

TRANSLATION OPERATING INSTRUCTIONS



Dok-ID: V0.01 – 15.08.2011



YOUR PARTNER IN PROCESS COOLING

OPERATING INSTRUCTIONS



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APPENDIX

- TECHNICAL DATA
- TEMPERATURE CONTROLLER
- WIRING DIAGRAM

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.

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!

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.

1 SAFETY / PREVENTION OF ACCIDENTS

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

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 exceeded

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 quickly. 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. hydrogen 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 occurring 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.

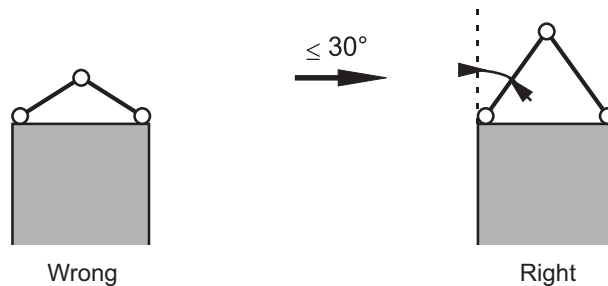
Note:

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. Always transport the chiller as mentioned below. Avoid vibrations during transport. Failure to observe can result in compressor damage.

Instructions during transport!



Attention: Never remove the top cover if transporting the chiller by means of a hoist (via eyelets)!

3 INSTALLATION AND INITIAL OPERATION

Installation

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

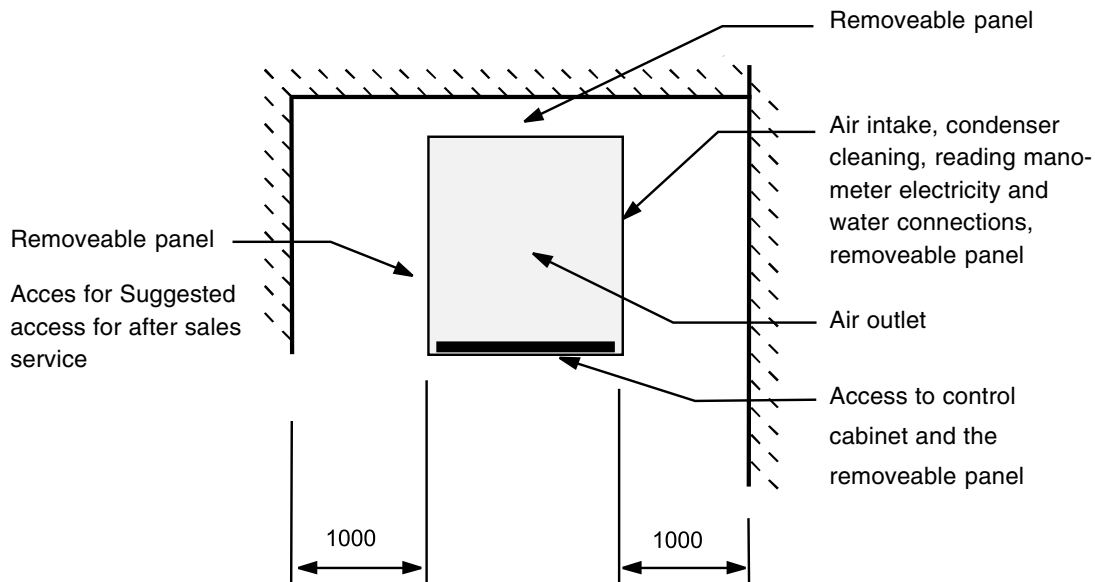
- **The fresh air intake temperature may not exceed the max.ambient temperature (refer to name plate)**
- Assure that the required quantity of air is available at air cooled chillers.
- **Assure that the chiller hot air outlet does not warm up the environment or room excessively.**
- Min.distance of fresh air intake: at least 1,0 m (air cooled version)
- Min.distance of hot air outlet: at least 3,0 m (air cooled version)
- Connection of an air supply and exhaust duct is admitted only for machines with radial fans.
- **The fresh air intake of the unit (condensor) may not be situated in front 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.



Floor space

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

The unit can be installed in a corner. However, its movability must be ensured to enable access to the various components.



The distance from any constructions blocking the air supply must be at a minimum distance of 1 meter.



3 INSTALLATION AND INITIAL OPERATION

Options

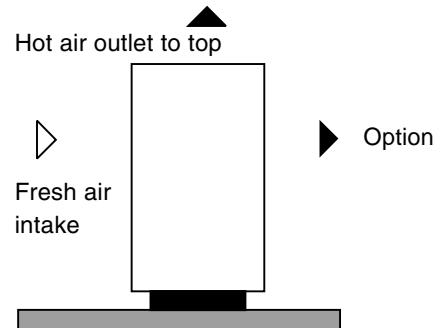
Option No 1:

The most frequent example. Air is taken in and evacuated in the same room. A large sized room is required.

Hot air outlet: min. 3 m

Fresh air intake: min.1 m

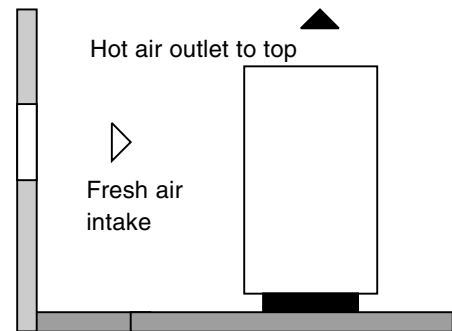
Note: The hot air outlet may not shortcycle with the fresh air intake.



Option No 2:

Air taken in from an adjoining room or from outside. If the incoming air in winter is too cold, provide a condensation pressure controller and the compressor casing resistance. A screen can be provided in winter so that taking in the cold air can however be prevented.

Note: The hot air outlet may not shortcycle with the fresh air intake.



Option No 3:

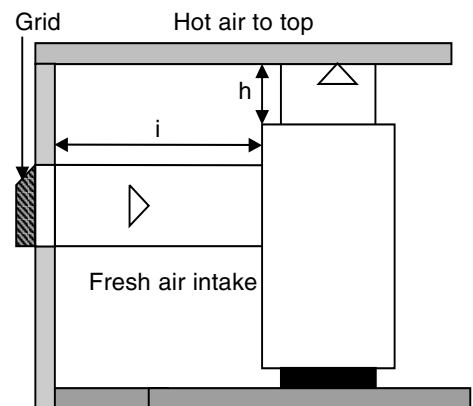
Air intake and evacuation to outside or an adjoining room using ducts.

- For the maximum permissible pressure loss, note the dimensions $h+i$
- Take the same precautions as in Option No 2 for the air intake temperatures in winter.

Note: Only permissible on chillers with radial fans.

$h+i = 5$ m max. with grid

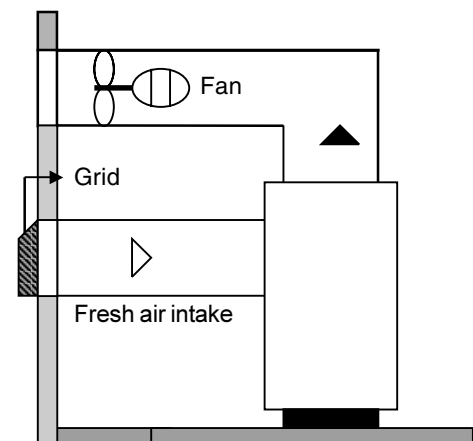
$h+i = 7$ m max. without grid



Option No 4:

Air intake and evacuation at the same floor level, either to outside or to an adjoining room.

- A large bend is required in the duct so as to reduce pressure loss.
- Use the same precautions as in option No 2.



3 INSTALLATION AND INITIAL OPERATION

Electrical connection

- The chiller is ready for connection and should only be connected to a 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 installed 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 to tap/fresh water supply.
- 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 damage.



3 INSTALLATION AND INITIAL OPERATION

Refilling of the tank

Automatic refill (Option)

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

Manual refill (Option)

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

The water level can be observed by the water sightglass which can be seen from the outside of the housing.

Ensure that the evaporator is submerged.

Important:

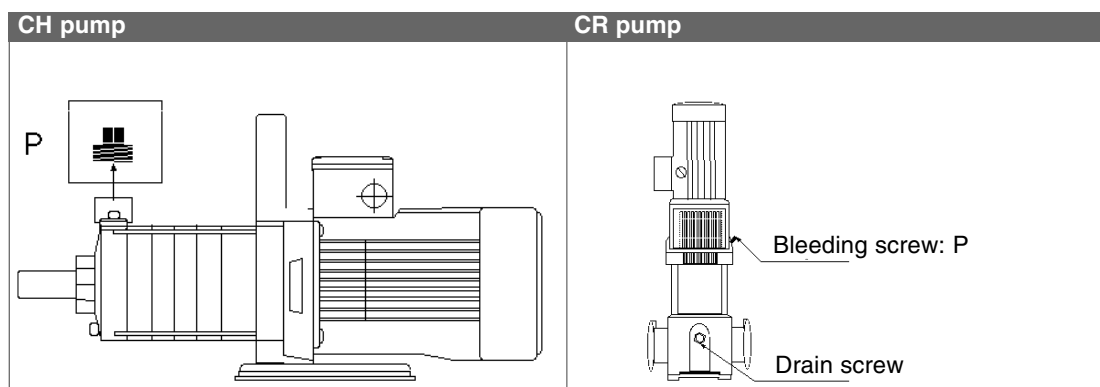
Prior to filling of the tank it is essential to test the water quality and if required carry out water treatment (refer to chapter 7).

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 12 months as increasing evaporation of the tank water means an increasing chloride content (→ please refer to chapter 7).

- 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
- Reinstall bleeding screw and tighten as soon as medium exits from filler fitting.



3 INSTALLATION AND INITIAL OPERATION

Start-up of chiller

a) Control switch »Standard«:

- 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: **0 = 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.
- *If the **FAULT** light lights up or the chiller does not start at all please refer to chapter 5.*







3 INSTALLATION AND INITIAL OPERATION

B) Control switch »Option«:

- 3 functions incl. one push button



Variation 1:	
Forced pump operation	
STOP	0
Autom. cooling	

Variation 2:	
Forced pump/ compressor	
STOP	0
Autom. cooling	

4 CARE AND MAINTENANCE

General

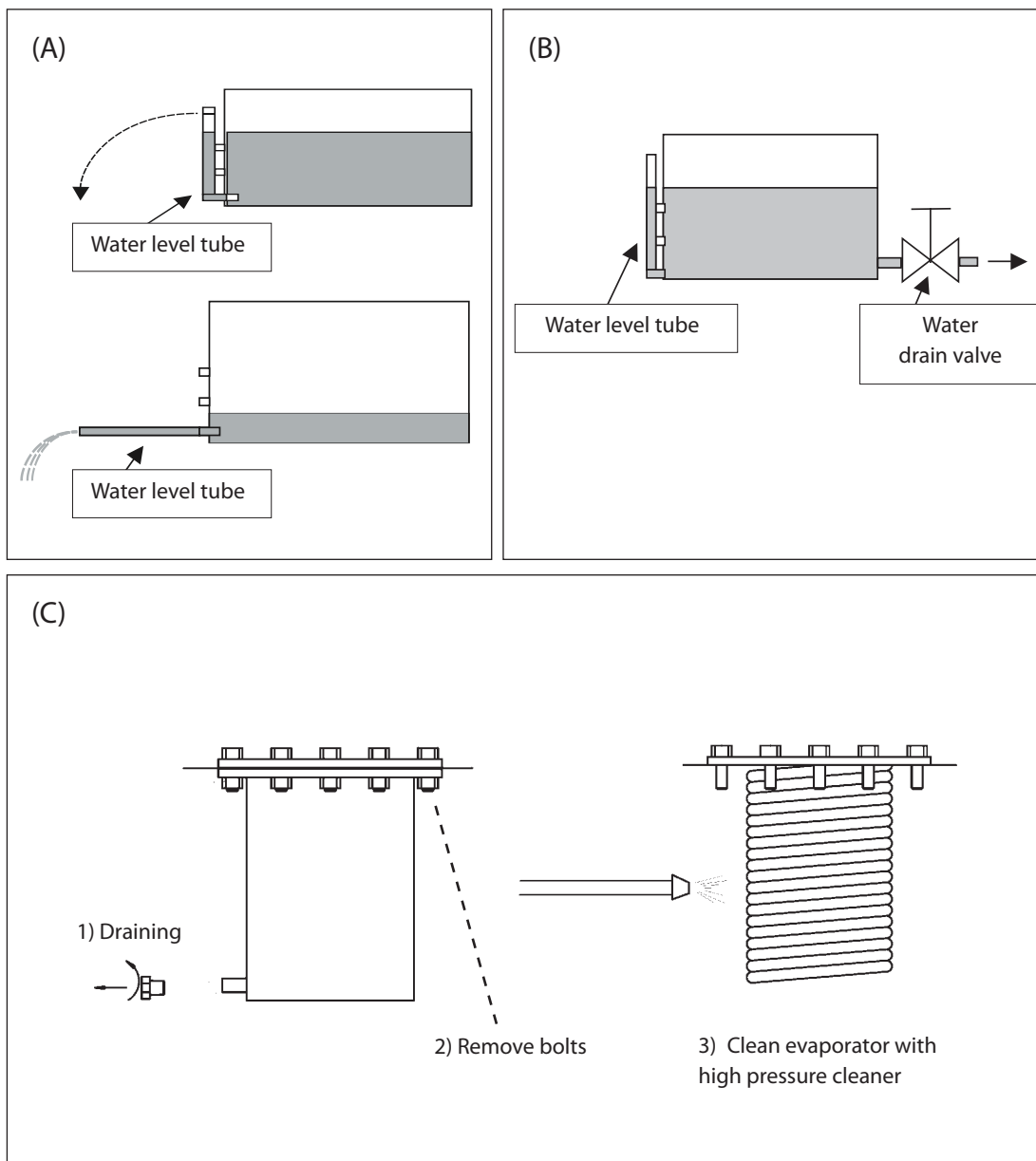
In case of irregularities occurring during operation or extraordinary noise, the chiller has to be switched off by means of the control or main switch.(please contact the manufacturer)

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. Chillers with shell in tube evaporators (C) should be inspected and cleaned 1 month after commissioning. Depending on the grade of dirt on the evaporators, the future cleaning cycles will be determined.

Drain water from the tank as follows:

- Turn the water level sight glass (pipe) to the side (A)
- Option - drain water through water drain valve (B)
- Option - cleaning of evaporator (C)



4 CARE AND MAINTENANCE



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 (option)

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

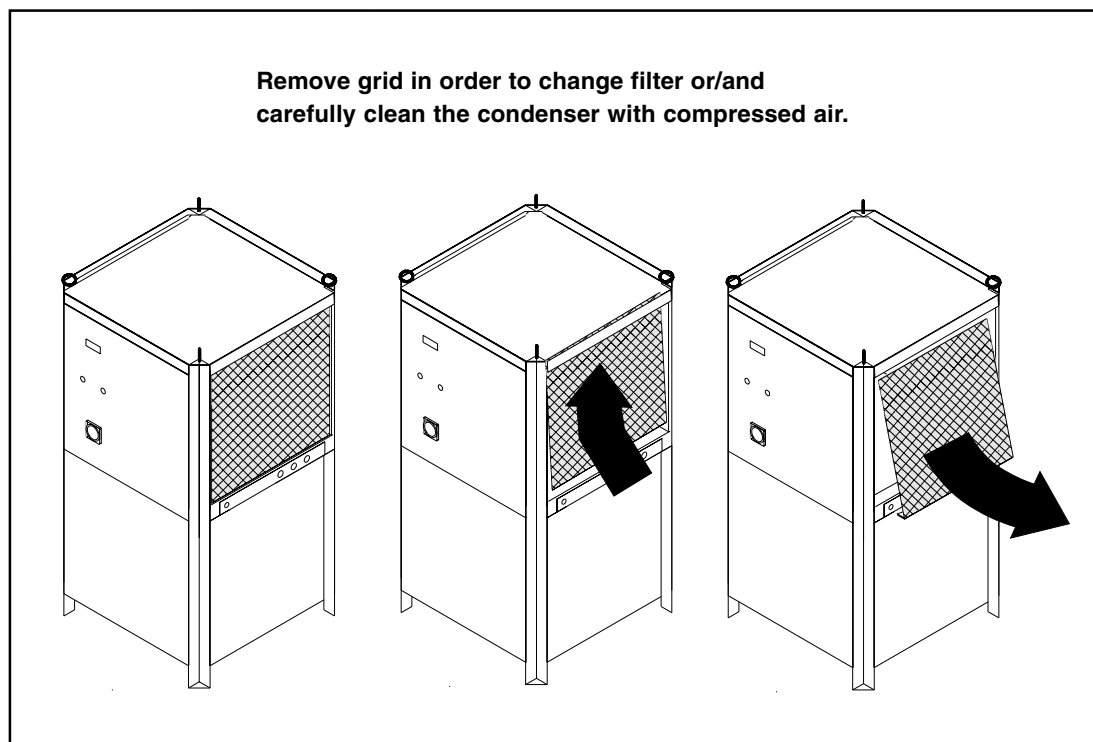
Longer standstill of chiller requires draining of tank and complete water circuit. For renewed start-up of the chiller the same steps as for the initial start-up must be considered.

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.
- If the chiller is equipped with an air filter, the filter has to be exchanged (please contact the supplier).

If the airfilter is replaced, only make use of a EU2 filter.



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

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



***If the fault
signal indicator lights ...*** ... refer to **FAULT LIGHT ON**
matrix (see page 14/15)

***If the fault
signal indicator is off ...*** ... refer to **FAULT LIGHT OFF**
matrix (see page 16)

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 light on (parts are identified on the wiring diagram)

Fault	Possible cause	Repairment
Compressor clixon cuts out	<p>Compressor current too high</p> <p>Compressor defect</p> <p>Clixon (Kriwan) defect</p> <p>Evaporation temp. too high</p>	<p>Incorrect power supply L1, L2, L3 testing of ocurent (ampere) Current and power supply OK: compressor or clixon defect</p> <p>Repairment only by refrigeration specialist</p> <p>Repairment only by refrigeration specialist</p> <p>Fluid (water, emulsion, oil) temp. too high</p>
Low pressure switch tripped	<p>Fluid (water, emulsion, oil) level in tank too low</p> <p>Refrigerant leakage</p> <p>Expansion valve defect</p> <p>Option:solenoid valve defekt</p> <p>Fluid temperature too low</p> <p>Ambient temp. too low</p>	<p>Resetting of low pressure switch</p> <p>Testing of correct fluid level - refilling tank</p> <p>Repairment only by refrigeration specialist</p> <p>Repairment only by refrigeration specialist</p> <p>Repairment only by refrigeration specialist</p> <p>Refer to technical specification</p> <p>Refer to technical specification</p>
High pressure switch tripped	<p>Clogged or dirty airfilter (Option)</p> <p>Clogged or dirty condensor</p> <p>Fan motor rotation - wrong way around</p> <p>Fan motor defect</p> <p>Fluid (water, emulsion,oil) temperature to high</p> <p>Watervalue at watercooled units</p> <p>Ambient temperature to high</p>	<p>Resetting of high pressure switch</p> <p>Replace airfilter (EU 2)</p> <p>Clean condensor</p> <p>Testing of correct rotation - see rotation arrow on condensor</p> <p>Replacement of fan motor</p> <p>Refer to technical specification</p> <p>Testing of correct waterflow</p> <p>Measure air inlet temp. at condensor refer to chapter 3</p>

5 FAULT DIAGNOSIS

Fault light on (parts are identified on the wiring diagram)



Fault	Possible cause	Repairement
Overload tripped	Current of the specific part too high Burnt or broken cable Loose connection Insufficient power supply	Resetting of overload Testing of current (ampere), replace defect part Repair broken cable Tighten all contacts and terminals Test power supply
Option: Flow switch tripped	Flow switch dirty Flow switch defect Pump defect Pump rotation - wrong way around Fluid (water, emulsion, oil) level too low	Clean flow switch Replace flow switch Replace pump Testing of correct pump rotation, see arrow on pump Testing of sufficient fluid in system and damaged or clogged up piping
Option Anti-freeze thermostat	Fluid (water, emulsion, oil) temperature too low	Test the setting of the Anti-freeze thermostate Testing of correct temperature setting on controller controller defect
Option: float switch tripped	Water level in tank too low	Testing of waterlevel, refilling of tank

5 FAULT DIAGNOSIS



Fault light off (parts are identified on wiring diagram)

Fault	Possible cause	Repairment
Unit does not start	No power supply Broken main fuse Transformer fuse broken Temperature controller broken Fluid temperature outside min. or max. allowable values	Test power supply Replace main fuse Replace transformer fuse Replace temperature controller Testing of correct temperature setting
Fluid (water, oil) temp. too high	Clogged or dirty air filter Dirty evaporator Dirty condensor Refrigerant leakage (bubbles in sight glass) Temp.controller setting incorrect Water level in tank too low Ambient temp. too high Consumer capacity too high	Replace air filter Clean evaporator Clean condensor Repairement only by refrigeration specialist Re-adjustment of temp. controller Testing of waterlevel refilling of tank Refer to technical specification or chapter 3 Test consumer capacity and compare with chiller capacity



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

Deionized / Demineralized / Distilled / Return Osmosis water

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

Fresh water/ City water / Tap water

When using fresh water, city water or tap water it is recommended to analyse the water by a specialist to minimize the risk of any chiller damage through a high chloride content. A high chloride content (>20mg/l) in the system water can cause corrosion on the stainless steel evaporator.

It is required to make use of a corrosion inhibitor as additive to the system water. We recommend the use of **Nalco 77382 at a concentration of 5g/l in the complete water system**, unless an inhibitor with similar characteristics is prescribed from the manufacturer.

Organic sediments and algae in the water cycle can be controlled by analysing the number of organic germs. If the number of organic germs exceeds 1000 KBE/ml, we recommend to use **Biozid Nalco 77352 at a concentration of 100mg/l**. After 3 to 4 days it is recommended to exchange the complete system water. The chiller can operate during this period.

Evaporation leads to a concentration of minerals and chloride in the system water, especially at the surface level. The water parameters which are initially below the guide values, can increase to exceed the guideline value as a result of the evaporation. An excessive chloride content in the system water will cause corrosion on the stainless steel evaporators and stainless steel tank. We therefore recommend to regularly monitor the water quality and if necessary drain the concentrated water from the system in order to rematch the water values to the parameters as per guideline. It is recommended to exchange the water at least once or more times per year and to inspect the evaporators on regular intervals.

Water quality parameters:

ph-value:	7-9	alkalinity (°dH):	<1
conductivity:	<300 µS/cm	chloride content:	<20 mg/L
hardness (°dH):	7,5°dH – 8,5°	organic germs:	<1000 KBE/ml

For any further questions please contact the water specialist (S. 18)

Ignorance of the above information cancels the Manufacturers liability for subsequent damage.



6 IMPORTANT INFORMATION ON WATER QUALITY

For assistance regarding watertreatment please contact:

GERMANY

Nalco Deutschland GmbH
Ludwig-Landmann-Strasse 405
D-60486 Frankfurt am Main
Phone: 069-793-40
Fax: 069-793-4295

FRANCE

Nalco
N°5 rue Rosa Bonheur
F-59290 Wasquehal
Phone: 03 20 11 70 00
Fax: 03 20 11 70 70

EUROPE

Nalco European Operations
2342 BV Oegstgeest
P.O. Box 627, NL-2300 Leiden, The Netherlands
Phone: 31-71-524-1100
Fax: 31-71-524-1197

USA

Nalco Company
Nalco Center
1601 W. Diehl Road
Naperville, IL 60563-1198 U.S.A.
Phone: 630-305-1000
Fax: 630-305-2900

SOUTH AMERICA

Nalco Latin America Operations
Av. Das Nacoes Unidas
17.891, 11o, Andar
Santo Amaro 04795-100
Sao Paulo, Brazil
Phone: 55-11-5644-6500
Fax: 55-11-5641-7687

ASIA

2 International Business
2-20 The Stategy Tower 2
Singapore 609930
Phone: 0065 (0) 68 61 40 11
Fax: 0065 (0) 68 61 40 11

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 environment friendly refrigeration fluid. Only registered and qualified refrigeration companies are permissible to carry out work on the chiller. Before attending any repairs or maintenance 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



EG- Konformitätserklärung im Sinne der EG- Druckgeräte-Richtlinie

Original-EG-Konformitätserklärung



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Industriepark 54
56593 Kunkel / Deutschland

Bevollmächtigter
für die
Zusammenstellung
der technischen
Unterlagen:

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56593 Kunkel / Deutschland

Produkt:

Nr.:

Hiermit erklären wir, dass das oben genannte Produkt allen einschlägigen Bestimmungen der Druckgeräte-Richtlinie 2014/68/EU entspricht. Das oben genannte Produkt erfüllt die Anforderungen der folgenden einschlägigen Richtlinien und Verordnungen:

- Richtlinie 2006/42/EG des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG (Neufassung) 2006/42/EC
- Richtlinie 2014/30/EU des Europäischen Parlaments und des Rates vom 26. Februar 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit (Neufassung) 2014/30/EU
- Richtlinie 2014/68/EU des Europäischen Parlaments und des Rates vom 15. Mai 2014 zur Harmonisierung der Rechtsvorschriften der Mitgliedstaaten über die Bereitstellung von Druckgeräten auf dem Markt (Neufassung) 2014/68/EU
- Verordnung (EU) 2016/2281 der Kommission vom 30. November 2016 zur Durchführung der Richtlinie 2009/125/EG des Europäischen Parlaments und des Rates zur Schaffung eines Rahmens für die Festlegung von Anforderungen an die umweltgerechte Gestaltung energieverbrauchsrelevanter Produkte im Hinblick auf Luftheizungsprodukte, Kühlungsprodukte, Prozesskühler mit hoher Betriebstemperatur und Gebläse Konvektoren

Folgende harmonisierte Normen wurden angewandt:

- DIN EN ISO 12100:2011-03 Sicherheit von Maschinen - Allgemeine Gestaltungsleitsätze - Risikobeurteilung und Risikominderung (ISO 12100:2010) 2011-03
- DIN EN ISO 14120:2016-05 Sicherheit von Maschinen - Trennende Schutzeinrichtungen - Allgemeine Anforderungen an Gestaltung und Bau von feststehenden und beweglichen trennenden Schutzeinrichtungen (ISO 14120:2015); Deutsche Fassung EN ISO 14120:2015 2016-05
- DIN EN 60204-1:2007-06 Sicherheit von Maschinen - Elektrische Ausrüstung von Maschinen - Teil 1: Allgemeine Anforderungen (IEC 60204-1:2005, modifiziert); Deutsche Fassung EN 60204-1:2006 2007-06
- DIN EN ISO 13849-1:2016-06 Sicherheit von Maschinen - Sicherheitsbezogene Teile von Steuerungen - Teil 1: Allgemeine Gestaltungsleitsätze (ISO 13849-1:2015); Deutsche Fassung EN ISO 13849-1:2015 2016-06
- DIN EN ISO 13732-1:2008-12 Ergonomie der thermischen Umgebung - Bewertungsverfahren für menschliche Reaktionen bei Kontakt mit Oberflächen - Teil 1: Heiße Oberflächen (ISO 13732-1:2006); Deutsche Fassung EN ISO 13732-1:2008 2008-12
- DIN EN 378-2:2018-04 Kälteanlagen und Wärmepumpen - Sicherheitstechnische und umweltrelevante Anforderungen - Teil 2: Konstruktion, Herstellung, Prüfung, Kennzeichnung und Dokumentation; Deutsche Fassung EN 378-2:2008+A2:2018-04


Kunkel, 28.08.2019, Berthold Adomat, Technischer Direktor

Konformitäts Bewertungsverfahren nach: Modul A1
Kompressor Bewertungsverfahren nach Modul: A1 Copeland / D1 Danfoss
TÜV Rheinland-Zertifizierungsstelle für Druckgeräte der
TÜV Rheinland Industrie Service GmbH
Benannte Stelle, Kennnummer: 0035
Am Grauen Stein, D-51105 Köln

DOK-ID:V1.05_KAT2_28.08.2019



**EC- Declaration of Conformity according to the
EC- Pressure Equipment Directive**
Original-EC-Declaration of Conformity



Manufacturer:

Hyfra Industriekühlanlagen GmbH
Telefon: +49 2687 898-0
Telefax: +49 2687 898-25
E-Mail: infohyfra@hyfra.com
Internet: www.hyfra.com
Industriepark 54
56593 Krunkel / Deutschland

**Authorized person
for technical
documentation:**

Berthold Adomat
Hyfra Industriekühlanlagen GmbH
Telefon: +49 2687 898-0
Telefax: +49 2687 898-25
E-Mail: infohyfra@hyfra.com
Internet: www.hyfra.com
Industriepark 54
56593 Krunkel / Deutschland

Product:

no.:

We herewith confirm that the product mentioned above meets all relevant requirements of the Pressure Equipment Directive 2014/68/EU. The product mentioned above meets the requirements of the relevant directives and regulations referenced below:

- Directive 2006/42/EC of the European Parliament and of the Council of 17 May 2006 on machinery, and amending Directive 95/16/EC (recast)
- Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility (recast)
- Directive 2014/68/EU of the European Parliament and of the Council of 15 May 2014 on the harmonization of the laws of the Member States relating to the making available on the market of pressure equipment (recast)
- Commission Regulation (EU) 2016/2281 of 30 November 2016 implementing Directive 2009/125/EC of the European Parliament and of the Council establishing a framework for the setting of ecodesign requirements for energy-related products, with regard to air heating products, cooling products, high temperature process chillers and fan convectors

Applied harmonized Standards:

- DIN EN ISO 12100:2011-03 Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010); German version EN ISO 12100:2010
- DIN EN ISO 14120:2016-05 Safety of machinery - Guards - General requirements for the design and construction of fixed and movable guards (ISO 14120:2015); German version EN ISO 14120:2015
- DIN EN 60204-1:2007-06 Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:2005, modified); German version EN 60204-1:2006
- DIN EN ISO 13849-1:2016-06 Safety of machinery - Safety-related parts of control systems - Part 1: General principles for design (ISO 13849-1:2015); German version EN ISO 13849-1:2015
- DIN EN ISO 13732-1:2008-12 Ergonomics of the thermal environment - Methods for the assessment of human responses to contact with surfaces - Part 1: Hot surfaces (ISO 13732-1:2006); German version EN ISO 13732-1:2008
- DIN EN 378-2:2018-04 Refrigerating systems and heat pumps - Safety and environmental requirements - Part 2: Design, construction, testing, marking and documentation; German version EN 378-2:2018-04


Krunkel, 28.08.2019, Berthold Adomat, Technical Director



**Déclaration de Conformité CE en accord avec la
Directive CE des équipements sous pression**



Original- Déclaration de Conformité CE

Fabricant:

Hyfra Industriekühlanlagen GmbH
Telefon: +49 2687 898-0
Telefax: +49 2687 898-25
E-Mail: infohyfra@hyfra.com
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Industriepark 54
56593 Krunkel / Deutschland

**Personne autorisée
pour la
documentation
technique:**

Berthold Adomat
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Internet: www.hyfra.com
Industriepark 54
56593 Krunkel / Deutschland

Produit:

numero.:

Par la présente nous déclarons que les produits référencés ci-dessus sont conformes aux exigences essentielles de sécurité et de santé de la directive des équipements sous pression 2014/30/ UE.

Les produits référencés ci-dessous sont conformes aux exigences des directives et règlements référencés ci-dessous:

- Directive 2006/42/CE du Parlement européen et du Conseil du 17 Mai 2006 aux machines et modifiant la directive 95/16/EC (refonte)
- Directive 2014/30/UE du Parlement européen et du Conseil du 26 février 2014 relative à l'harmonisation des législations des États membres concernant la compatibilité électromagnétique Directive 2014/20/EU (refonte)
- Directive 2014/68/UE du Parlement européen et du Conseil du 15 mai 2014 relative à l'harmonisation des législations des États membres concernant la mise à disposition sur le marché des équipements sous pression (refonte)
- Décret (EU) 2016/2281 de la commission du 30 novembre 2016 sur l'exécution de la directive 2009/125/UE du Parlement européen et du Conseil établissant un cadre pour la fixation d'exigences en matière de fabrication respectueuse de l'environnement de produits consommateurs d'énergie concernant les systèmes de chauffage d'air, les appareils de refroidissements, les refroidisseurs industriels à température de service élevée et les convecteurs de soufflerie

Standards Harmonisés Appliqués:

- DIN EN ISO 12100:2011-03 Sécurité des machines, exigences générales. - Appréciation du risque et réduction du risque (ISO 12100:2010); Version Allemande EN ISO 12100:2010
- DIN EN ISO 14120:2016-05 Sécurité des machines - Protecteurs - Prescriptions générales pour la conception et la construction des protecteurs fixes et mobiles (ISO 14120:2015); Version Allemande EN ISO 14120:2015
- DIN EN 60204-1:2007-06 Sécurité machines, équipements électriques des machines - Partie 1: Règles générales (CEI 60204-1:2005, modifiée); Version Allemande EN 60204-1:2006
- DIN EN ISO 13849-1:2016-06 Sécurité des machines - Parties des systèmes de commande relatives à la sécurité - Partie 1 : principes généraux de conception (ISO 13849-1:2015); Version Allemande EN ISO 13849-1:2015
- DIN EN ISO 13732-1:2008-12 Ergonomie des ambiances thermiques - Méthodes d'évaluation de la réponse humaine au contact avec des surfaces - Partie 1 : surfaces chaudes (ISO 13732-1:2006); Version Allemande EN ISO 13732-1:2008
- DIN EN 378-2:2018-04 Systèmes de réfrigération et pompes à chaleur - Exigences de sécurité et d'environnement - Partie 2 : conception, construction, essais, marquage et documentation; Version Allemande EN 378-2:2018-04


Krunkel, 28.08.2019, Berthold Adomat, Directeur technique

TECHNICAL DATA SHEET

Industrial-Water-Recooler
Type sigma 80-S

1. GENERAL DATA

Refrigerant gas:		R410A	
<u>Specifications:</u>			
Nominal ambient air:	°C	32	
Coolant temperature:	°C	15 20 0	
Cooling Capacity:	W	71300 79800	
Min ambient air:	°C	-18	
Max ambient air:	°C	42	
Min coolant temperature:	°C	13.5	
Max coolant temperature:	°C	40	
Evaporator material:		stainless steel 1.4436/ copper	
Temperature control:		electronic, absolute control	
Temperature display:		digital	
Control voltage:		24V AC	
Main Power supply:		3/PE/50Hz 380-415V +-10%	
Total absorbed power:	kW		max: 31.9
Full load current:	A		max: 53.6
Safety fuse protection:	A	63.00	
Sound pressure levels	dB(A)	74.00 +/- 2dB(A)	

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.

Cabinet structure: Edelstahl, unlackiert

2. AIR CONDENSER:

air cooled, axial

Nominal Air Flow:	m ³ /h	15500.00	
Number of fan:	Unit	1	
Nom Absorbed power:	kW	1.97	
Starting current:	A	3.40	

3. COMPRESSOR:

full hermetic (dome)

Number:	Unit	1	
Technology:		direct	
Total absorbed power:	kW		max: 26.70
Full load current:	A		max: 43.60

4. PUMP:

TECHNICAL DATA SHEET

First PUMP:		horizontal centrifugal pump
Type:		CM10-5
Number:	Unit	1
Total absorbed power:	kW	3.00
Full load current:	A	6.30
Nominal flow rate:	m ³ /h	12.70
Nominal pressure rate:	bar	5.10

5. LIQUID TANK: stainless steel, insulated

Volume:	l	300.00
Outlet / inlet connections:	Inch	IG 2
Pipe connection fresh-water:	Inch	IG 3/8

6. WEIGHT AND PHYSICAL SIZE:

Length:	mm	1000
Width:	mm	1000
Height:	mm	2055

Weight :	kg	440
----------	----	-----

Please note:

Required external pressure loss min. 1 bar.

7. TECHNICAL ALTERATION:

technical modifications are subject to change without prior notification



R-410A

GUARANTEED COMMERCIAL SPECIFICATIONS

STANDARD SPECIFICATIONS	LIMIT VALUE
Composition: R-32	50 % (+0.5% -1.5%)
R-125	50 % (+1.5% -0.5%)
Guaranteed purity	≥ 99.5 % weight
Water content	≤ 10 ppm weight
Chlorine ion test	Negative
Acidity (HCl)	≤ 1 ppm weight
Non-condensable content (gas phase)	≤ 1.5 % volume
High-boiling residues	≤ 0.01 % volume

MAIN APPLICATIONS

R-410A is a very near azeotropic HFC blend mainly intended for new installations. It is mainly used in air conditioning and industrial refrigeration applications.

OILS

Use a polyol ester (POE) oil.

Check with **Climalife** regarding the viscosity of the oil selected for your application, and the miscibility with the fluid under consideration.

PRECAUTIONS OF USE

Refer to the Safety Data Sheet*.

REGULATION

The use and implementation of R-410A are governed by EU Regulation n° 517/2014.

The recovery of R-410A is mandatory under EU Regulation n° 517/2014.

(Refer to regulations enforced in each country)

* Find the Safety Data Sheet (SDS) directly on our website www.climalife.dehon.com



R-410A

climalife®

R-410A PHYSICAL PROPERTIES

Molar mass	g/mol	72.6
Melting point	°C	N/A
Boiling point (at 1.013 bar)	°C	-51.6
Temperature glide at 1.013 bar	K	0.05
Saturated liquid density at 25°C	kg/m ³	1061
Saturated vapour density at boiling point	kg/m ³	4.173
Vapour pressure at: 25°C	bar	16.5
50°C	bar	30.6
Critical temperature	°C	70.17
Critical pressure	bar	47.7
Critical density	kg/m ³	552
Latent heat of vaporisation at boiling point	kJ/kg	271.5
Thermal conductivity of liquid at 25°C	W/(m.K)	0.098
Thermal conductivity vapour at 1.013 bar	W/(m.K)	0.0124
Surface tension at 25°C	10 ⁻³ N/m	5.01
Viscosity of liquid at 25°C	10 ⁻³ Pa-s	0.121
Viscosity of vapour at 1.013 bar	10 ⁻³ Pa-s	0.0134
Specific heat of liquid at 25°C	kJ/(kg.K)	1.69
Specific heat of vapour at 1.013 bar	kJ/(kg.K)	0.822
Cp/Cv ratio at 25°C at 1.013 bar		1.175
Flammability in air		Non-flammable
Flash point	°C	None
NF-EN 378 classification		L1
Ozone Depletion Potential	(R-11 = 1)	0
GWP	(CO ₂ = 1)	2088

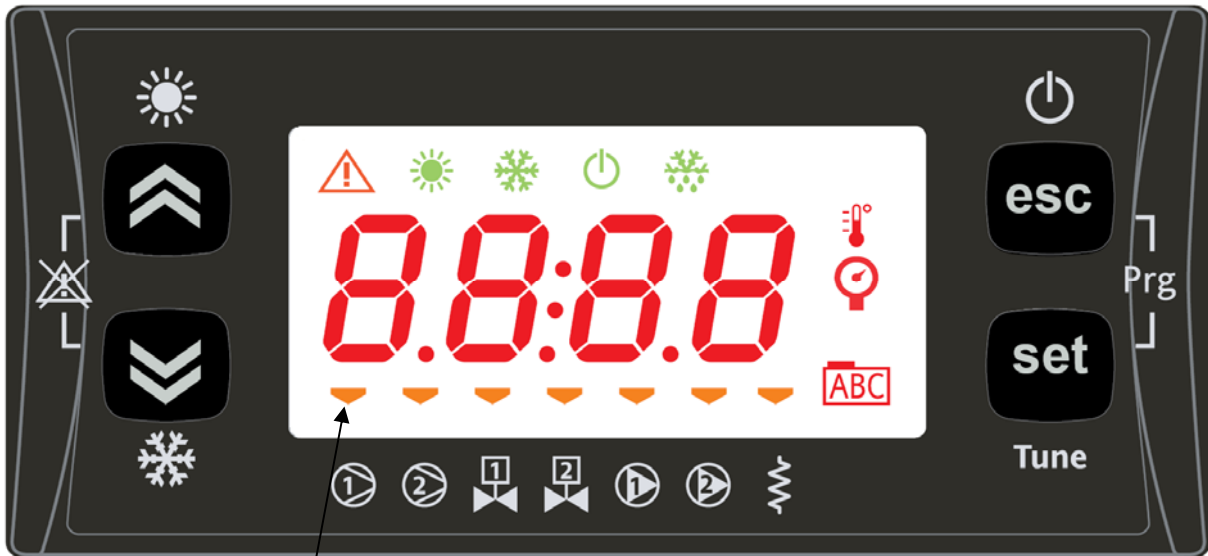
Please contact your distributor or our **Climalife** sales department for more information. In addition, if the refrigeration system you want to install, or are working on, does not appear to be a typical installation, please do not hesitate to contact us for advice and information.

For more information, please visit our website:
http://www.climalife.dehon.com/contact_us



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 for types of sigma and SVK):

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

Strukturkennzeichenübersicht

Structure identifier overview

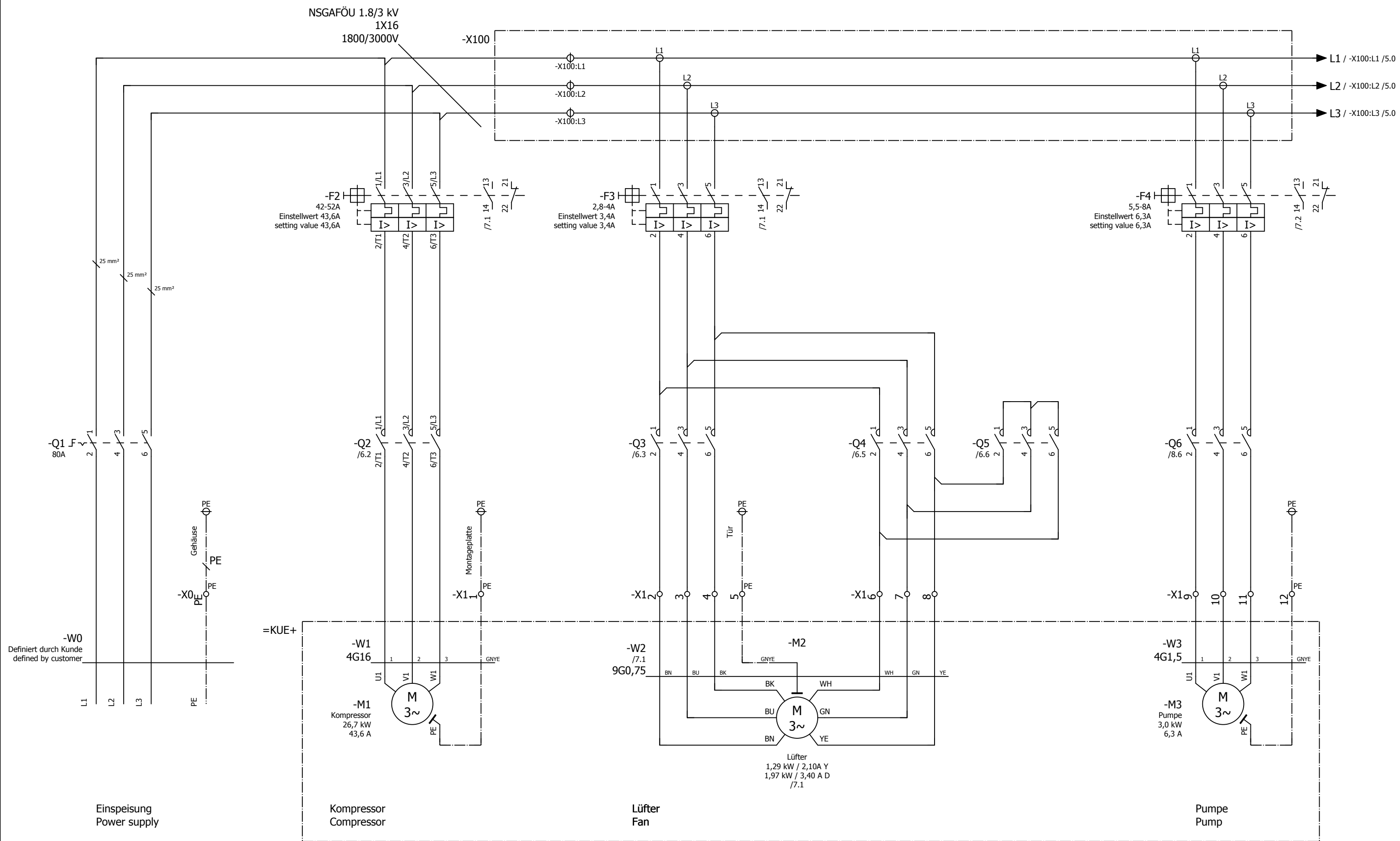
Anlage Plant	Beschreibung Description
KUE	Kühlanlage Chiller
EXT	Extern External

Einbauort Mounting location	Beschreibung Description
ESK	Schaltschrank Enclosure
REPORT	Dokumentation Documentation

+ESK/4

			Datum	26.03.2020	sigma 80-S		Strukturkennzeichenübersicht Structure identifier overview	E002623-00	= KUE	Blatt	3
			Bearb.	Ketler					+	Blatt	21
			Gepr								
Änderung	Datum	Name	Urspr	Ketler	Ersatz von	Ersetzt durch					

Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H07V-K 1,5mm²
 all cables without numbers are H07V-K 1,5mm²



Datum	26.03.2020
Bearb.	Ketler
Gepr.	
Änderung	Datum Name Urspr
	Ketler

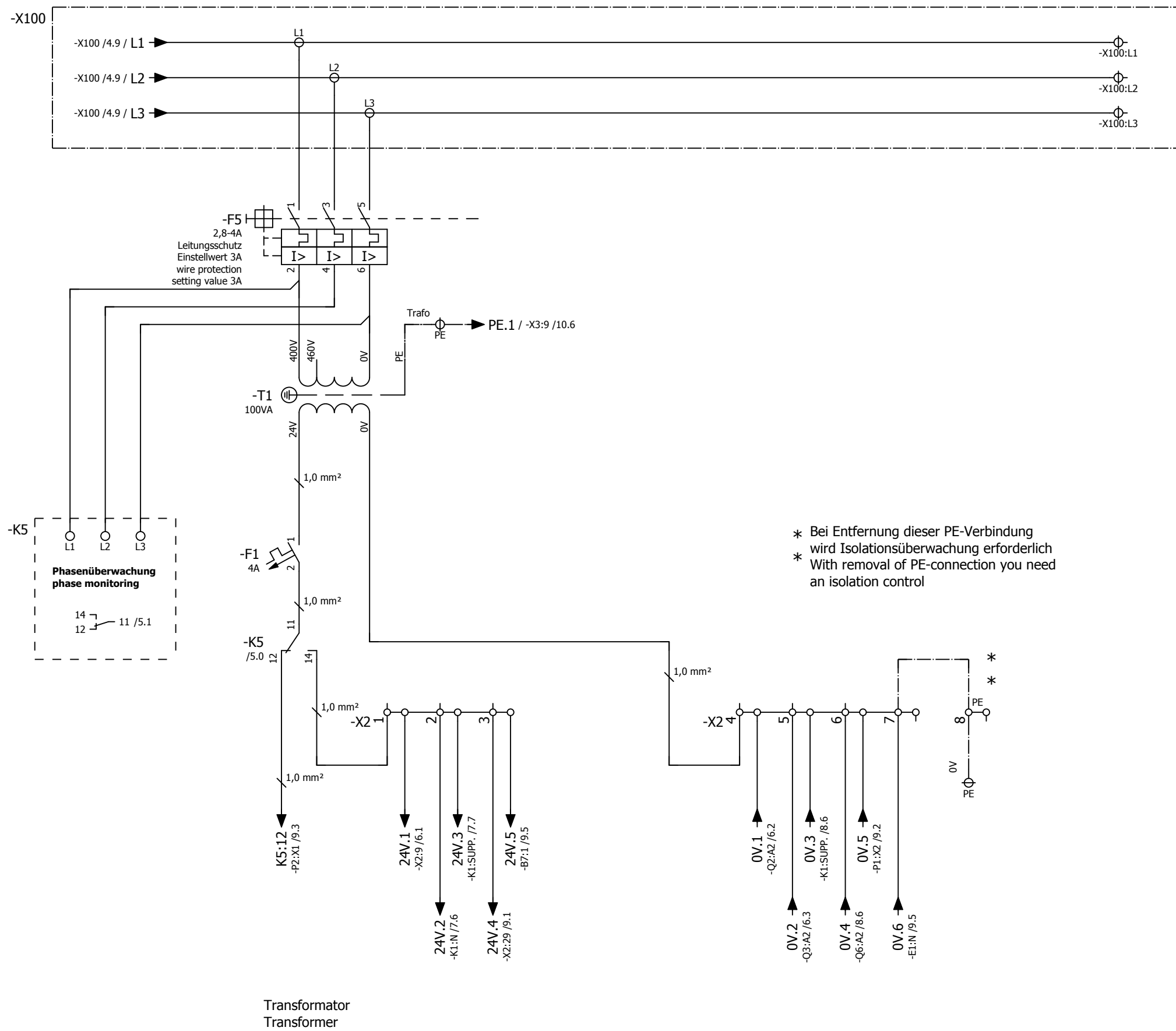
sigma 80-S	
Ersatz von	Ersetzt durch



Laststromkreise
Main circuit

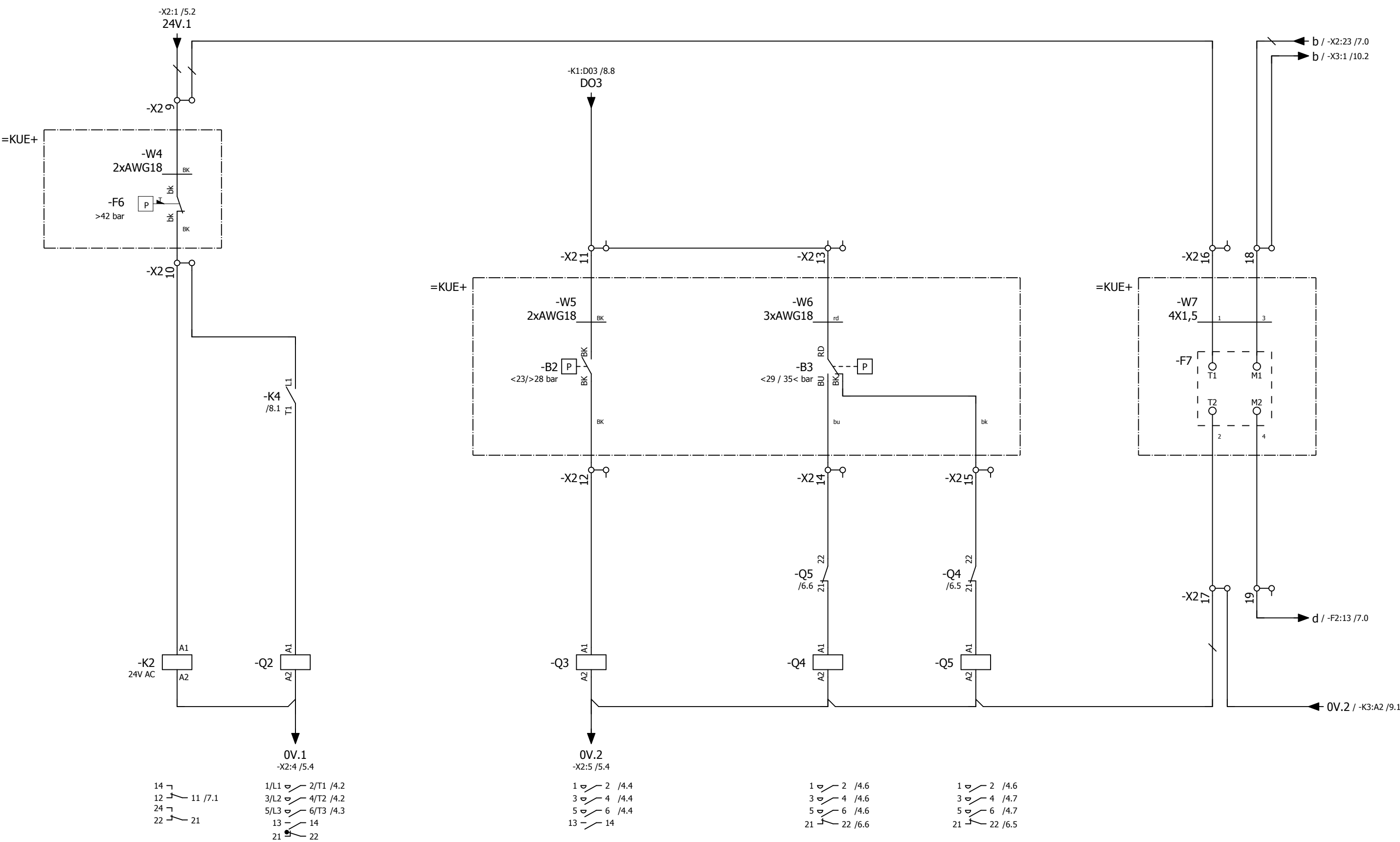
= KUE	
+ ESK	
E002623-00	
Blatt	4
Blatt	21

Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H07V-K 1,5mm²
 all cables without numbers are H07V-K 1,5mm²



		Datum	26.03.2020	sigma 80-S		HYFRA	Laststromkreise Main circuit			= KUE
		Bearb.	Ketler							+ ESK
		Gepr.								
Änderung	Datum	Name	Urspr	Ketler	Ersatz von	Ersetzt durch	E002623-00		Blatt	5
								Blatt	21	

Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H05V-K 1,0mm²
 all cables without numbers are H05V-K 1,0mm²





Hochdruckbegrenzer
high pressure limiter

Kompressor
Compressor

Lüfter
Fan

Druckschalter D-Y
Pressure switch D-Y


hohe Drehzahl
high speed 

niedrige Drehzahl
low speed 

Motorvollschutz Kompressor
motor protection device

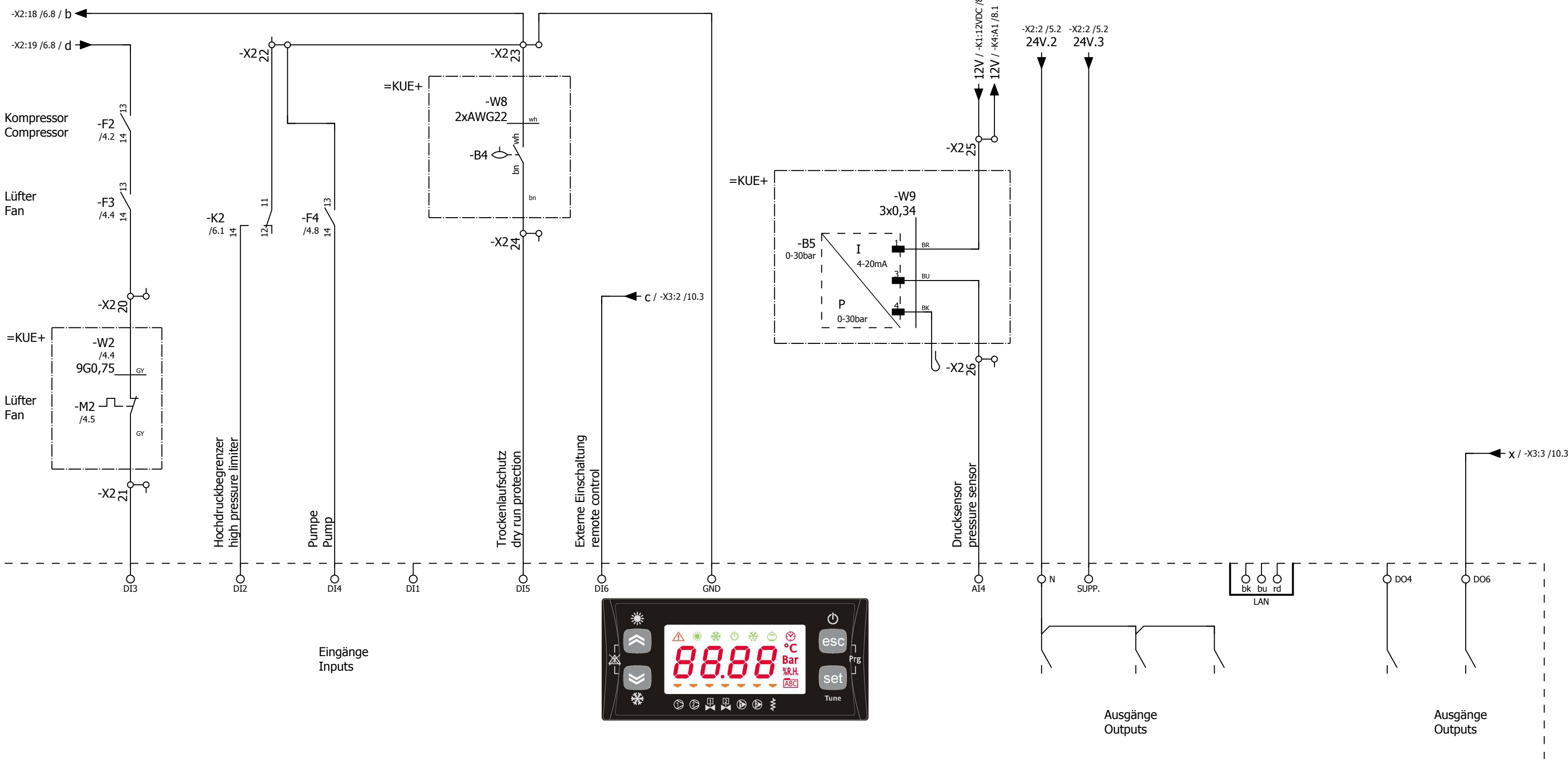
Datum	26.03.2020
Bearb.	Ketler
Gepr.	
Änderung	Datum Name Urspr
	Ketler

sigma 80-S	
Ersatz von	Ersetzt durch

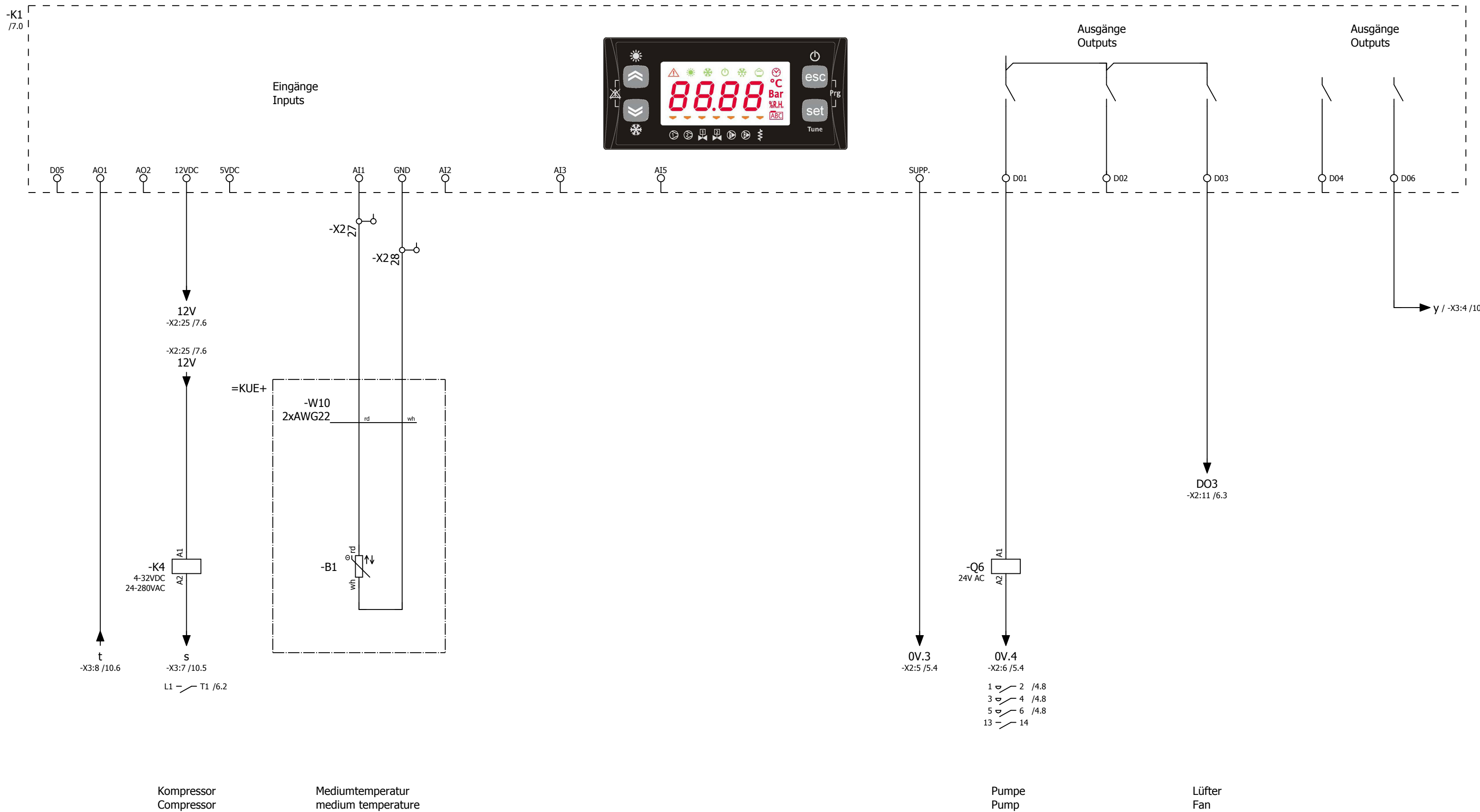
 **HYFRA** Steuerstromkreise
Control circuit

E002623-00		Blatt 6
		Blatt 21

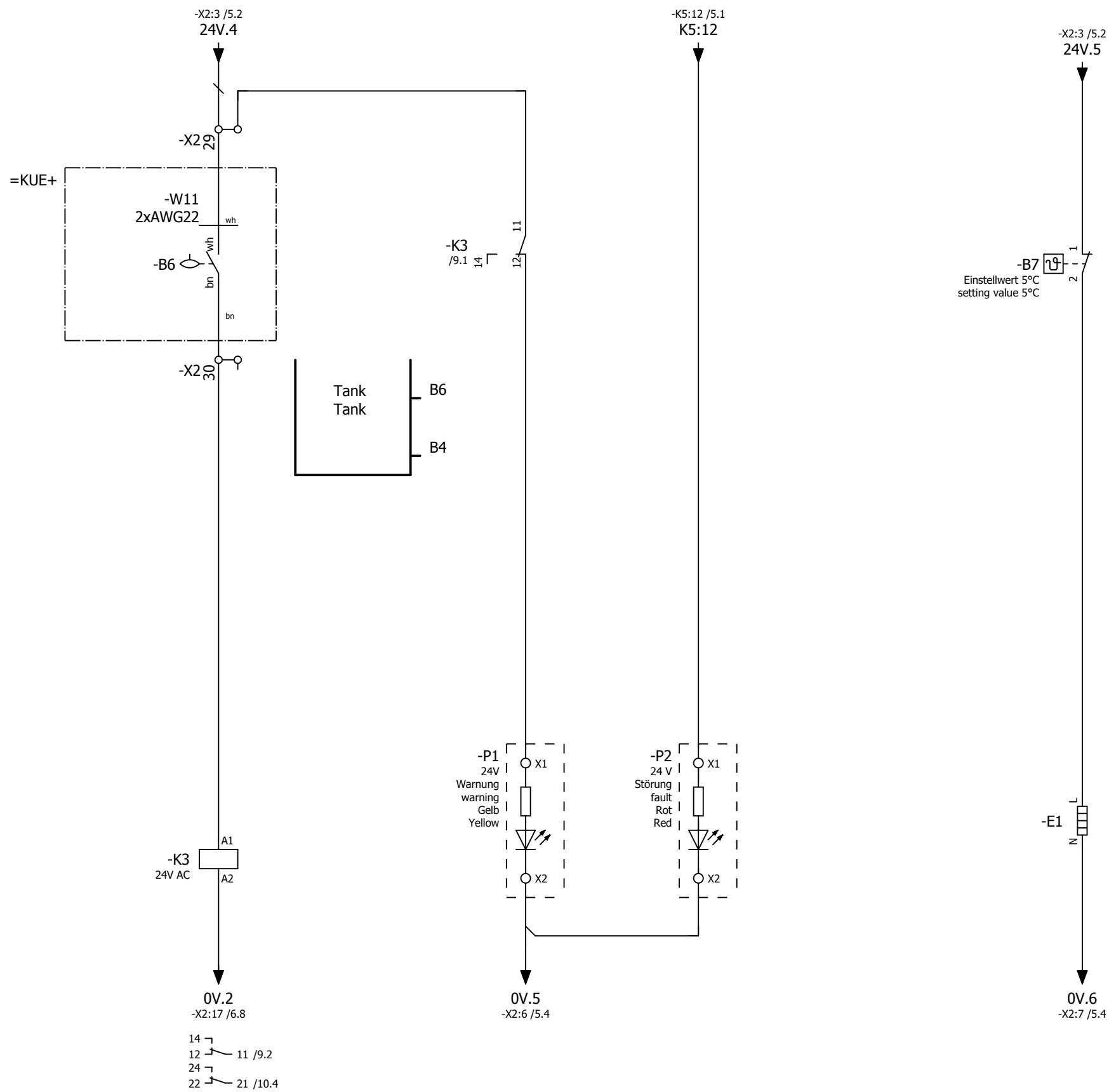
= KUE
+ ESK



Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H05V-K 1,0mm²
 all cables without numbers are H05V-K 1,0mm²



Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H05V-K 1,0mm²
 all cables without numbers are H05V-K 1,0mm²



Wassermangel
water level to low

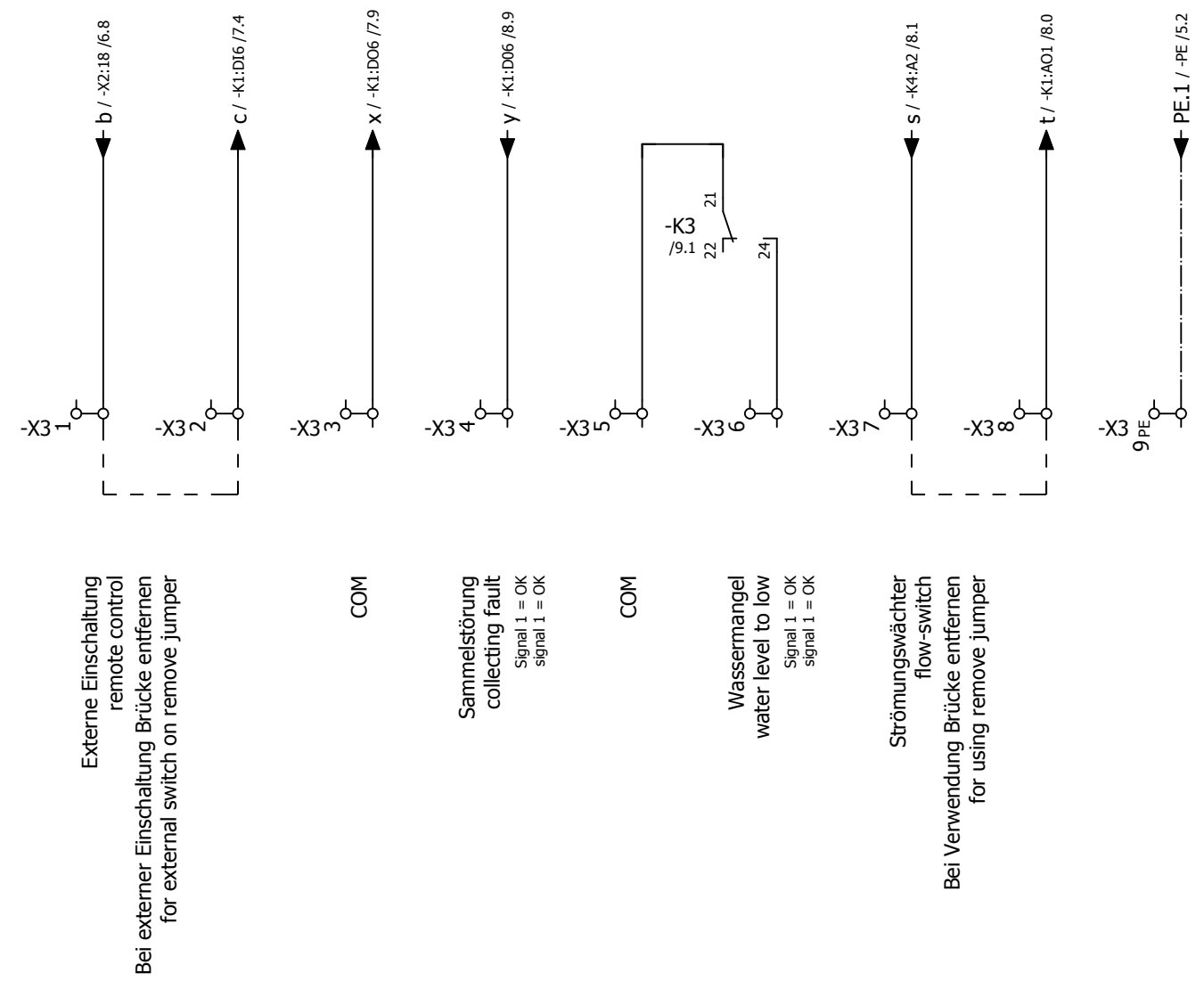
Wassermangel
water level to low

Phasenüberwachung
phase monitoring

Schaltschrank Heizung
Enclosure Heater

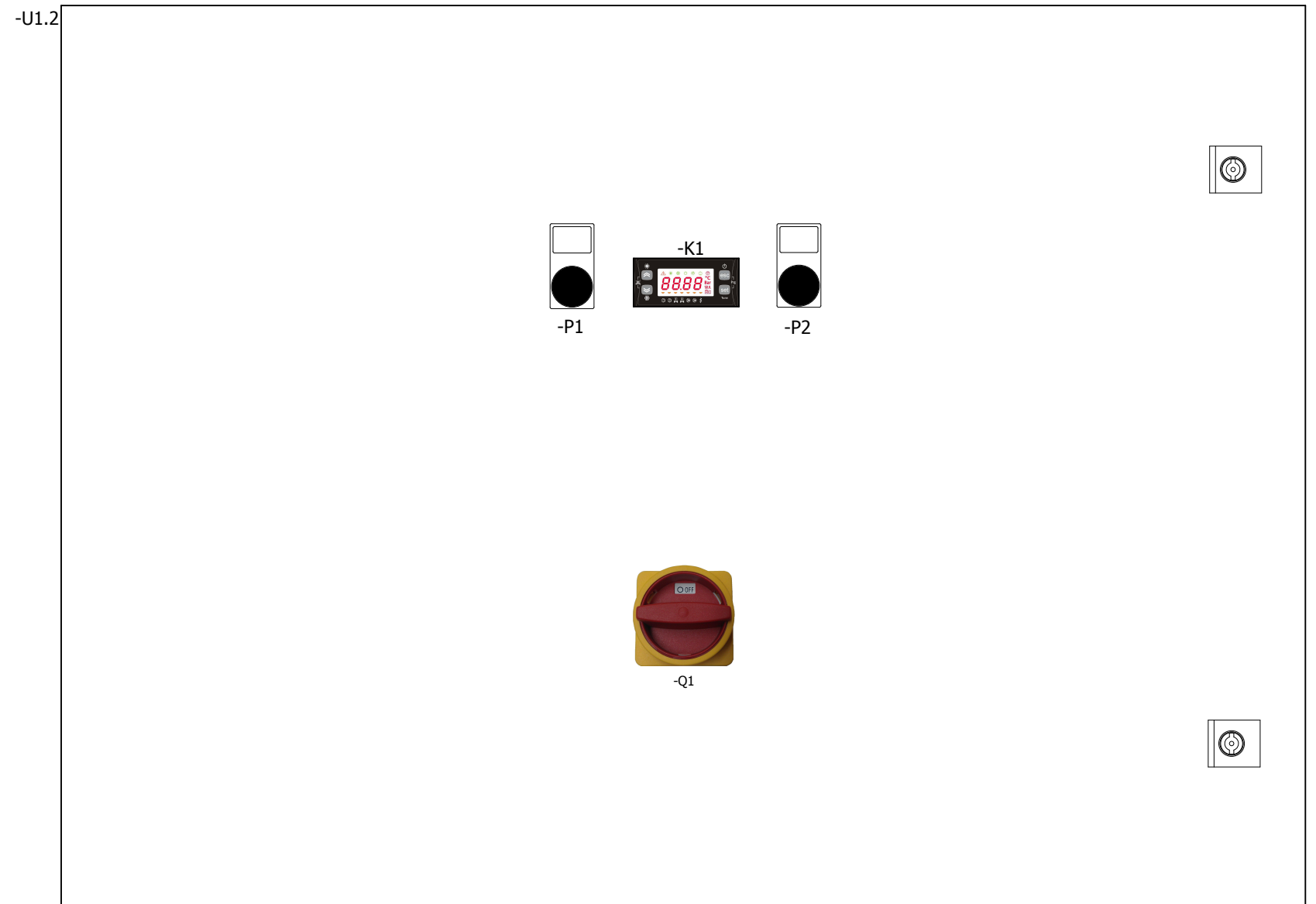
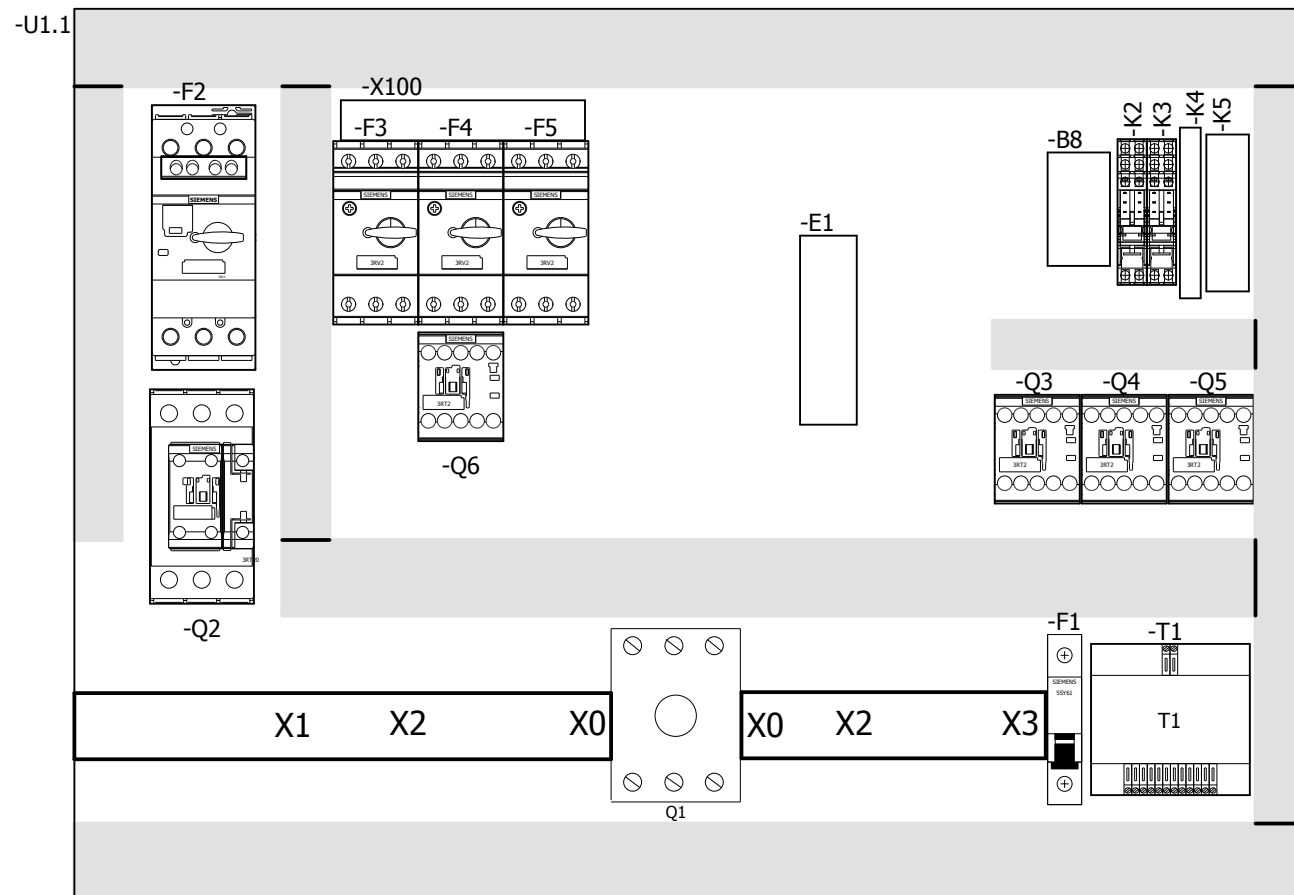
				Datum	26.03.2020	Steuerstromkreise Control circuit		= KUE	
				Bearb.	Ketler			+ ESK	
				Gepr.				E002623-00	
Änderung	Datum	Name	Urspr	Ketler	Ersatz von	Ersetzt durch	Blatt 9		
							Blatt 21		

Sämtliche Leitungen ohne besondere Querschnitts-angabe sind H05V-K 1,0mm²
 all cables without numbers are H05V-K 1,0mm²



Montageplatte Mounting panel

Schaltschranktür Switchboard Door



Datum	26.03.2020
Bearb.	Ketler
Gepr.	
Änderung	Datum
	Name
Urspr	Ketler
Ersatz von	Ersetzt durch

sigma 80-S



Aufbauplan
Panel layout

E002623-00

= KUE
+ ESK

Kabelübersicht

Cable overview

Kabelbezeichnung Cable designation	von from	bis to	Adern Conductrs	∅	Länge Length	Funktionstext Function text
-W1	-M1	+ESK-Q2	4G	16		Kompressor Compressor
		+ESK-X1				
-W2	+ESK-X1	-M2	9G	0,75		Lüfter Fan
	+ESK-X2					
-W3	+ESK-X1	-M3	4G	1,5		Pumpe Pump
-W4	+ESK-X2	-F6	2	AWG18		Hochdruckbegrenzer high pressure limiter
-W5	+ESK-X2	-B2	2	AWG18		Druckschalter 0-Y Pressure switch 0-Y
-W6	+ESK-X2	-B3	3	AWG18		Druckschalter Y-D Pressure switch Y-D
-W7	+ESK-X2	-F7	4X	1,5		Motorvollschutz Kompressor motor protection device
-W8	+ESK-X2	-B4	2	AWG22		Trockenlaufschutz dry run protection
-W9	+ESK-X2	-B5	3	0,34	2	Drucksensor pressure sensor
-W10	+ESK-X2	-B1	2	AWG22		Mediumtemperatur medium temperature
-W11	+ESK-X2	-B6	2	AWG22		Wassermangel water level to low

			Datum	26.03.2020	sigma 80-S			Kabelübersicht Cable overview	= KUE	E002623-00	Blatt	12
		Bearb.	Ketler	+ REPORT					Blatt		21	
		Gepr										
Änderung	Datum	Name	Urspr	Ketler	Ersatz von	Ersetzt durch						

Klemmenplan

Terminal diagram

Funktionstext Function text	Kabelname Cable name	Kabeltyp Cable type	Leiste Strip =KUE+ESK-X2					Anschluss Connection	Zielbezeichnung Target designation	Anschluss Connection	Kabelname Cable name	Kabeltyp Cable type	Seite / Spalte Page / column
			Zielbezeichnung Target designation	Anschluss Connection	Klemme Terminal	Beschreibung Description	Brücke Jumper						
Transformator Transformer			-K5	14	1		2,5					/5.2	
Transformator Transformer			-X2	9			2,5					/5.2	
Transformator Transformer			-K1	N	2		2,5					/5.2	
Transformator Transformer			-K1	SUPP.			2,5					/5.2	
Transformator Transformer			-X2	29	3		2,5					/5.2	
Transformator Transformer			-B7	1			2,5					/5.4	
Transformator Transformer			-T1	0V	4		2,5					/5.4	
Transformator Transformer			-Q2	A2			2,5					/5.4	
Transformator Transformer			-Q3	A2	5		2,5					/5.4	
Transformator Transformer			-K1	SUPP.			2,5					/5.4	
Transformator Transformer			-Q6	A2	6		2,5					/5.4	
Transformator Transformer			-P1	X2			2,5					/5.4	
Transformator Transformer			-E1	N	7		2,5					/5.4	
=			-PE		8	PE	2,5					/5.5	
Hochdruckbegrenzer high pressure limiter			-X2	1	9		2,5	-F6	bk	BK		/6.1	
Hochdruckbegrenzer high pressure limiter			-X2	16			2,5	-F6	bk	BK		/6.1	
Hochdruckbegrenzer high pressure limiter			-K2	A1	10		2,5	-F6	bk	BK		/6.1	
Hochdruckbegrenzer high pressure limiter			-K4	L1			2,5	-F6	bk	BK		/6.1	
Kompressor Compressor			-K1	D03	11		2,5	-B2	BK	BK		/6.3	
=			-Q3	A1	12		2,5	-B2	BK	BK		/6.3	
Druckschalter D-Y Pressure switch D-Y					13		2,5	-B3	RD		rd	/6.5	
=			-Q5	22	14		2,5	-B3	BU		bu	/6.5	
=			-Q4	22	15		2,5	-B3	BK		bk	/6.6	
Motorvollschutz Kompressor motor protection device			-X2	9	16		2,5	-F7	T1			/6.7	
=			-Q5	A2	17		2,5	-F7	T2			/6.7	
Motorvollschutz Kompressor motor protection device			-K3	A2			2,5	-F7	M1			/6.8	
Motorvollschutz Kompressor motor protection device			-X2	23	18		2,5	-F7	M1			/6.8	
Motorvollschutz Kompressor motor protection device			-X3	1			2,5	-F7	M2			/6.8	
Motorvollschutz Kompressor motor protection device			-F2	13	19		2,5	-F7	M2			/6.8	
Lüfter Fan			-F3	14	20		2,5	-M2			GY	/7.1	
=			-K1	DI3	21		2,5	-M2			GY	/7.1	
Hochdruckbegrenzer high pressure limiter			-K2	11	22		2,5					/7.2	
Hochdruckbegrenzer high pressure limiter			-F4	13			2,5					/7.2	
Trockenlaufschutz dry run protection			-X2	18	23		2,5	-B4	wh		wh	/7.3	
Trockenlaufschutz dry run protection			-K1	GND			2,5	-B4	wh			/7.3	





Klemmenplan

Terminal diagram

Funktionstext Function text	Kabelname Cable name	Kabeltyp Cable type	Leiste Strip =KUE+ESK-X2							Anschluss Connection	Kabelname Cable name	Kabeltyp Cable type	Seite / Spalte Page / column
			Zielbezeichnung Target designation	Anschluss Connection	Klemme Terminal	Beschreibung Description	Brücke Jumper	max. Querschnitt max. Cross-section	Zielbezeichnung Target designation				
Trockenlaufschutz dry run protection			-K1	DI5	24		•	2,5	-B4	bn	bn	/7.3	
Drucksensor pressure sensor			-K1	12VDC	25			2,5	-B5	1	BR	/7.6	
			-K4	A1									
Drucksensor pressure sensor			-K1	AI4	26			2,5	-B5	3	BU	/7.6	
Mediumtemperatur medium temperature			-K1	AI1	27		•	2,5	-B1	rd	rd	/8.2	
=			-K1	GND	28		•	2,5	-B1	wh	wh	/8.2	
Wassermangel water level to low			-X2	3	29		•	2,5	-B6	wh	wh	/9.1	
Wassermangel water level to low			-K3	11									
			-K3	A1	30		•	2,5	-B6	bn	bn	/9.1	

Klemmenplan

Terminal diagram

Funktionstext Function text	Kabelname Cable name	Kabeltyp Cable type	Leiste Strip =KUE+ESK-X3						Kabelname Cable name	Kabeltyp Cable type	Seite / Spalte Page / column
			Zielbezeichnung Target designation	Anschluss Connection	Klemme Terminal	Beschreibung Description	Brücke Jumper	max. Querschnitt max. Cross-section			
Externe Einschaltung remote control			-X2	18	1			2,5		/10.2	
=			-K1	D16	2			2,5		/10.3	
COM			-K1	D06	3		.	2,5		/10.3	
Sammelstörung collecting fault			-K1	D06	4		.	2,5		/10.4	
COM			-K3	21	5		.	2,5		/10.4	
Wassermangel water level to low			-K3	24	6		.	2,5		/10.5	
Strömungswächter flow-switch			-K4	A2	7			2,5		/10.5	
=			-K1	AO1	8			2,5		/10.6	
			-PE		9	PE	.	2,5		/10.6	

Artikelstückliste

Parts list

BMK DT	Bezeichnung designation	Typnummer Type number	Hersteller Manufacturer	Artikelnummer part number
-B1	NTC-Fühler 3m NTC-sensor 3m	NTC 030WH01	Carel	10197
-B2	Druckschalter <23 / 28< bar Pressure switch <23 / 28< bar	ACB-2UA782W	Danfoss GmbH	40864
-B3	Druckschalter Pressure switch	ACB-2UC125W	Danfoss GmbH	40865
-B4	Schwimmerschalter, Schließer Float switch, NO contact	NIG-A-G.3/8"Viton,PP,49/15	ELOBAU GmbH+Co KG	37206
-B5	Sensor Sensor	TD34A030B	Eliwell	87465
-B6	Schwimmerschalter, Schließer Float switch, NO contact	NIG-A-G.3/8"Viton,PP,49/15	ELOBAU GmbH+Co KG	37206
+ESK-B7	Temperaturregler Temperature controller	KTO 1140	J. Richter	73610
+ESK-B8	Temperaturregler Temperature controller	KTO 1140	J. Richter	73610
+ESK-E1	Schaltschrank-Heizung Enclosure heating	SM 20	ELMEKO	65665
+ESK-F1	Leitungsschutzschalter 230/400V 6KA, 1polig Circuit-breaker 230/400V 6KA, 1pole	5SY6104-6	Siemens AG	12808
+ESK-F2	LEISTUNGSSCHALTER BGR. S2, FUER DEN MOTORSCHUTZ, CLASS 10 CIRCUIT-BREAKER SZ S2, FOR MOTOR PROTECTION, CLASS 10	3RV2031-4WA10	Siemens AG	71978
+ESK-F2	Hilfsschalter Auxiliary switch	3RV2901-1E	Siemens AG	44718
+ESK-F2	Verbindungsbaustein S2 Link module S2	3RA2931-1AA00	Siemens AG	77438
+ESK-F2	Klemmenabdeckung terminal cover	3RT2936-4EA2	Siemens AG	72061
+ESK-F3	LEISTUNGSSCHALTER BGR. S00, FUER DEN MOTORSCHUTZ, CLASS 10 CIRCUIT-BREAKER SZ S00, FOR MOTOR PROTECTION, CLASS 10	3RV2011-1EA10	Siemens AG	44704
+ESK-F3	Hilfsschalter Auxiliary switch	3RV2901-1E	Siemens AG	44718
+ESK-F4	LEISTUNGSSCHALTER BGR. S00, FUER DEN MOTORSCHUTZ, CLASS 10 CIRCUIT-BREAKER SZ S00, FOR MOTOR PROTECTION, CLASS 10	3RV2011-1HA10	Siemens AG	44707
+ESK-F4	Hilfsschalter Auxiliary switch	3RV2901-1E	Siemens AG	44718

		Datum	26.03.2020	sigma 80-S		 Stückliste Bill of materials			= KUE
		Bearb.	Ketler						+ REPORT
		Gepr							
Änderung	Datum	Name	Urspr	Ketler	Ersatz von	Ersetzt durch	E002623-00		Blatt 18
								Blatt 21	

Artikelstückliste

Parts list

BMK DT	Bezeichnung designation	Typnummer Type number	Hersteller Manufacturer	Artikelnummer part number
+ESK-F4	Verbindungsbaustein S00/S0-S00	3RA1921-1DA00	Siemens AG	44750
+ESK-F5	LEISTUNGSSCHALTER BGR. S00, FUER DEN MOTORSCHUTZ, CLASS 10 CIRCUIT-BREAKER SZ S00, FOR MOTOR PROTECTION, CLASS 10	3RV2011-1EA10	Siemens AG	44704
-F6	Druckschalter >42bar Pressure switch >42bar	ACB-2UB1136MW	Danfoss GmbH	38623
-F7	Auswertelektronik-Temperatursensor Electronic transmitter temperature sensor	8169015	Danfoss GmbH	45369
+ESK-K1	FREESmart FREESmart	FREE SMP5500	Eliwell	55059
+ESK-K1	Verbindungs-Stück Connector	COLV0000E0201	Eliwell	55232
+ESK-K1	Wetterschutz Weather protection	Wetterschutz	Industrial Electronic	37561
+ESK-K2	Relaiskoppler Relay	RCIKIT 24VAC 2CO LED	Weidmüller	69794
+ESK-K3	Relaiskoppler Relay	RCIKIT 24VAC 2CO LED	Weidmüller	69794
+ESK-K4	Halbleiterrelais AC Solid-state relays AC	SSM1A16BD	Schneider Electric	78071
+ESK-K5	Phasenüberwachung phase monitoring	3UG4511-1AP20	Siemens AG	30530
-M1	Kompressor Compressor	SH 295	Danfoss GmbH	54142
-M2	Lüfter Fan	A4D630-AH01-05	ebm-papst	54577
-M3	Pumpe CM10	CM10-5 A-R-A-V AQQV F-A-A-N	Grundfos	77283
+ESK-P1	Meldeleuchte Gelb Signal lamp Yellow	3SU1102-6AA30-1AA0	Siemens AG	78162
+ESK-P2	Meldeleuchte rot Signal lamp red	3SU1102-6AA20-1AA0	Siemens AG	78165
+ESK-Q1	Hauptschalter 80A Main switch 80A	H408-41300 281N4	Sälzer	20622
+ESK-Q1	Profilachse Profile shaft	AVA 8 - 065	Sälzer	18893

		Datum	26.03.2020	sigma 80-S			Stückliste Bill of materials			= KUE
		Bearb.	Ketler							+ REPORT
		Gepr								
Änderung	Datum	Name	Urspr	Ketler	Ersatz von	Ersetzt durch	E002623-00		Blatt	19
								Blatt	21	

Artikelstückliste

Parts list

BMK DT	Bezeichnung designation	Typnummer Type number	Hersteller Manufacturer	Artikelnummer part number
+ESK-Q2	SCHUETZ,AC3, 30KW 1S+10E AC/DC20-33V	3RT2037-1NB30	Siemens AG	78157
+ESK-Q2	Klemmenabdeckung terminal cover	3RT2936-4EA2	Siemens AG	72061
+ESK-Q3	SCHUETZ, AC-3, 3KW/400V, 1S, AC 24V, 50/60 HZ CONTACTOR, AC-3, 3KW/400V, 1NO, AC 24V, 50/60 HZ	3RT2015-1AB01	Siemens AG	69715
+ESK-Q3	Schützkombination Y-D Contactor combination Y-D	3RA2913-2BB1	Siemens AG	44754
+ESK-Q4	SCHUETZ, AC-3, 3KW/400V, 10E, AC 24V, 50/60 HZ CONTACTOR, AC-3, 3KW/400V, 1NC, AC 24V, 50/60 HZ	3RT2015-1AB02	Siemens AG	69717
+ESK-Q5	SCHUETZ, AC-3, 3KW/400V, 10E, AC 24V, 50/60 HZ CONTACTOR, AC-3, 3KW/400V, 1NC, AC 24V, 50/60 HZ	3RT2015-1AB02	Siemens AG	69717
+ESK-Q6	SCHUETZ, AC-3, 4KW/400V, 1S, AC 24V, 50/60 HZ CONTACTOR, AC-3, 4KW/400V, 1NO, AC 24V, 50/60 HZ	3RT2016-1AB01	Siemens AG	44721
+ESK-T1	Transformator AC Transformer AC	460/400/ 24V, AC 100VA	Elektromaschinenbau Wittlich	88429
+ESK-U1.1	Schaltschrankkorpus VA	ST00_967_0, BL04_1025_0	HYFRA Industriekühlanlagen	82399
+ESK-U1.2	Schaltschranktür VA	ST00-897-0	HYFRA Industriekühlanlagen	76658
+ESK-X0	Schutzleiter-Reihenklemme Ground modular terminal block	UT 35-PE	Phoenix Contact	77822
+ESK-X1	Schutzleiter-Reihenklemme Ground modular terminal block	UT 35-PE	Phoenix Contact	77822
+ESK-X1	Endwinkel End angle	ZEW 35	Weidmüller	28947
+ESK-X1	Durchgangsklemme Feed-through terminal block	PT 2,5	Phoenix Contact	77809
+ESK-X1	Schutzleiter-Reihenklemme Ground modular terminal block	PT 2,5-PE	Phoenix Contact	77810
+ESK-X2	Durchgangsklemme Feed-through terminal block	PTS 1,5/S-TWIN	Phoenix Contact	77802
+ESK-X2	Endwinkel End angle	ZEW 35	Weidmüller	28947
+ESK-X2	Steckbrücke Plug-in bridge	FBS 3-3,5 GY	Phoenix Contact	77795

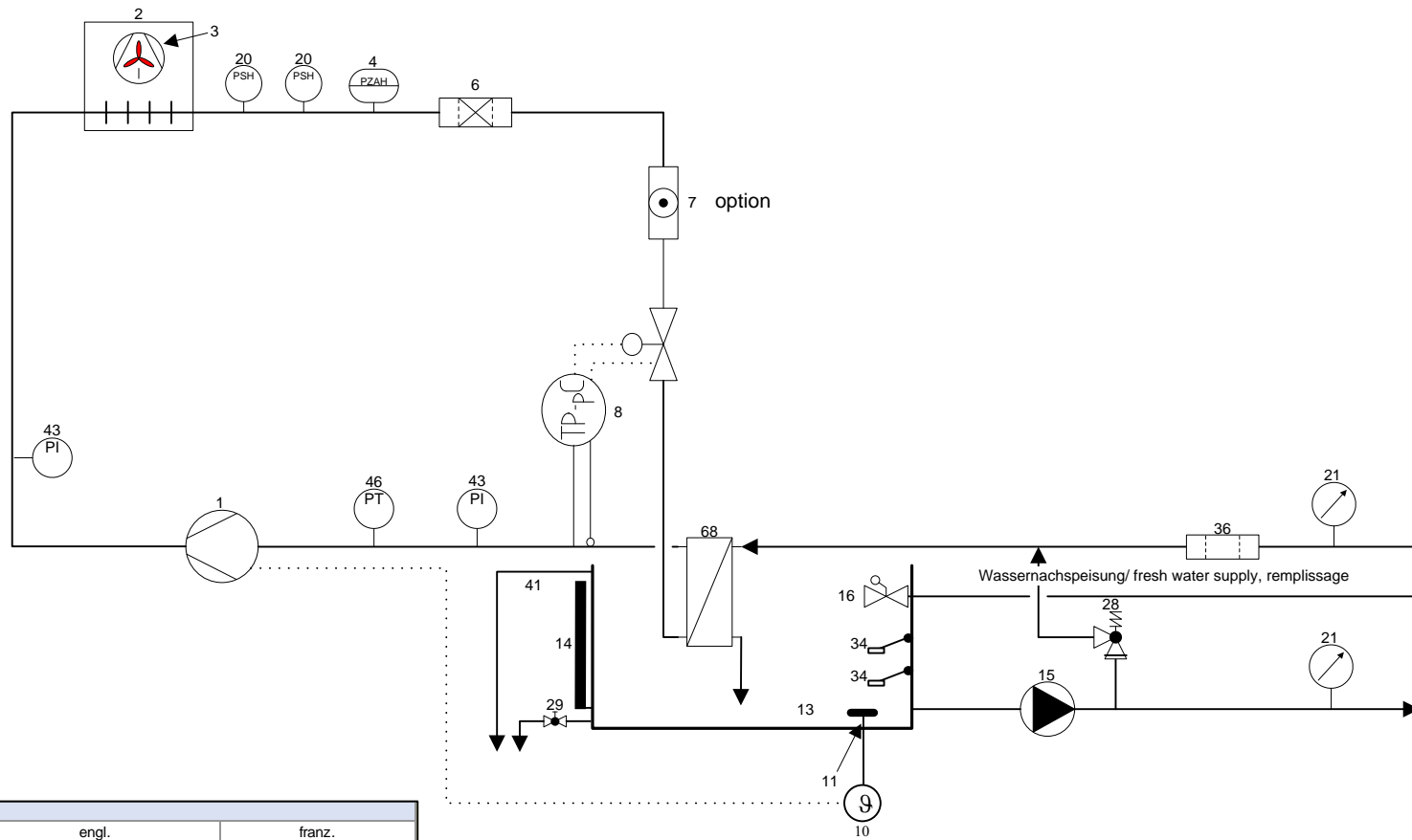
		Datum	26.03.2020	sigma 80-S			Stückliste Bill of materials			= KUE
		Bearb.	Ketler							+ REPORT
		Gepr								
Änderung	Datum	Name	Urspr	Ketler	Ersatz von	Ersetzt durch	E002623-00		Blatt	20
									Blatt	21

Artikelstückliste

Parts list

BMK DT	Bezeichnung designation	Typnummer Type number	Hersteller Manufacturer	Artikelnummer part number
+ESK-X2	Steckbrücke Plug-in bridge	FBS 4-3,5 GY	Phoenix Contact	77796
+ESK-X2	Schutzleiter-Reihenklemme Ground modular terminal block	PTS 1,5/S-TWIN-PE	Phoenix Contact	77803
+ESK-X2	Steckbrücke Plug-in bridge	FBS 2-3,5 GY	Phoenix Contact	77794
+ESK-X3	Durchgangsklemme Feed-through terminal block	PTS 1,5/S-TWIN	Phoenix Contact	77802
+ESK-X3	Endwinkel End angle	ZEW 35	Weidmüller	28947
+ESK-X3	Schutzleiter-Reihenklemme Ground modular terminal block	PTS 1,5/S-TWIN-PE	Phoenix Contact	77803
+ESK-X100	Sammelschiene Busbar	3RV1915-1BB	Siemens AG	10391
+ESK-X100	Einspeiseklemme Power Terminal	3RV2925-5AB	Siemens AG	78174

			Datum	26.03.2020	sigma 80-S		Stückliste Bill of materials	E002623-00	= KUE	Blatt	21
			Bearb.	Ketler					+ REPORT	Blatt	21
Änderung	Datum	Name	Urspr	Ketler					Ersatz von	Ersetzt durch	



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
7	Schauglas	sight glass	voyant liquide
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
16	Schwimmerventil	float valve	robinet flotteur
20	Druckschalter	hp- controller	pressostat hp
21	Manometer	manometer	manomètre
28	Sicherheitsventil	by- pass valve	soupape de sûreté
29	Kugelhahn/ Tankentleerung	hand shut off valve- ball/ tank drain	robinet de vidange
34	Schwimmerschalter	float switch	contrôleur niveau
36	Feinfilter	water filter	filtre
41	Überlauf	overflow	le trop plain
43	Kältemanometer	refrigerant manometer	manomètre de réfrigération
46	Druckaufnehmer	pressure controller	contrôleur de pression
68	Verdampfer	evaporator	évaporateur

		Fließschema/ hydraulic schema/ schéma hydraulique	
		Type: sigma 18-80	
bearbeitet T.Uiff	geprüft H.Schneider		ZEICHN. NR. F5565
DATUM 06.01.2020	DATUM 06.01.2020		Blatt 1 von 1

Hyfra and its Organisation



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