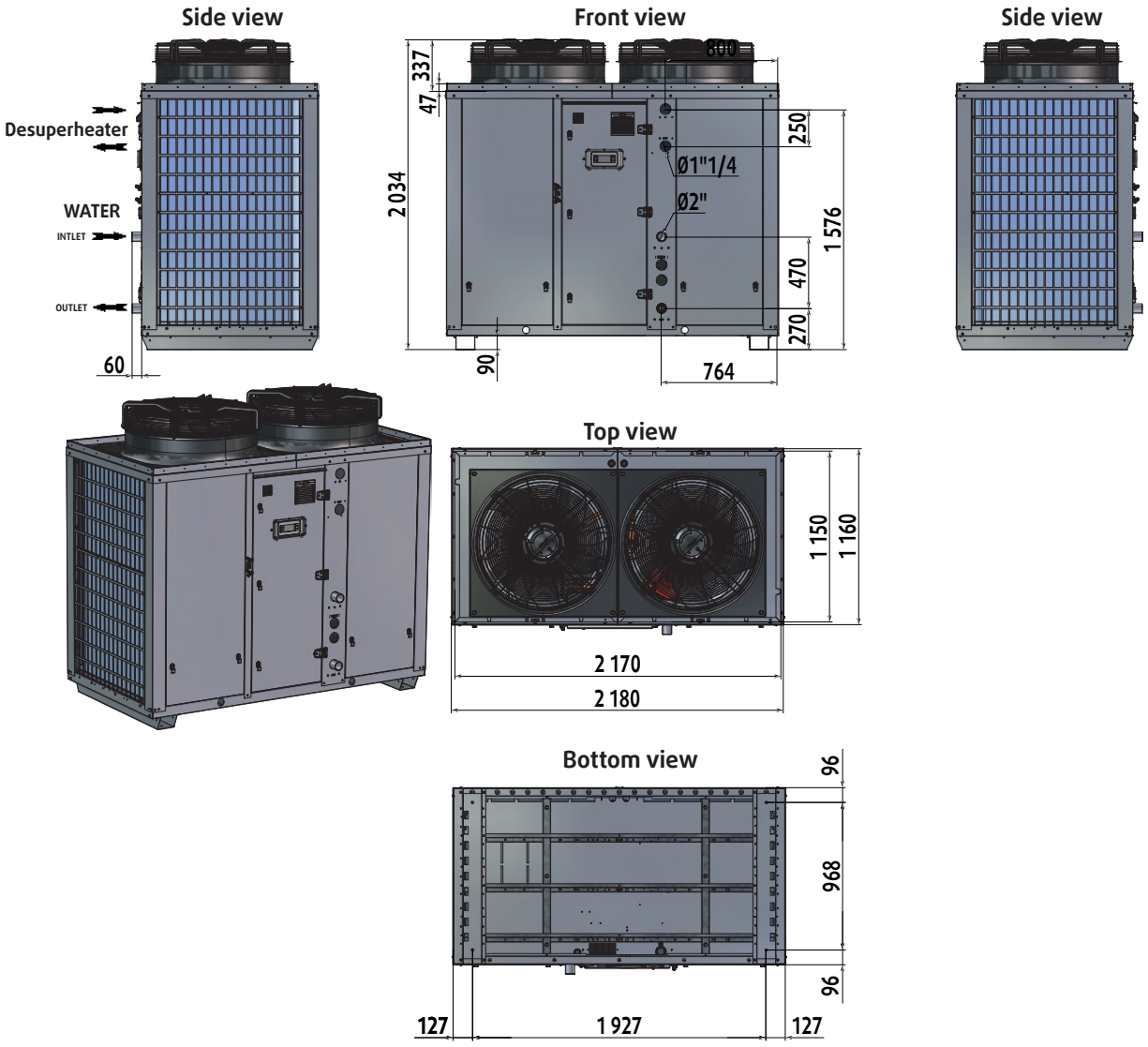
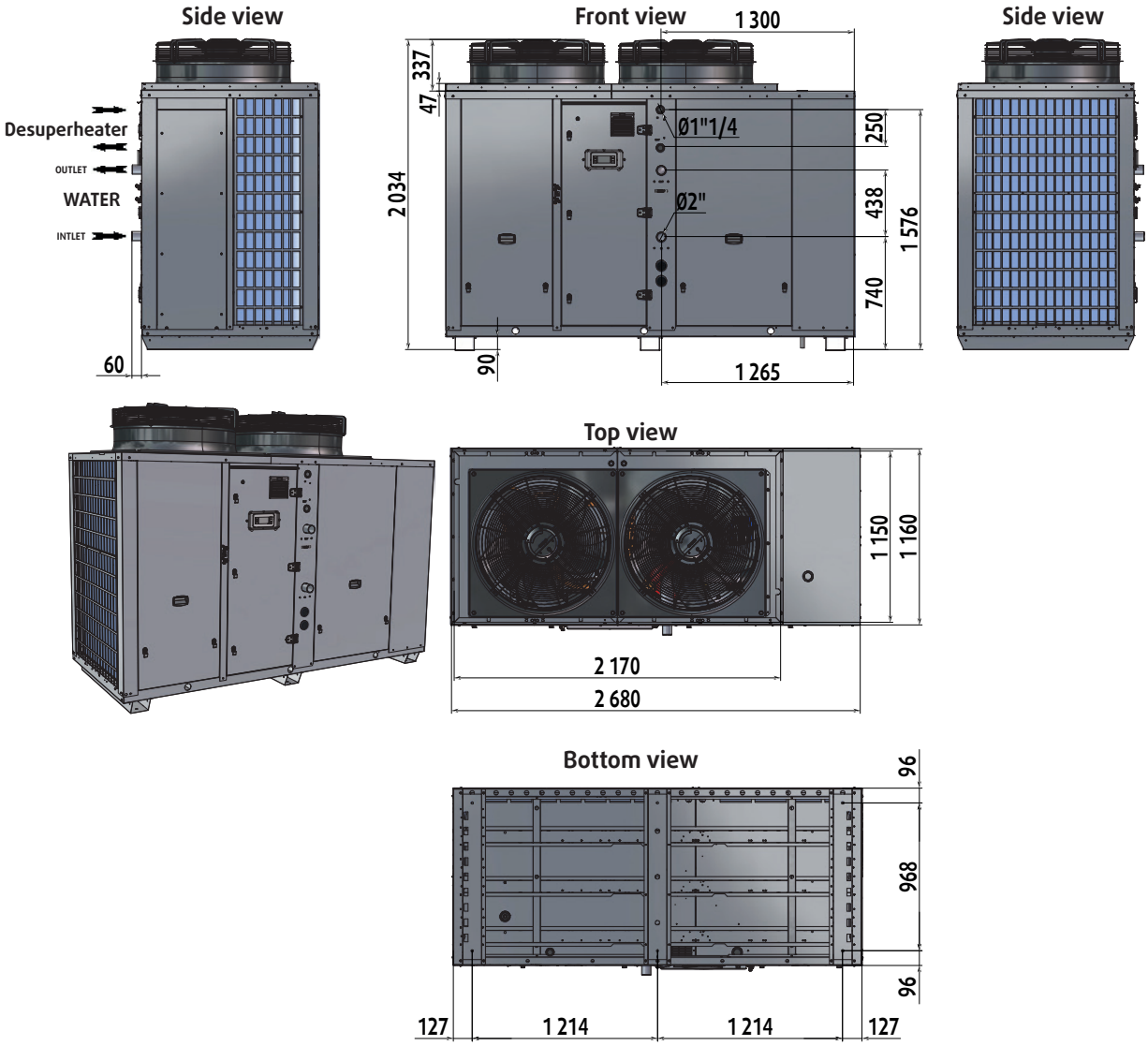


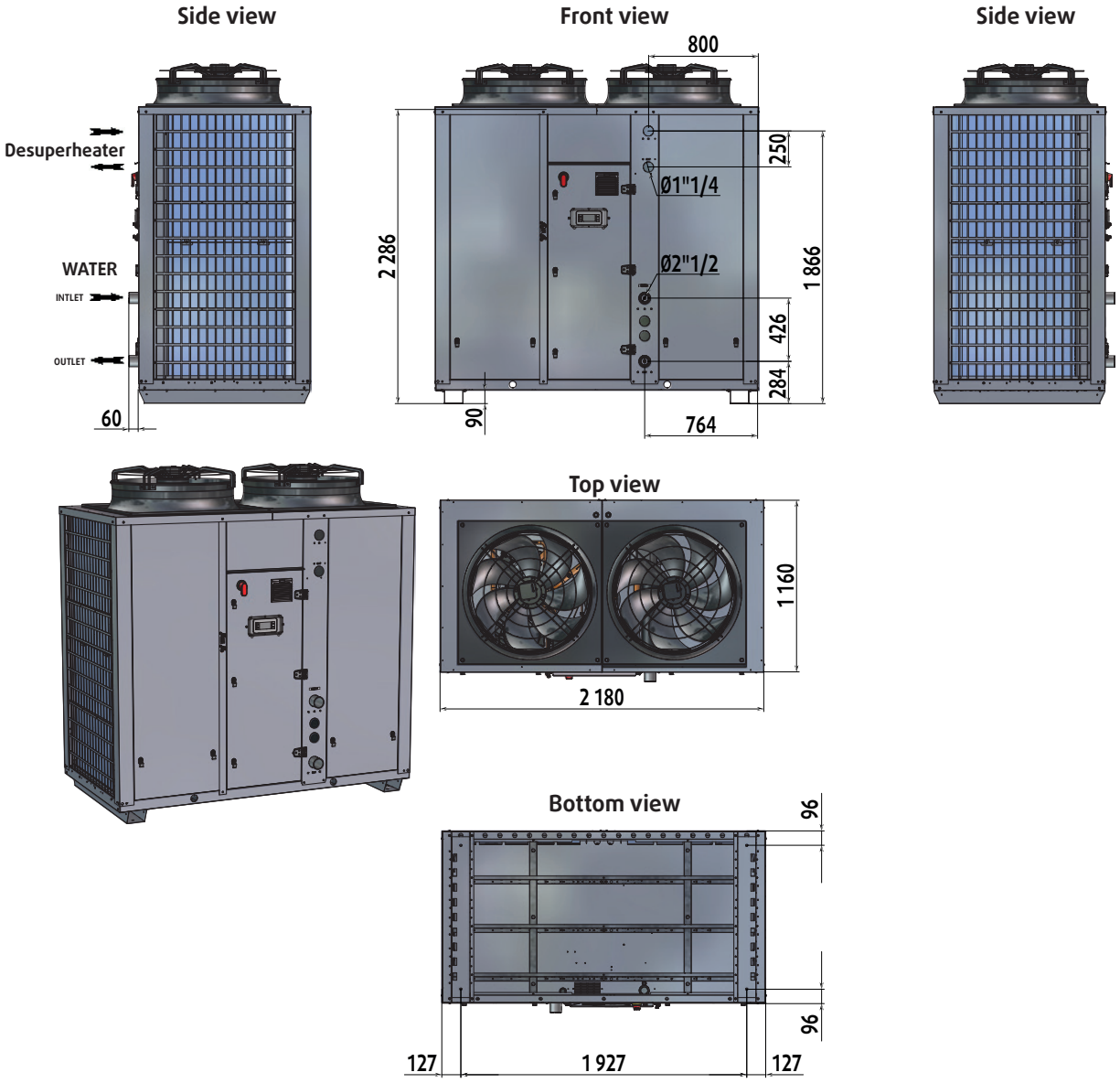
ECOI-W AQUA-Z 70 - 75 HPF FANS



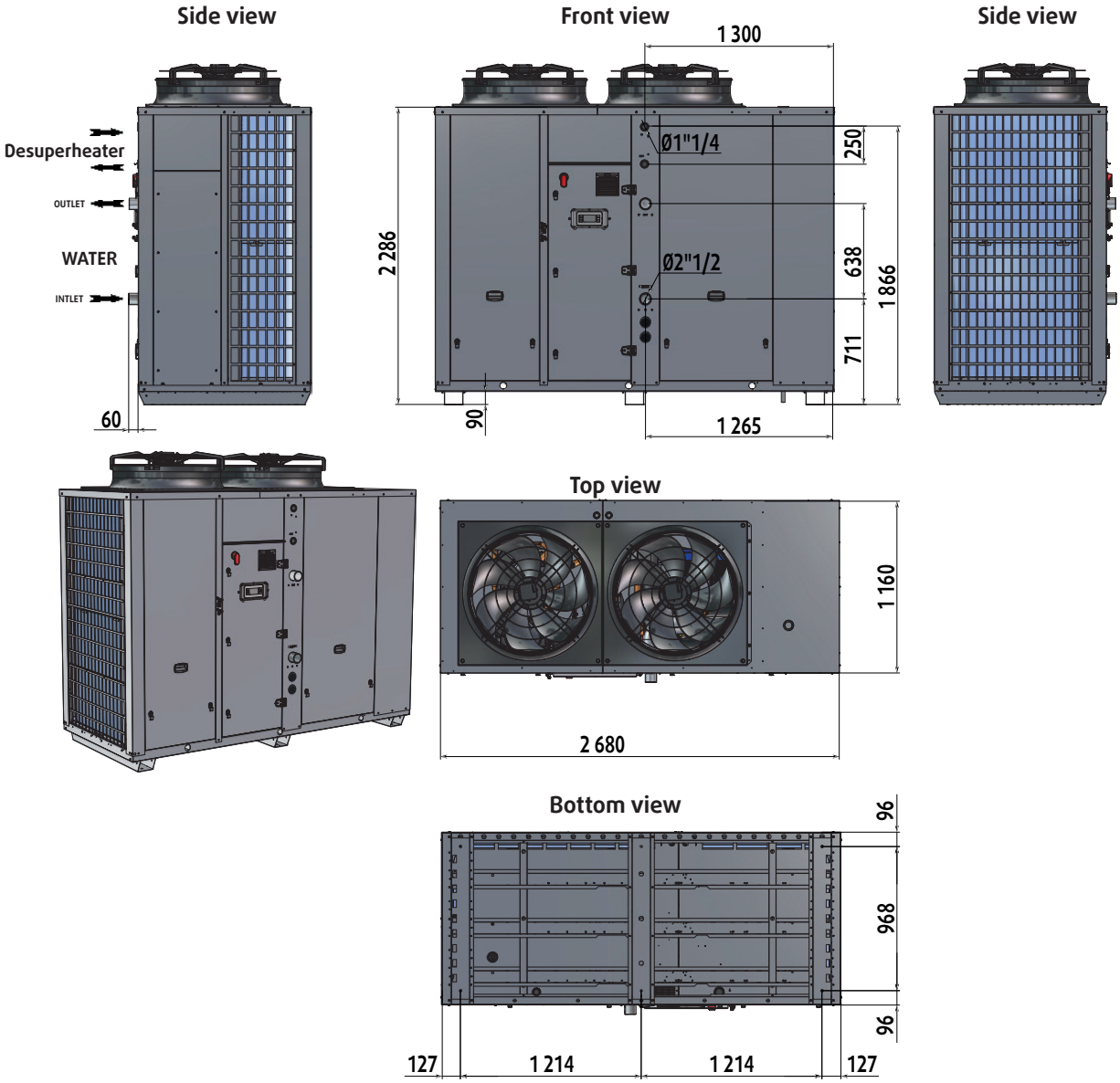
ECOI-W AQUA-Z 70 - 75 HPF FANS WITH BUFFER TANK



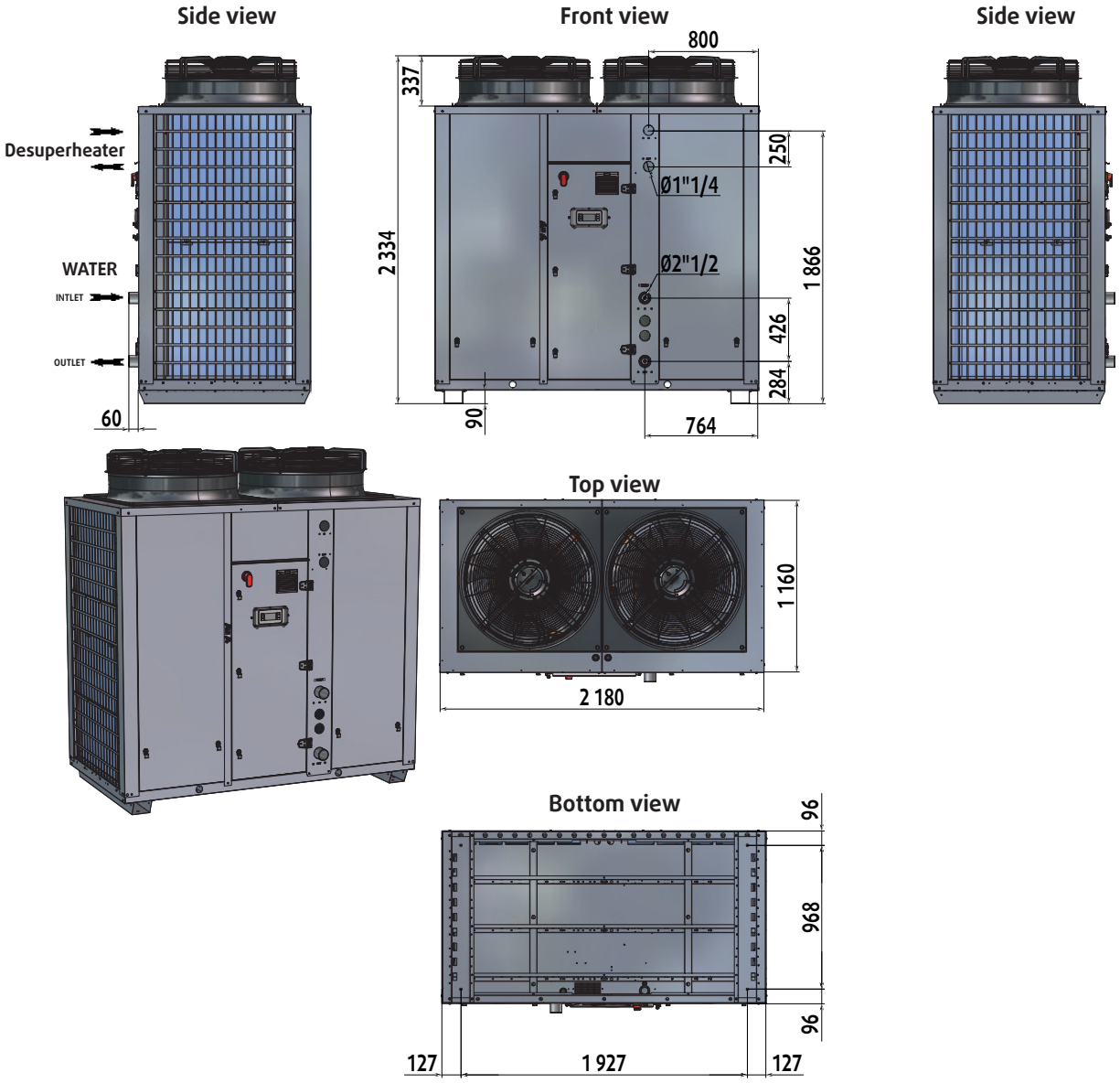
ECOI-W AQUA-Z 85 - 130 AC FANS



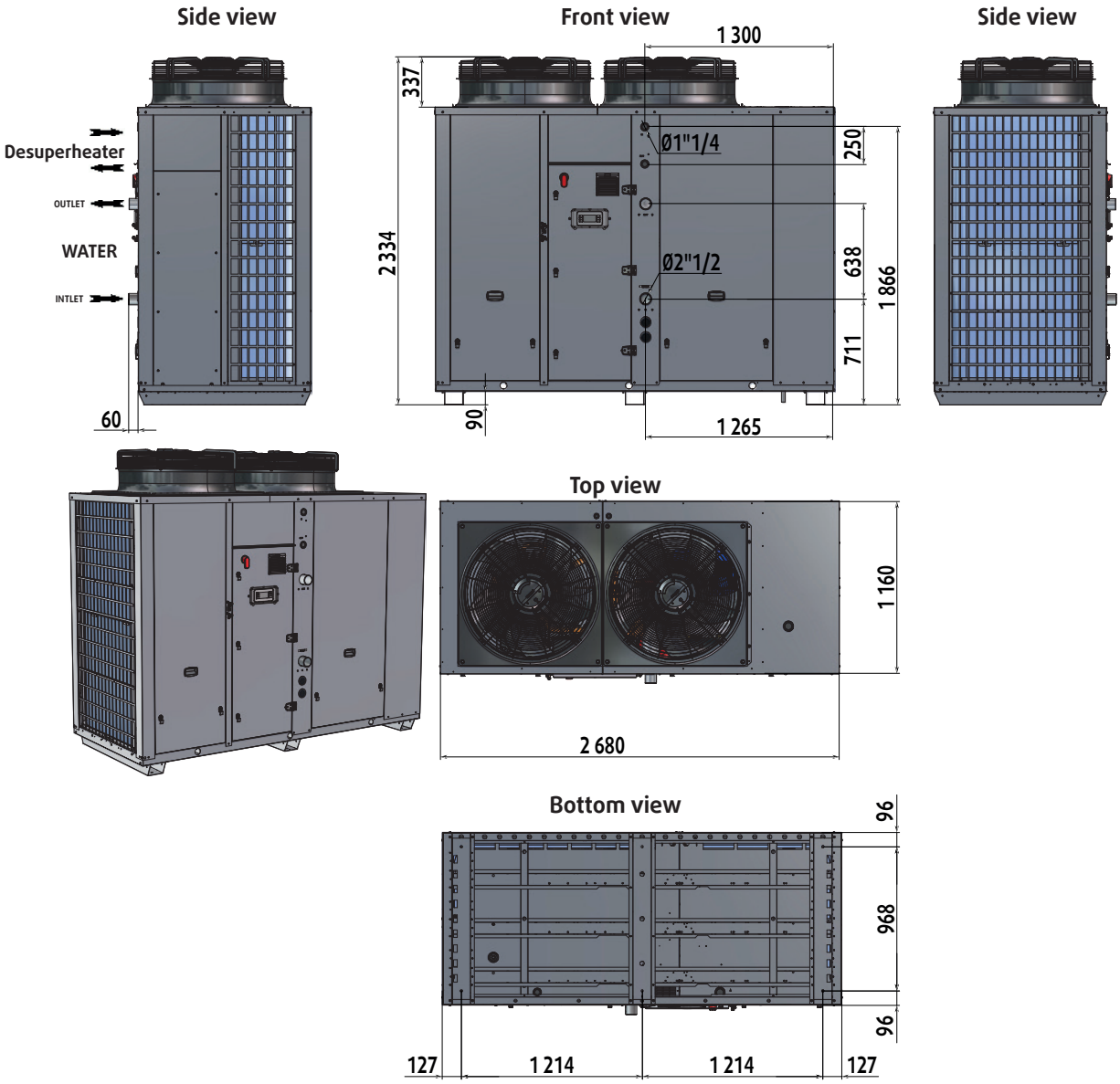
ECOI-W AQUA-Z 85 - 130 AC FANS WITH BUFFER TANK



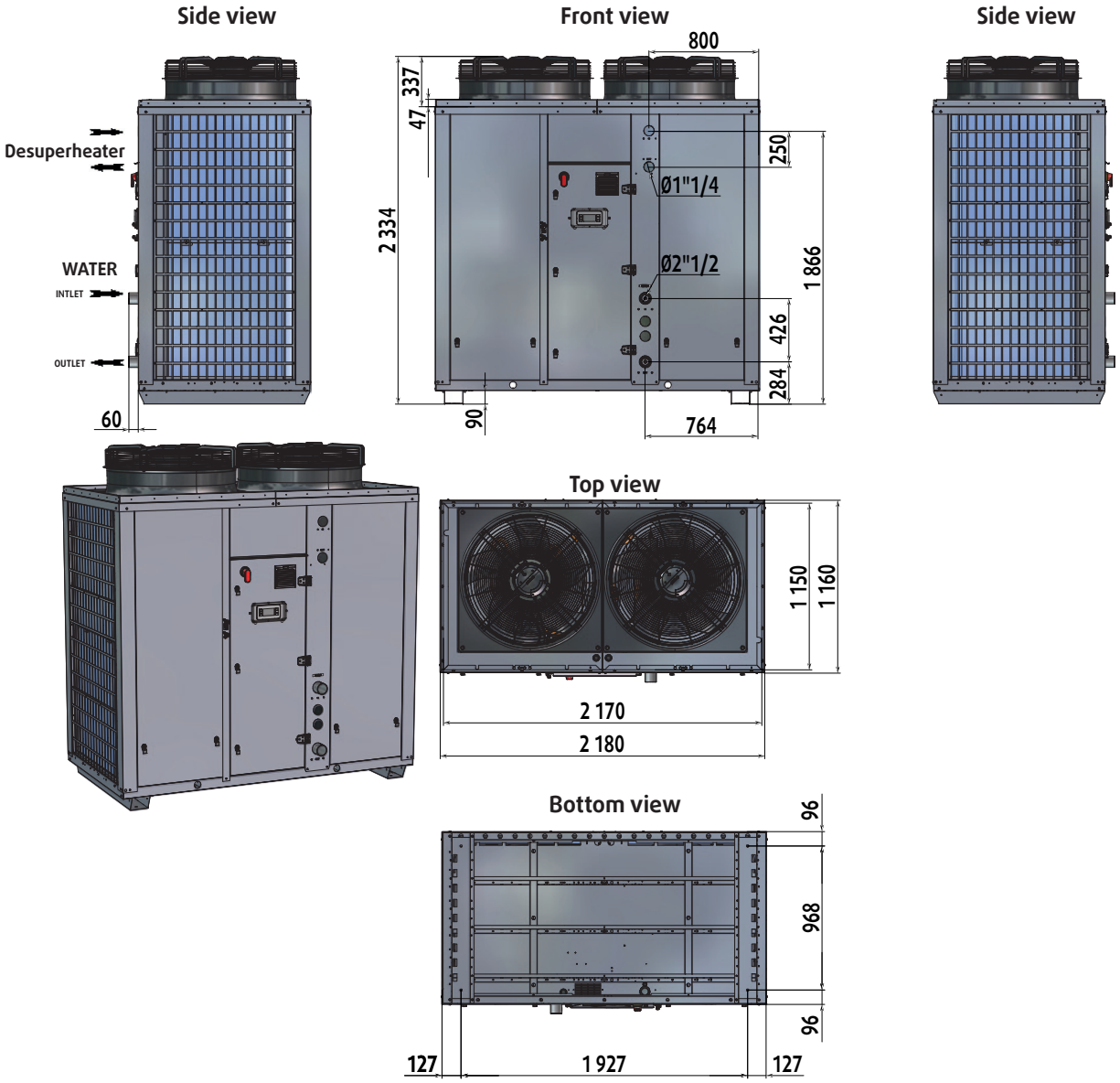
ECOI-W AQUA-Z 85 - 130 EC FANS



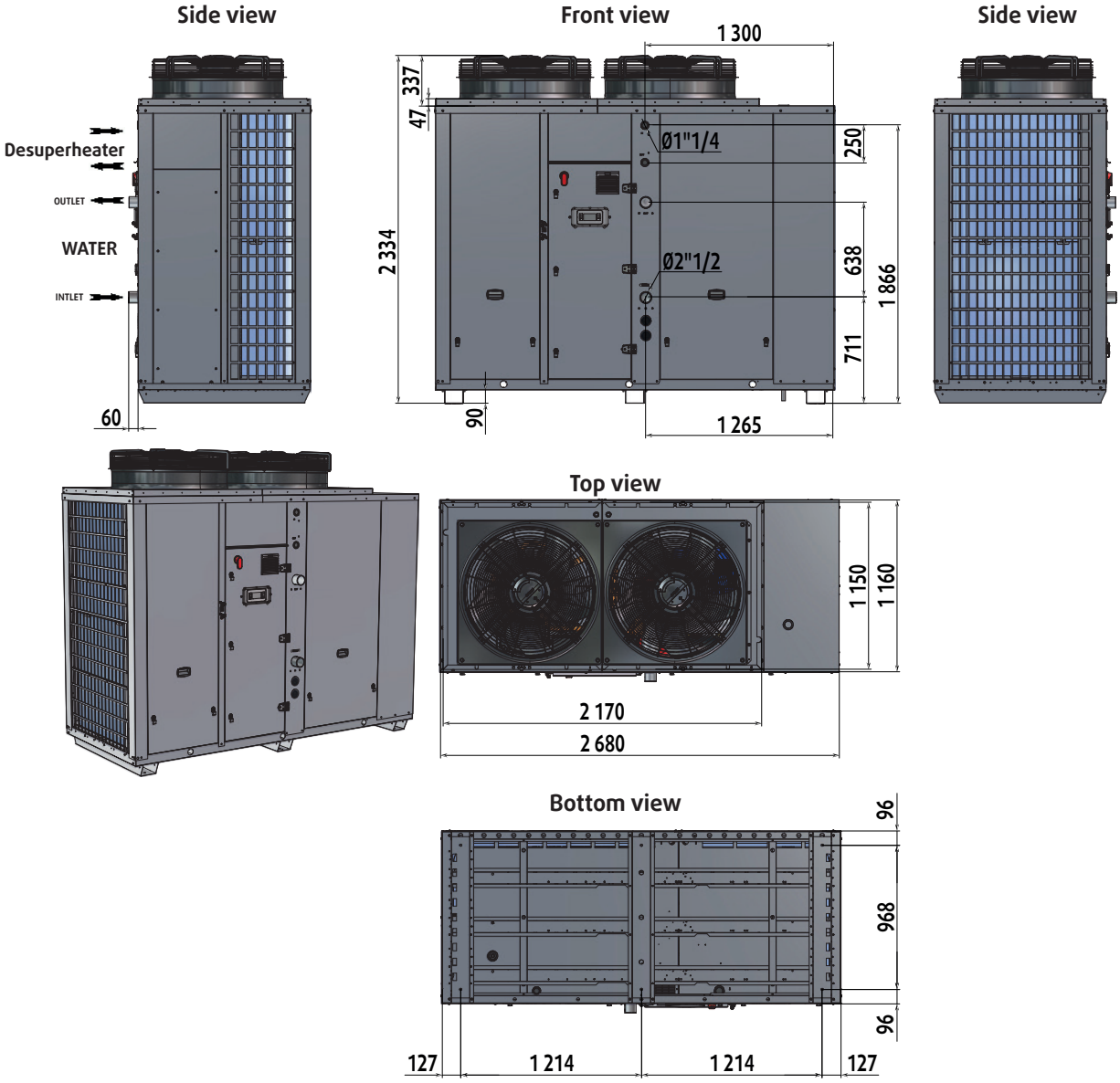
ECOI-W AQUA-Z 85 - 130 EC FANS WITH BUFFER TANK



ECOI-W AQUA-Z 85 - 130 HPF FANS



ECOI-W AQUA-Z 85 - 130 HPF FANS WITH BUFFER TANK

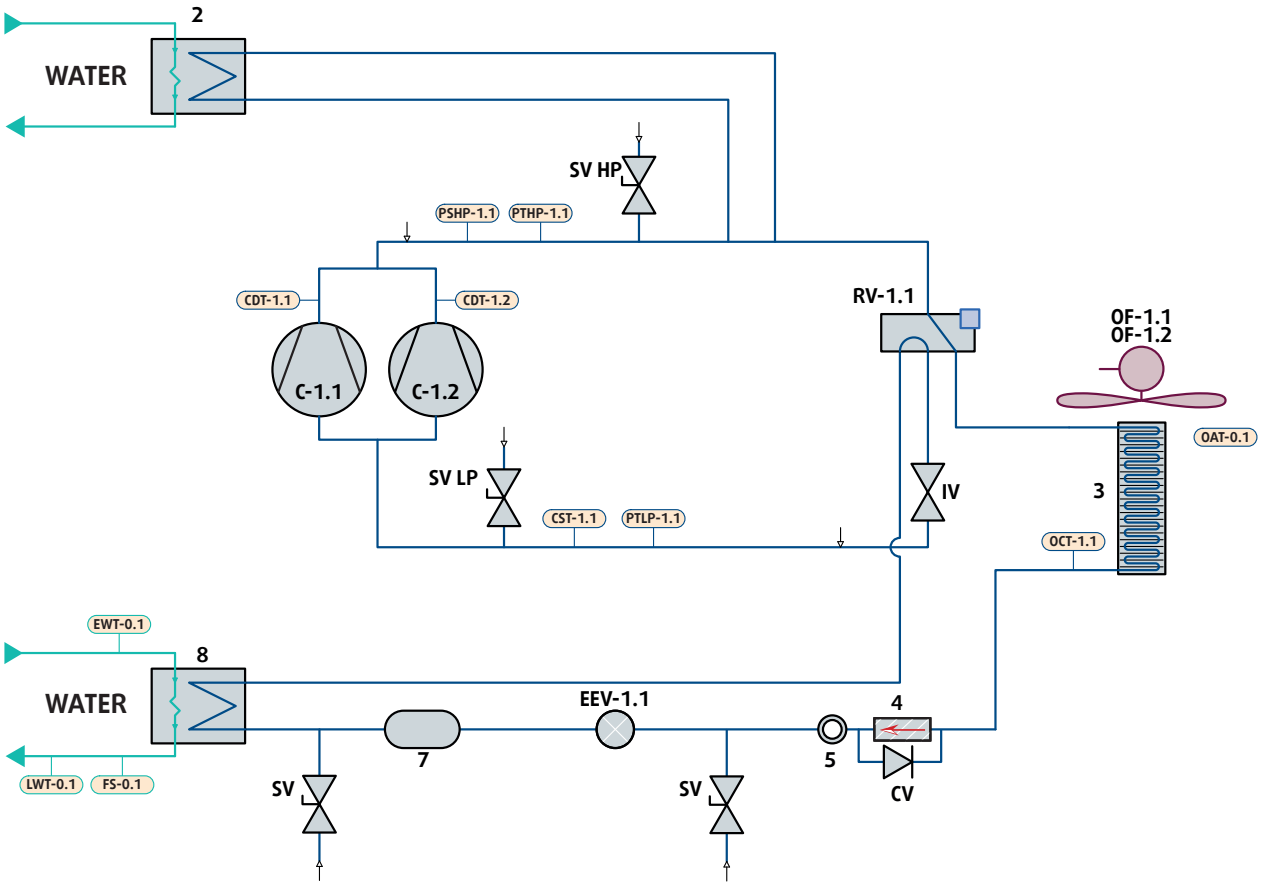


REFRIGERANT CIRCUIT DIAGRAM
SCHÉMA DU CIRCUIT FRIGORIFIQUE
KÄLTEKREISLAUFDIAGRAMM
SCHEMA DEL CIRCUITO REFRIGERANTE
ESQUEMA DEL CIRCUITO FRIGORIFÍCO

English

C-1.1 / C-1.2	Compressors 1 et 2
RV-1.1	Cycle reversal valve
OF-1.1 / OF-1.2	Outdoor fan motor
3	Air cooled condenser
4	Filter drier
CV	Check valve
5	Sight glass
EEV-1.1	Electronic expansion valve
7	Liquid reservoir
8	Plate heat exchanger
	Pressure tapping point 1/4"
PTHP-1.1	High pressure transducer
PSHP-1.1	High pressure switch
CDT-1.1	Discharge temperature sensor
PTLP-1.1	Low pressure transducer
CST-1.1	Suction temperature sensor
OAT-0.1	Outdoor air temperature sensor
SV	Service valve
SV HP	Service valve HP
SV LP	Service valve LP
IV	Isolating valve

ECOi-W AQUA-Z 70-130 (version heat pump)

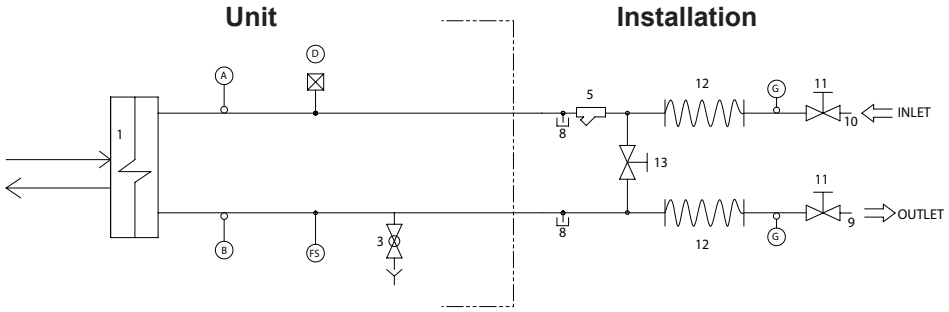


HYDRAULIC CIRCUIT DIAGRAM
SCHÉMA DU CIRCUIT HYDRAULIQUE
HYDRAULISCHER SCHALTPLAN
SCHEMA CIRCUITALE IDRAULICO
ESQUEMA CIRCULAR HIDRÁULICO

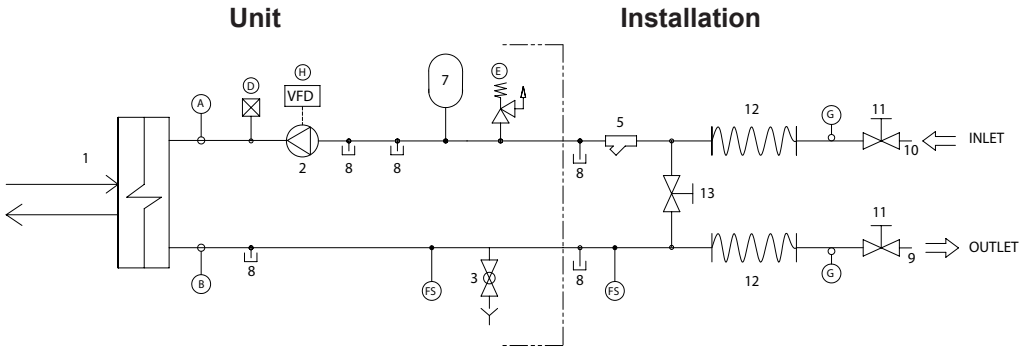
English

Components	
1	Plate Heat Exchanger
2	Pump
3	Draining valve
4	Water buffer tank
5	Water filter
6A	Gate valve
6B	Check valve
7	Pressure expansion tank
8	Pression point/drainage
9	Water outlet
10	Water inlet
11	Globe valve
12	Flexible pipes
13	By pass valve
A	Inlet water temperature sensor
B	Outlet water temperature sensor
C	Water differential pressure switch
D	Vent valve
E	Water safety valve (3 bar)
FS	Flow switch
G	Thermometer
H	Variable frequency drive
- - — - -	Unit side
o	Probes

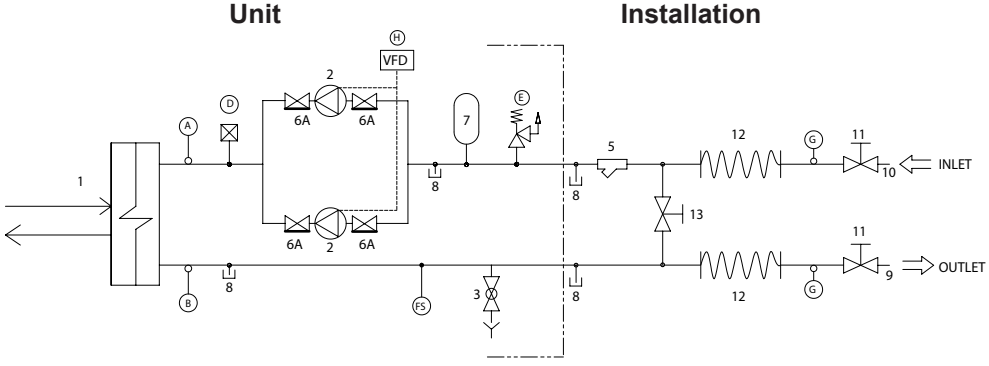
ECOI-W AQUA-Z 70-130 WITHOUT PUMP



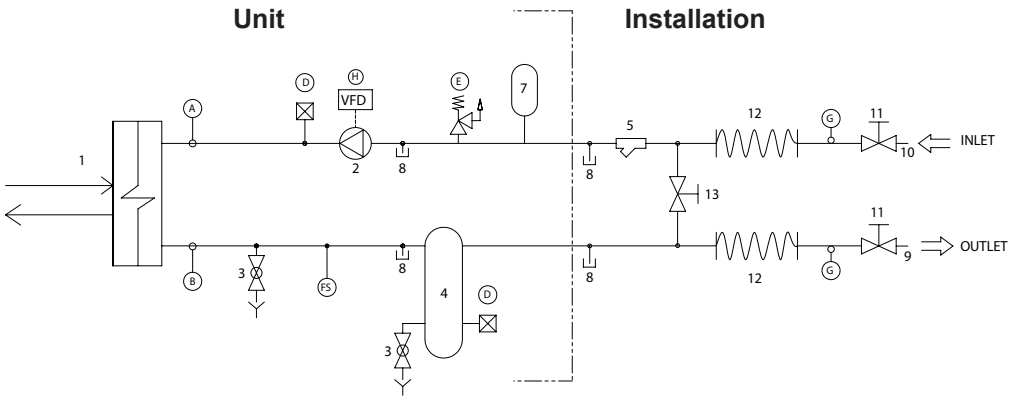
ECOI-W AQUA-Z 70-130 SINGLE PUMP



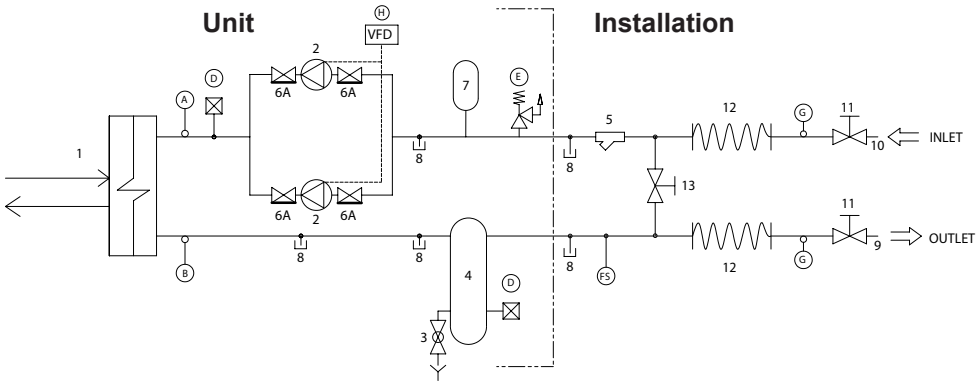
ECOI-W AQUA-Z 70-130 DOUBLE PUMP



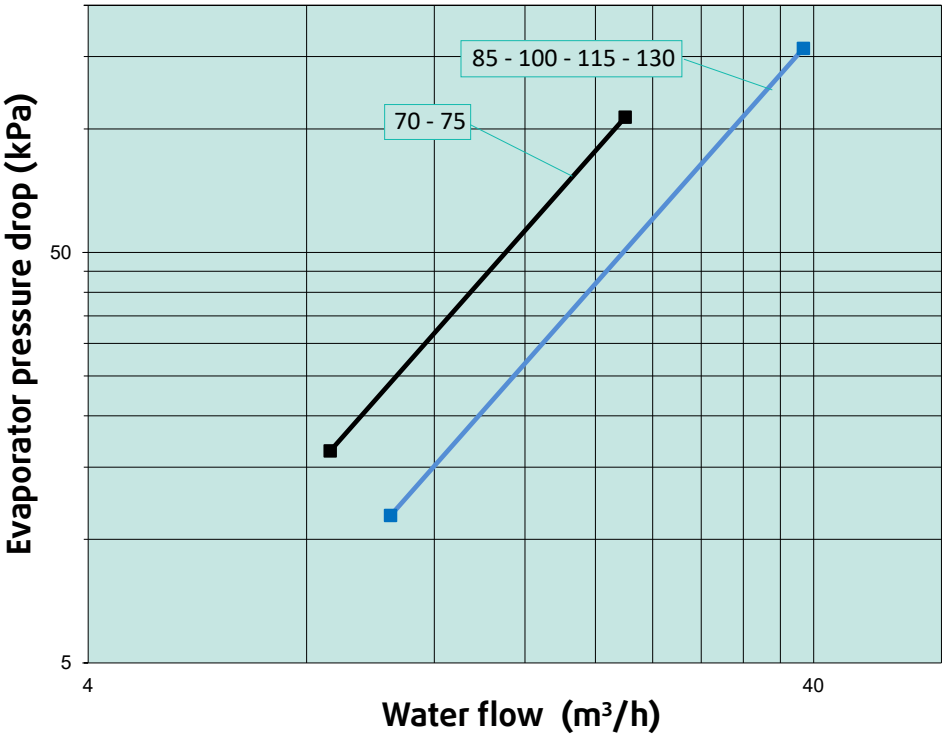
ECOI-W AQUA-Z 70-130 SINGLE PUMP + TANK



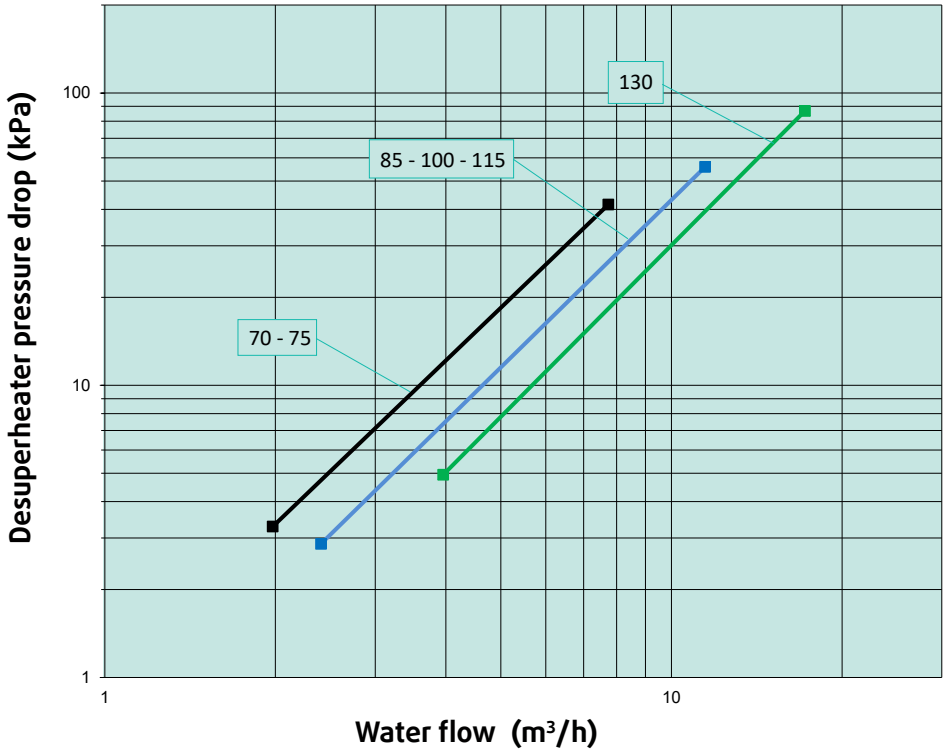
ECOI-W AQUA-Z 70-130 DOUBLE PUMP + TANK



PRESSURE LOSSES OF THE PLATE HEAT EXCHANGER
PERTE DE CHARGE DE L'ÉCHANGEUR À PLAQUES
DRUCKVERLUST PLATTENWÄRMEÜBERTRAGER
PERDITA DI CARICO SCAMBIATORE A PIASTRE
PÉRDIDA DE CARGA INTERCAMBIADOR DE PLACAS

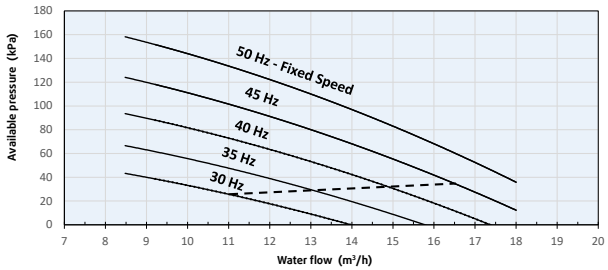


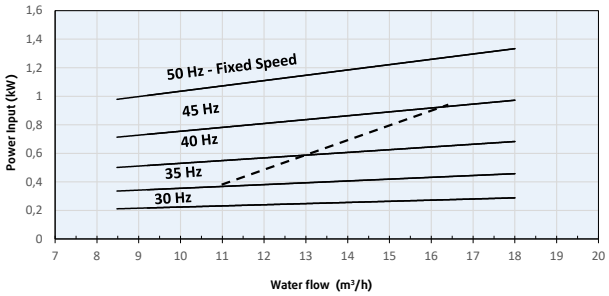
PRESSURE LOSSES OF THE DESUPERHEATER
PERTE DE CHARGE DÉSURCHAUFFEUR
DRUCKVERLUSTE DES ENTWÄRMETERS
PERDITA DI CARICO DESURRISCALDATORE
PÉRDIDA DE CARGA DESRECALENTADOR



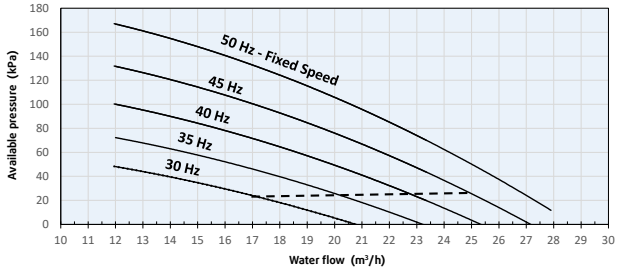
HYDRAULIC PUMPS CURVES
COURBES DES pompeS HYDRAULIQUES
KURVEN VON HYDRAULIKPUMPEN
CURVE DELLE pompe IDRAULICHE
CURVAS BOMBAS HIDRÁULICAS

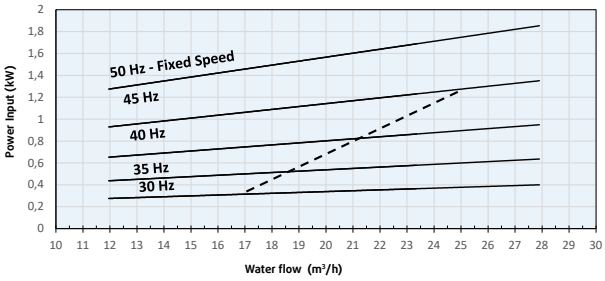
ECOI-W AQUA-Z 70 - 75 - STANDARD PRESSURE PUMP



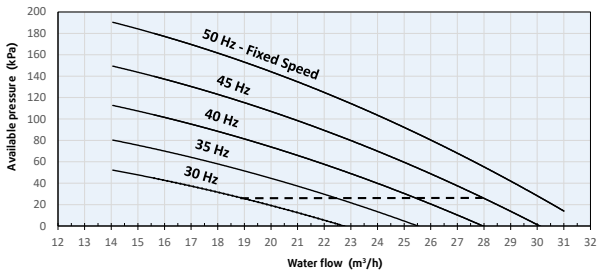


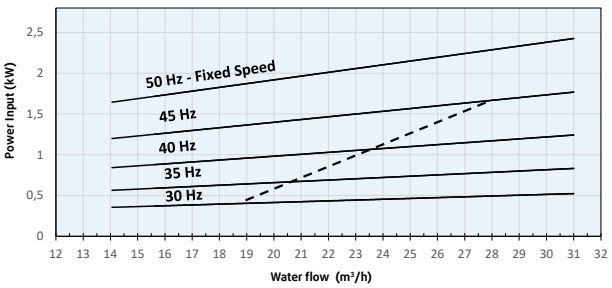
ECOI-W AQUA-Z 85 - 100 - STANDARD PRESSURE PUMP



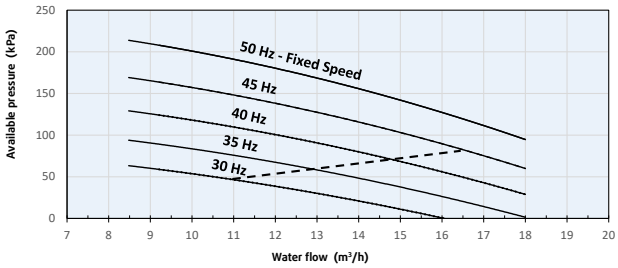


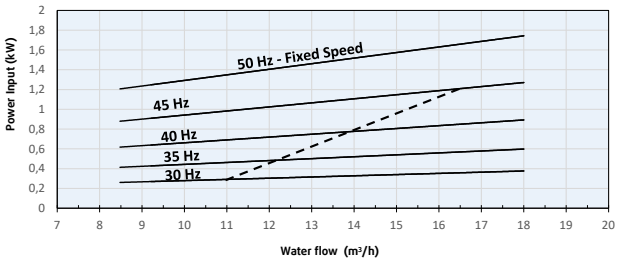
ECOI-W AQUA-Z 115 - 130 - STANDARD PRESSURE PUMP



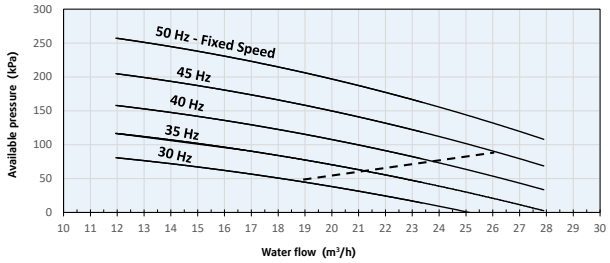


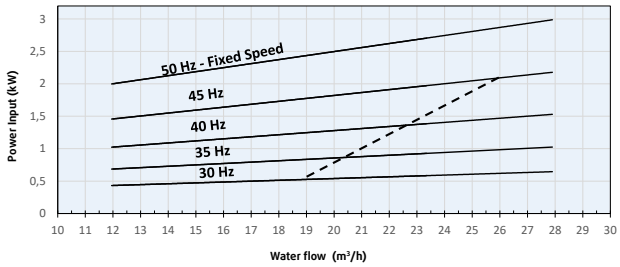
ECOI-W AQUA-Z 70 - 75 - HIGH PRESSURE PUMP



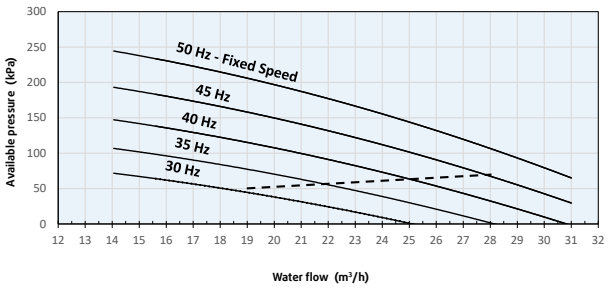


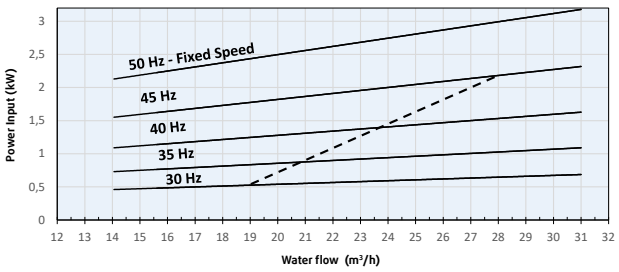
ECOI-W AQUA-Z 85 - 100 - HIGH PRESSURE PUMP





ECOI-W AQUA-Z 115 - 130 - HIGH PRESSURE PUMP





WIRING DIAGRAM
SCHÉMAS ÉLECTRIQUES
STROMLAUFPLANS
SCHEMA ELETRICO
ESQUEMA ELECTRICO

TAKE CARE!

These wiring diagrams are correct at the time of publication. Manufacturing changes can lead to modifications. Always refer to the diagram supplied with the product.

ATTENTION

Ces schémas sont corrects au moment de la publication. Les variantes en fabrication peuvent entraîner des modifications. Reportez-vous toujours au schéma livré avec le produit.

ACHTUNG!

Diese Stromlaufplans sind zum Zeitpunkt der Veröffentlichung gültig. In Herstellung befindliche Varianten können Änderungen mit sich bringen. In jedem Fall den mit dem Produkt gelieferten Stromlaufplan hinzuziehen.

ATTENZIONE !

Questi schemi sono corretti al momento della pubblicazione. Le varianti apportate nel corso della fabbricazione possono comportare modifiche. Far sempre riferimento allo schema fornito con il prodotto.

ATENCIÓN !

Esto esquemas son correctos en el momento de la publicación. Pero las variantes en la fabricación pueden ser motivo de modificaciones. Remítase siempre al esquema entregado con el producto.

POWER SUPPLY MUST BE SWITCHED OFF BEFORE STARTING TO WORK IN THE ELECTRIC CONTROL BOXES!

MISE HORS TENSION OBLIGATOIRE AVANT TOUTE INTERVENTION DANS LES BOITIERS ÉLECTRIQUES.

VOR JEDEM EINGRIFF AN DEN ANSCHLUßKÄSTEN UNBEDINGT DAS GERÄT ABSCHALTEN!

PRIMA DI OGNI INTERVENTO SULLE CASSETTE ELETTRICHE ESCLUDERE TASSATIVAMENTE L'ALIMENTAZIONE !

PUESTA FUERA DE TNESIÓN OBLIGATORIA ANTES DE CUALQUIER INTERVENCIÓN EN LAS CAJAS ELÉCTRICAS!

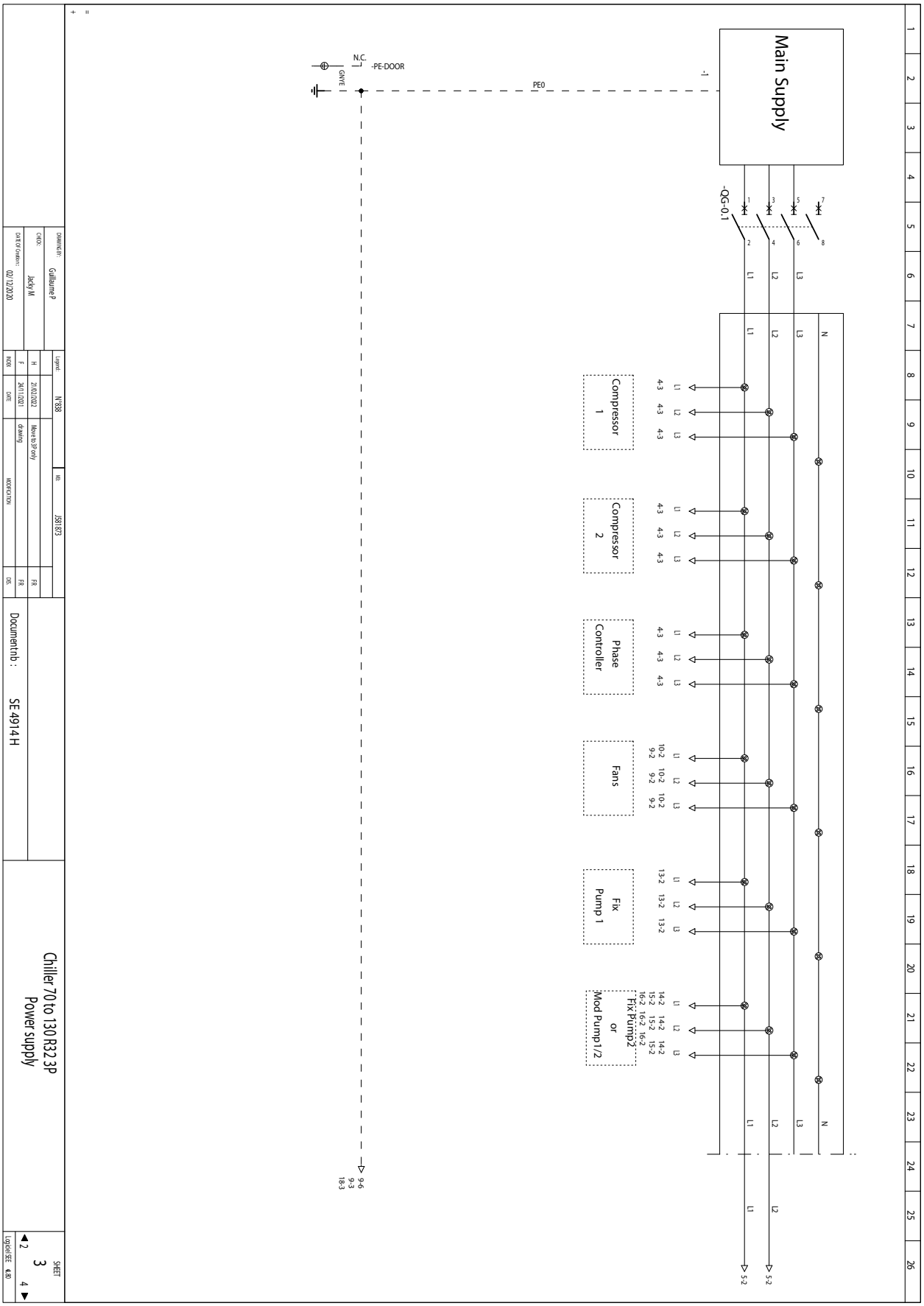
LEGEND

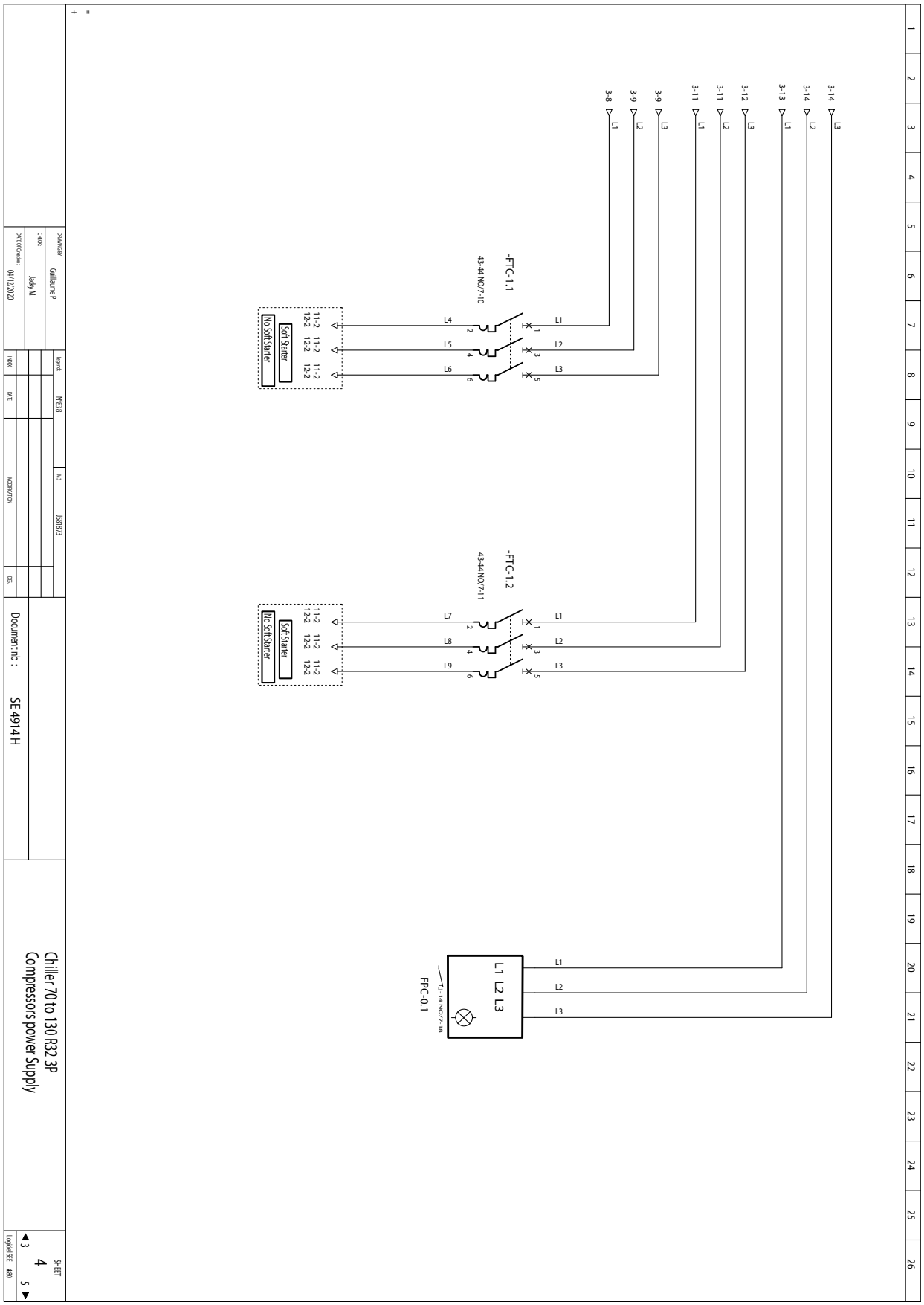
	English	Français	Deutsch	Italiano	Español
	CONTROL AND REGULATION	SCHÉMAS DE COMMANDE	STEUERPLÄNE	SCHEMI DI COMANDO	ESQUEMAS DE COMANDO
	DESCRIPTION	DESIGNATION	BEZEICHNUNG	DENOMINAZIONE	DESIGNACIÓN
AFEH-0.1 AFEH-0.2	Antifreeze electric heater	Résistances anti-gel	Frostschutz-Widerstand	Resistenza antigelo	Resistencia anticongelación
C-1.1 C-1.2	Compressors	Compresseurs	Verdichter	Compressori	Compresores
CDT-1.1 CDT-1.2	Discharge temperature probe	Sondes de température de refoulement	Auslass-Temperaturfühler	Sonda di temperatura di mandata	Sonda de temperatura de descarga
CH-1.1 CH-1.2	Compressors crankcase heater	Résistances de carter des compresseurs	Ölsumpfheizungen der Verdichter	Resistenze del carter dei compressori	Resistencias de cárter de los compresores
CST-1.1	Suction temperature sensor	Sonde de température d'aspiration	Saug-Temperaturfühler	Sonda di temperatura di aspirazione	Sonda de temperatura de succión
EEV-1.1	Electronic expansion valve	Détendeur électronique	Elektronisches Expansionsventil	Valvola di espansione elettronica	Válvula de expansión electrónica
EH-0.1	Heating resistors	Résistances chauffantes	Heizwiderstände	Resistenze di riscaldamento	Resistencias de calefacción
EWT-0.1	Inlet water temperature probe	Sonde de température d'entrée d'eau	Wassereintritt-Temperaturfühler	Sonda di temperatura di ingresso dell'acqua	Sonda de temperatura de entrada de agua
FA-0.1	Automatic reset heating safety thermostat (option)	Thermostat de sécurité chauffage à réarmement automatique (option)	Sicherheitsthermostat Heizung mit automatischer Wiedereinschaltvorrichtung (Option)	Termostato di sicurezza riscaldamento a ripristino automatico (optional)	Termostato de seguridad de calefacción con restablecimiento automático (opcional)
FF-0.1	Fuse terminal + fuse 2,5A	Borne fusible + fusible 2,5A	Sicherungsklemme + Sicherung 2,5A	Portafusibile + fusibile 2,5A	Terminal de fusible + fusible 2,5A
FOF-1.1 FOF-1.2	Outdoor fans motors internal protection	Sécurité interne des moteurs des ventilations extérieures	Eingebauter Wärmeschutzschalter des Motors der externen Lüftung	Sicurezza interna del motore della ventilazione esterna	Seguridad interna del motor de la ventilación exterior
FPC-0.1	Three-phase network control relay (phase sequence and cut-out)	Module de contrôle d'ordre et de coupure de phases	Phasenabschaltungs- und reihenfolge Kontrollmodul	Modulo di controllo d'ordine e di interruzione di fasi	Módulo de control de orden y de corte de fases
FS-0.1	Flow switch	Détecteur de débit d'eau (flow switch)	Strömungswächter (flow switch)	Sensore di portata di acqua (flussostato)	Detector de caudal de agua (flow switch)
FTC-1.1 FTC-1.2	Compressors magneto-thermal circuit breaker	Disjoncteurs magnétothermiques des compresseurs	Magnetothermische Schutzschalter der Verdichter	Disgiuntori magnetotermici dei compressori	Disyuntores magnetotérmicos de los compresores
FTCC-0.1	Control circuit magneto-thermal circuit breaker	Disjoncteur magnétothermique du circuit de commande	Magnetothermischer Schutzschalter des Steuerkreises	Disgiuntore magnetotermico del circuito di comando	Disyuntor magnetotérmico del circuito de comando
FTEH-0.1 FTEH-0.2	Magnetic breakers for heating elements (option) + additional contacts	Disjoncteurs magnétiques des éléments chauffants (option) + contact additionnels	Magnetische Schutzschalter der Heizelemente (Option) + Zusätzliche Kontakte	Interruttori magnetici degli elementi riscaldanti (optional) + Contatti aggiuntivi	Disyuntores magnéticos de los elementos calefactores (opcional) + contactos adicionales

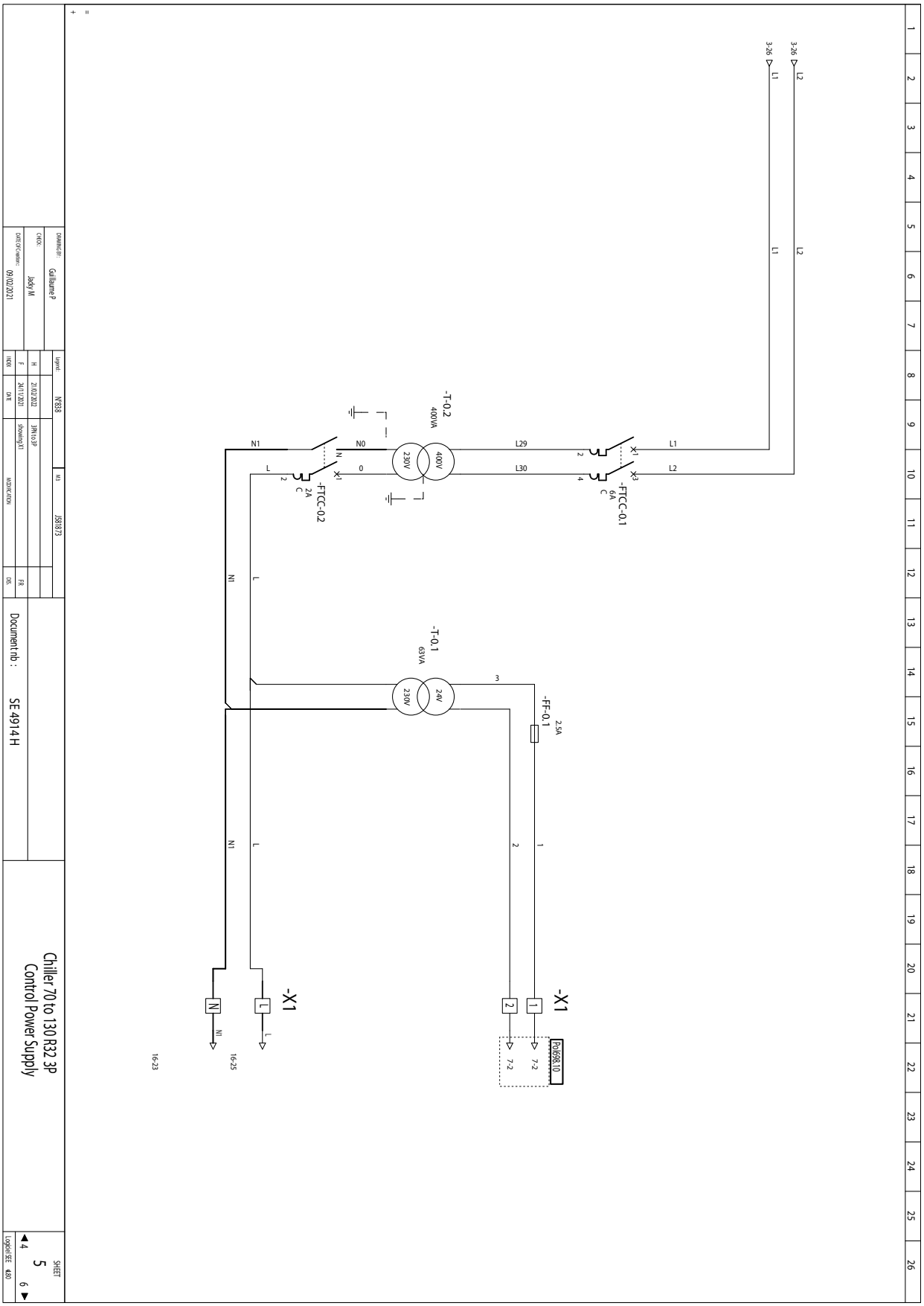
	English	Français	Deutsch	Italiano	Español
	CONTROL AND REGULATION	SCHÉMAS DE COMMANDE	STEUERPLÄNE	SCHEMI DI COMANDO	ESQUEMAS DE COMANDO
	DESCRIPTION	DESIGNATION	BEZEICHNUNG	DENOMINAZIONE	DESIGNACIÓN
FTPC-0.1	30mA circuit breaker for modem socket	Disjoncteur 30mA prise modem	30mA-Schutzschalter für Modembuchse	Interruttore 30mA per presa modem	Disyuntor de 30mA para la toma del módem
FTOF-1.1	Outdoor fans magneto-thermal circuit breaker	disjoncteur magnétothermique de la ventilation extérieure	Magnetothermischer Schutzschalter der externen Lüftung	Disgiuntore magnetotermico della ventilazione esterna	Disyuntor magnetotérmico de la ventilación exterior
FTM-0.1	Circuit breaker 2A modem socket	Disjoncteur 2A prise modem	Sicherungsautomat 2A Modemsteckdose	Interruttore 2A presa modem	Disyuntor 2A toma de módem
FTWP-0.1 FTWP-0.2	Water pump motor magnetothermal circuit breaker	Disjoncteur magnétothermique du moteur de la pompe hydraulique	Magnetothermischer Schutzschalter des Wasserpumpenmotors	Disgiuntore magnetotermico del motore della pompa idraulica	Disyuntor magnetotérmico del motor de la bomba hidráulica
KA-0.2 KA-0.3	Auxiliary line contactor	Relais auxiliaire	Hilfsrealsi	Relè auxiliario	Relé auxiliar
KC-1.1 KC-1.2	Compressors power circuit contactor	contacteurs de puissance des compresseurs	Leistungsschütze der Verdichter	Contattori di potenza dei compressori	Contactores de potencia de los compresores
KEH-0.1 KEH-0.2	Power contactors for heating elements (option)	Contacteurs de puissance des éléments chauffants (option)	Leistungsschütze Heizelemente (Option)	Contattori di potenza degli elementi riscaldanti (optional)	Contactores de potencia de los elementos calefactores (opcional)
KOF-1.1	Outdoor fans power contactors	Contacteur de puissance des ventilations extérieures	Leistungsschütz der externen Lüftung	Contattore di potenza della ventilazione esterna	Contactor de potencia de la ventilación exterior
KOFHS-1.1	Outdoor fans power contactors	Contacteur de puissance grande vitesse des ventilations extérieures	Leistungsschütz der externen Lüftung	contattore di potenza della ventilazione esterna	contactor de potencia de la ventilación exterior
KOFLS-1.1	Outdoor fans power contactors	Contacteur de puissance petite vitesse des ventilations extérieures	Leistungsschütz der externen Lüftung	contattore di potenza della ventilazione esterna	contactor de potencia de la ventilación exterior
KWP-0.1 KWP-0.2	Water pump motor power contact	Contacteur de puissance du moteur de la pompe hydraulique	Leistungsschütz des Wasserpumpenmotors	contattore di potenza del motore della pompa idraulica	contactor de potencia del motor de la bomba hidráulica
LWT-0.1	Outlet water temperature probe	Sonde de température de sortie d'eau	Wasseraustritt-Temperaturfühler	sonda di temperatura di uscita dell'acqua	sonda de temperatura de salida de agua
MV-0.1	Fan of the electrical box	Ventillateur du coffret élèctrique	Ventilator für den Stromkasten	Ventilatore della scatola elettrica	Ventilador de la caja eléctrica
OAT-0.1	Outdoor temperature probe (air)	Sonde de température extérieure (air)	Außentemperaturfühler (Luft)	sonda di temperatura esterna (aria)	sonda de temperatura exterior (aire)
OCT-1.1	De-icing temperature probe	Sonde de température de batterie ailetée	Temperaturfühler der verrippten Batterie	sonda di temperatura della batteria alettata	sonda de temperatura de batería con aletas
PSW-0.1	Water low pressure switch (option)	Pressostat manque d'eau (option)	Wassermangel-Druckwächter (Option)	pressostato mancanza di acqua (opzionale)	presóstato falta de agua (opcional)

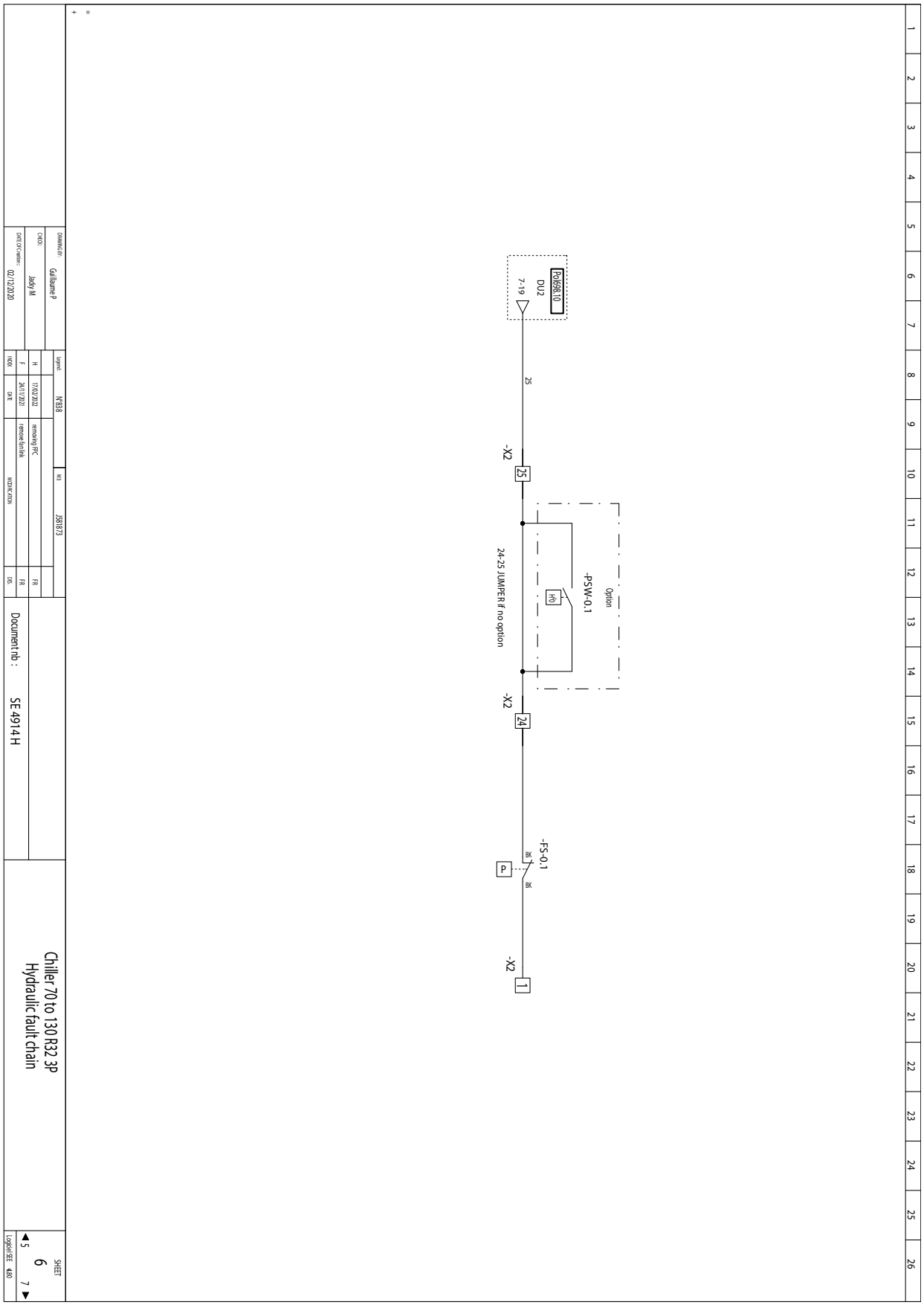
	English	Français	Deutsch	Italiano	Español
	CONTROL AND REGULATION	SCHÉMAS DE COMMANDE	STEUERPLÄNE	SCHEMI DI COMANDO	ESQUEMAS DE COMANDO
	DESCRIPTION	DESIGNATION	BEZEICHNUNG	DENOMINAZIONE	DESIGNACIÓN
PTHP-1.1	Pressure transducer (high-pressure)	Transducteur de pression (haute pression)	Druckwandler (Hochdruck)	trasduttore di pressione (alta pressione)	transductor de presión (alta presión)
PTLP-1.1	Pressure transducer (low pressure)	Transducteur de pression (basse pression)	Druckwandler (Niederdruck)	trasduttore di pressione (bassa pressione)	transductor de presión (baja presión)
QG-0.1	Main section switch	Interrupteur sectionneur principal	Hauptschalter	interruttore principale	interruptor seccionador principal
QGEH-0.1	Heating disconnect switch (optional)	Interrupteur sectionneur chauffage (option)	Trennschalter Heizung (Option)	Sezionatore di riscaldamento (opzionale)	Interruptor de desconexión de la calefacción (opcional)
RV-1.1	4-way cycle changeover valves (option)	Vanne d'inversion de cycle (option)	Umkehrzyklusventil (Option)	valvole di inversione di ciclo (opzionale)	válvula de inversión de ciclo (opcional)
SDN	Switch day / night (not supplied)	Interrupteur jour/nuit (non fourni)	Tag-/Nacht-Schalter (nicht mitgeliefert)	interruttore giorno/notte (non fornito)	interruptor día/noche (no suministrado)
SSTC-1.1 SSTC-1.2	Soft Starter	Démarreurs «Soft Starter»	Anlasser «Soft Starter»	motorini di avviamento «Soft Starter»	Motor de arranque «Soft Starter»
SWS	Switch winter / summer (not supplied)	Interrupteur hiver/été (non-fourni)	Winter/Sommer-Schalter	interruttore invero /estate (non fornito)	interruptor invierno/verano (no suministrado)
T-0.1	Transformer 230V/24V-63VA	Transformateur 230V/24V-63VA	Transformator 230V/24V-63VA	Trasformatore 230V/24V-63VA	Transformador 230V/24V-63VA
TEBF-0.1	Electric box thermostat	Thermostat du coffret élèctrique	Thermostat am Stromkasten	Termostato del quadro elettrico	Termostato del cuadro eléctrico
VFDWP-0.1	Three phase frequency variator of water pump motor	Variateur de fréquence triphasé du moteur de la pompe hydraulique	Drehstrom-Frequenzumrichter der Wasserpumpenmotors	Variatore di frequenza trifase del motore della pompa idraulica	Variador de frecuencia trifásico del motor de la bomba hidráulica
WP-0.1 WP-0.2	Water pump	Pompe hydraulique	Wasserpumpe	Pompa idraulica	Pomba hidráulica
X	Phase distributor	répartiteur de phases	Phasenverteiler	distributore di fase	distribuidor de fase

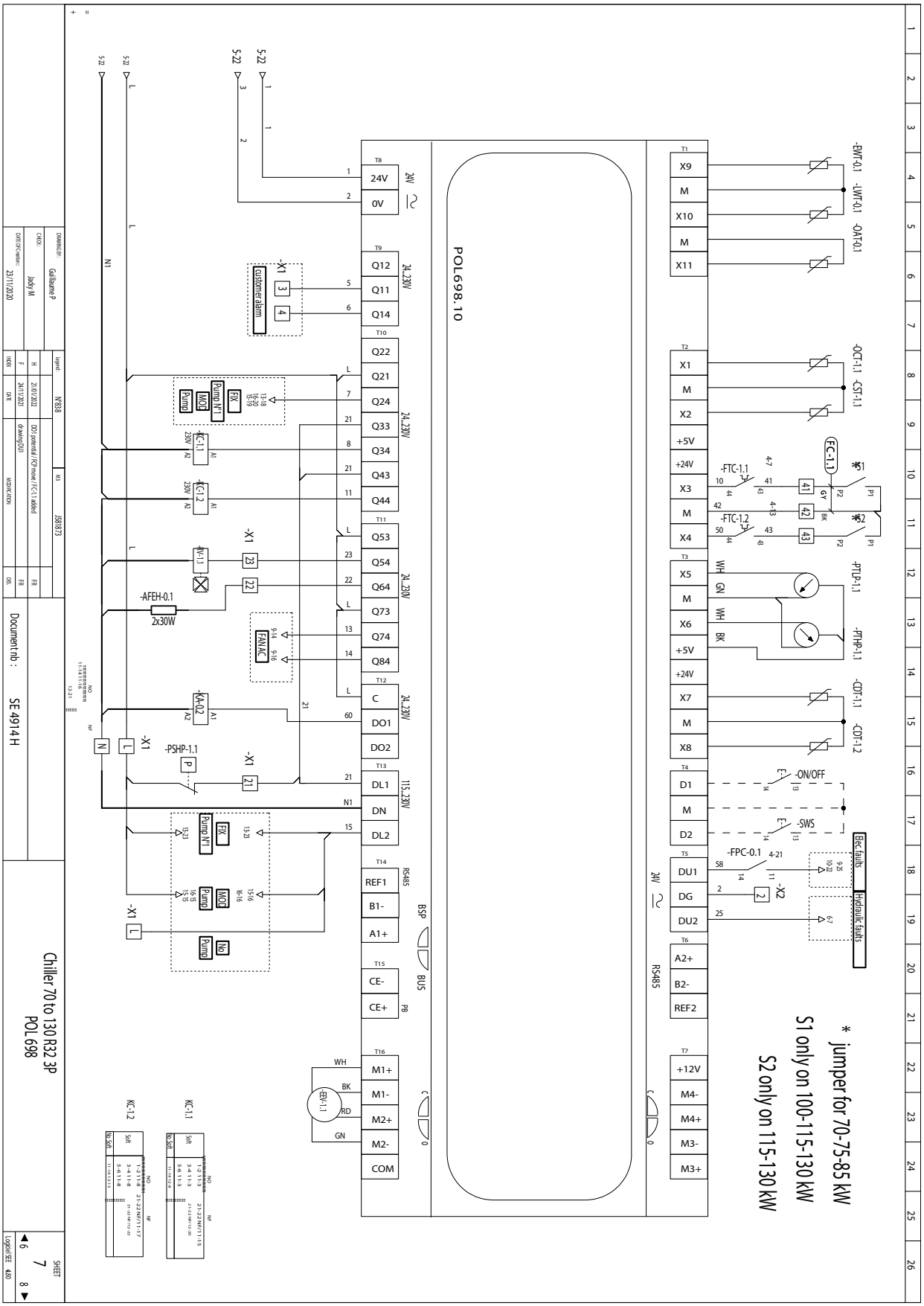
ECOI-W AQUA-Z 70 - 130

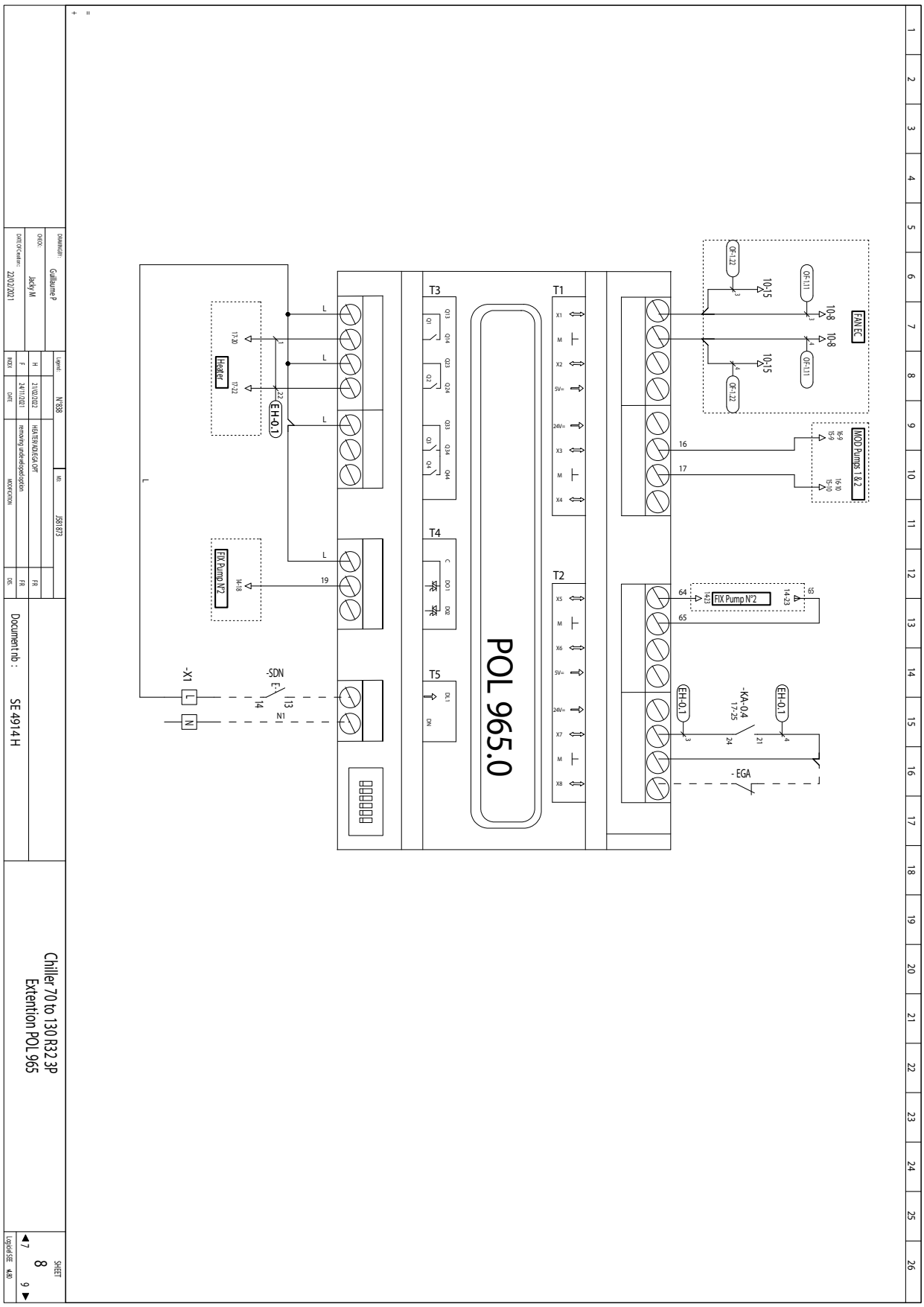


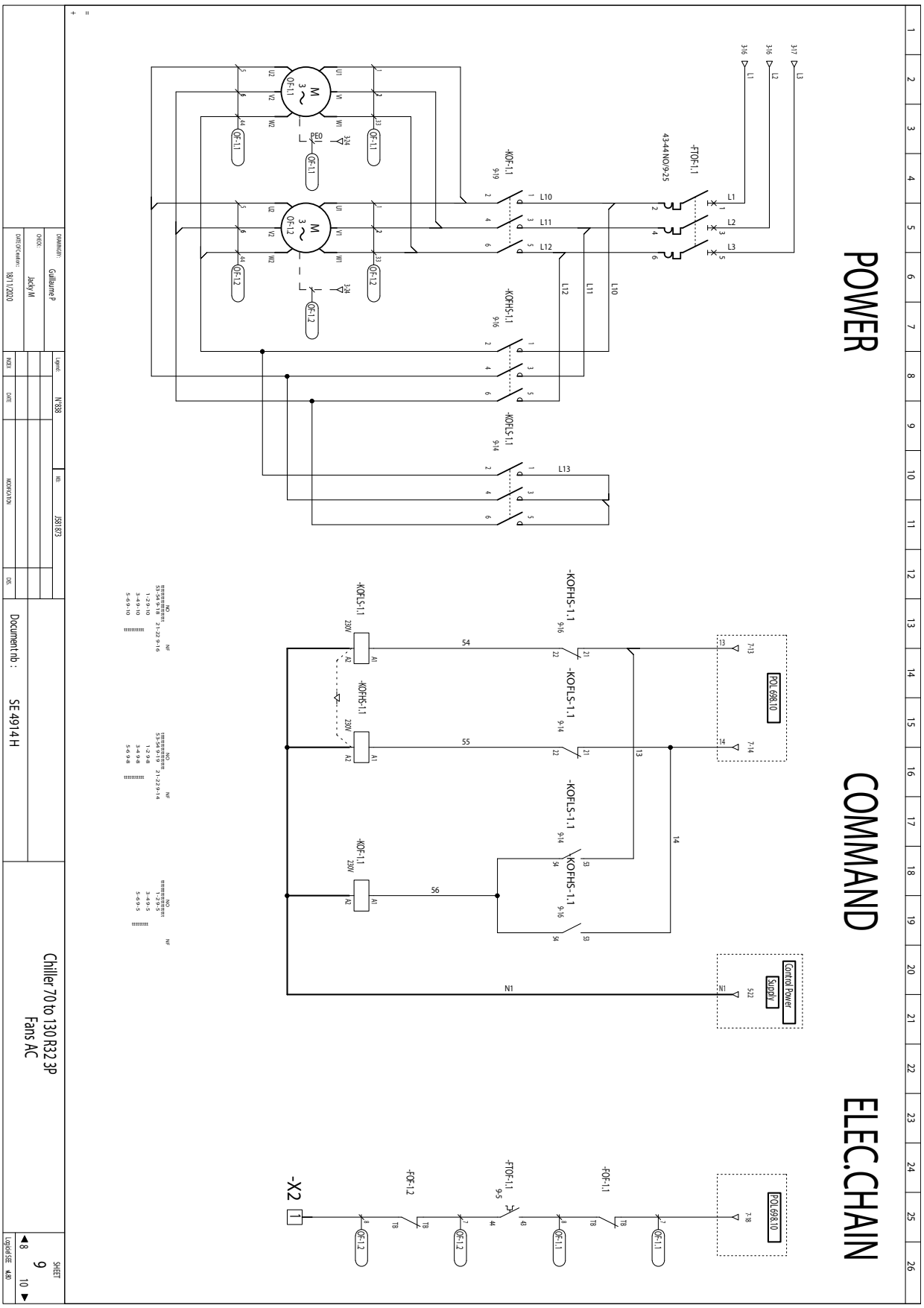


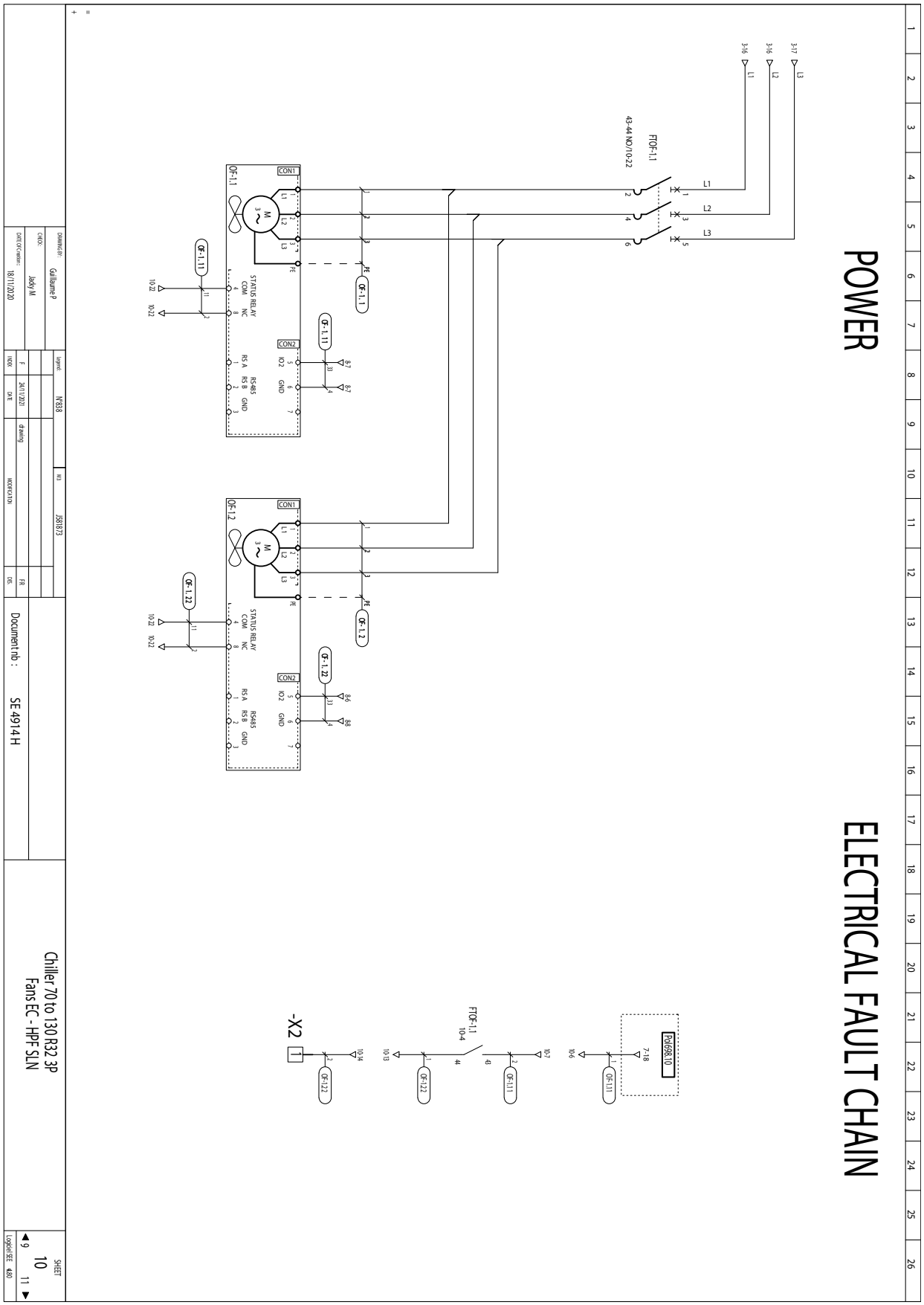


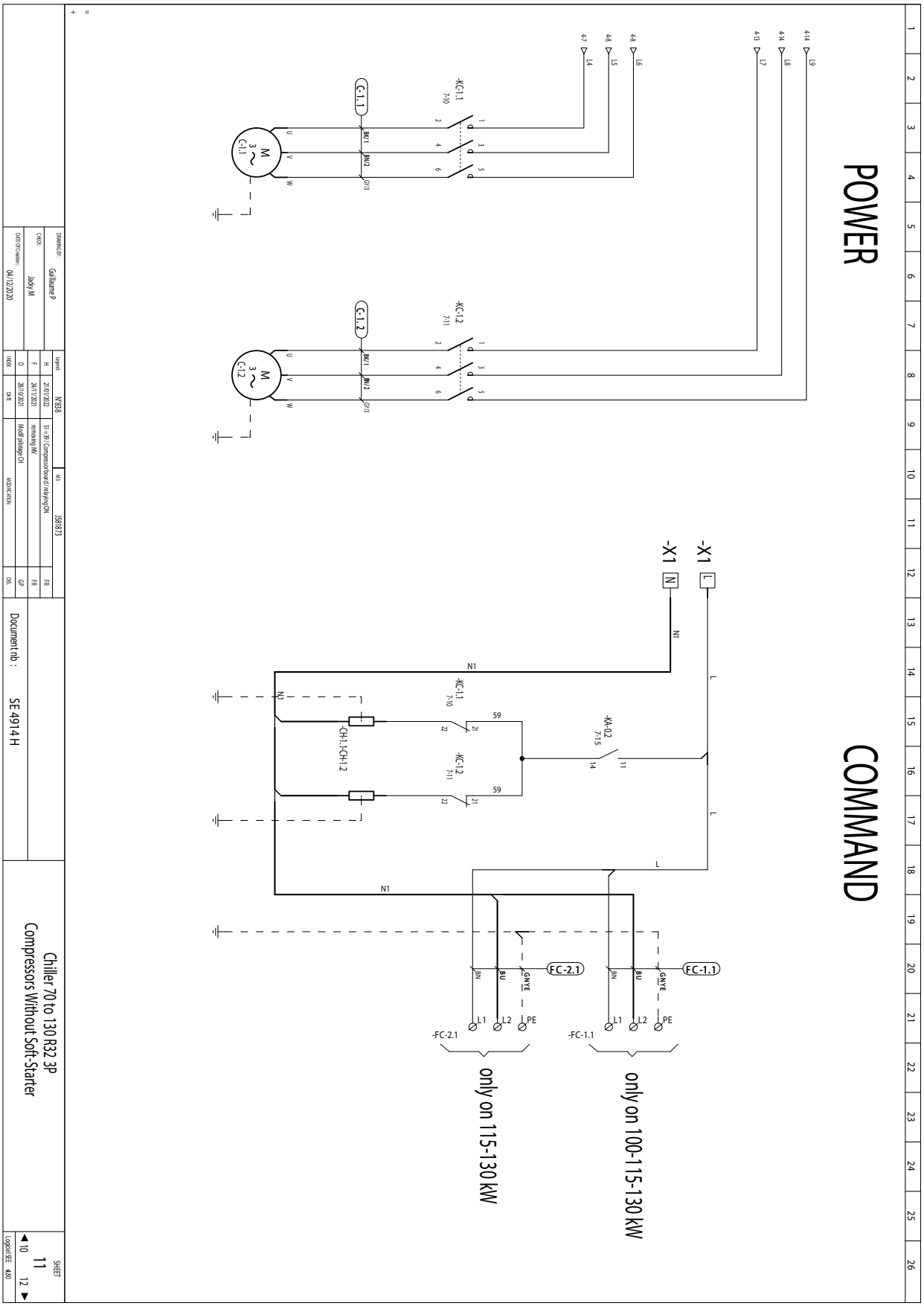


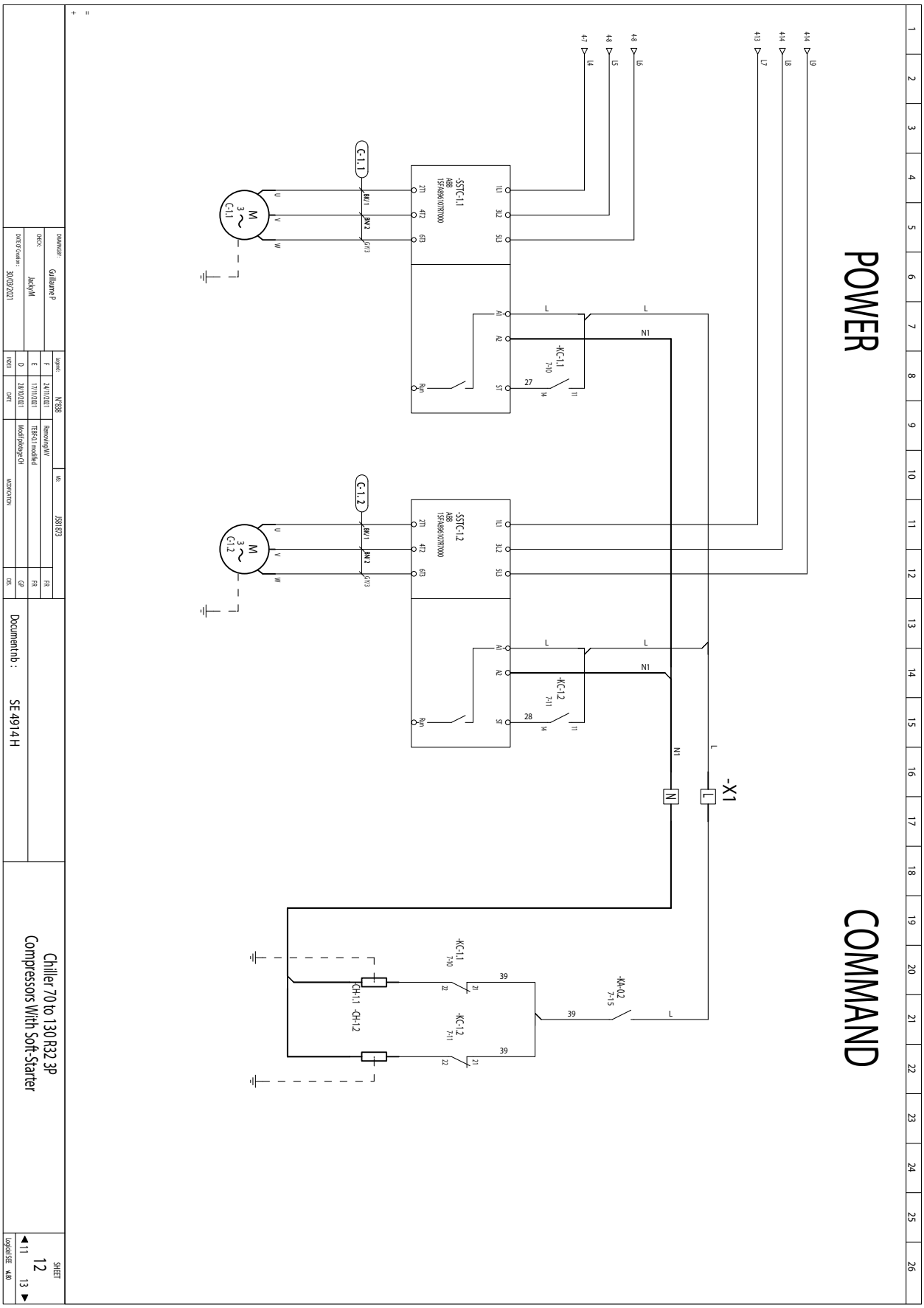


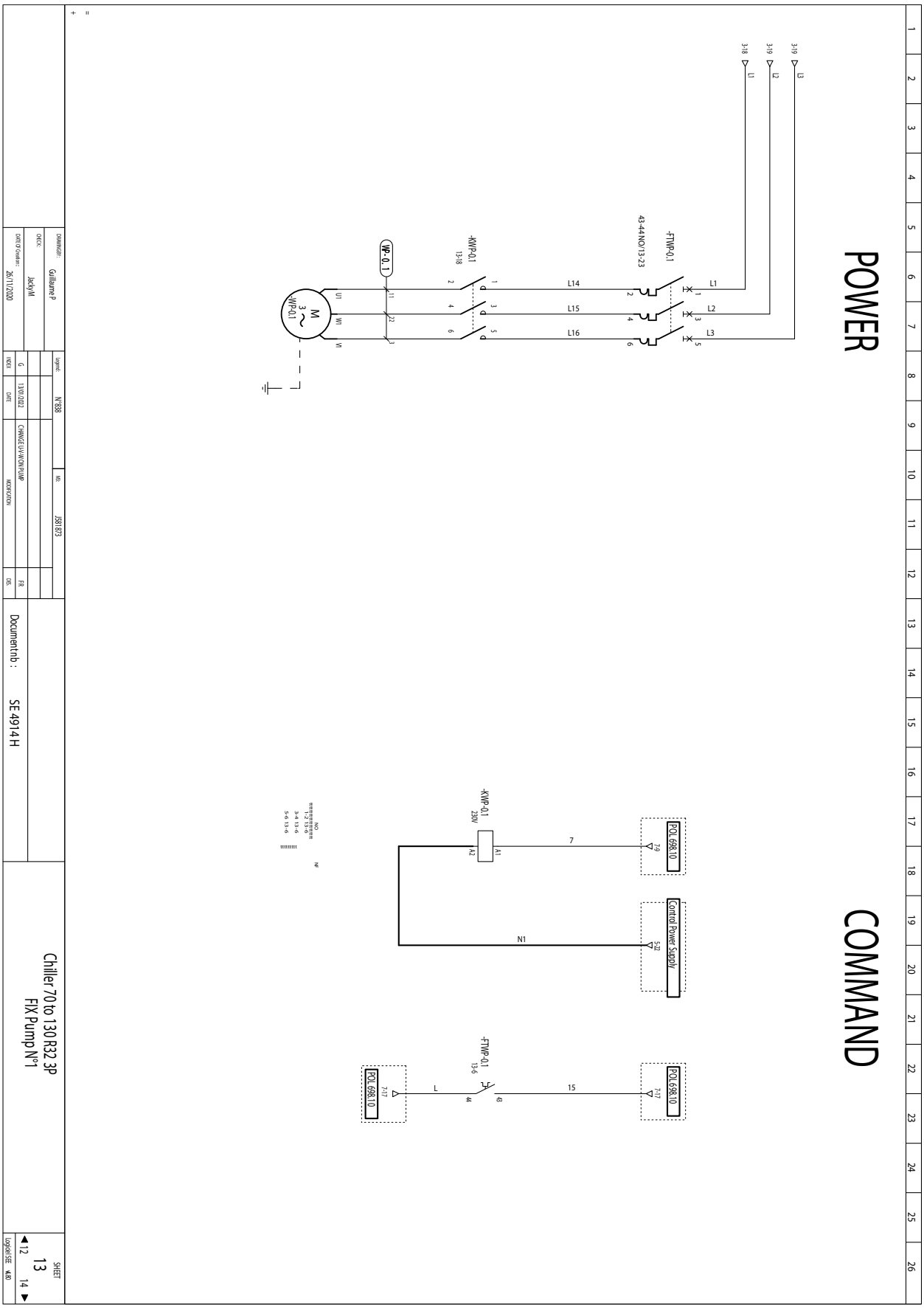


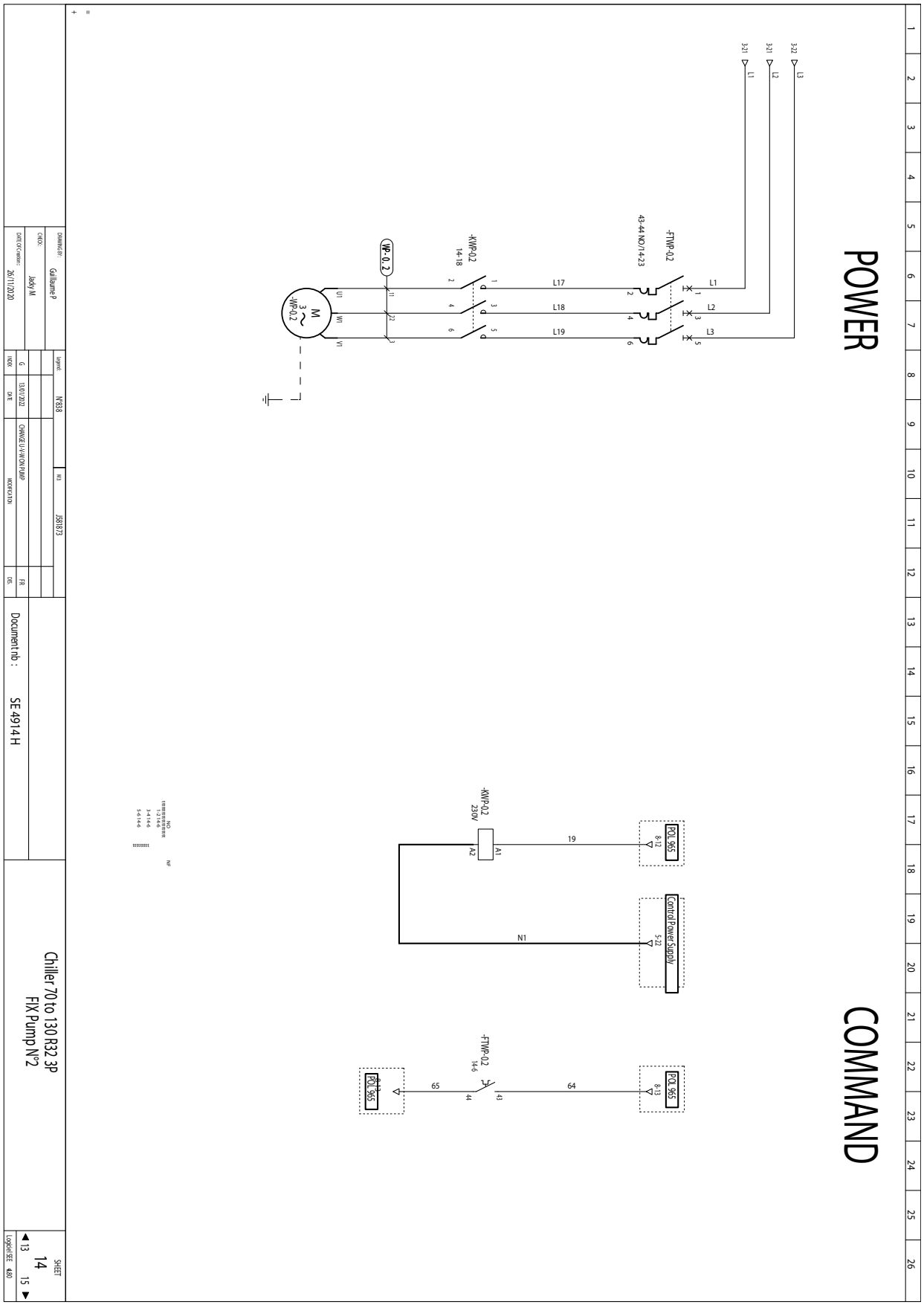


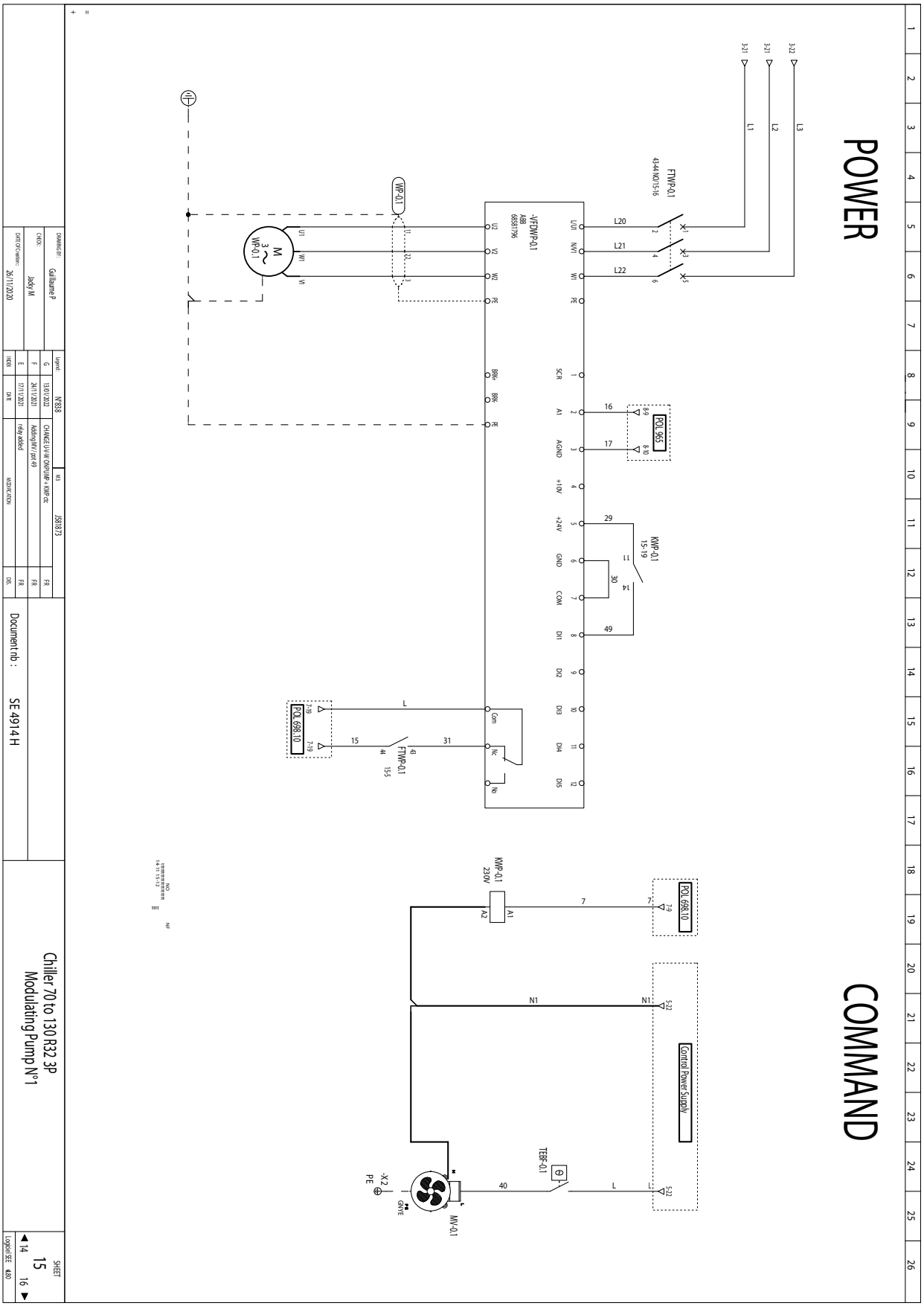


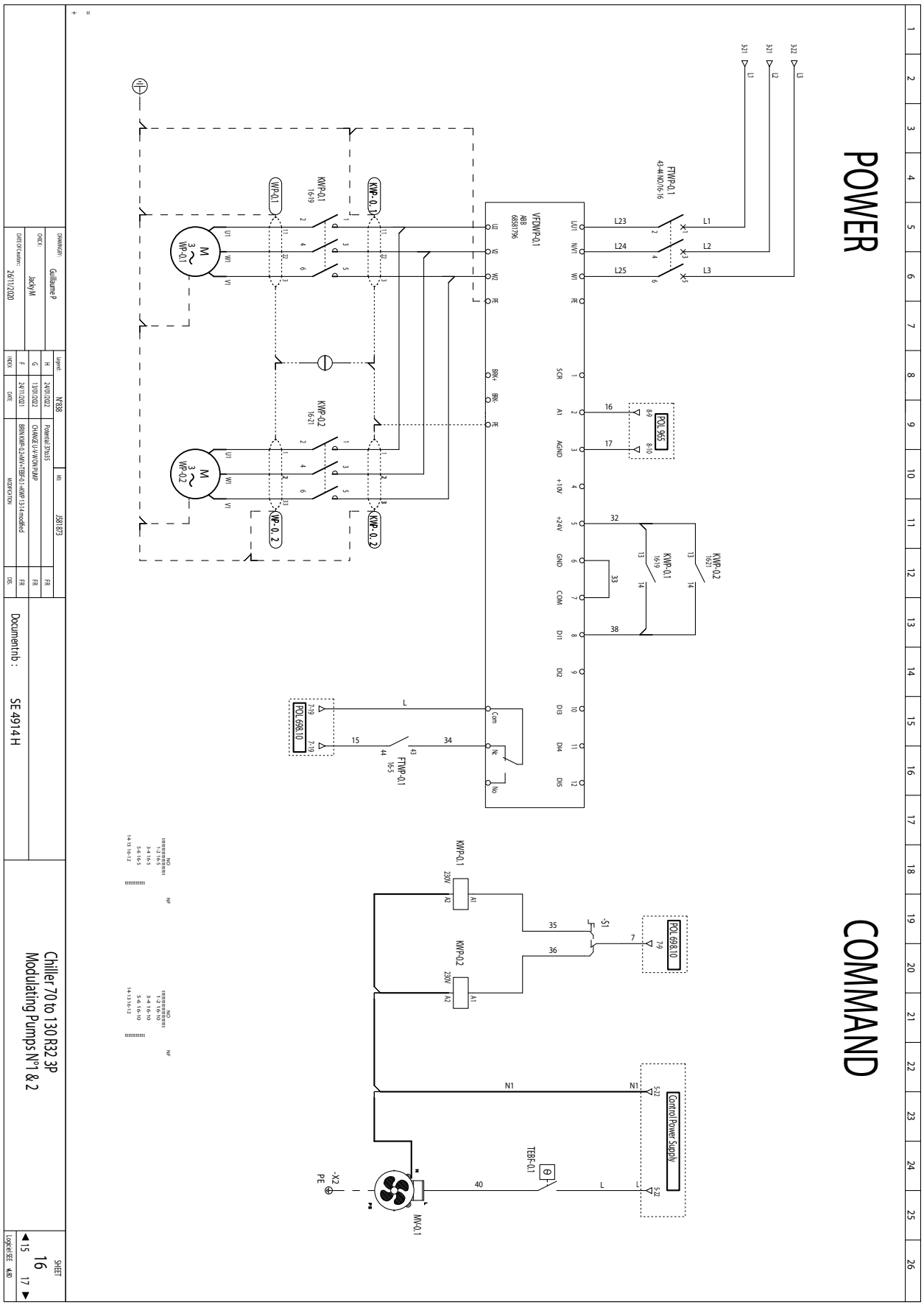


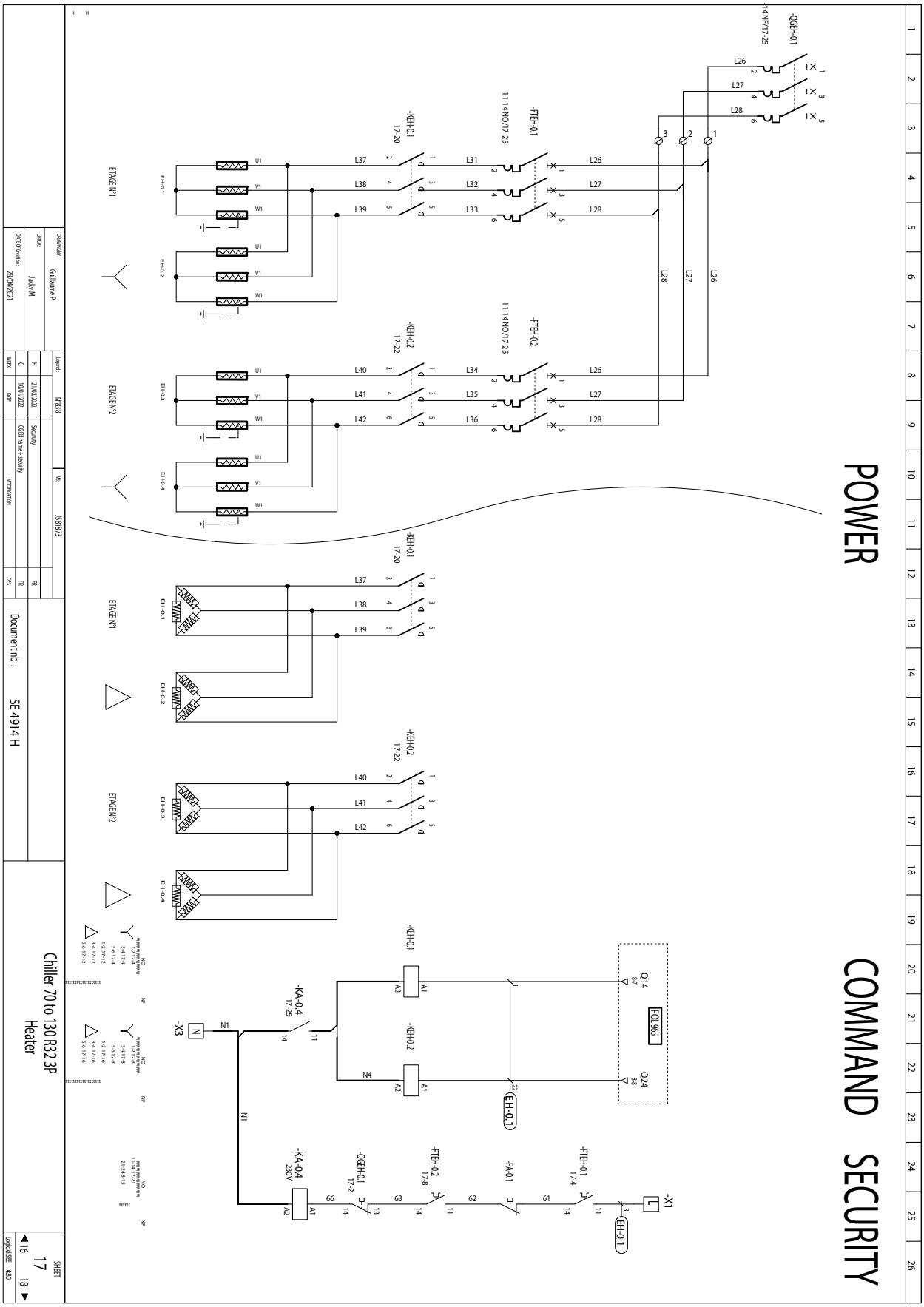


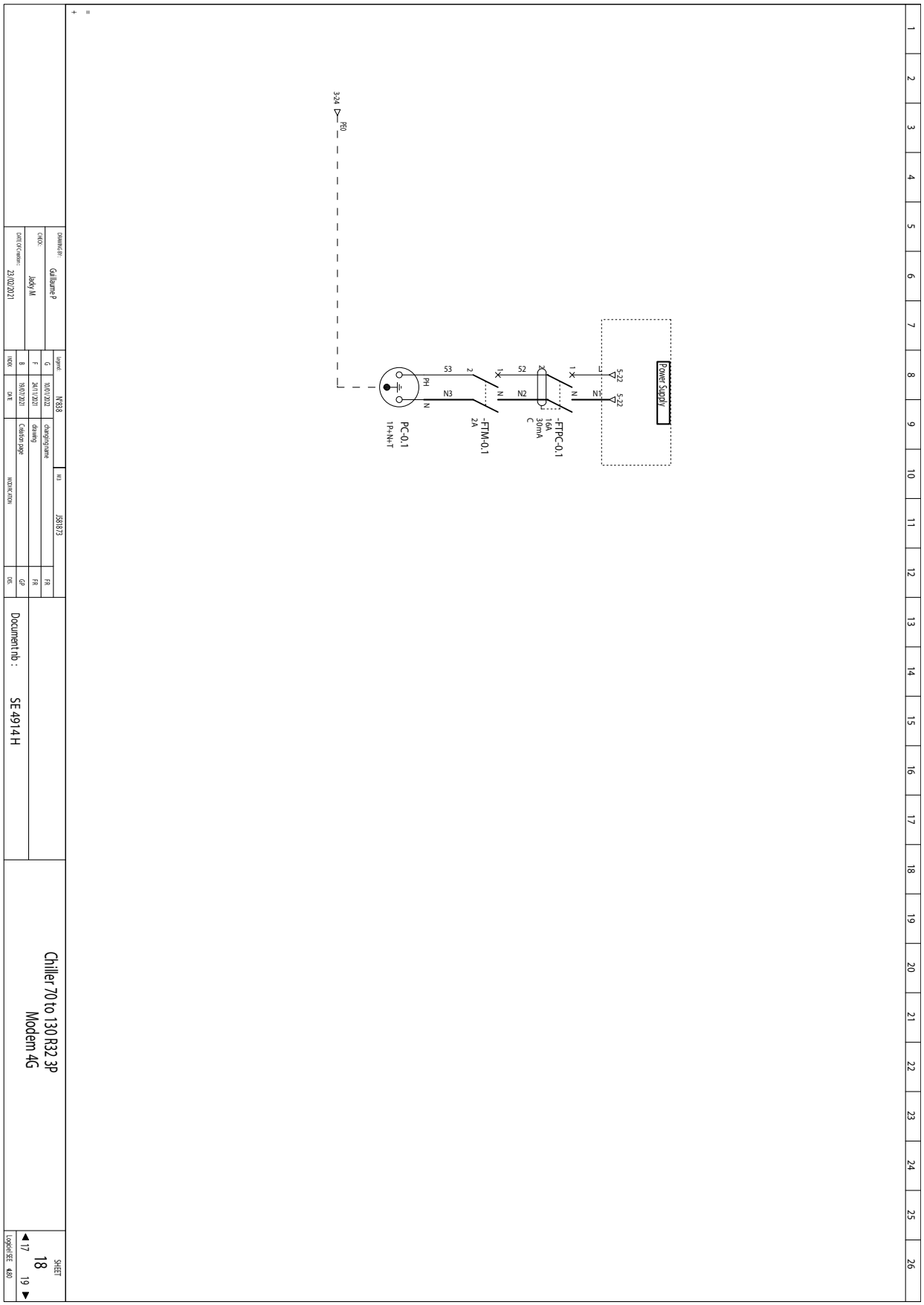












START UP FORM / FICHE DE MISE EN SERVICE

CUSTOMER INFORMATION:

Order number: ..... Job name: .....

Contractor: ..... Installation address: .....

Contact: ..... ☎: .....

INSTALLER INFORMATION:

Company: ..... Address: .....

Contact: ..... ☎: .....

COMMISSIONING INFORMATION:

Company: ..... Address: .....

Contact: ..... ☎: .....

UNIT IDENTIFICATION:

	50	60	70	75	85	100	115	130	150	170
ECOi-W AQUA-Z C										
ECOi-W AQUA-Z H										

Unit serial number: .....

	YES	NO		YES	NO		YES	NO
Simple pump			All seasons kit			XLN		
Double pump			HPF			Soft Starter		
Buffer tank								

Compressor 1 serial number: ..... Compressor 2 serial number: .....

INSTALLATION CHECKING:

	YES	NO		YES	NO
Recommanded free clearance			Water connection, cleaning, rinsing, air bleed		
Level installation			Anti-frost protection of the water loop		
Unit correctly mounted on supplied dampers			Installation thermal load reaches at least 50%		
Power supply compatible with unit specifications			Mesh filter at the inlet of the unit		
State-of-art power cable section and wiring to the unit			Minimum water flowrate available		
Ground cable is wired			Flowswitch cut-out checked		
Main electrical protection suits the unit			Crankcases heaters are energized since 12 hours		
All electrical connections are correctly tightened					
Ground continuity on all pipes					

OBSERVATIONS:

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INSTALLATION MEASUREMENTS:

Ambient temperature: ..... Ambient humidity: .....

ELECTRICAL MEASUREMENTS:

Voltage L1-N: ..... Voltage L1-L2: .....

Voltage L1-L3: ..... Voltage L2-L3: .....

	YES	NO
Voltage unbalance less than 2 %	☐	☐

Never start the unit if the voltage unbalance is over 2 %. Please, contact your electricity supplier for help.

	VOLTAGE			NOMINAL CURRENT		
	L1-L2	L1-L3	L2-L3	L1	L2	L3
Comp. 1						
Comp. 2						
Fan 1						
Fan 2						
Pump 1						
Pump 2						

THERMODYNAMICS MEASUREMENTS:

% of capacity	%	%	%	%
Evaporating pressure	bar	bar	bar	bar
Evaporating temperature	°C	°C	°C	°C
Suction temperature	°C	°C	°C	°C
Condensing pressure	bar	bar	bar	bar
Condensing temperature	°C	°C	°C	°C
Liquid line temperature	°C	°C	°C	°C
Discharge temperature	°C	°C	°C	°C
High pressure switch cut-out	bar	bar	bar	bar

HYDRAULICS MEASUREMENTS:

Inlet temperature	°C
Outlet temperature	°C
BPHE inlet pressure	kPa
BPHE outlet pressure	kPa
Glycol type & contents	%

Vmax (VARIABLE PRIMARY FLOW)	%
Vmin (VARIABLE PRIMARY FLOW)	%
Vstdby (VARIABLE PRIMARY FLOW)	%
Water pressure setpoint	bar

REMARKS:

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The installer certifies that the system has been installed in accordance with the design requirements, and reports that the safety and control devices have been adjusted in accordance with the manufacturer's recommendations.

Date:
TECNICIAN:
Name:
Sign-in:

Date:
CLIENT:
Name:
Sign-in: