

OPERATING INSTRUCTIONS



FOR

REFRIGERATION APPLIANCES

OF THE MODELS

KGN (MK)

TGN

AND

KGT (MKE)

TEMPERATURE CONTROLLER ST 502

WITH ST-BUS-INTERFACE

METAGRO Edelstahltechnik AG
Ramsauer Straße 35
A-3170 Hainfeld
Telephone: +43(0)2764/2671
E-Mail: office@metagro.at
Website: www.metagro.at

Contents

General Notes	2
Commissioning	3
Electrical Mains Supply	3
Earth Termination System and Equipotential Bonding	3
Condensation Drain.....	4
General Checks	4
Commissioning – Checks – Operating Regulations	4
Temperature Controller	5
Switching State Displays	6
Temperature Range	6
Altering the set point temperature.....	6
Alarm Functions	6
Manual Defrosting	6
Cleaning & Care	7
Weekly Cleaning	7
Monthly Cleaning.....	7
System for Collecting the Defrost Water	8
Longer Shutdown Periods	8
What to Do in the Event of Faults	9
Status display and error messages	9
Refrigeration Equipment Schema	10
Disposal	10
Technical Data – GastroNorm Refrigeration Appliances (KGN)	11
Technical Data – Beverage Refrigeration Appliances (KGT)	12
Technical Data – GastroNorm Freezers (TGN)	13
Circuit Diagrams	14
Declaration of Conformity	22

General Notes

This manual is used for the correct installation, setting and maintenance of the appliances and, therefore, you should - without fail - ensure that

- the following notes are carefully read through because they give important instructions on safety for the installation, the usage and the maintenance.
- this manual is kept in a safe place and is made available to the operator for reference purposes.
- the appliance is installed, tested and maintained only by specialists who possess the legal requirements.

The manufacturer does not accept any responsibility in the event of electrical and/or mechanical alterations. The guarantee becomes null and void if improper interventions have been carried out and/or if the instructions of this manual are not followed.

Observe the local safety regulations which apply for the installation.

Before connecting the appliance, ensure that the electricity mains corresponds to the data of the identification plate.

The packaging materials represent a possible source of danger and should, therefore, be kept out of the reach of children and disposed of in accordance with the applicable local regulations.

The appliance has been designed and manufactured for the conservation of foodstuffs or beverages and should, therefore, only be used for the purpose for which it was made. The maker denies any responsibility in the event of improper use.

In the case of faults or malfunctioning, you have to switch the appliance off and to contact qualified specialists.

If repairs are required, refer exclusively to qualified specialists and demand the use of original spare parts.

FAILURE TO COMPLY WITH THE GENERAL NOTES CAN IMPAIR THE OPERATION OF THE APPLIANCE.



Installation note for refrigeration appliances with **external refrigerating unit**: When installing a centrally cooled appliance, **a filter must be installed** in the fluid line otherwise no guarantee is possible on failure of the appliance.




If repairs or a service is required the appliance is only to be opened **by qualified electrical specialists** in a not energized state (the appliance must be separated from the electricity mains in an all-pole way). The electrical safety regulations according to EN 50110-1, operation of electrical installations, have to be followed.



The refrigeration unit, especially a connector-ready one with an aggregate, **must not be tilted/turned** (not even before installation).

Commissioning

Electrical Mains Supply

 The installation and the **function check** of the appliance must be carried out by a **qualified specialist** in compliance with the following instructions.

In case of new plants or considerable alterations the electrical plant/system has to be erected in accordance with the state-of-the-art.

Before connecting the appliance, ensure that the data of the rating plate correspond to those of the electricity mains and that the precautionary measures according to **ÖVE/ÖNORM E 8001** or the local **electrical security measures** are obeyed. The rated power of the appliance must be considered as well.


The effective value of the **alternating voltage** between the phase (L) and the neutral conductor (N) must not be exceeded or fallen below

230 V ± 10%.


The **mains frequency** must not be exceeded or fallen below


50HZ.


A **residual current device Type A (sensitive to pulsating current)** has to be used as fault or complementary protection.

 Diverse adapters, multiple socket outlets and/or extension cables must not be used for the mains supply.

Earth Termination System and Equipotential Bonding

 The electrical safety of this appliance is guaranteed only if it is connected with **low-impedance** to an efficient **earthing system** in conformity with the applicable **electrical safety regulations**.

 The appliance has to be integrated in an equipotential bonding system according to **ÖVE/ÖNORM E 8001** or the **local electrical safety regulations**.

 Without the manufacturer's approval it is **forbidden to add or install further electrical components on the appliance** afterwards.

The manufacturer denies any responsibility for any damage which may be caused by an improper mains supply, additional installed components, lacking protective earth connections, a lacking equipotential bonding as well as a lacking earth termination system.

Condensation Drain

To avoid nasty smells and to protect the interior of the refrigeration unit from aggressive sewer gases (especially the evaporator) **ensure that a trap is mounted on-site** (concerns centrally cooled appliances).

General Checks

Ensure that

- the appliance has been positioned horizontally (if necessary, operate the moving part of the adjustable feet in order to obtain perfect alignment).
- the protective plastic covering has been removed from the external surfaces.
- the inside has been cleaned with lukewarm water and neutral soap.
- the appliance has not been placed immediately next to a source of heat.
- the free circulation of air in the region of the motor is guaranteed.
- the plug has been inserted into the power socket properly.

Commissioning – Checks – Operating Regulations

After the above-mentioned instructions have been carried out carefully, the appliance can be put into operation:

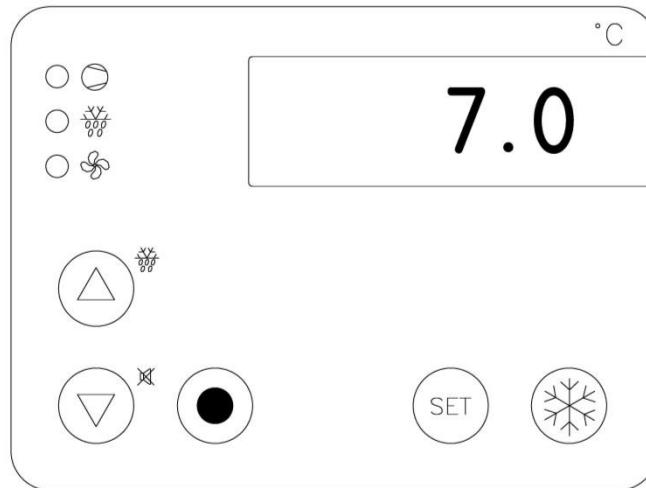
To do this, press the right-hand button of the controller (the internal temperature appears in the display field). In order to guarantee good functioning of the refrigeration appliance, the following has to be observed **absolutely**:

- BRING THE APPLIANCE INTO OPERATING CONDITIONS BEFORE PUTTING IN ANY FOODSTUFFS OR BEVERAGES!
- WARNING: VAPOURS FROM VINEGAR CAN CAUSE SEVERE CORROSION DAMAGE TO THE COOLING SYSTEM!
- KEEP SALADS AND PICKLES ONLY IN SEALED CONTAINERS IN THE REFRIGERATION APPLIANCE!
- WHERE POSSIBLE, STORE MEAT PRODUCTS, MILK AND MILK PRODUCTS IN AIRTIGHT PACKAGING!
- DO NOT PUT IN ANY WARM OR STEAMING FOOD. PACKAGE STRONG-SMELLING FOODS!
- DO NOT PUT IN ANY PACKAGING OR ANY ARTICLES TO BE COOLED WHICH ARE LARGER THAN THE USABLE SURFACE OF THE RACKS, SO THAT THE AIR CIRCULATION IS NOT IMPAIRED!
- DO NOT LEAVE DOORS AND DRAWERS OPEN LONGER THAN NECESSARY!
- PEOPLE (INCLUDING CHILDREN) WHO ARE NOT CAPABLE OF OPERATING THE APPLIANCE SAFELY BECAUSE OF THEIR INEXPERIENCE/ IGNORANCE OR THEIR MOTORIC, SENSORY OR MENTAL DIFFICULTIES MUST NOT OPERATE THE APPLIANCE WITHOUT THE SUPERVISION OF THE PERSON RESPONSIBLE.


IF THESE ARE NOT OBSERVED, NO GUARANTEED SERVICES WILL BE PROVIDED!


Temperature Controller


ST 502-KPKAR.112FP
ST 502-KS3TAR.112FP





Installed in the temperature controller are all the control and checking functions which are required for the operation of the appliance:

- 

Key 1: UP
By pressing the UP-key for 4 seconds, a defrost can be started at any time. During a defrost, the corresponding LED lights up. The LED flashes when a defrost is needed but cannot be started due to blocking conditions.
- 

Key 2: DOWN
An alarm can be acknowledged with the DOWN-key.
- 

Key 3: Selection Key A
Various functions are allocated to "Selection Key A" with the help of parameterization (see parameter b1: standby-switching, direct switching of a contact, set point value input). The key must be pressed for at least half a second.
- 

Key 5: SET
While the SET-key is pressed, the set point value is displayed. Apart from this, the SET-key is needed for setting parameters.
- 

Key 6: Cooling ON/OFF
With this key the cooling can be switched into standby mode.

Switching State Displays

In the display at the top there are light points for displaying the following switching states:

- Refrigerating unit relay
- Defrost relay
- Fan relay

Lighting of the LED indicates the current operating state of the given appliance. These displays flash if the required switching state is delayed due to the effect of set parameters (e.g. draining time etc.) is delayed.

- The actual temperature of the inside of the cooling space is visible in the display field during operation.
- The set point temperature is shown when the SET-key is pressed.

Temperature Range

- for GastroNorm-refrigerations (KGN) from 2 °C to 18 °C (ST 502-KS3TAR.112FP)
- for beverage-refrigerations (KGT) from 2 °C to 18 °C (ST 502-KS3TAR.112FP)
- for GastroNorm-freezers (TGN) from -20 °C to -12 °C (ST 502-KPKAR.112FP)

Altering the set point temperature

Hold the SET-key pressed (the set point value appears) and set the desired temperature by pressing the UP- or DOWN-key at the same time.

Alarm Functions

Error messages are indicated by blinking light and a buzzer sounds at the same time (can be acknowledged with the DOWN-key)



In the event of an error message, customer services must be notified and informed about the error code immediately in order to prevent consequential damage.

Manual Defrosting

If required, the cooling cycle can be interrupted and defrosting can be started manually by pressing the UP-key for 4 seconds (defrost-LED lights up).

Cleaning & Care

This section **concerns the end-user** and is of importance for the long-term and prescribed operation of the appliance.

Careful and regular carrying out of some procedures prevents possible faults and the technical service of the specialist personnel. The measures which have to be carried out do not presuppose any special technical knowledge.

It concerns simple checks of the appliance components.



SWITCH OFF THE POWER SUPPLY OF THE APPLIANCE BEFORE CARRYING OUT MAINTENANCE OR CLEANING!



DO NOT CLEAN THE APPLIANCE WITH DIRECT HIGH PRESSURE WATER JETS. NEVER AIM WATER JETS AT THE ELECTRICAL PARTS!

Weekly Cleaning

- Check the state of cleanliness of the main parts and clean them if necessary.
- Clean containers, drawers etc. with diluted washing agents as well as doors and cover seals with gentle soapy water. Then dry.
- DO NOT use aggressive detergent!
- Wipe damp and dry well.

Monthly Cleaning

- Switch off the appliance!
- Adequate incoming and outgoing ventilation is absolutely essential for the appliance!
- Clean the condenser fins of the refrigeration machine and the dirt filter with a long-bristle brush (vacuum cleaner)! – see Refrigeration Equipment Schema
- Defrost the refrigeration appliance. Clean the inside.
- Switch on the appliance.

IF THESE ARE NOT OBSERVED, NO GUARANTEED SERVICES WILL BE PROVIDED!

System for Collecting the Defrost Water

Ensure that the drainage pipe of the condensation water is not blocked and clean if necessary.



FOR REFRIGERATION APPLIANCES WITH AN INTEGRAL REFRIGERATION TRAY, THE REFRIGERATION DRAIN IS ONLY DESIGNED FOR DISPOSING OF THE CONDENSATION OR DEFROST WATER WHICH ARISES. DO NOT EMPTY WASTE WATER OR SUCHLIKE VIA THE REFRIGERATION TRAY. DUE TO THE DANGER OF WATER DAMAGE TO THE INSIDE OF THE REFRIGERATION COUNTER, THE REFRIGERATION TRAY MUST ALSO NOT BE FILLED WITH WATER.

If nasty smells occur, please check the trap (plumbing) and fill it up if necessary.

Longer Shutdown Periods

For longer shutdown periods of the refrigeration appliance, proceed as follows:

- Press the "Cooling ON/OFF"-key of the controller (OFF appears in the display)
- Pull the plug out of the power socket
- Do not shut the doors/drawers completely in order to prevent the development of unpleasant odours
- Protect the refrigerating unit against dust



THE APPLIANCES ARE MANUFACTURED FROM 1.4301 CHROME NICKEL STEEL AND ARE RESISTANT TO CORROSION WHICH CAN ARISE THROUGH NORMAL USE. NEVER USE CLEANING AGENTS OR CLEANING SYSTEMS WHICH COULD DAMAGE THE APPLIANCE.

What to Do in the Event of Faults

Fault	Checking
The cooling appliance is not working	<ul style="list-style-type: none"> - Is the right-hand key on the controller switched on? (Temperature is shown in the display field) - Is the connection lead damaged? (a new cable must be replaced only by customer services)
Deviations from the desired refrigeration temperature (the cooling appliance is not working)	<ul style="list-style-type: none"> - Is the condenser (which is positioned behind the plug-in gate) very dirty? → CLEAN - Is the vaporiser in the refrigeration space iced heavily? → Switch off and empty the appliance and keep out of operation until it is completely de-iced (WARNING: Do not use any hard, sharp or metallic objects for cleaning the vaporiser) - Is the ambient temperature too high? → air out the room - Are there too many warm beverages or foodstuffs stored in the refrigeration appliance? → restore the ware



Other faults can only be cleared by customer services.

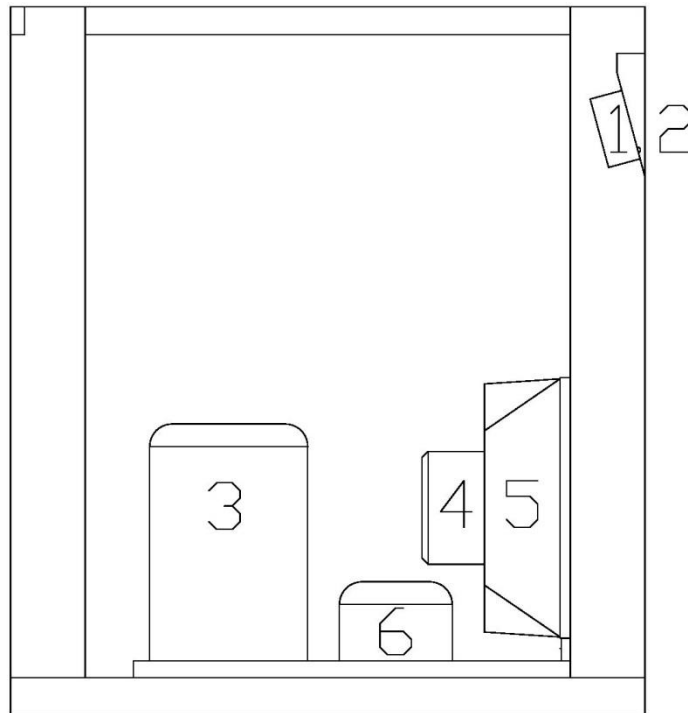
Status display and error messages

Message	Cause	Measures
<i>Hi</i> or <i>Lo</i> – the display flashes	The inside temperature of the refrigeration has exceeded or fallen below the alarm limits	
<i>E1L</i> or <i>E1H</i> – the display flashes	Defect in the temperature sensor F1 (cable break or short-circuit)	Contact a qualified specialist
<i>E2L</i> or <i>E2H</i> – the display flashes	Defect in the temperature sensor F2 (cable break or short-circuit)	Contact a qualified specialist
<i>EP0</i> – the display flashes	Internal error in control unit	Contact a qualified specialist
<i>EP1</i> – the display flashes	Error in the parameter memory	Contact a qualified specialist

The error messages alternate with the current value of the temperature sensor F1 (inside temperature of the refrigeration), as far as it is not defect. This happens regardless from the chosen display mode. If the error is fixed, the display mode chosen before appears again.

Refrigeration Equipment Schema

1. Electronic control
2. Temperature display
3. Compressor
4. Fan
5. Condenser
6. Receiver (liquid tank)



Disposal



If the appliance should be disposed of, it must be decommissioned before it is scrapped. To do this, the power supply cable must be removed and all parts which represent possible sources of danger, such as lock, hinges and other closure systems, must be removed in order to prevent children locking themselves in the appliance when playing.

OBSERVE THE LOCALLY APPLICABLE REGULATIONS FOR SCRAPPING THESE APPLIANCES!

Technical Data – GastroNorm Refrigeration Appliances (KGN)

Type	Own refrigeration			
	940	1260	1680	2100
Gross capacity [l]	160	275	430	575
Width [mm]	940	1260	1680	2100
Depth [mm]	680	680	680	680
Height [mm]	760	760	760	760
Connected load [W]	370	370	370	450
Power consumption [A]	1,7	1,7	1,7	2,2
Refrigeration capacity: [W]	250	310	380	460

Temperature range:	+2 °C to +10 °C
Connected voltage:	230 V / 50 Hz ~
Safety class:	IP 23
Vaporisation temperature:	-10 °C
Refrigerant:	R 290
Max. ambient temperature:	+30 °C with a relative humidity of 55%

Caution: R 290 is flammable!



Type	Central refrigeration				
	520	840	1260	1680	2100
Gross capacity [l]	160	275	430	575	730
Width [mm]	520	840	1260	1680	2100
Depth [mm]	680	680	680	680	680
Height [mm]	760	760	760	760	760
Connected load [W]	25	25	25	50	50
Power consumption [A]	0,1	0,1	0,1	0,2	0,2
Refrigeration capacity: [W]	250	310	380	460	600

Temperature range:	+2 °C to +10 °C
Connected voltage:	230 V / 50 Hz ~
Safety class:	IP 23
Vaporisation temperature:	-10 °C
Refrigerant:	for R513a , R134a or customer-specific
Max. ambient temperature:	+30 °C with a relative humidity of 55%

Technical Data – Beverage Refrigeration Appliances (KGT)

Type	Own refrigeration					
	1080	1540	1820	2100	2660	3220
Gross capacity [l]	250	470	575	730	990	1250
Width [mm]	1080	1540	1820	2100	2660	3220
Depth [mm]	680	680	680	680	680	680
Height [mm]	860	860	860	860	860	860
Connected load [W]	370	370	420	420	450	850
Power consumption [A]	1,7	1,7	2,2	2,2	2,2	4,9
Refrigeration capacity: [W]	250	310	340	390	480	640

Temperature range: +2 °C to +10 °C
 Connected voltage: 230 V / 50 Hz ~
 Safety class: IP 23
 Vaporisation temperature: -10 °C
 Refrigerant: R 290
 Max. ambient temperature: +30 °C with a relative humidity of 55%

Caution: R 290 is flammable!



Type	Central refrigeration					
	670	1160	1400	1760	2360	2960
Gross capacity [l]	250	470	575	730	990	1250
Width [mm]	670	1160	1400	1760	2360	2960
Depth [mm]	680	680	680	680	680	680
Height [mm]	860	860	860	860	860	860
Connected load* [W]	25	25	25	25	50	50
Power consumption* [A]	0,1	0,1	0,1	0,1	0,2	0,2
Refrigeration capacity: [W]	250	310	340	390	480	640

Temperature range: +2 °C to +10 °C
 Connected voltage: 230 V / 50 Hz ~
 Safety class: IP 23
 Vaporisation temperature: -10 °C
 Refrigerant: for R513a, R134a or customer-specific
 Max. ambient temperature: +30 °C with a relative humidity of 55%

Technical Data – GastroNorm Freezers (TGN)

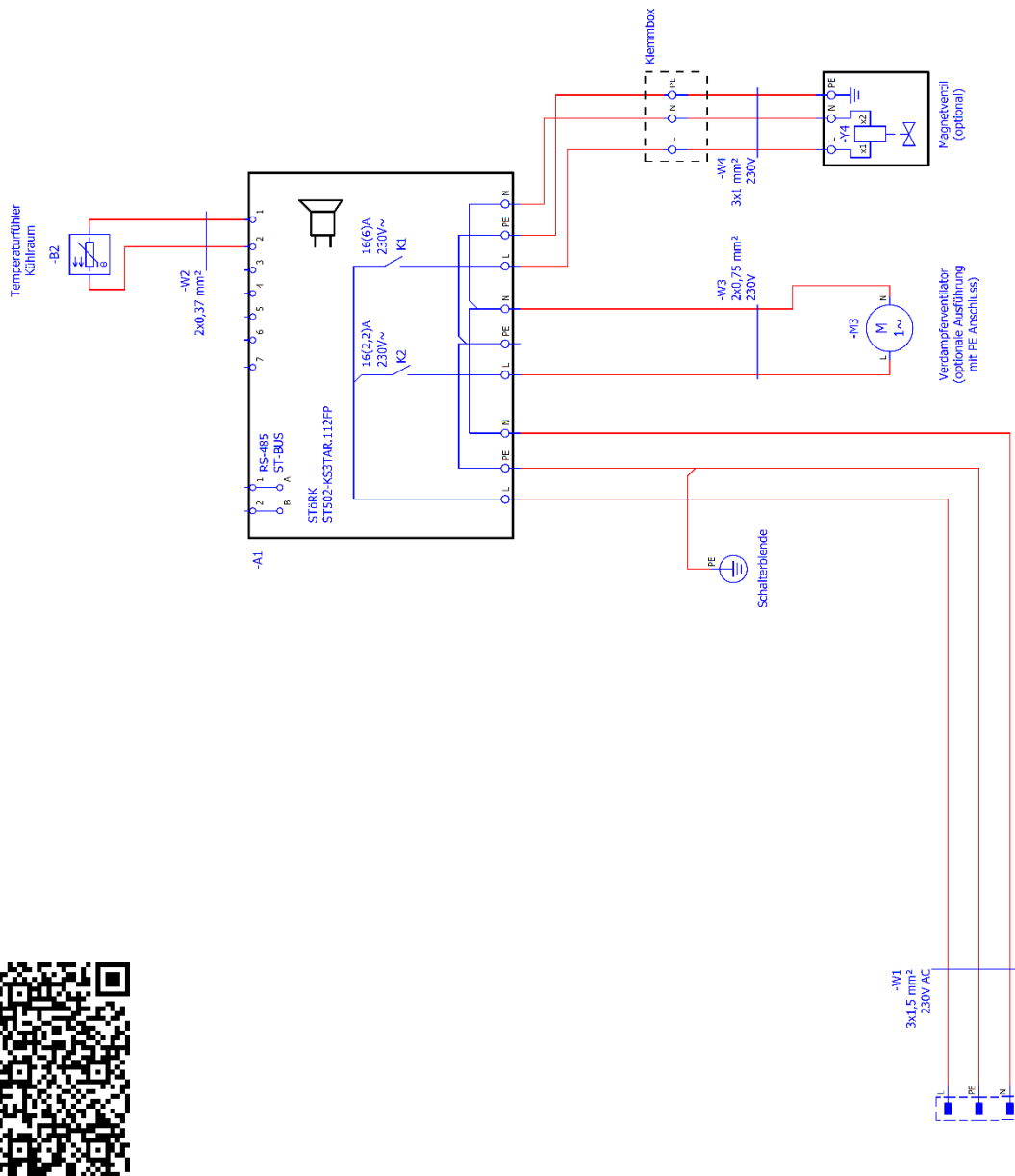
Type	Own refrigeration			Central refrigeration		
	1055	1420	1920	635	1000	1500
Gross capacity [l]	160	275	430	160	275	430
Width [mm]	1055	1420	1920	635	1000	1500
Depth [mm]	680	680	680	680	680	680
Height [mm]	760	760	760	760	760	760
Connected load [W]	620	735	1164	337	337	674
Power consumption [A]	3,7	4,2	6,0	1,15	1,4	2,4
Refrigeration capacity: [W]	280	370	560	280	370	560

Temperature range:	-20 °C to -12 °C
Connected voltage:	230 V / 50 Hz ~
Safety class:	IP 23
Vaporisation temperature:	-30 °C
Refrigerant:	R 290 or customer-specific (e.g.: R452a)
Max. ambient temperature:	+30 °C with a relative humidity of 55%

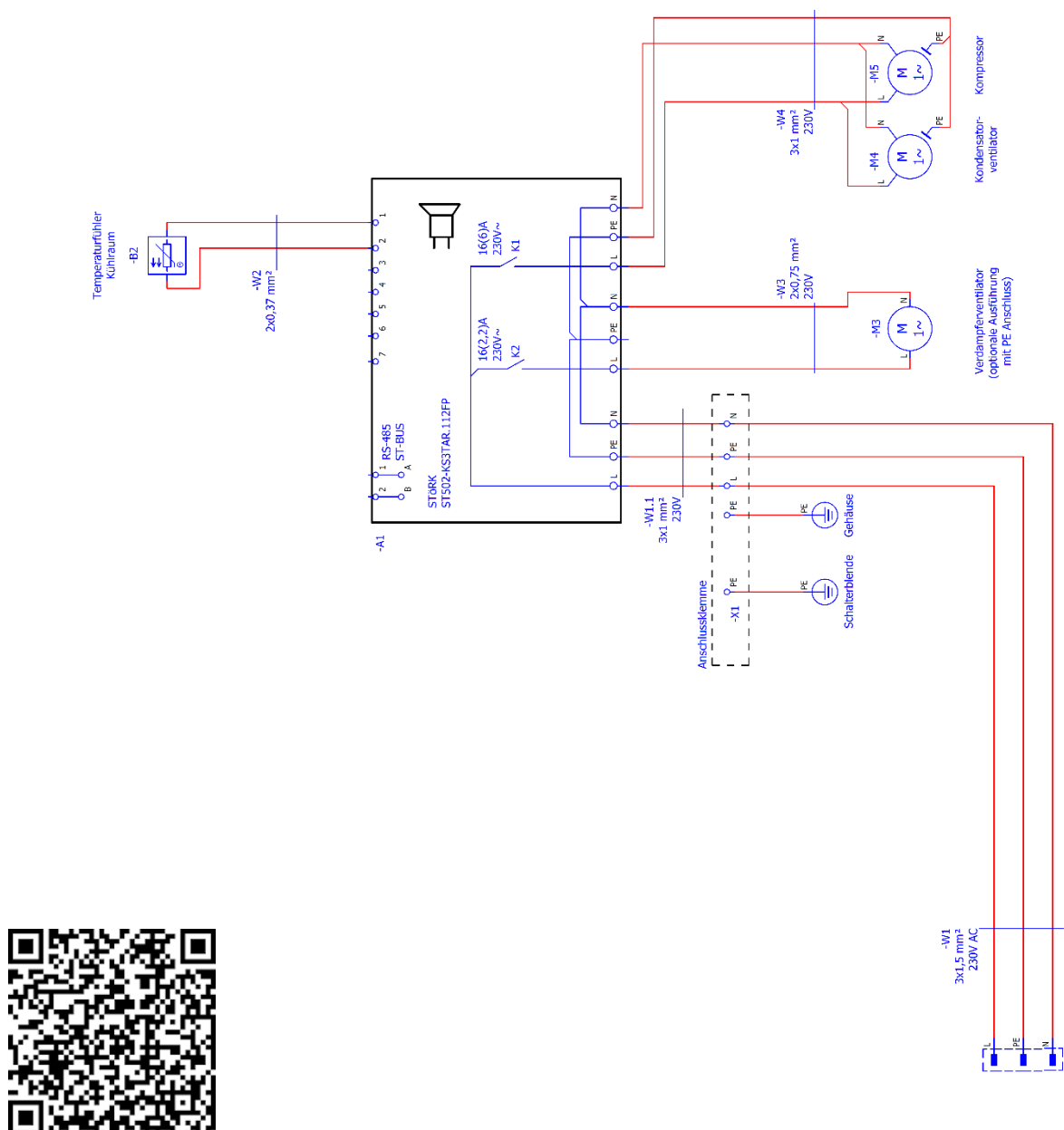
Caution: R 290 is flammable!



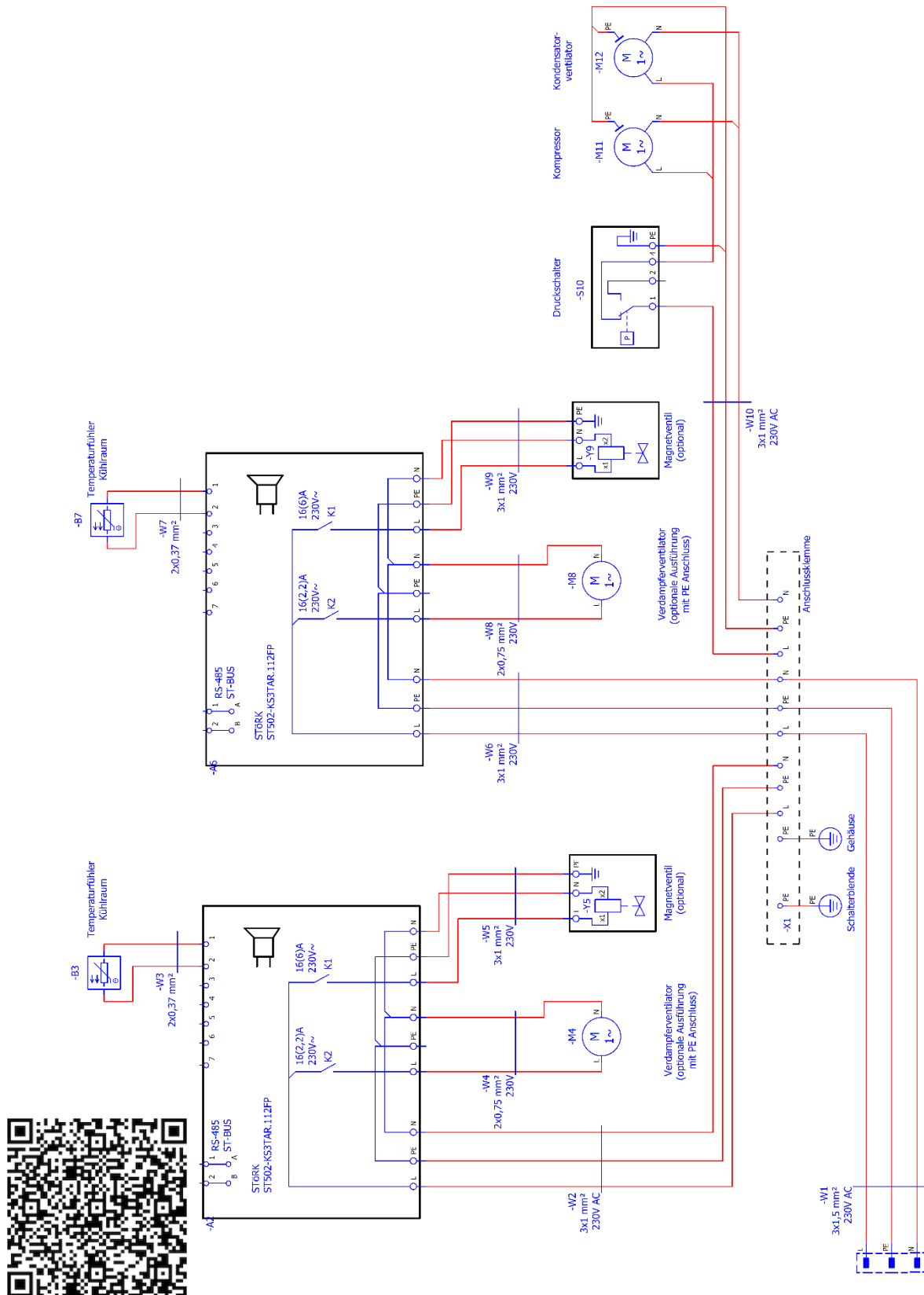
Refrigeration with digital control ST502-KS3TAR.112FP – central cooled



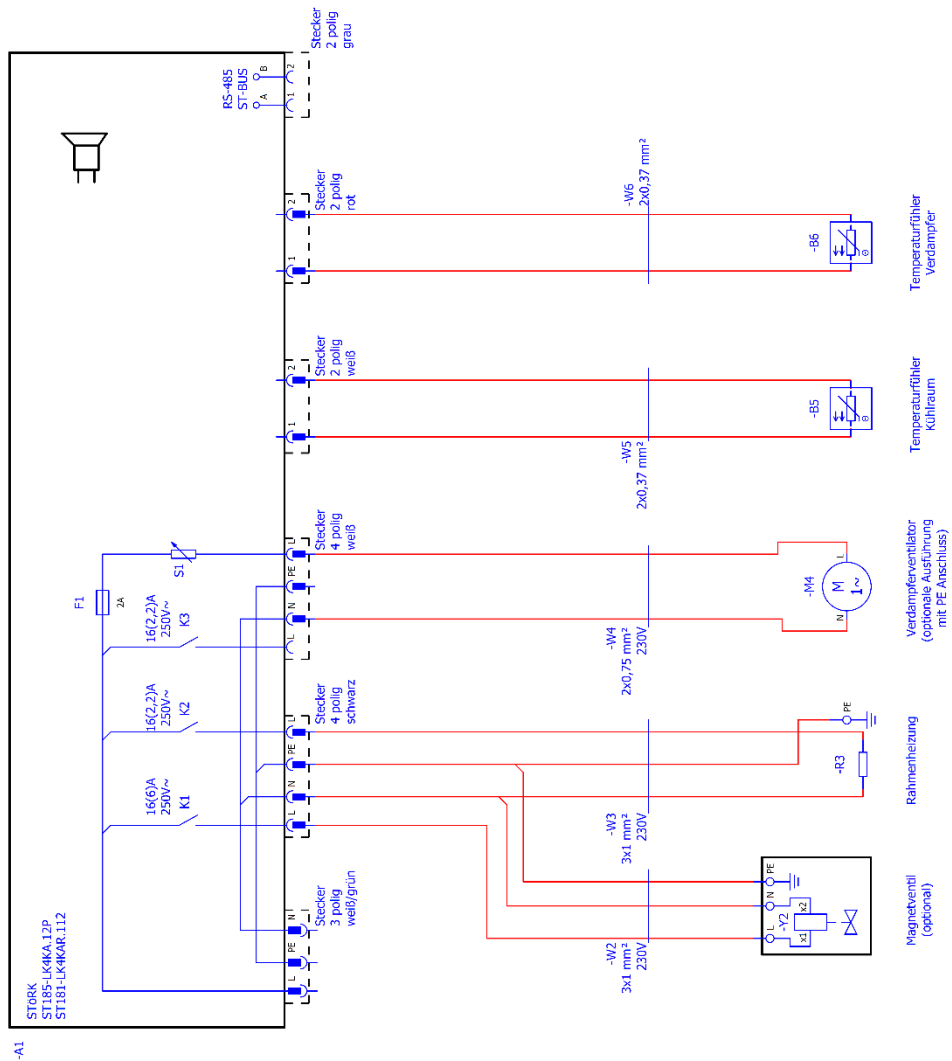
Refrigeration with digital control ST502-KS3TAR.112FP and an aggregate



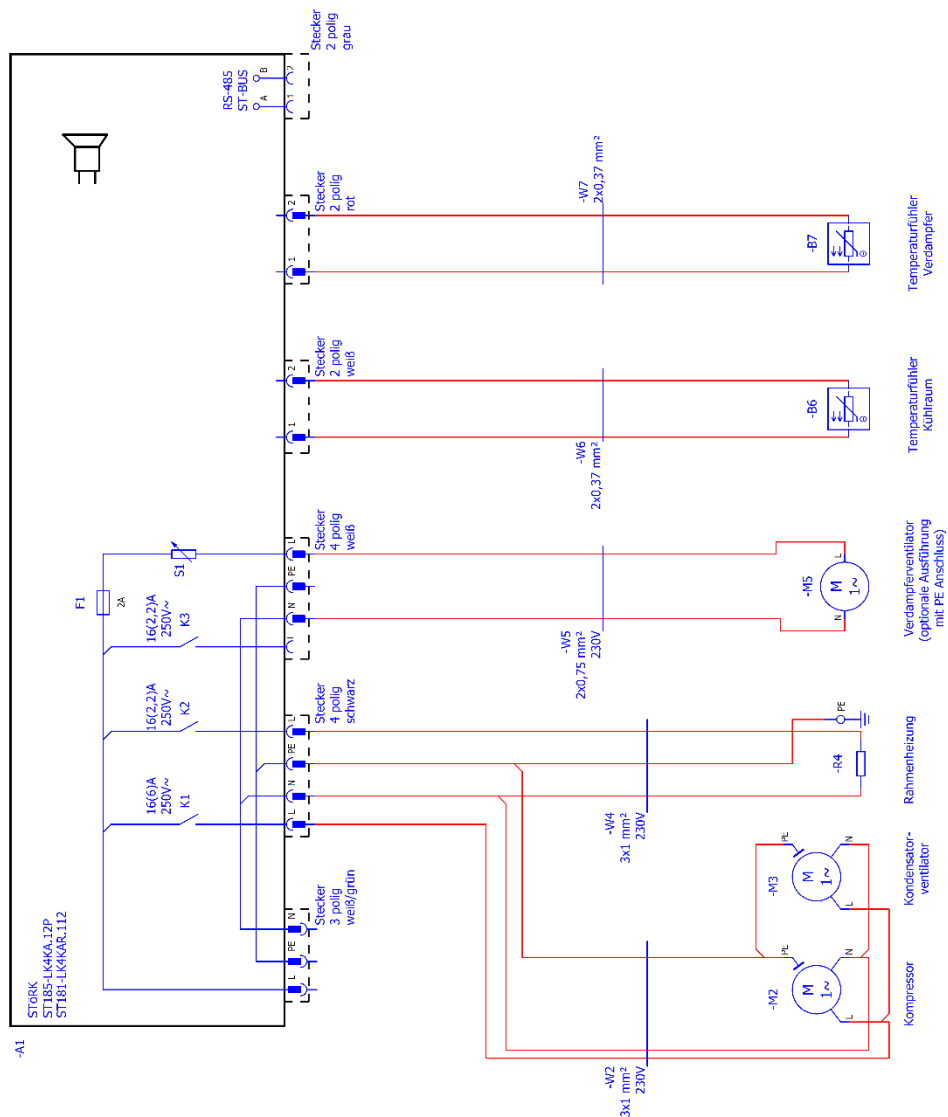
Refrigeration with digital control ST502-KS3TAR.112FP and an aggregate for multiple cooling points



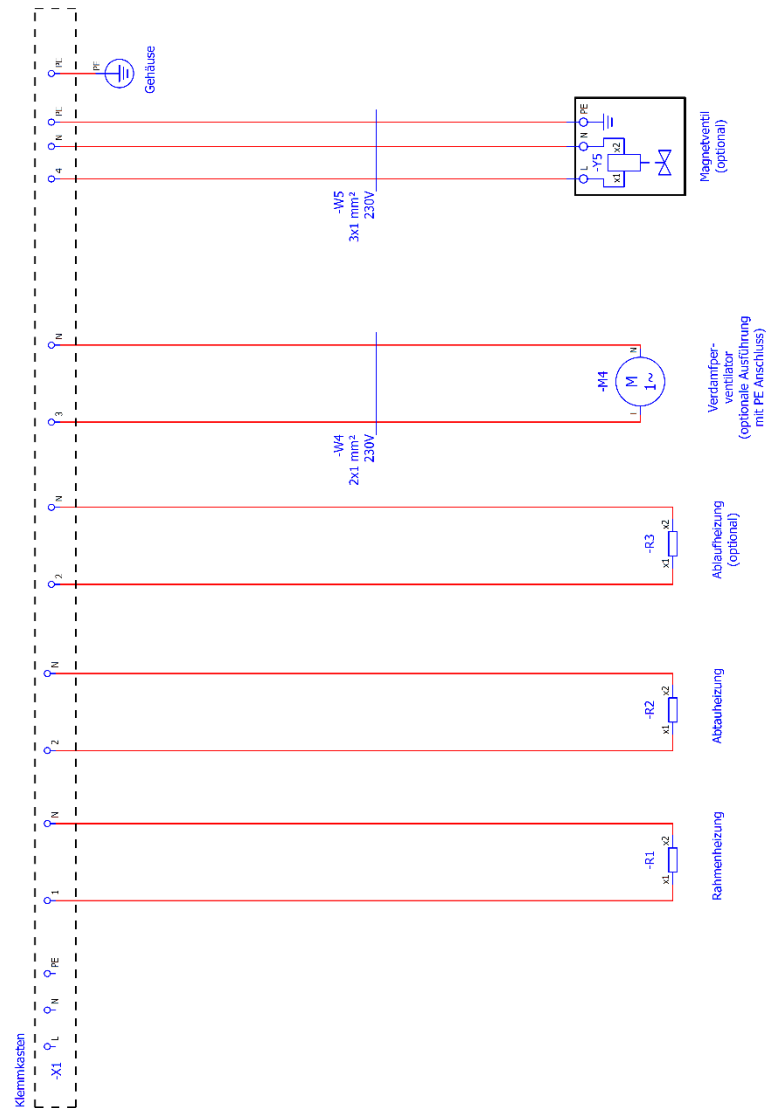
Refrigeration with digital control ST185-LK4KA.12P or ST181-LK4KAR.112 – central cooled



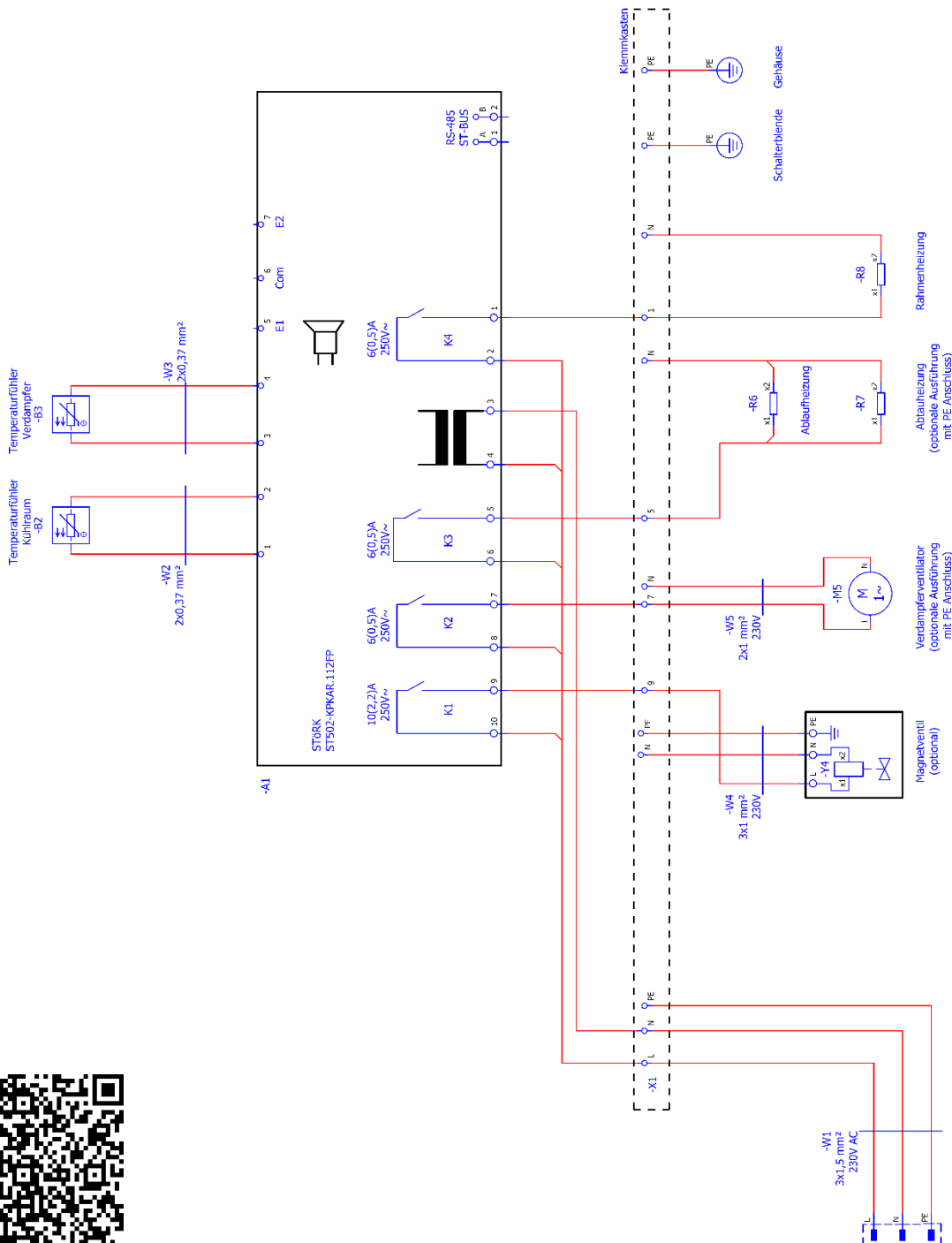
Refrigeration with digital control ST185-LK4KA.12P or ST181-LK4KAR.112 and an aggregate



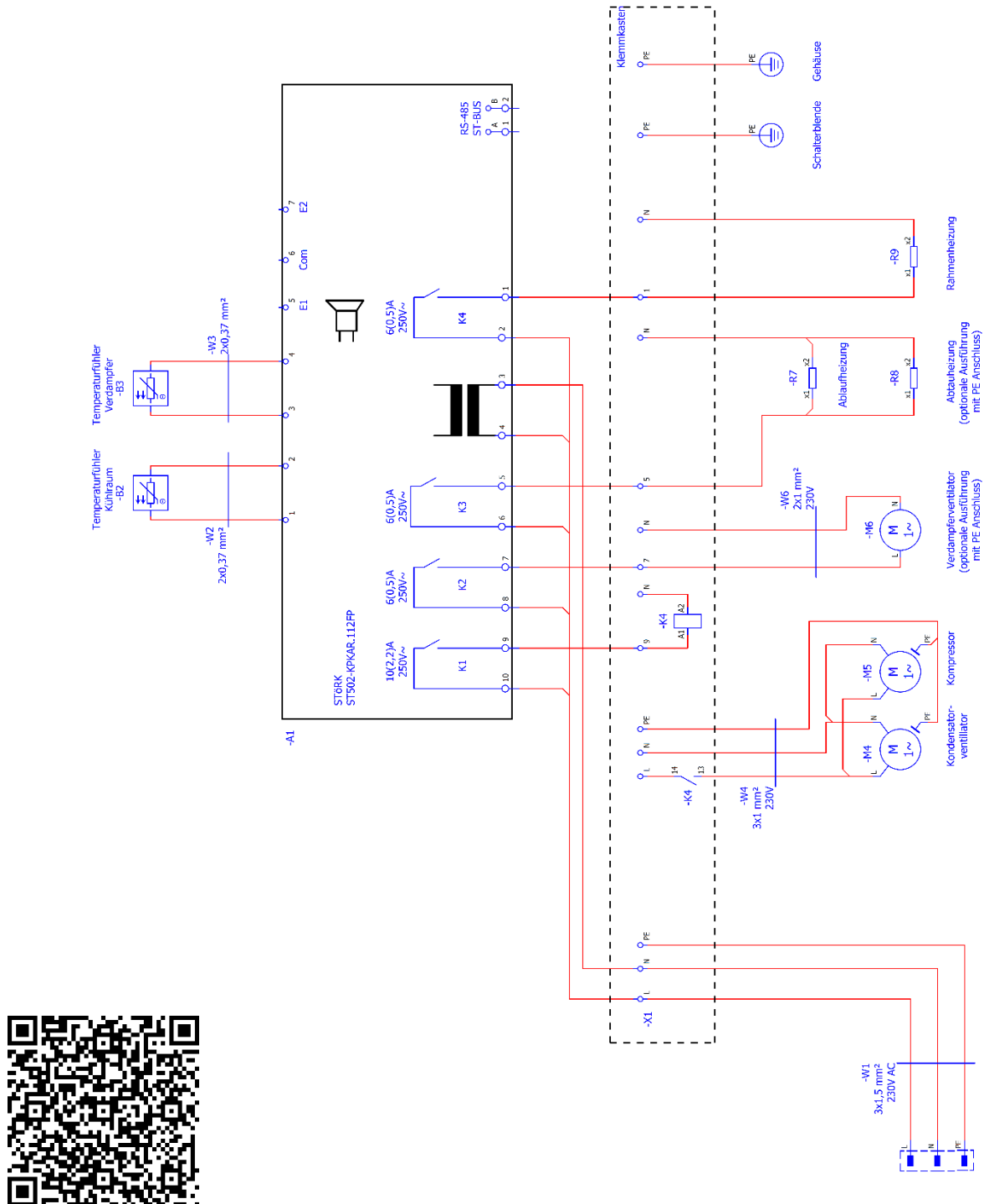
Freezer without digital control – central cooled



Freezer with digital control ST502-KPKAR.112FP – central cooled



Freezer with digital control ST502-KPKAR.112FP and an aggregate



Declaration of Conformity

The company
METAGRO Edelstahltechnik AG
Ramsauer Straße 35
A-3170 Hainfeld

as manufacturer in the EU for the below-mentioned products makes the following declaration:

GastroNorm refrigeration appliances (KGN)
Beverage refrigeration appliances (KGT)
GastroNorm freezers (TGN)

With reference to the following harmonised standards:

EN 60 335-1: A13: 2008
EN 60 335-2-89: 2002 + A11: 2004 + A1: 2005 + A2: 2007
EN 50 106: 2008

the appliances correspond to the requirements of the EU guideline 73/23 and its appendices and changes which are currently valid.

With reference to the following harmonised standards:

EN 55011-1: 2006
EN 55014-2: 1997 + A1: 2001 + A2: 2008
EN 62 233: 2008
EN 61000-3-2: 2006 + A1: 2009 + A2: 2009
EN 61000-3-3: 2008

the regulations for fulfilling the EMC guideline 89/336/EWG, changed by 91/263/EWG, 92/31/EWG and 93/68/EWG are complied with.

Date and signature:

Hainfeld, on 1 December 2021



DI Christoph Hofer, MSc
CEO