ENG

TRANSLATION
INSTRUCTION MANUAL

CHILLY

COMPACT WATER-CHILLER

Nr. / no. 10154716PC01290425

INSTRUCTION MANUAL CHILLY

WTG – QUANTOR GmbH
Europa-Allee 53
D-54343 Föhren
Tel: +49 (0)6502 99 995-0
Fax: +49 (0)6502 99 995-75
www.quantor.technology • info@quantor.tech

WTG-Quantor brands:

QUANTOR

KREYER

OPERATING INSTRUCTIONS

CE

These operating instructions have to be read carefully before putting the chiller into operation.

Please observe these instructions, otherwise the manufacturers liability for subsequent damage will be cancelled. All rights required for further technical development and modification, are reserved.

IMPORTANT!

Proper use of the chiller

This chiller is designed for the cooling of water only. For the use of other agents (e.g. deionised water) please contact the manufacturer. Limits indicated in the technical data must be adhered to strictly, otherwise the manufacturers liability for subsequent damage will be cancelled. Chilling of flammable or explosive substances is prohibited.

IMPORTANT!

Please keep these operating instructions for further use!

1 SAFETY / PREVENTION OF ACCIDENTS

General information

These operating instructions contain valuable information which has to be observed during initial start-up, operation and maintenance. Therefore these instructions are to be read by the installer and operating personnel in charge, before putting the chiller into operation.

All general safety instructions mentioned in this chapter and special security instructions given in other sections of this manual have to be observed.

Personnel qualification and training

Operating, maintenance, inspection and installation personnel must be qualified. Responsibility and supervision must be clearly explained to the operator.

Danger due to non-observance of safety instructions

Non-observance of safety instructions may cause injuries, endanger the environment or damage the chiller. Non-observance of safety instructions will cancel the manufacturers liability for subsequent damage.

Safety conscious operation

The safety instructions given in these operating instructions, including national regulations on accident prevention as well as any specific chiller safety instructions must be observed.

Safety instructions for user / operator

Protective guards that have been installed to prevent contact with moving parts may not be removed when the unit is being operated. Danger resulting from the use of electrical power is excluded (for detailed information, refer to the VDE regulations and the regulations of the local power supply authorities).

Safety instructions on maintenance, inspection, and installation work

Basically none of the cleaning or maintenance tasks may be performed until the unit has come to a complete standstill. As soon as this work has been completed, all the safety devices and protective equipment must be mounted or installed according to their proper function.

Arbitrary modification and production of spare parts

The unit may be converted only if an agreement has been reached with the manufacturer. Original spare parts and accessories accepted by the manufacturer serve as safety guarantee. Use of other parts may cancel the manufacturer‘s liability for subsequent damages

1 SAFETY / PREVENTION OF ACCIDENTS

Non-permissible operating methods

The operational safety of the delivered unit is guaranteed only if the unit is properly used as intended.

Limits indicated in the technical data must not be exceed

Health hazards with the refrigerant

The refrigerant has only a very low acute health hazard. It has narcotic effects only at extremely high concentrations. After acute exposure to extremely high concentrations the substance is eliminated over the lungs very quikkly. The refrigerant has a certain irritating effect on skin and mucous membranes. Exposure of the skin to liquid refrigerant can cause frost bite. In the presence of open flames or hot surfaces refrigerant can decompose and form toxic decomposition products (e.g. hydrogyn chloride, phosgene). The refrigerant evaporates when exposed to air . Intentional exposure of refrigerant is not permissible. The chiller must be handled with great care to prevent any damage occuring through transport operations.

Safety symbols

Warning!

This symbol is to be found next to all the safety instructions involving work that may result in serious injuries. Observe these instructions and proceed with extreme caution in such instances. Inform all other users as well. In addition to the instructions included in this manual, the applicable general safety and accident prevention regulations must also be taken into account.

Attention!

This symbol is to be found next to the items in this manual that must be strictly observed to ensure proper application of the guidelines, regulations, instructions and procedure of tasks and to make sure that the machine or other parts are not damaged or destroyed.

Note!

This symbol explains that chiller is designed according to state-of-the-art technology and is safe to operate. Dangerous situations may, however, be the result if the unit is used by personnel without adequate qualification or if it is not used correctly according to its intended purpose. Accordingly, this may affect efficient operation of the unit.

2 TRANSPORT

The chiller may only be transported in original packaging to the site of initial operation. In case of damage the manufacturer must be informed immediately. If the unit is moved to another location in a factory, all connections must be disconnected from the unit. Moving the unit to another location must be carried out without causing damages. If damage occurs despite these instructions, the unit must be checked by an expert and repaired as required before it is put into operation again.

Note:

The Manufacturers Liability excludes any Damage to the Chiller subsequent to Transportation.

When transporting the unit, consider the weight limits indicated in the technical data.
Use a fork-lift, truck or a crane with the corresponding load-capacity.

The fully-hermetic compressor is mounted on rubber. Avoid vibrations during transport.
Failure to observe can result in compressor damage.

3 INSTALLATION AND INITIAL OPERATION

Installation

Prior to installation and commissioning of the chiller, please observe the following points strictly:

- ***The fresh air intake temperature may not exceed the max.ambient temperature (refer to name plate)***
- Assure that the required quantity of air is available at air cooled chillers.
- **Assure that the chiller hot air outlet does not warm up the environment or room excessivly**.
- Min.distance of fresh air intake: at least 0,5 m (air cooled version)
- Min.distance of hot air outlet: at least 1,0 m (air cooled version)
- Connection of an air supply and exhaust duct is not admitted.
- **The fresh air intake of the unit (condensor) may not be situated infront of a heat rejecting device like a pump or electric motor.**
- The unit must be set up on level, solid surfaces only, in order to ensure the required stability. For outside erected chillers, the minimum outdoor temperature should be considered from the technical data.

According to EN 60204-1 the chiller must be positioned in a way that its power switch is located at a height between 0.6m-1.9m above the access level (floor).

Floor space

A minimum space must be left open around the installation, so that there is access to the various components and to the control cabinet.

The distance from any constructions blocking the air supply must be at a minimum distance of 0,5 meter.

3 INSTALLATION AND INITIAL OPERATION

Electrical connection

- The chiller is ready for connection and is connected to a one or three phase current network (mains voltage refer to technical data).
- The power supply has to be connected in a ***right handed rotatory field***. In order to confirm the correct connection the direction of rotation of the fan motor must turn in the same direction as the arrow.
- All electrical connections in the switch board are to be tightened prior to commissioning.

Incorrect connection of power supply and incorrect power supply will cancel the manufacturers liability for subsequent damage.

Hydraulic connection

After completing the electrical connection it is necessary to connect the Chiller to the consumer VIA flexible or fixed pipes.

- Selection of materials of pipes. PVC, Plastic, Stainless Steel, Copper and Brass are permissible.
  Note: Mild Steel and Galvanized Steel is not permissible.
- Selection of cross – section of pipes (for advise please refer to manufacturer).
- Insulated pipes are to be used if the distance between the chiller and the consumer is greater than 5 m.
- Refer to technical data (pump diagram) for flow rate and pressure available from the chiller.
- Before starting up it is always necessary to prime the pump with the medium to be transported. (refer to BLEEDING OF PUMP in this chapter).
- If the consumer is placed on a higher level than the chiller unit, a non-return valve has to be recommend in the water outlet as well as an solenoid valve has to be installed in the water inlet.
- Connect water inlet port to consumer return line.
- Connect water outlet port to consumer inlet line.
- Connect water supply port (if available) to city water net.
- Please test float valve adjustment (option). Float valve is factory adjusted at 3 bar water pressure.

Incorrect hydraulic installation will cancel the manufacturers liability for subsequent damag

Refilling of the tank

Automatic refill

Tap/fresh water feed connected to water supply port guarantees constant level in the tank, so that evaporator always remains submerged.

Manual refill

Filling of water manually through water inlet port or directly into tank.

The waterlevel can be observed by the water sightglass which can be seen from the outside of the housing. Ensure that the evaporator is submerged.

3 INSTALLATION AND INITIAL OPERATION

Important:
Prior to filling of the tank it is esessential to test the water quality and if required carry out watertreatment (refer to chapter 7).

To avoid corrosion at the stainless steel evaporator, we recommend to use water with a low salt content (chloride content < 20 mg/l). To avoid thickening of the tank water, we recommend to replace the system content every 1 to 3 months.

- an increasing evaporation of the tank water means an increasing chloride content (➔please refer to chapter 6).
- For chillers running at temperatures lower than freezing point, a water/glycol mixture at the appropriate ratio should be filled.

  30% Glycol up to –10°C, at lower temperatures ➔please refer to the manufacturer.
- The tank should be filled to the max. level of the water level tube.
- Prior to start up it is always necessary to prime the pump with the medium to be transported.
- Prior to start up the pump must be bled in order to remove air from the pump.

Bleeding of the pump

- Remove bleeding screw P (option)
- Reinstall bleeding screw and tighten as soon as medium exits from filler fitting.

Important: Ventilation of the pump

before start the process,following steps are to relize for ventilate the pump:

- check the waterlevel in the tank and refill it, if necessary
- open the outlet of the pump, or
- connect only the outlet of the pump, let the inlet free flow out

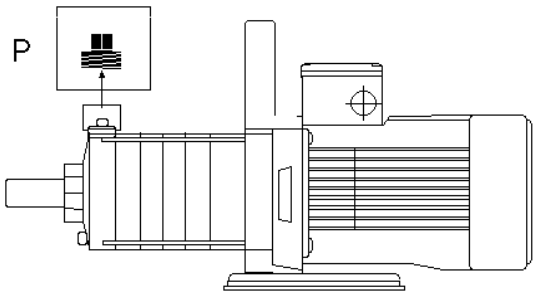
If there is still some air in the system, you have to repeat the steps as described before.

After open the outlet start the pump for a short time.

Attention

before start the operation of the pump, the function of this pump must be absolutly check.
In case that the pump after a longer standstill and ventilation stopp , you have to introduce a screwdriver through the airgrille into the shaft and turn it clockwise (1-2 turns min.), until a easiness is produced.

CM-pump



3 INSTALLATION AND INITIAL OPERATION

Start–up of chiller

■ After successful completion of all instructions given in this chapter, the refrigerating plant is switched on by means of the main switch or master switch (if installed). The **OPERATION** light will light up during normal operation.

Master switch position: **O = Off** **1 = Operation**

■ In case of irregularities occurring during operation or extraordinary noise, the chiller has to be switched off by means of the control switch (please contact the manufacturer).

■ Confirm the correct power supply connection.The direction of rotation of the fan motor must turn in the same direction as the arrow.

4 CARE AND MAINTENANCE

General

In case of irregularities occurring during operation or extraordinary noise, the chiller has to be switched off by means of the main switch or if missing over the power supply.

Fluid (water)

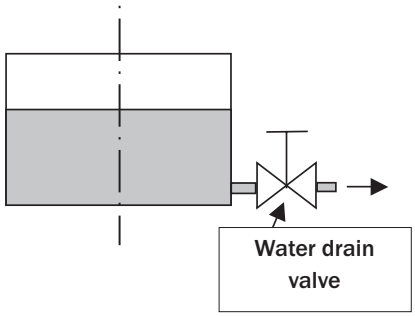
Cleanliness of the water/fluid should be tested daily. If required, the water/fluid has to be drained and the evaporator, tank and pump has to be rinsed or cleaned.

Drain water from the tank as follows:

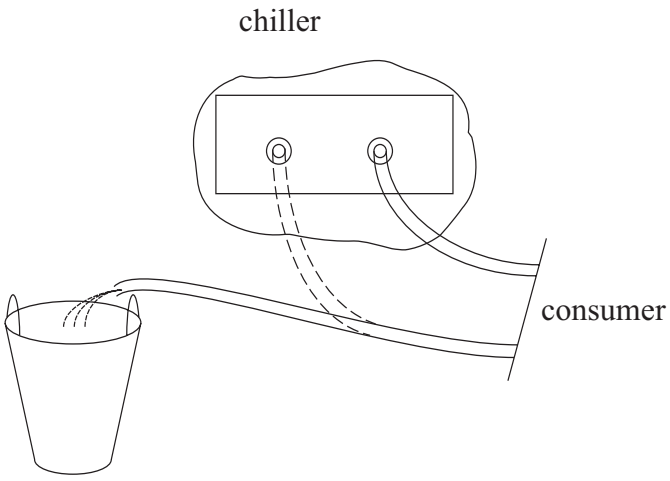
- Option - drain water through water drain valve (A) Special equipment available on request
- By disconnecting the connection medium on the water inlet side while the pump is running

  Attenion: use a buchet (B).

(B)



(C)



Refilling of fluid

Automatic refill (option)

Automatic water feed guarantees constant level in the tank, ensure that the evaporator always remains submerged. Float valve function has to be tested regularly.

Manual refill

Ensure that the evaporator is always submerged.

Water supply

Larger volumes of fresh water supply may disturb the equilibrium of mixture or reduce concentration of antifreezing agent. The content of concentration should be checked and determined at required intervals of time.

Standstill for prolonged period

Longer standstill of chiller requires draining of tank and complete water circuit. For renewed start-up of the chiller the same steps as for the initial start-up must be considered.

Cleaning of condenser (air-cooled chillers)

Make sure that the cooling fins of the condenser remain clean in order to guarantee the required heat exchange.

The condensor must be cleaned in monthly intervals or if required at shorter time intervals.

Dust and dirt clogging up the cooling fins should be removed by means of compressed air.

5 FAULT DIAGNOSIS

By means of the following instructions a quick failure analysis can be made. The user can repair some failures without any assistance. Please do not hesitate in phoning the manufacturers after sale service department if assistance is required.

Corrective maintenance of the refrigeration cycle must be performed by competent refrigeration specialists only. In case of any problems concerning the refrigeration cycle, please contact the manufacturer

Note:

Please ensure to switch »0« the main switch, before any maintenance or repairment work has to be performed on the chiller.

5 FAULT DIAGNOSIS

Fault Refrigeration cycle	Possible cause	Repairement
A. Compressor and fan motor running, but chiller has no cooling capacity	Refrigerant leakage - refrigerant level to low	Repairement by qualified refrigeration technician only
	Dirty condensor	Clean condensor
	Ambient temp. to high	Refer to technical specifications
	Consumer capacity to high	Refer to technical specifications
B. Compressor and fan motor is not running	Temperature controller setting incorrect	Re-adjustment of temp. controller
	Temperatur controller defect	Replacement by qualified technician only
	Fan Motor defect	Switch off the chiller and restart after 3 hours only. If compressor does not start, replacement by qualified refrigeration technician only. If compressor starts, refer to D.
C. Compressor does not run, but fan motor is running	Compressor Bimetal/Clixon switches compressor of due to overheating	Switch off the chiller and restart chiller after 3 hours only. If compressor does not start, replacement by qualified refrigeration technician only.
	If compressor starts after 3 hours	1. Refrigerant leakage - refrigerant level to low 2. Dirty condensor 3. Ambient temp. to high 4. Consumer capacity to high
D. Compressor is running, but fan motor does not run	Fan Motor defect	Replacement by qualified technician only.

5 FAULT DIAGNOSIS

Fault Water cycle	Possible cause	Repairement
Pump is not pumping any water	Air in the water cycle	Refer to air bleeding instructions in Documentation
	Pump fuse defect	Replace fuse
	Pump defect	Replacement by qualified technician only

6 IMPORTANT INFORMATION ON WATER QUALITY

In order to achieve a correct and trouble-free operation on your water chiller it is necessary to examine the water quality and, when necessary, carry out water treatment. Corrosion, furring and biological problems can occur in the water system.

The following information is important for the assessment of a half-open system:

- water quality
- all materials having contact with the cooling water
- max. and min. system water temperature
- requirements for water quality

1. Deionized / Demineralized / Destilled / Return Osmosis water

When using deionized, demineralized, destilled or return osmosis water it is required to add a corrosion inhibitor or glycol to the water system.

2. Guidelines for the process water quality

Machine damage

Filling the system with process water of unsuitable quality may result in corrosion and deposits.

- Test the water quality before filling the system.
- Only fill the system with process water of suitable quality.

Requirements

The water quality of the cooling water must satisfy specific requirements. A wide range of conditions may cause corrosion (rust, material destruction) and deposits (limescale, sludge, bacteria, algae, etc.).
To protect the system from these and similar problems, the manufacturer generally recommends treating the water using suitable agents (corrosion protection, lime stabiliser, biocide)

Parameter	Max.	Unit
pH value, without aluminium	7.0–9.5	
pH value, with aluminium	7.0–8.5	
Conductivity (without treatment agents)	< 80	mS/m (T = 25 °C)
Total hardness ($CaCO_3$)	< 300	ppm
Total hardness	< 15	°dH
Chloride (Cl)	50	mg/l
Sulphate (SO_4)	200	mg/l
Iron (Fe)/manganese (Mg)/copper (Cu)	< 0.2	mg/l
Corrosion protection, e.g. ST-DOS H-390	10–20	g/l
No solids/rust	< 0.1	mg/l
Microbiology, pathogens	< 1,000	CFU/ml

6 IMPORTANT INFORMATION ON WATER QUALITY

Water treatment

If the quality of the water available does not comply with these guidelines, we recommend altering the water quality by means of suitable water treatment (filter technology, softening systems, demineralisation systems). The operator is responsible for adhering to the recommended water quality and other parameters. The manufacture therefore assumes no responsibility for problems caused by corrosion, deposits, etc.

Example of treatment agents

Example 1
ST-DOS H-390, corrosion protection with non-ferrous metal protection and hardness stabilisation, suitable for all water qualities and typical materials (including Al), required quantity 1 % – 2 %, easy to verify. Alternative ST-DOS K-370, 0.3 % – 0.5 %, not suitable for aluminium.

Example 2
ST-DOS KK-372, ready-to-use solution, corrosion protection suitable for all typical materials, easy to verify.

Example 3
ST-DOS B-513, disinfectant and biocide suitable for all water qualities and typical materials, required quantity 10 ml per 10 l.

Example 4
ST-DOS F-196 L, ready-to-use mixture on a basis of propylene glycol, antifreeze with corrosion protection and bacterial protection, approved for the food industry. Alternative ST-DOS F-190 on a basis of monoethylene glycol.

Other questions about water treatment

If you have any other questions, please contact a water treatment specialist.

Information about manufacturer liability

The manufacturer is not liable for any damage or disruptions to operation resulting from non-observance of this section.

7 PLATE HEAT EXCHANGER (OPTION)

Cleaning of plate exchanger

Soldered heat exchanger: For the removal of lime- and rust deposits, purifying agent SWEPcip AS, RS, CS or S (according to material) is suitable. Cleaning may be performed by means of SWEP cleaning device C.I.P 90 (circulation method) or a stationary pump.

Screwed heat-exchanger: In this case the heat exchanger can also be disassembled for cleaning.

Steel	Lime	Rust	Lime + Rust
	SWEPcip AS	SWEPcip RS	SWEPcip S
Max. Temp:	80 °C	80 °C	50 °C
Max. time:	8 h	8 h	8 h
Mixture ratio:	1:10	1:5	1:5

Stainless steel	Lime	Rust	Lime + Rust
	SWEPcip AS	SWEPcip CS	SWEPcip AS
Max. Temp:	80 °C	80 °C	80 °C
Max. time:	8 h	8 h	8 h
Mixture ratio:	1:10	1:5	1:10

See attached concept for further technical data

8 Waste disposal

The refrigerant cycle of the chiller contains an enviroment friendly refrigeration fluid. Only registered and qualified refrigeration companies are permissible to carry out work on the chiller. Before attending any repairments or maintanance work on the refrigeration cycle the refrigerant must be recovered by means of a recovery unit. Any intention blowing off the refrigerant is prohibited. Disposal of the refrigerant and any other parts like compressor oil or waste water must be completed according to local regulations only.

Specification subject to change.

FOR YOUR NOTICE

Bei niedriger Wassertemperatur empfehlen wir ein Wasser-Glykolgemisch mit einem Glykolanteil von min. 20% (siehe Tabelle). Konzentrationen unter 20% Glykol können korrosionsfördernd wirken. Bei Glykolzusatz, max. 34%, verringert sich die Kälteleistung bis zu 15%.

If the water temperature is low, you have to use minimum 20 % glycol in the water tank, see table. Concentration below 20% of glycol may force corrosion. If glycol addition, max. 34%, the cooling capacity drops up to 15%.

Si la temperature d'eau est basse, utiliser au minimum 20 % de glycol dans l'eau du bac, voir tableau. Un taux de glycol inferieur à 20% pourrait entrainer l'apparition de corrosion. Un taux de glycol plus élevé, et au maximum de 34%, entraine une chute de la capacité de refroidissement juqu'à 15%.

Wassertemperatur/Water temperature/Temperature d'eau	***Glykolanteil/Glycol concentration/Volume glycol***
10°C→0°C	**20%**
<0°C→-5°C	**27%**
<-5°C→-10°C	**34%**

Konformitätserklärung
Declaration of Conformity
Declaration de Conformite

Hersteller: Manufacturer: Fabricant:	WTG-QUANTOR GmbH Europa-Allee 53 D-54343 Föhren	
Produktbezeichnung: Product description: Descriptions produits	CHILLY 45-M-LT-US	- Kühlanlage zur Rückkühlung von Flüssigkeiten - Chiller - Refroidisseur
Seriennummer: Serial number: Numéro de série:	10154716PC01290425	

Hiermit erklären wir, dass nachfolgend genannte Produkte aufgrund ihrer Konzeption, Konstruktion und Bauart in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheitsanforderungen der nachstehend genannten Richtlinien einschließlich der zum Zeitpunkt der Erklärung geltenden Änderungen entsprechen.

Einschlägige EG-Richtlinien:
- EG-Maschinenrichtlinie 2006/42/EG
- EG-EMV Richtlinie 2014/30/EU

Angewandte harmonisierte Normen:
- DIN EN ISO 12100:2011-03; Sicherheit von Maschinen, Allgemeine Anforderungen
- DIN EN 60204-1:2007-06; Sicherheit von Maschinen, elektrische Ausrüstung von Maschinen
- DIN EN 378-1 bis -4:2012-08, Kälteanlagen und Wärmepumpen - Sicherheitstechnische und umweltrelevante Anforderungen

We herewith confirm that the following products based upon their construction as well as their distributed version meets the relevant basic security and health requirements of the EC directives below referenced, including any alterations made at the time of the declaration.

Applied machine Directives:
- EC- Machine Directive 2006/42/EG
- EC- EMV Directive 2014/30/EU

Applied harmonized Standard:
- DIN EN ISO 12100:2011-03: Safety of machines, General requirements.
- DIN EN 60204-1:2007-06;Safety of machines, Electrical Equipment of machines
- DIN EN 378-1 to -4:2012-08, Refrigeration and Heat pump systems – safety and environmental requirements. Requirements

Par la présente nous déclarons que les produits suivants de part leur fabrication et de part leur distribution sont conformes aux exigences essentielles de sécurité et de santé des directives CE ci-dessous référencés, incluant leurs avenants publiés à ce jour.

Directives CE Appliquées:
- EC- Directive Machine 2006/42/EG
- EC- Directive CEM 2014/30/EU

Standards Harmonisés Appliqués:
- DIN EN ISO 12100:2011-03; Sécurité des machines, exigences générales.
- DIN EN 60204-1:2007-06; Sécurité machines, équipements électriques des machines
- DIN EN 378-1 à -4:2012-08, Systèmes de Réfrigération et Pompes à Chaleur – Sécurité et exigences environnementales

Föhren, 01.02.2016

Markus Milz

Managing Director

(Bevollmächtigte Person zur Zusammenstellung der technischen Unterlagen und zur Ausstellung dieser Erklärung)
(Authorized person for technical documentation and for issuing this clarification)
(Personne autorisée pour la documentation technique et pour publier le présent declaration)

TECHNICAL DATA SHEET

Description	KÜHLWASSER- RÜCKKÜHLER TYP CHILLY 45-M-LT-US-R513A

1. GENERAL DATA

Refrigerant gas		R513A
Specifications:		
Nominal ambient air	°C	32.00
Coolant temperature 1	°C	10.00-
Cooling Capacity 1	W	1600,00
Coolant Temperature 2	°C	0.00
Cooling Capacity 2	W	2600,00
Coolant Temperature 3	°C	15.00
Cooling Capacity 3	W	4200,00
Min ambient air	°C	10.00
Max ambient air	°C	42.00
Min coolant temperature	°C	10.00-
Max coolant temperature	°C	15.00
Evaporator material		EDELSTAHL 14301/KUPFER
Temperature control		ELEKTRONISCH, ABSOLUTGEFÜHRT
Temperature display		DIGITAL
Control voltage		230V AC
Main Power Supply		1/N/PE 230V +5-10% 60Hz
Total absorbed power max	kW	3.20
Full load current max	A	15.40
Sound pressure levels	+/- 2dB (A)	70

Sound pressure level measured under the following conditions: free field 1m distance at operating side, ambient temperature 32°C, sea level, compressor operation without start / stop phase.

Paint Facility	ABDECKHAUBE EDELSTAHL BODENBLECH RAL 3000

2. Cooling-water

Admission-temperature	°C	0.00
Volume stream	l/min	0.00
Pressure-loss	kPa	0.00

3. AIR CONDENSER

		LUFTGEKÜHLT AXIAL
Nominal Air Flow	m³/h	2390.00
Number of Fans	Unit	1
Nom Absorbed power	kW	0.17
Starting Current	A	1.35

4. Compressor

Compressor - 1

		VOLLHERMETISCHER SCROLL
Number	Unit	1
Technology		DIREKT
Total absorbed power	kW	2.20
Full load current	A	9.60

5. PUMP

Pump - 1

		HORIZONTALE KREISELPUMPE
Type		CM1-3
Number	Unit	1
Total absorbed power	kW	0.60
Full load current	A	4.10
Nominal flow rate	m³/h	0.78
Nominal pressure rate	bar	2.50

6. LIQUID TANK

Liquid Tank - 1

Liquid tank type		VA-Tank isoliert
Volume	l	25

7. WEIGHT AND PHYSICAL SIZE

Length	mm	765
Width	mm	770
Height	mm	515
Bonnet-height	mm	0
Immersion-deep	mm	0
Length of the immersion-frames	mm	0
Width of the immersion-frames	mm	0
Min of the refrigerant	mm	0
Weight	kg	81

Please note: Required external pressure loss min. 1 bar.

For cold-water temperatures < +7 °C it is mandatory to add sufficient propylene glycol to the process water to prevent frost damage to the system!

8. TECHNICAL ALTERATION:

Technical modifications are subject to change without prior modification

R-513A

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830
SDS Ref.: 100151300
Revision date: 10/10/2019 Supersedes: 6/20/2017 Version: 1.2

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture

Name : R-513A

Product code : 100151300

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Refrigerant

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier

Dehon Service SAS
26 Avenue du Petit Parc
94683 VINCENNES Cedex - France
T 01 43 98 75 00 - F 01 43 98 21 51
ContactFDS@climalife.dehon.com

Other

Climalife Hongrie Kft
Rét u. 2
2040 Budaörs - Hungary
T 00 36 23 431 660 - F 00 36 23 431 661
ContactFDS@climalife.dehon.com

Other

Climalife Kft Budepesta sucurcala Bucuresti Romania
Bulevardul Hristo Botev, Nr. 28,
Biroul NR 4, Modulul I
Bucuresti Sectorul 3 - Romania
ContactFDS@climalife.dehon.com

Other

Climalife Supplied by Inventec Performance Chemicals Italia SRL
Via del Lavoro, 10/G
20874 Busnago MB - Italia
T +39 39-5973480 - F +39 39-5973490
ContactFDS@climalife.dehon.com

Other

Dehon Kälte-Fachvertriebs GmbH
Robert-Bosch-Strasse 14
40668 MEERBUSCH - Germany
T 00 49 2150 7073 0 - F 00 49 2150 7073 17
ContactFDS@climalife.dehon.com

Other

Dehon nordic service
Östra Hamngatan 50B 3tr
41109 GÖTEBORG - Sweden
T 00 46 44 21 58 80 - F 00 46 44 21 58 80
ContactFDS@climalife.dehon.com

Other

Dehon Service Belgium s.a/n.v.
Avenue Carton de Wiart, 79
1090 Bruxelles - Belgium
T 00 32 2 421 01 70 - F 00 32 2 426 96 62
ContactFDS@climalife.dehon.com

Other

Dehon Service Nerderland B.V.
Van Konijnenburgweg 84
NL-4612 PL Bergen Op Zoom - Netherlands
T 00 31 164 212 830 - F 00 31 164 212 831
ContactFDS@climalife.dehon.com

Other

Friogas sa
Poligono Industrial SEPES
Parcela 10
46500 SAGUNTO (Valencia) - Spain
T 00 34 9 6 266 36 32 - F 00 34 9 6 266 50 25
ContactFDS@climalife.dehon.com

Other

IDS Refrigeration Limited
Green Court, Kings Weston Lane
Avonmouth
BS11 8AZ Bristol - United Kingdom
T 00 44 1179 802520 - F 00 44 1179 802521
ContactFDS@climalife.dehon.com

Other

Prochimac SA
Rue du Château 10
CH-2000 NEUCHATEL - Switzerland
T 00 41 32 727 36 00 - F 00 41 32 727 36 19
ContactFDS@climalife.dehon.com

1.4. Emergency telephone number

Emergency number : +33 (0) 1 72 11 00 03

Country	Organisation/Company	Address	Emergency number	Comment
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0344 892 0111	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Press. Gas (Liq.) H280

Full text of hazard classes and H-statements : see section 16

Adverse physicochemical, human health and environmental effects

Vapours are heavier than air and can cause suffocation by reducing oxygen available for breathing. Contact with the liquid may cause frostbite and serious damage to eyes.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :

GHS04

Signal word (CLP) : Warning

Hazard statements (CLP) : H280 - Contains gas under pressure; may explode if heated.

Precautionary statements (CLP) : P410+P403 - Protect from sunlight. Store in a well-ventilated place.

Extra phrases : Greenhouse fluorinated gas falling within Kyoto Protocol (GWP=631).

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
2,3,3,3-Tetrafluoroprop-1-ene substance with a Community workplace exposure limit substance with national workplace exposure limit(s) (DE)	(CAS-No.) 754-12-1 (EC-No.) 468-710-7 (REACH-no) 01-0000019665-61	56	Flam. Gas 1, H220 Press. Gas (Liq.), H280
1,1,1,2-Tetrafluoroethane	(CAS-No.) 811-97-2 (EC-No.) 212-377-0 (REACH-no) 01-2119459374-33	44	Press. Gas (Liq.), H280

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation : Move the affected person away from the contaminated area and into the fresh air. If you feel unwell, seek medical advice.

First-aid measures after skin contact : In the event of contact with the liquid: treat resulting frostbite as a burn. Immediately remove contaminated clothing or footwear. Immediately rinse with plenty of water. If skin burns appear, call a doctor immediately.

First-aid measures after eye contact : Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Consult an eye specialist immediately.

First-aid measures after ingestion : Not specifically applicable (gas).

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects : CNS depression. Narcosis. Cardiac disorders. Lack of oxygen: risk of death.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : All extinguishing agents can be used.

Unsuitable extinguishing media : None to our knowledge. If there is a fire close by, use suitable extinguishing agents.

5.2. Special hazards arising from the substance or mixture

Explosion hazard : pressure rise and possible bursting of container. On heating : Toxic and corrosive vapours are released.

Hazardous decomposition products in case of fire : Thermal decomposition generates : Carbon oxides (CO, CO2), Hydrogen halogenides, Carbonyl halogenides, fluorinated compounds.

5.3. Advice for firefighters

Firefighting instructions : Use water spray or fog for cooling exposed containers.

Protection during firefighting : Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid contact with skin and eyes. Remove all sources of ignition. Do not smoke. Evacuate the danger area. Do not breathe smoke. Stop the leak.

6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

No additional information available

6.3. Methods and material for containment and cleaning up

Other information : Mechanically ventilate the spillage area.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid breathing mist, vapours. Do not get in eyes, on skin, or on clothing. Ventilation. Vapours are heavier than air and may spread along floors. Under certain temperature and pressure conditions may form a flammable mixture in the presence of air. Do not use joint paste that may contain peroxides.

Hygiene measures : Do not drink, eat or smoke in the workplace.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store : in a cool, well-ventilated area, away from any source of heat, away from any source of ignition.

Incompatible materials : Strong oxidizing agents. Alkaline hydroxide. Alkaline earth metals. Finely divided metals (Al, Mg, Zn).

Packaging materials : Recommended materials: Stainless steel, Carbon steel. Do not use : Alloys containing more than 2% magnesium, Plastic materials.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

R-513A	
Sweden - Occupational Exposure Limits	
Anmärkning (SE)	V (Vägledande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas)

1,1,1,2-Tetrafluoroethane (811-97-2)	
Germany - Occupational Exposure Limits (TRGS 900)	
TRGS 900 Local name	Norfluran
TRGS 900 Occupational exposure limit value (mg/m³)	4200 mg/m³
TRGS 900 Occupational exposure limit value (ppm)	1000 ppm
TRGS 900 Limitation of exposure peaks (mg/m³)	33600 mg/m³
TRGS 900 Limitation of exposure peaks (ppm)	8000 ppm
TRGS 900 Limitation of exposure peaks	8(II)
TRGS 900 Remark	DFG;Y
TRGS 900 Regulatory reference	TRGS900

Sweden - Occupational Exposure Limits	
Local name	HFC 134 a (1,1,1,2-Tetrafluoretan)
nivågränsvärde (NVG) (mg/m³)	2000 mg/m³
nivågränsvärde (NVG) (ppm)	500 ppm
kortidsvärde (KTV) (mg/m³)	3000 mg/m³
kortidsvärde (KTV) (ppm)	750 ppm
Anmärkning (SE)	V (Vägledande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas)
Regulatory reference	Hygieniska gränsvärden (AFS 2015:7)
United Kingdom - Occupational Exposure Limits	
Local name	1,1,1,2-Tetrafluoroethane (HFC 134a)
WEL TWA (mg/m³)	4240 mg/m³
WEL TWA (ppm)	1000 ppm
Regulatory reference	EH40. HSE
Switzerland - Occupational Exposure Limits	
MAK (mg/m³)	4200 mg/m³
MAK (ppm)	1000 ppm

2,3,3,3-Tetrafluoroprop-1-ene (754-12-1)	
EU - Occupational Exposure Limits	
IOELV TWA (ppm)	500 ppm (recommended)
Germany - Occupational Exposure Limits (TRGS 900)	
TRGS 900 Occupational exposure limit value (mg/m³)	950 mg/m³
TRGS 900 Occupational exposure limit value (ppm)	200 ppm

1,1,1,2-Tetrafluoroethane (811-97-2)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	13936 mg/m³
DNEL/DMEL (General population)	
Long-term - systemic effects, inhalation	2476 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	0.1 mg/l
PNEC aqua (marine water)	0.01 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.75 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	73 mg/l

2,3,3,3-Tetrafluoroprop-1-ene (754-12-1)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, inhalation	23000 mg/m³
PNEC (Water)	
PNEC aqua (freshwater)	> 0.1 mg/l
PNEC aqua (marine water)	> 0.01 mg/l
PNEC (Sediment)	
PNEC sediment (marine water)	> 0.178 mg/kg dwt
PNEC (Soil)	
PNEC soil	> 1.54 mg/kg dwt

8.2. Exposure controls

Hand protection:

Leather protective gloves. Nitrile-rubber protective gloves. VITON gloves

Eye protection:

Safety glasses with side shields

Skin and body protection:

Majority cotton protective clothing

Respiratory protection:

In the event of insufficient ventilation: Gas mask with filter type AX. In a confined area : Self-contained breathing apparatus

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Press. Gas (Liq.).
Colour	: Colourless.
Odour	: slightly ethereal.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: -29.58 °C
Flash point	: None
Critical temperature	: 94.91 °C
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Non flammable.
Vapour pressure	: 7.13 bar (25°C)
Vapour pressure at 50 °C	: 13.77 bar (50°C)
Critical pressure	: 36.48 bar
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 1134 kg/m³ (25°C)
Solubility	: Insoluble in water.
Log Pow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive material according to EC criteria.
Oxidising properties	: Non oxidizing material according to EC criteria.
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Decomposes on exposure to temperature rise.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

No information available. No polymerization.

10.4. Conditions to avoid

Under certain temperature and pressure conditions may form a flammable mixture in the presence of air. Avoid high temperatures. Avoid naked flame.

10.5. Incompatible materials

Do not use joint paste that may contain peroxides. Alkalis and caustic products. alkali metals. Alkaline earth metals. Finely divided metals (Al, Mg, Zn). Strong oxidizing agents.

10.6. Hazardous decomposition products

On thermal decomposition (pyrolysis), releases : Hydrogen fluoride, Carbon oxides (CO, CO2), Fluorinated hydrocarbons, Carbonyl halogenides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

1,1,1,2-Tetrafluoroethane (811-97-2)	
LC50 inhalation rat (ppm)	> 500000 ppm/4h

2,3,3,3-Tetrafluoroprop-1-ene (754-12-1)	
LC50 inhalation rat (ppm)	> 400000 ppm/4h

Skin corrosion/irritation : Not classified
pH: Not applicable
Additional information : Contact with the liquid causes frostbite
Serious eye damage/irritation : Not classified
pH: Not applicable
Additional information : Contact with the liquefied gas may cause severe ocular lesions
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

1,1,1,2-Tetrafluoroethane (811-97-2)	
NOAEL (chronic, oral, animal/male, 2 years)	300 mg/kg bodyweight rat

Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity : Not classified
Chronic aquatic toxicity : Not classified

1,1,1,2-Tetrafluoroethane (811-97-2)	
LC50 fish 1	450 mg/l 96 Hours (Oncorhynchus mykiss)
EC50 Daphnia 1	980 mg/l 48 Hours (Daphnia magna)
EC50 72h algae (1)	> 118 mg/l (Selenastrum capricornutum)

2,3,3,3-Tetrafluoroprop-1-ene (754-12-1)	
LC50 fish 1	> 197 mg/l Cyprinus carpio (Common carp)
EC50 Daphnia 1	> 83 mg/l (Daphnia magna)
EC50 72h algae (1)	> 100 mg/l (scenedesmus capricornutum)

12.2. Persistence and degradability

1,1,1,2-Tetrafluoroethane (811-97-2)	
Persistence and degradability	Photodegradation in the air : Half-life in air : 9,7 y. 3 % biodegradation after 28 days.

2,3,3,3-Tetrafluoroprop-1-ene (754-12-1)	
Persistence and degradability	Not readily biodegradable.

12.3. Bioaccumulative potential

1,1,1,2-Tetrafluoroethane (811-97-2)	
Log Pow	1.06

2,3,3,3-Tetrafluoroprop-1-ene (754-12-1)	
Log Pow	2.15

12.4. Mobility in soil

1,1,1,2-Tetrafluoroethane (811-97-2)	
Log Koc	1.5

12.5. Results of PBT and vPvB assessment

Component	
1,1,1,2-Tetrafluoroethane (811-97-2)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
2,3,3,3-Tetrafluoroprop-1-ene (754-12-1)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

Other adverse effects : Ozone depletion factor ODP (R-11=1) = 0. Total global warming potential (GWP) : 631.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste) : Switzerland : OTD : RS 814.600 / OMoD : RS 814.610.

Product/Packaging disposal recommendations : Methods of disposal of packaging. Reuse or recycle following decontamination. Destroy at an authorised site.

Additional information : The user's attention is drawn to the possible existence of specific european, national or local regulations regarding disposal.

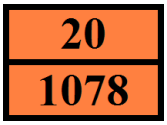
SECTION 14: Transport information

In accordance with ADR / IATA / IMDG

ADR	IMDG	IATA
14.1. UN number		
UN 1078	UN 1078	UN 1078
14.2. UN proper shipping name		
REFRIGERANT GAS, N.O.S. (2,3,3,3-Tetrafluoroprop-1-ene ; 1,1,1,2-Tetrafluoroethane)	REFRIGERANT GAS, N.O.S. (2,3,3,3-Tetrafluoroprop-1-ene ; 1,1,1,2-Tetrafluoroethane)	Refrigerant gas, n.o.s. (2,3,3,3-Tetrafluoroprop-1-ene ; 1,1,1,2-Tetrafluoroethane)
Transport document description		
UN 1078 REFRIGERANT GAS, N.O.S. (2,3,3,3-Tetrafluoroprop-1-ene ; 1,1,1,2-Tetrafluoroethane), 2.2, (C/E)	UN 1078 REFRIGERANT GAS, N.O.S. (2,3,3,3-Tetrafluoroprop-1-ene ; 1,1,1,2-Tetrafluoroethane), 2.2	UN 1078 Refrigerant gas, n.o.s. (2,3,3,3-Tetrafluoroprop-1-ene ; 1,1,1,2-Tetrafluoroethane), 2.2
14.3. Transport hazard class(es)		
2.2	2.2	2.2
		
14.4. Packing group		
Not applicable	Not applicable	Not applicable
14.5. Environmental hazards		
Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
No supplementary information available		

14.6. Special precautions for user

Overland transport

Classification code (ADR)	: 2A
Special provisions (ADR)	: 274, 582, 662
Limited quantities (ADR)	: 120ml
Tank code (ADR)	: PxBN(M)
Transport category (ADR)	: 3
Hazard identification number (Kemler No.)	: 20
Orange plates	: 
Tunnel restriction code (ADR)	: C/E
EAC code	: 2TE

Transport by sea

Special provisions (IMDG)	: 274
Limited quantities (IMDG)	: 120 ml
EmS-No. (Fire)	: F-C
EmS-No. (Spillage)	: S-V

Air transport

PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: 200
PCA max net quantity (IATA)	: 75kg
CAO packing instructions (IATA)	: 200
CAO max net quantity (IATA)	: 150kg

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions
Contains no substance on the REACH candidate list
Contains no REACH Annex XIV substances
Contains no substance subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.
Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Other information, restriction and prohibition regulations : * Regulation (EC) No 517/2014 : Greenhouse fluorinated gas falling within Kyoto Protocol.

15.1.2. National regulations

Ensure all national/local regulations are observed.

Germany

Reference to AwSV	: Water hazard class (WGK) 1, Slightly hazardous to water (Classification according to AwSV)
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV	: Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen	: None of the components are listed
SZW-lijst van mutagene stoffen	: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding	: None of the components are listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid	: None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : None of the components are listed

Switzerland

Swiss National Regulations : ORRChim RS 814.81.

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Indication of changes:			
Section	**Changed item**	**Change**	**Comments**
5.2	Hazardous decomposition products in case of fire	Added	
7.1	Precautions for safe handling	Added	
10.5	Incompatible materials	Added	

Other information : For more information regarding the use of this product, please refer to our technical information or contact the sales department in your region.

Full text of H- and EUH-statements:	
Flam. Gas 1	Flammable gases, Category 1
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Operating concept Eliwell ‚FREE SMART‘

Operating display

1. Switching on/off:

   Press and hold the **esc** key (> 3 seconds) to switch from the operating status “Off” to “On” and vice versa.

   In the operating status “Off”, the display shows **Off**; this symbol lights up in the operating status “On”: ⏻

2. Pump inching mode (only type MCK):

   The pump can be operated in inching mode in the operating status “Off”.
   If you press and hold the **“Down”** key for more than 3 seconds, the pump starts and continues to operate until the key is released.

3. Normal display:
   The **ACTUAL value** is displayed.

4. Adjusting the setpoint:

   a. With fixed value control (absolute):

Briefly press **set** 1x	⇒	**SEt** appears on the display
Briefly press **set** 1x	⇒	**StC** shows the actual regulation set point
Briefly press **up** 1x	⇒	**St1** (Cooling setpoint) appears on the display
Briefly press **set** 1x	⇒	The setpoint appears on the display and can be changed with the **"Up"** and **"Down"** keys The setpoint is confirmed with **set**. The display returns to **St1**
Briefly press **esc** 2x	⇒	The controller returns to the normal display

   b. Reference-guided control (difference):

The setpoint consists of the addition of room temperature and ST1.

Briefly press **set** 1x	⇒	**SEt** appears on the display
Briefly press **set** 1x	⇒	**StC** shows the actual regulation set point
Briefly press **up** 1x	⇒	**St1** (Cooling setpoint) appears on the display
Briefly press **set** 1x	⇒	The setpoint appears on the display and can be changed with the **"Up"** and **"Down"** keys The setpoint is confirmed with **set**. The display returns to **St1**
Briefly press **esc** 2x	⇒	The controller returns to the normal display

5. Optional functions

   a. Switching between heating and cooling

Press and hold **"Up"** 1x	⇒	☼ lights up on the display, the system is in heating mode
Press and hold **"Down"** 1x	⇒	❄ lights up on the display, the system is in cooling mode

   b. Self-optimisation of the PID parameters (auto-tune)

Press and hold the **set** key (> 3 seconds); the controller now shows **tune**
and tries to define the optimal PID parameters.
Once self-optimisation is completed, the display returns to the actual value.

To cancel the self-optimisation before it is complete, press and hold the **esc** key
(> 3 seconds).

6. Clear errors:
   Press **"Up" + "Down"** at the same time

Elektrodokumentation
Electrical documentation

Anlagenbezeichnung CHILLY 45-M-LT-US
Plant designation

Zeichnungsnummer E007715-0A
Job number

Hersteller **Manufacturer**	
Einspeisung **Power supply**	1/N/PE230V+-10% /TN
Frequenz **Frequency**	60 Hz
Steuerspannung **Control voltage**	230V AC
Leistungsaufnahme **Power consumption**	3,20 kW
Stromaufnahme **Current input**	15,40 A
Maximale Vorsicherung **Safety Fuse**	16 A
Kurzschlussfestigkeit **Short circuit resistance**	Icc = 10kA bei max. 16A gG Vorsicherung Icc = 10kA at max. 16A gG Pre-Fuse
Anlaufstrom größter Verbraucher **starting current biggest Consumer**	61A bei 198V 61A at 198V

Verdrahtung
Wiring

Erdung / Schutzleitung **Ground / Protective conductor**	Grün/Gelb Green/Yellow	**Steuerspannung** **Control voltage** **230V AC**	Rosa Pink
Last / Leitung **Load / Line**	Schwarz Black	**Steuerspannung** **Control voltage** **24V AC**	Rot Red
Neutralleiter **Neutral conductor**	Hellblau light blue	**Steuerspannung** **Control voltage** **24V DC**	Blau Blue
Fremdspannung **external voltage**	Orange Orange	**Hilfsspannung** **auxiliary voltage**	Violett Violet

Bearbeitet am
Edit date 12.05.2025

von
by Huber

ePLAN electric P8

Revision overview

Revision name	Date	Edited by	Page name	Revision description
E007715-0A	15.04. 25	LW		EP Blatt 2: Ansteuerung Lüfter passt nicht zu Art. 100630
E007715-0A	12.05. 25	LW		EP Blatt 2: Leitung XDA1:5 - CAA1:L ist: blau 2,5mm² soll: schwarz 2,5mm²

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&MDB/1

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			Appr				E007715-0A	Page 2
Modification	Date	Name	Original	Huber				Page 18

Strukturkennzeichenübersicht
Structure identifier overview

Funktionskennzeichen	Beschreibung Description
KUE	Kühlanlage Chiller

Ortskennzeichen	Beschreibung Description
ESK	Schaltschrank Enclosure

Kabelübersicht
Cable overview

Kabelbezeichnung Cable designation	von from	bis to	Adern Condctrs	ø	Länge Length	Funktionstext Function text
-WDB0	+ESK-XEA1		3G	2,5	3	Einspeisung Power supply
	+ESK-QBA1					
	+ESK-FCA1					
-WDB1	+ESK-XDA1	-MAA1	4G	1,5		Kompressor Compressor
-WDB2	+ESK-XDA1	-MAA2	4G	0,5		Lüfter Fan
-WDB3	+ESK-XDA1	-MAA3	3G	1,5		Pumpe Pump
	+ESK-QAA2					
-WGA1	+ESK-XGB1	-BPB1	3	AWG18		Hochdruckbegrenzer high pressure limiter
-WGA2	+ESK-XGB1	-BLB1	2	AWG22		Trockenlaufschutz dry run protection
-WGA3	+ESK-XGB1	-BLB1	2	AWG22		Mediumtemperatur medium temperature
		-BTA1				
-WGA4	+ESK-XGB1	-BPA1	3	0,34	2	Drucksensor pressure sensor

Artikelstückliste
Parts list

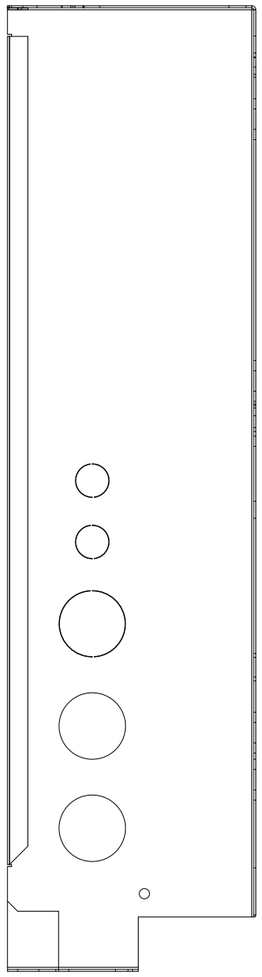
BMK DT	Bezeichnung designation	Typnummer Type number	Hersteller Manufacturer	Artikelnummer part number
-BLB1	Schwimmerschalter, Schließer Float switch, NO contact	NIG-A-G.3/8"Viton,PP,49/15	ELOBAU GmbH+Co KG	37206
-BPA1	Sensor, 4-20mA Sensor	TD34A030B	Eliwell	87465
-BPB1	Druckschalter >20bar Pressure switch >20bar	ACB-061F9247	Danfoss GmbH	33275
-BTA1	NTC, 3m	SN8DAE53002CN1	Eliwell	10197
+ESK-CAA1	Kondensator Capacitor	8540597	EMERSON	33561
+ESK-FCA1	D01 - Sicherung D01 - fuse	16 A, Neozed	Mersen	14564
+ESK-FCA1	Sicherungslasttrennschalter fuse switch disconnector	5SG7611-0KK16	Siemens	96398
+ESK-FCA2	Sicherungsklemme Fuse terminal block	PT 4-HESI (5X20)	Phoenix Contact	96677
+ESK-FCA2	Feinsicherung fuse	4A, 5x20 T	ESKA Erich Schweizer GmbH	96683
+ESK-FCA2	Querverbinder/Brücker für Reihenklemme Cross-connector for terminal block	FBS 3-6	Phoenix Contact	86869
+ESK-FCA3	Sicherungsklemme Fuse terminal block	PT 4-HESI (5X20)	Phoenix Contact	96677
+ESK-FCA3	Feinsicherung fuse	6,3A, 5x20 T	ESKA Erich Schweizer GmbH	96681
+ESK-FCA4	Sicherungsklemme Fuse terminal block	PT 4-HESI (5X20)	Phoenix Contact	96677
+ESK-FCA4	Abschluss- und Zwischenplatte für Reihenklemme End and partition plate for terminal block	D-ST 4	Phoenix Contact	96679
+ESK-FCA4	Feinsicherung fuse	2,5A, 5x20 T	ESKA Erich Schweizer GmbH	96684
+ESK-KEB1	FREESmart FREESmart	FREE SMP5500	Eliwell	55059
+ESK-KFA1	STECKRELAIS, 2W RELAIS 15MM, 230V AC PLUG-IN RELAY	LZX:RT424730	Siemens	22034
+ESK-KFA1	STECKRELAIS, SOCKEL 15MM PLUG-IN RELAY, BASE 15MM	LZS:RT78725	Siemens	28343

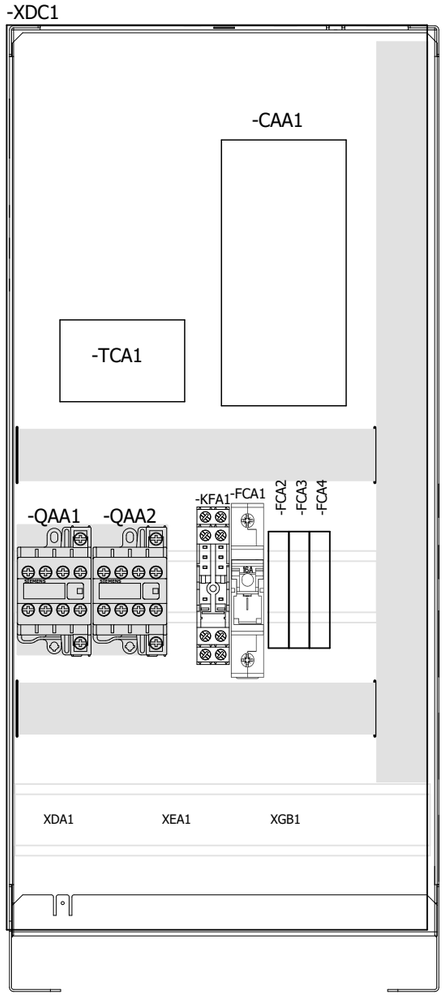
Artikelstückliste
Parts list

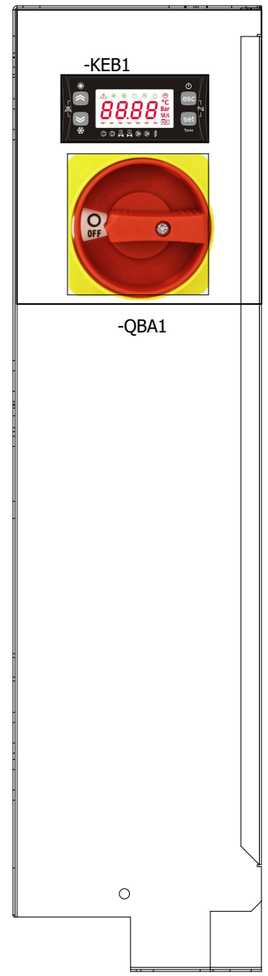
BMK DT	Bezeichnung designation	Typnummer Type number	Hersteller Manufacturer	Artikelnummer part number
-MAA1	Kompressor Compressor	ZR28K3EPFJ522	EMERSON	33560
-MAA2	EC-Lüfter EC-Fan	W3G-350-JN0-30	ebm-papst	100630
-MAA3	Pumpe CM1-3	CM1-3 A-R-A-V-AQQV A-A-A-N	Grundfos	93946
+ESK-QAA1	SIRIUS Kleinschütz SIRIUS miniature contactor	3TG1010-0AL2	Siemens	17891
+ESK-QAA2	SIRIUS Kleinschütz SIRIUS miniature contactor	3TG1010-0AL2	Siemens	17891
+ESK-QBA1	Hauptschalter Main switch	A105/50.1550-ZB1293	Merz Schaltgeräte	69336
+ESK-TCA1	Transformator Transformer	TRA0060000	Carel	44429
+ESK-TCA1	Klemme (außer Freileitung, Zubehör) Clamp (not overhead line, accessories)	209-120	WAGO	57851
+ESK-XDA1	Durchgangs-Reihenklemme Feed-through terminal block	PTS 2,5-TWIN	Phoenix Contact	69462
+ESK-XDA1	Schutzleiter-Reihenklemme Ground terminal block	PTS 2,5-TWIN-PE	Phoenix Contact	69463
+ESK-XDA1	Durchgangs-Reihenklemme Feed-through terminal block	PTS 2,5-TWIN BU	Phoenix Contact	78318
+ESK-XDA1	Endklammer/-halter für Klemme End bracket for terminal block	CLIPFIX 35-5	Phoenix Contact	77922
+ESK-XDA1	Querverbinder/Brücker für Reihenklemme Cross-connector for terminal block	FBS 3-5 GY	Phoenix Contact	77799
+ESK-XDA1	Querverbinder/Brücker für Reihenklemme Cross-connector for terminal block	FBS 2-5 GY	Phoenix Contact	77798
+ESK-XDC1	Schaltschrank Chilly	ST00-665-0	NM Stahlgeräte GmbH	62796
+ESK-XDC1	Montageplatte Mounting panel	BL03-700-0	NM Stahlgeräte GmbH	62795
+ESK-XDC1	Schaltschranktür div.	ST00-666-0	NM Stahlgeräte GmbH	62797
+ESK-XDC1	Verbindungs-Stück Connector	COLV0000E0201	Eliwell	61171

Artikelstückliste
Parts list

BMK DT	Bezeichnung designation	Typnummer Type number	Hersteller Manufacturer	Artikelnummer part number
+ESK-XEA1	Endklammer/-halter für Klemme End bracket for terminal block	CLIPFIX 35-5	Phoenix Contact	77922
+ESK-XEA1	Schutzleiter-Reihenklemme Ground terminal block	PT 2,5-PE	Phoenix Contact	77810
+ESK-XGB1	Durchgangs-Reihenklemme Feed-through terminal block	PTS 2,5-TWIN	Phoenix Contact	69462
+ESK-XGB1	Querverbinder/Brücker für Reihenklemme Cross-connector for terminal block	FBS 3-3,5 GY	Phoenix Contact	77795
+ESK-XGB1	Querverbinder/Brücker für Reihenklemme Cross-connector for terminal block	FBS 3-5 GY	Phoenix Contact	77799
+ESK-XGB1	Schutzleiter-Reihenklemme Ground terminal block	PTS 2,5-TWIN-PE	Phoenix Contact	69463
+ESK-XGB1	Endklammer/-halter für Klemme End bracket for terminal block	CLIPFIX 35-5	Phoenix Contact	77922

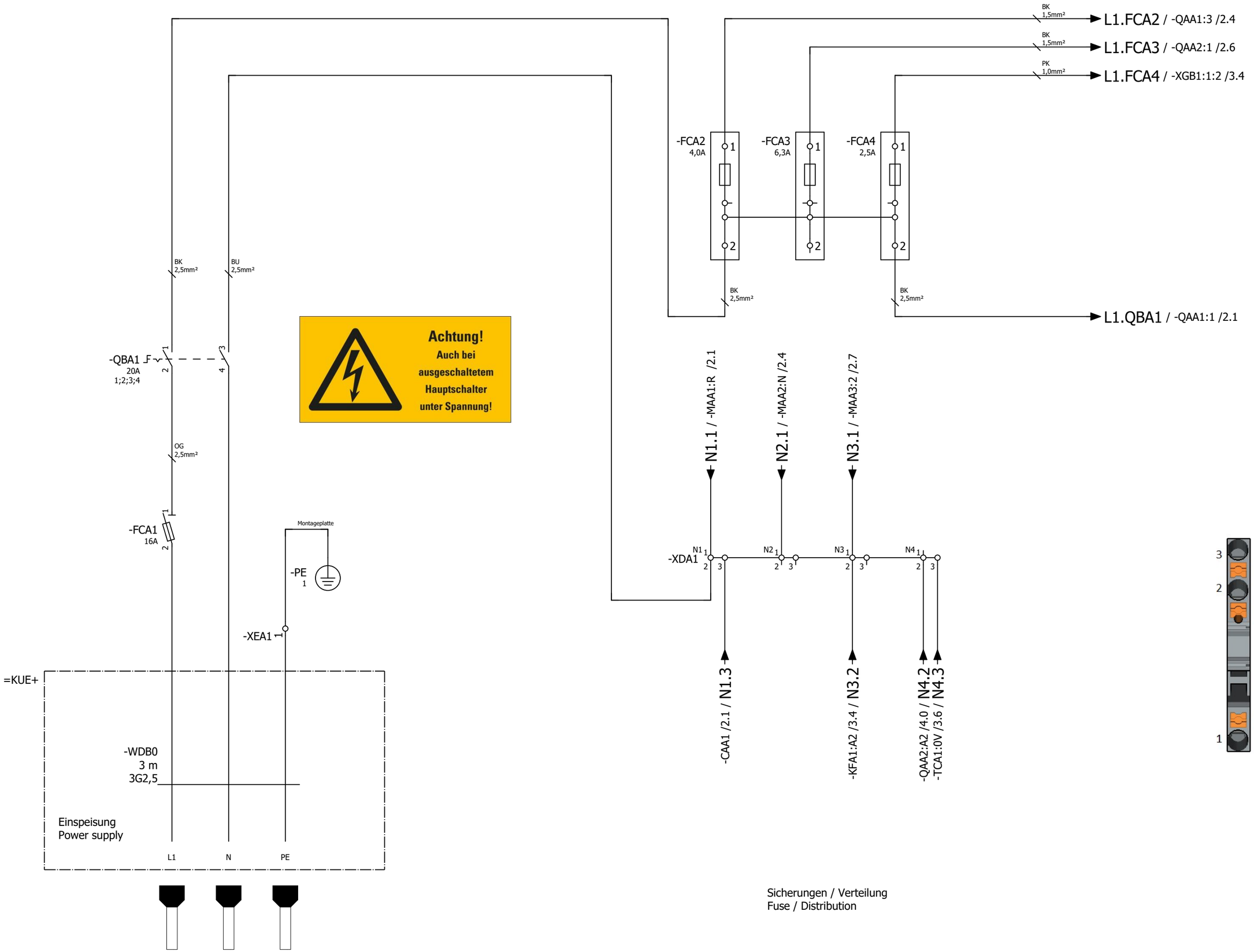






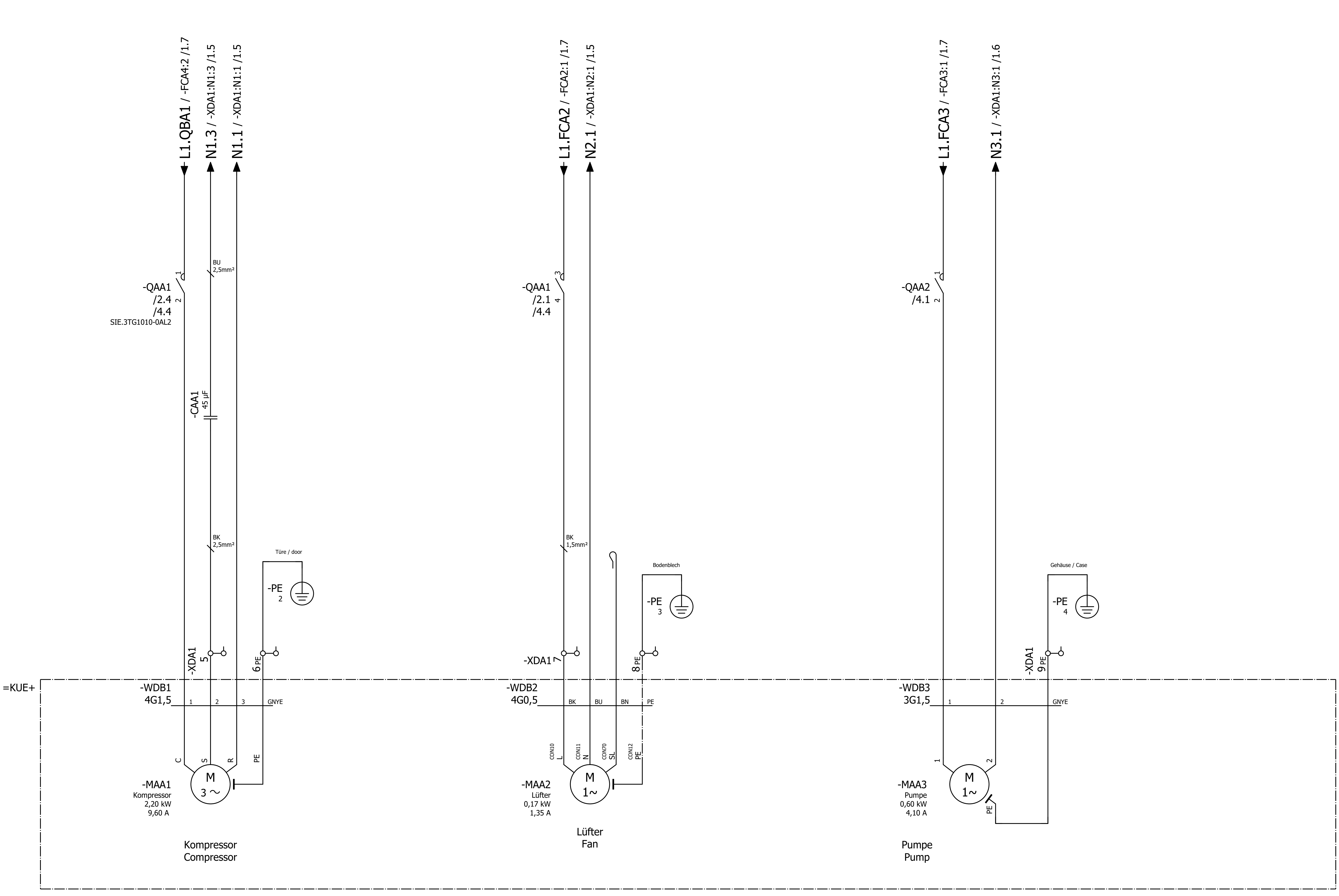
&EFS/1

			Date	06.05.2025	CHILLY 45-M-LT-US	Aufbauplan Panel layout	= KUE
			Ed.	A.Asbach			+ ESK
			Appr			E007715-0A	Page 1
Modification	Date	Name	Original	Huber			Page 18



Sicherungen / Verteilung
Fuse / Distribution

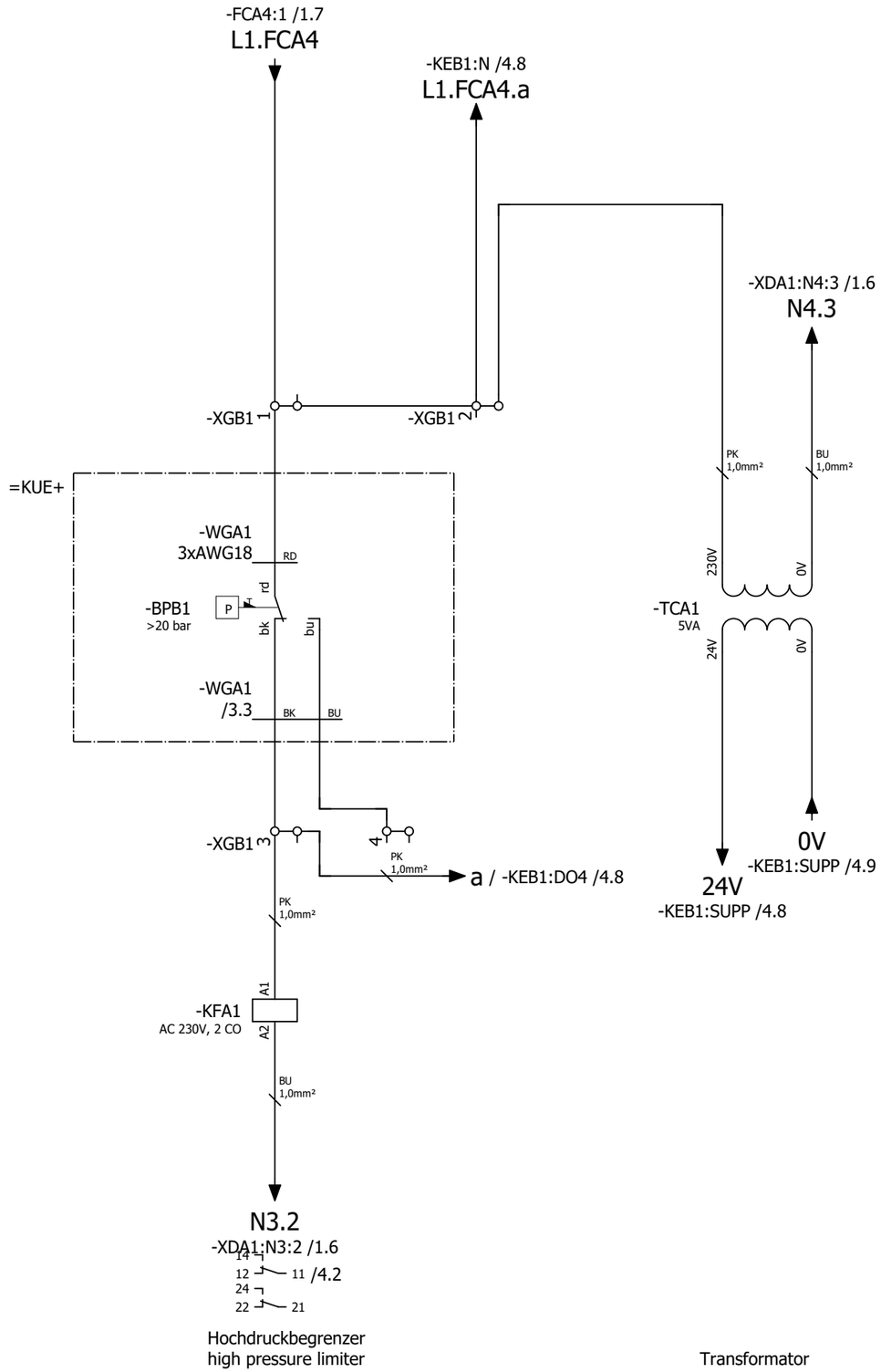
			Date	16.04.2025			= KUE
			Ed.	Weegmann	CHILLY 45-M-LT-US	Einspeisung Feed	+ ESK
			Appr				E007715-0A
Modification	Date	Name	Original	Huber			Page 1 Page 18



Modification	Date	Name	Date 12.05.2025	CHILLY 45-M-LT-US	Laststromkreise
			Ed. Weegmann		Main circuit
			Appr		
			Original Huber		

= KUE
+ ESK

E007715-0A



			Date	15.04.2025	CHILLY 45-M-LT-US		Steuerstromkreise Control circuit	= KUE
			Ed.	Weegmann				+ ESK
			Appr				E007715-0A	Page 3
Modification	Date	Name	Original	Huber				Page 18

-XGB1 5 6 7

VT 1,0 mm²

HD-Begrenzer
HD-Limiter
-KFA1 /3.4
11 12 14

=KUE+
-WGA2
2xAWG22
WH
-BLB1
wh
bn
BN
Trockenlaufschutz
dry run protection

-XGB1 8

L1.FCA4.a / -XGB1:2:2 /3.4
a / -XGB1:3 /3.4
X / -XGB1:13:2 /6.4

-KEB1
/5.0

VT 0,35 mm²

Digitale Eingänge
digital Input

DI 3 DI 2 DI 1 DI 4 DI 5 DI 6 GND N DO 4 DO 6

Digitale Ausgänge
digital output

DO 1 DO 2 DO 3 DO 4 DO 6

Power Supply
24V SUPP
0V SUPP

PK 1,0mm²

WH 0,35mm²

GY 0,35mm²

-QAA2 A1 A2 Pumpe Pump

-QAA1 A1 A2 Kompressor Compressor

BU 1,0mm²

-XDA1:N4:2 /1.6 / N4.2

1 2 /2.6

1 2 /2.1
3 4 /2.4

Y
-XGB1:14:2 /6.4

0V
-TCA1:0V /3.6

24V
-TCA1:24V /3.5

5

			Date	15.04.2025	CHILLY 45-M-LT-US	Reglereinheit Digital/Analog	= KUE
			Ed.	Weegmann			+ ESK
			Appr			E007715-0A	Page 4
Modification	Date	Name	Original	Huber			Page 18

=KUE+

Mediumtemperatur
medium temperature -BTA1

WH
RD

-WGA3
2xAWG22

rd wh

Drucksensor -BPA1
pressure sensor 0-30bar

0-30bar
I P
4-20mA
1 3 4

-WGA4
2 m
3x0,34

BR BU BK

-XGB1 9

-XGB1 10

-XGB1 11

-XGB1 12

-KEB1:12V /5.1 / 12V.1

-KEB1
/4.0

VT
0,35 mm²

VT
0,35 mm²

VT
0,35 mm²

Analoge Eingänge
analog inputs

AI 1 GND AI 5 AI 3 AI 2 AI 4

Analoge Ausgänge
anlog outputs

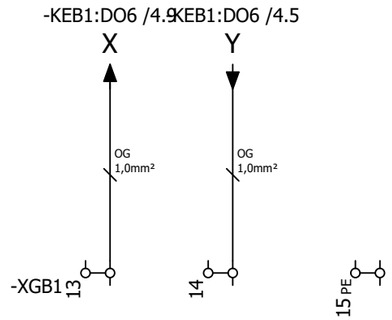
12V DC AO 1 5V DC AO 2 DO5

LAN
bn bu bk

VT
0,35 mm²

12V.1
-XGB1:11:2 /5.8

			Date	15.04.2025	CHILLY 45-M-LT-US		Reglereinheit Analog	= KUE
			Ed.	Weegmann				+ ESK
			Appr				E007715-0A	Page 5
Modification	Date	Name	Original	Huber				Page 18



&EMA/1

			Date	15.04.2025	CHILLY 45-M-LT-US		Schnittstelle Interface	= KUE
			Ed.	Weegmann				+ ESK
			Appr				E007715-0A	Page 6
Modification	Date	Name	Original	Huber				Page 18

Klemmenplan
Terminal diagram

Funktionstext Function text									Kabelname Cable name	Leiste Strip =KUE+ESK-XDA1							Kabelname Cable name	-WDB1	-WDB2	-WDB3								Seite / Spalte Page / column
									Kabeltyp Cable type	Zielbezeichnung Target designation	Anschluss Connection	Klemme Terminal	Beschreibung Description	Brücke Jumper	max. Querschnitt max. Cross-section	Zielbezeichnung Target designation	Anschluss Connection	Kabeltyp Cable type	JZ-500		JZ-500 / OZ-500							
Kompressor Compressor										-CAA1		5		,	4 mm²	-MAA1	S		2									&EFS/2.1
=										-PE		6	PE	,	4 mm²	-XDA1	8:1											&EFS/2.2
																-MAA1	PE		GNYE									
Kompressor Compressor										-QAA1	4	7		,	4 mm²	-MAA2	L			BK								&EFS/2.4
Lüfter Fan										-PE		8	PE	,	4 mm²	-XDA1	9:1											&EFS/2.4
																-XDA1	6:1											
																-MAA2	PE			PE								
Pumpe Pump												9	PE	,	4 mm²	-MAA3	PE				GNYE							&EFS/2.7
																-XDA1	8:1											
Einspeisung Power supply										-QBA1	3	N1	N1		4 mm²	-MAA1	R		3									&EFS/1.5
										-CAA1																		
Sicherungen / Verteilung Fuse / Distribution												N2	N2		4 mm²	-MAA2	N			BU								&EFS/1.5
=										-KFA1	A2	N3	N3		4 mm²	-MAA3	2				2							&EFS/1.6
=										-QAA2	A2	N4	N4		4 mm²													&EFS/1.6
										-TCA1	0V																	

2

			Date	16.04.2025	CHILLY 45-M-LT-US		Klemmenplan Terminal diagram
			Ed.	Weegmann			
			Appr				
Modification	Date	Name	Original	Huber			

= KUE
+ ESK

E007715-0A

Page 1
Page 18

Klemmenplan
Terminal diagram

Leiste / Strip

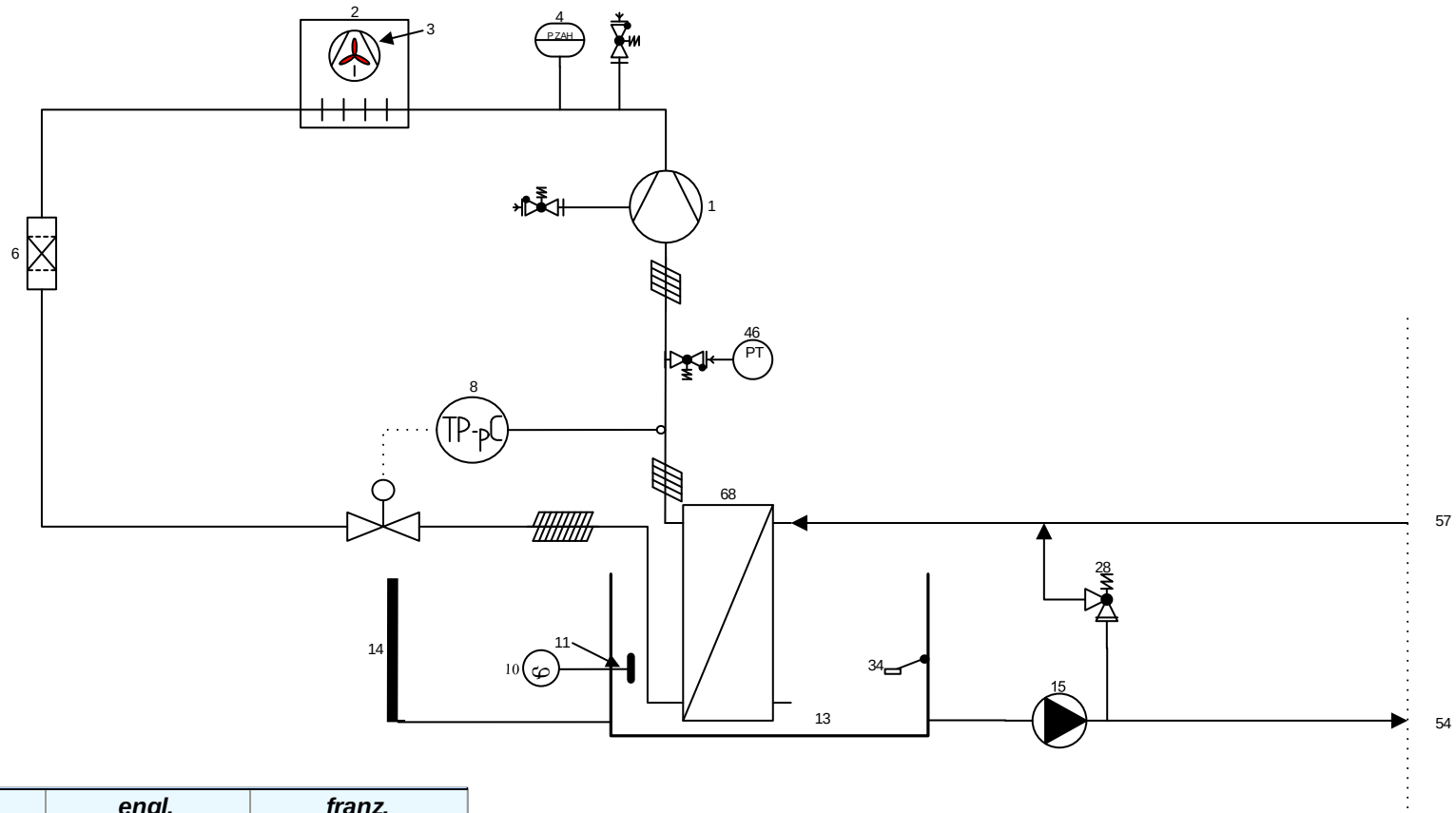
=KUE+ESK-XEA1

Funktionstext Function text	Kabelname / Cable name Kabeltyp Cable type	Zielbezeichnung Target designation	Anschluss Connection	Klemme Terminal	Beschreibung Description	Brücke Jumper	max. Querschnitt max. Cross-section	Zielbezeichnung Target designation	Anschluss Connection	Kabelname / Cable name Kabeltyp Cable type	-WDB0 ÖLFLEX® CLASSIC 110	Seite / Spalte Page / column
Einspeisung Power supply				1					PE			&EFS/1.2

Klemmenplan
Terminal diagram

Funktionstext Function text	Kabelname Cable name	Kabeltyp Cable type	Leiste Strip =KUE+ESK-XGB1 Zielbezeichnung Target designation	Anschluss Connection	Klemme Terminal	Beschreibung Description	Brücke Jumper	max. Querschnitt max. Cross-section	Zielbezeichnung Target designation	Anschluss Connection	Kabelname Cable name	Kabeltyp Cable type	-WGA1 HEAT PROOF ELECTRIC VINYL WIRE	-WGA2 PVC	-WGA3 PTE	-WGA4 PVC	Seite / Spalte Page / column
Hochdruckbegrenzer high pressure limiter			-FCA4	1	1			4 mm²	-BPB1	rd			RD				&EFS/3.4
=			-KEB1	N	2			4 mm²									&EFS/3.4
			-TCA1	230V													
Hochdruckbegrenzer high pressure limiter			-KFA1	A1	3			4 mm²	-BPB1	bk			BK				&EFS/3.4
									-KEB1	DO4							
Hochdruckbegrenzer high pressure limiter					4			4 mm²	-BPB1	bu			BU				&EFS/3.4
HD-Begrenzer HD-Limiter			-KEB1	DI	5			4 mm²									&EFS/4.2
			-KFA1	11													
Kompressor Compressor			-KEB1	DI	6			4 mm²									&EFS/4.4
			-KEB1	DI													
Trockenlaufschutz dry run protection			-KEB1	GND	7			4 mm²	-BLB1	wh				WH			&EFS/4.6
			-KEB1	DI													
Trockenlaufschutz dry run protection			-KEB1	DI	8			4 mm²	-BLB1	bn					BN		&EFS/4.6
Mediumtemperatur medium temperature			-KEB1	AI	9			4 mm²	-BTA1	RD					rd		&EFS/5.1
=			-KEB1	GND	10			4 mm²	-BTA1	WH					wh		&EFS/5.2
Drucksensor pressure sensor			-KEB1	12V	11			4 mm²	-BPA1	1							&EFS/5.8
=			-KEB1	AI	12			4 mm²	-BPA1	3							&EFS/5.9
			-KEB1	DO6	13			4 mm²									&EFS/6.4
COM COM			-KEB1	DO6	14			4 mm²									&EFS/6.4
					15	PE		4 mm²									&EFS/6.5

			Date	15.04.2025	CHILLY 45-M-LT-US	Klemmenplan Terminal diagram	= KUE + ESK
			Ed.	Weegmann			
			Appr				
Modification	Date	Name	Original	Huber		E007715-0A	Page 3 Page 18



Nr.	dt.	engl.	franz.
1	Kompressor	compressor	compresseur
2	Verflüssiger	condenser	condenseur
3	Lüfter	fan	ventilateur
4	HD- Pressostat	hp- switch	pressostat HP
6	Trockner	drier	déshydrateur
8	Expansionsventil	expansion valve	détendeur
10	Thermostat	thermostat	thermostat
11	Fühler	sensor	sonde
13	Tank	tank	bac
14	Füllstandsanzeige	fluid level indicator	niveau visuel
15	Pumpe	pump	pompe
28	Sicherheitsventil	by- pass valve	soupape de sûreté
34	Schwimmerschalter	float switch	controleur niveau
46	Druckaufnehmer	pressure controller	controleur de pression
54	Vorlauf Kaltwassertank	outlet tank cold water	sortie d´eau froide
57	Rücklauf Kaltwassertank	inlet tank cold water	entrée d´eau froide
68	Verdampfer	evaporator	évaporateur

Fließschema/ hydraulic schema/ schéma hydraulique

Type: Chilly 45-M-LT

bearbeitet	geprüft		ZEICHN. NR.
D.Bruchhof	**T.Ulff**		**RI0498**
DATUM	DATUM		Blatt
03.12.2024	**03.12.2024**		**1 von 1**

INSTRUCTION MANUAL CHILLY