



Stromlaufplan / Circuit diagram

Projekt / project 909080-00529(z) ab 90801906
 Modell / model: cBoxX 80

Betriebsspannung / Line: :380 V / 60Hz
 Steuerspannung / Control voltage: : 24 V DC
 Anschlußleistung / Connected load: : ca. 38 kW/ ca. 47,4 kVA
 max. Stromaufnahme / Max. current: : ca. 72 A
 Schutzart / Prot.class: : IP 54
 Vorsicherung / Main fuse: : 80 A
 Kurzschlussausschaltvermögen Icu: : 20 kA

Drahtfarben / colors of wiring :

Hauptstromkreise / main power : schwarz / black
 Schutzleiter / protective conductor : grün-gelb / green-yellow
 Steuerspannung / control voltage 24VDC : dunkelblau-darkblue
 Steuerspannung / control voltage 24VDC : dunkelblau weiß / darkblue-white
 Steuerspannung / control voltage 230 VAC : rot / red
 Steuerspannung / control voltage 230VAC (V) : rot-weiß / red-white
 Fühlerleitung / sensor conductor: weiß / white
 Pot.-freie Verdrahtung / wiring without potential : orange / orange

Zur Beachtung !

Der Schaltplan ist Bestandteil des Schaltschranks gleicher Baunummer und sollte nicht daraus entfernt werden, damit er im Notfall sofort verfügbar ist. Bei unbefugten Eingriffen in die Verdrahtung erlischt unsere Gewährleistung !

Vor Inbetriebnahme - alle Schrauben an Schützen, Klemmen , Relais und Reglern nachziehen.

note !

The circuit diagram is an integral part of the switch cabinet, with matching build number. should not be removed and should always be available on short notice in case of emergency. Unauthorized changes to the wiring will void the Warranty!

Tighten all screws on contactors, clamps, relays and controls prior to commissioning.

Schutzvermerk nach DIN ISO 16016 beachten !

Erstellt mit ELCAD/AUCOPLAN (R) 7.11.0

		date	11.04.2018	KKT chillers - a brand of ait-deutschland GmbH		cBoxX cBoxX 80	Art. Nr. 61639401	Deckblatt / cover	sheet 1
		editor	J.Distler						23 sh.
R. change	date	name	norm						replayement by:

Inhaltsverzeichnis /contens


Revision

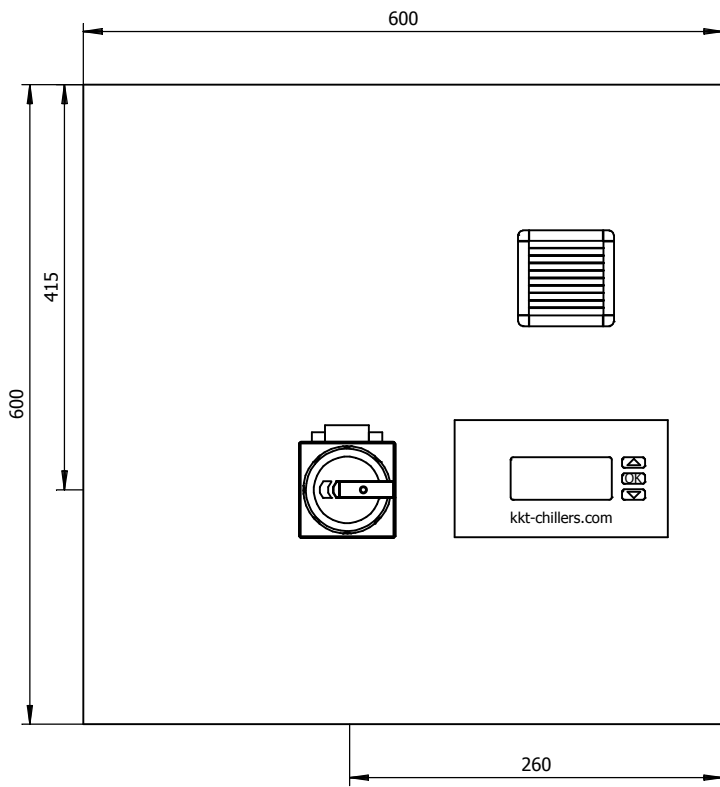
1	DECKBLATT / COVER					DECKBLATT / COVER	J.Distler	
2	INHALTSVERZEICHNIS / CONTENS					INHALTSVERZEICHNIS / CONTENS	J.Distler	
3	ANSICHT / VIEW					ANSICHT / VIEW	J.Distler	
4	AUFB. / VIEW MOUNTING PLATE					AUFB. PLATTE / VIEW MOUNTING PLATE	J.Distler	
5	ANSICHT PLATINE / VIEW PCB					ANSICHT PLATINE / VIEW PCB	J.Distler	
6	EINSPEISUNG / POWER SUPPLY					EINSPEISUNG / POWER SUPPLY	J.Distler	
7	POT. VERTEILER / POWER UNIT					POT. VERTEILER / POWER UNIT	J.Distler	
8	DIG. EINGÄNGE / PCB DIG. INPUT					DIG. EINGÄNGE / PCB DIG. INPUT	J.Distler	
9	DIG. EINGÄNGE / PCB DIG. INPUT					DIG. EINGÄNGE / PCB DIG. INPUT	J.Distler	
10	DIG. EINGÄNGE / PCB DIG. INPUT					DIG. EINGÄNGE / PCB DIG. INPUT	J.Distler	
11	DIG. EINGÄNGE / PCB DIG. INPUT					DIG. EINGÄNGE / PCB DIG. INPUT	J.Distler	
12	DIG. AUSGÄNGE / PCB DIG. OUTPUT					DIG. AUSGÄNGE / PCB DIG. OUTPUT	J.Distler	
13	DIG. AUSGÄNGE / PCB DIG. OUTPUT					DIG. AUSGÄNGE / PCB DIG. OUTPUT	J.Distler	
14	DIG. AUSGÄNGE / PCB DIG. OUTPUT					DIG. AUSGÄNGE / PCB DIG. OUTPUT	J.Distler	
15	ANA. EINGÄNGE / PCB ANA. INPUT					ANA. EINGÄNGE / PCB ANA. INPUT	J.Distler	
16	ANA. EINGÄNGE / PCB ANA. INPUT					ANA. EINGÄNGE / PCB ANA. INPUT	J.Distler	
17	ANA. AUSGÄNGE / PCB ANA. OUTPUT					MODUL FREE SMC5500/C/S	J.Distler	
18	PLATINE / PCB RESERVE					PLATINE / PCB RESERVE	J.Distler	
19	ANA. EINGÄNGE/ PCB ANA. INPUT					ANA. EINGÄNGE/ PCB ANA. INPUT	J.Distler	
20	PUMPE / PUMP					PUMPE / PUMP	J.Distler	
21	KOMPRESSOR / COMPRESSOR					KOMPRESSOR / COMPRESSOR	J.Distler	
22	LÜFTER / CONDENSER FAN					LÜFTER / CONDENSER FAN	J.Distler	
23	MOTORKLAPPE / MOTOR FLAP					MOTORKLAPPE / MOTOR FLAP	J.Distler	
24							J.Distler	
25							J.Distler	

Bemerkung:

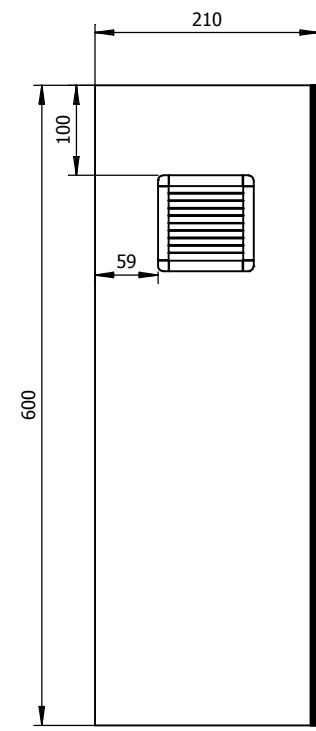
drawn with ELCAD (R)

Alle Leitungen ohne Querschnittsangabe sind 0,75 mm²
All lines without cross-sectional specification are 0,75 mm²

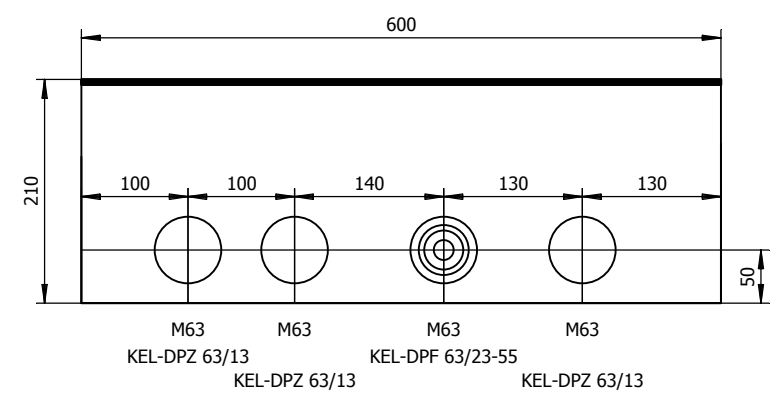
c	date	23.10.2018	KKT chillers - a brand of ait - deutschland GmbH		circuit diagram	909080-00529(z) ab 90801906			
b	editor	J.Distler			cBoxX				
a	check								
change	date	name	norm	replacement by:	replacement for:	origin:	KKT	sheet 2 sh. 23	



Ansicht Frontseite
view front



Ansicht links
view left



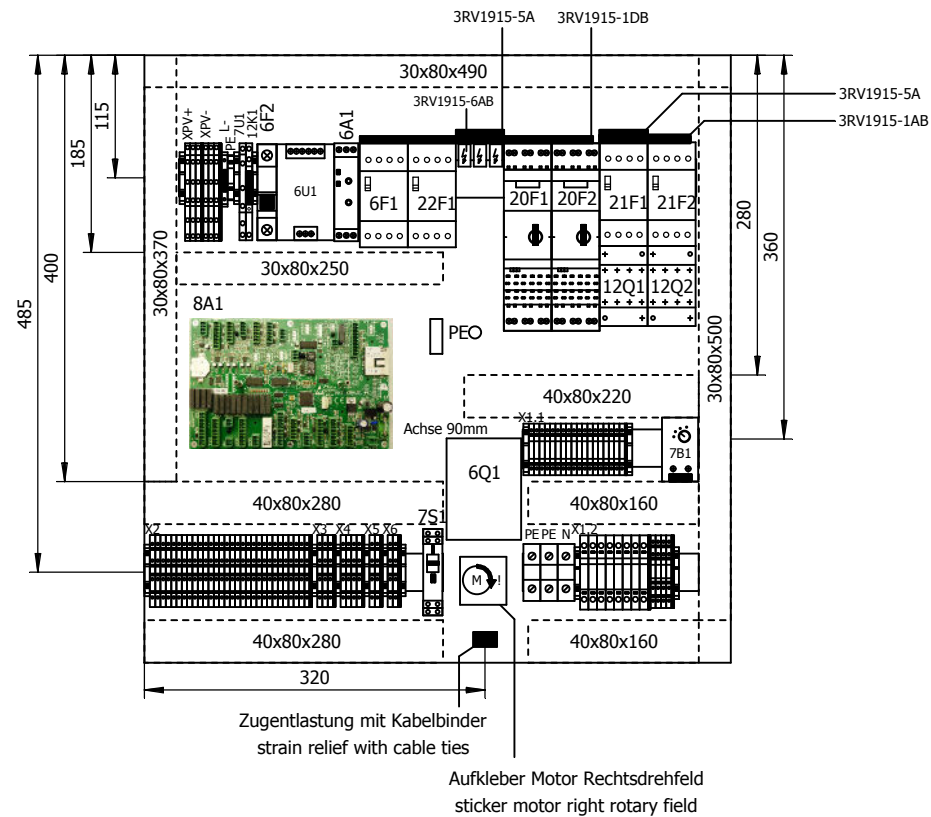
Ansicht unten
view down

Skalierung Maßstab: 1:75
Maßeinheit: mm

Alle Leitungen ohne Querschnittsangabe sind 0,75 mm²
All lines without cross-sectional specification are 0,75 mm²

drawn with ELCAD (R)				KKT chillers - a brand of ait - deutschland GmbH		circuit diagram 909080-00529(z) ab 90801906			
c			date	23.10.2018	replaced by:	replaced for:	origin:	KKT	-
b			editor	J.Distler					
a			check						
change	date	name	norm						
Ansicht / view									sheet 3 sh. 23





Anforderung: Alle Kennzeichen müssen gesondert unterhalb des Betriebsmittels angebracht sein!
 Requirement : All signs must be mounted separately below the component

Skalierung Maßstab: 1:75
 Maßeinheit: mm

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 All lines without cross-sectional specification are 0,75 mm²

drawn with ELCAD (R)

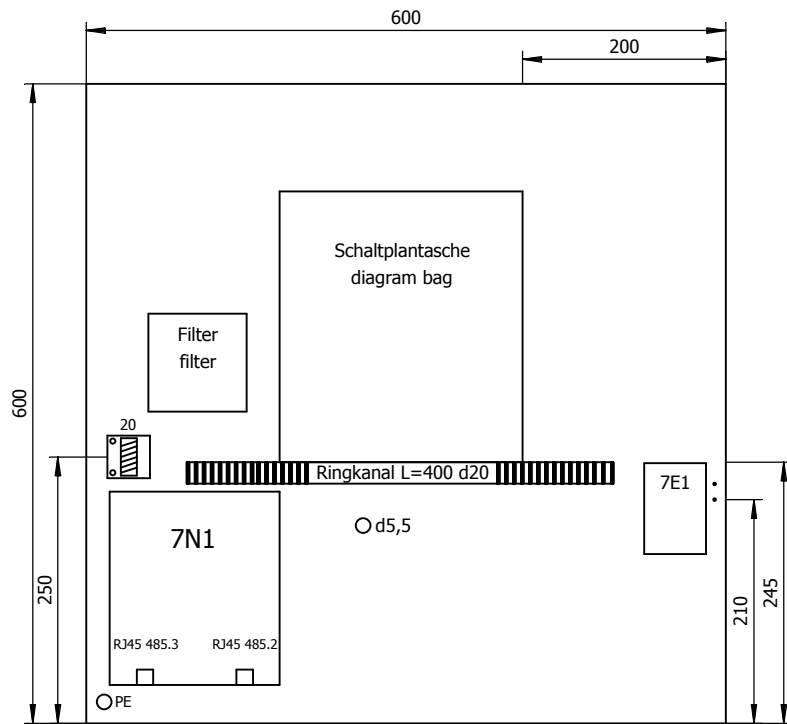
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a			check	
change	date	name	norm	

KKT chillers - a brand of ait - deutschland GmbH	
replacement by:	replacement for:



circuit diagram	909080-00529(z) ab 90801906
cBoxX	
-	

Aufb. Montageplatte / view mounting plate		sheet 4
		sh. 23




Ansicht Tür innen
view inside of the door

Skalierung Maßstab: 1:75
Maßeinheit: mm

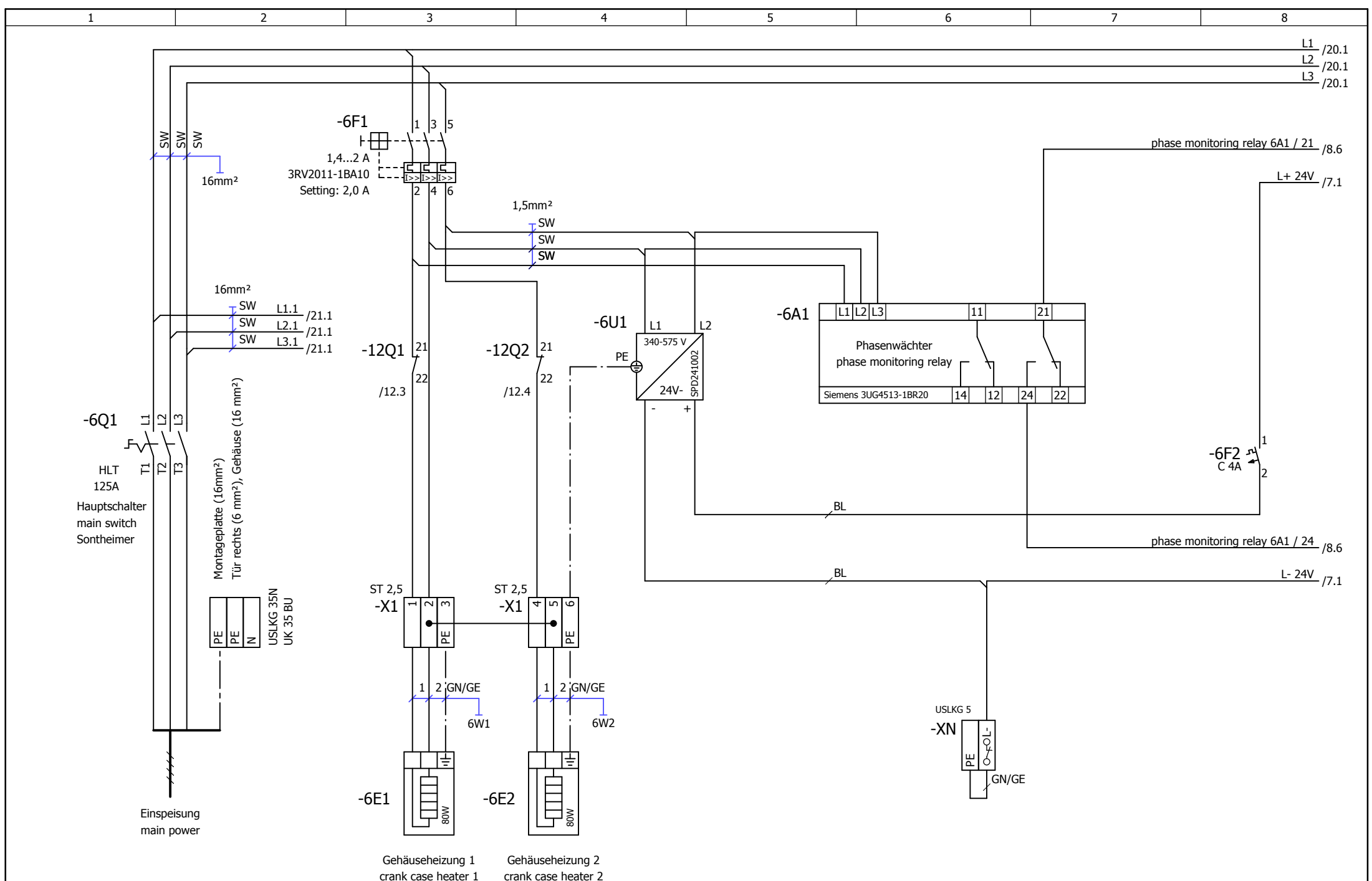
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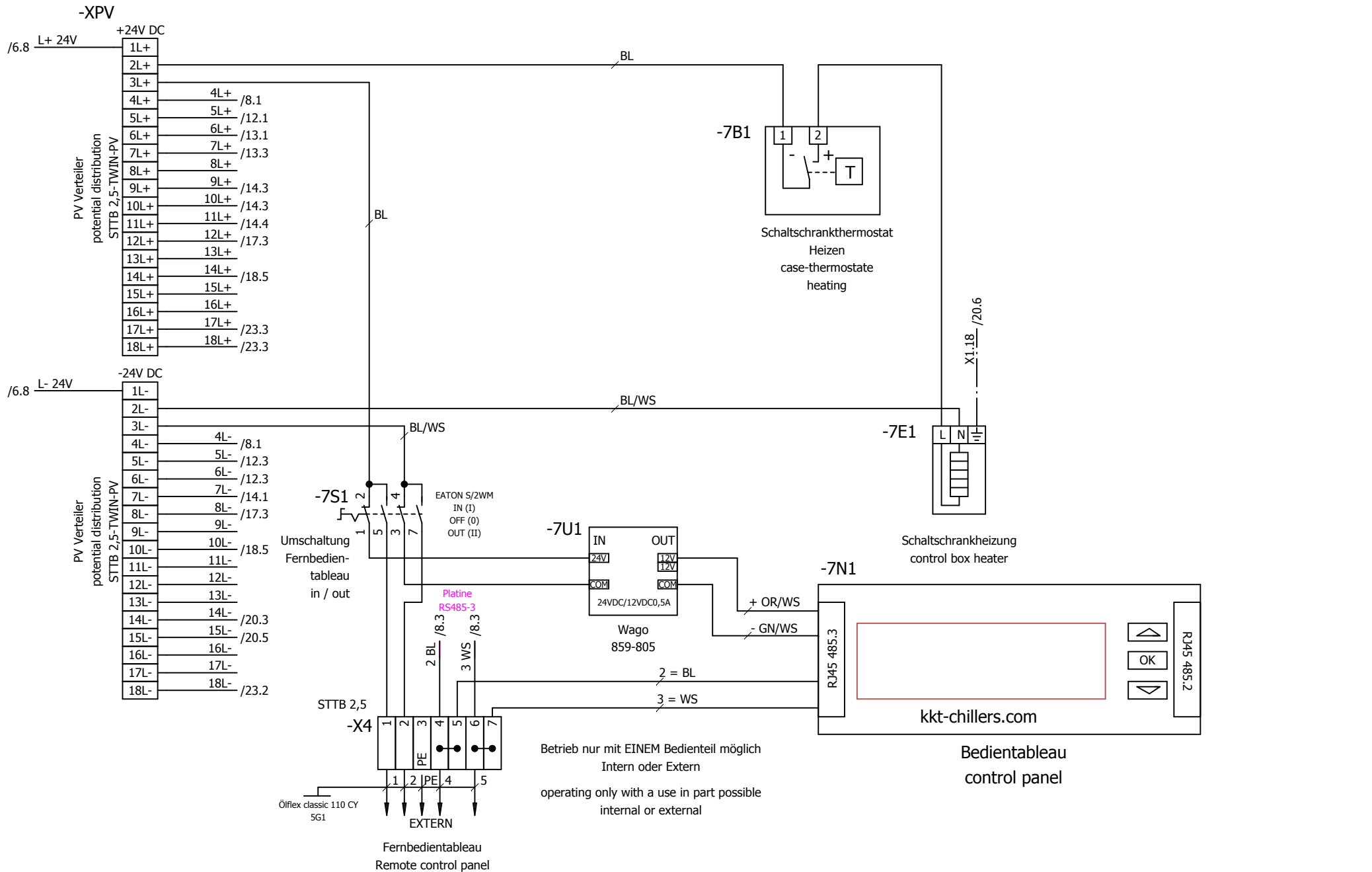
drawn with ELCAD (R)

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b		editor	J.Distler						
a		check							
change	date	name	norm		replacement by:	replacement for:	origin:	KKT	

Ansicht Platine / view PCB

sheet 5
sh. 23



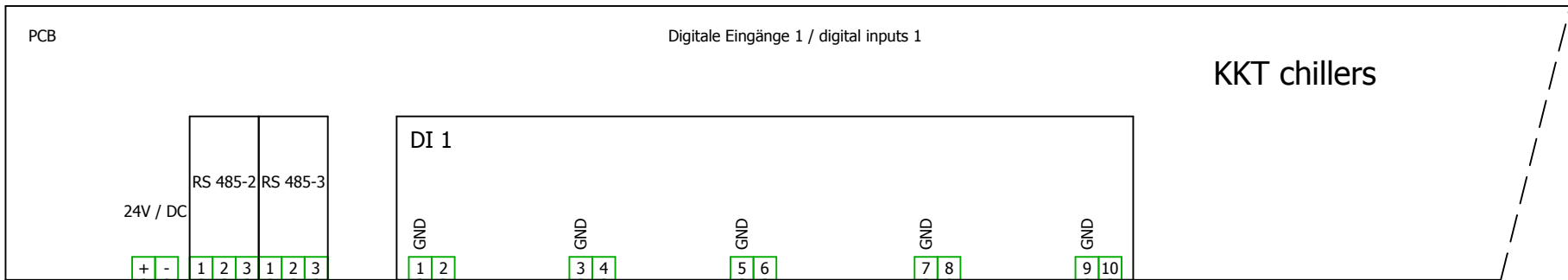


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c			date	23.10.2018	KKT chillers - a brand of ait - deutschland GmbH		circuit diagram 909080-00529(z) ab 90801906	-	Pot. Verteiler / power unit 24 V DC	sheet	7
b			editor	J.Distler						sh.	23
a			check								
change	date	name	norm	replacment by:	replacment for:	origin:	KKT				

-8A1



/7.2 4L+ BL
/7.2 4L- BL/WS

2 BL /7.3
3 WS /7.3

1 BL
2 BL

BL
BL

/6.8 phase monitoring relay 6A1 / 21
/6.8 phase monitoring relay 6A1 / 24

STTB 2,5
-X2

STTB 2,5
-X2

Fernsteuerung 1
remote control 1
1=Start/run
0=Stop/stop

MSS Tankheizung
motor protection
tank heater

TK Heizung
TK heating

Phasenüberwachung
phase monitoring

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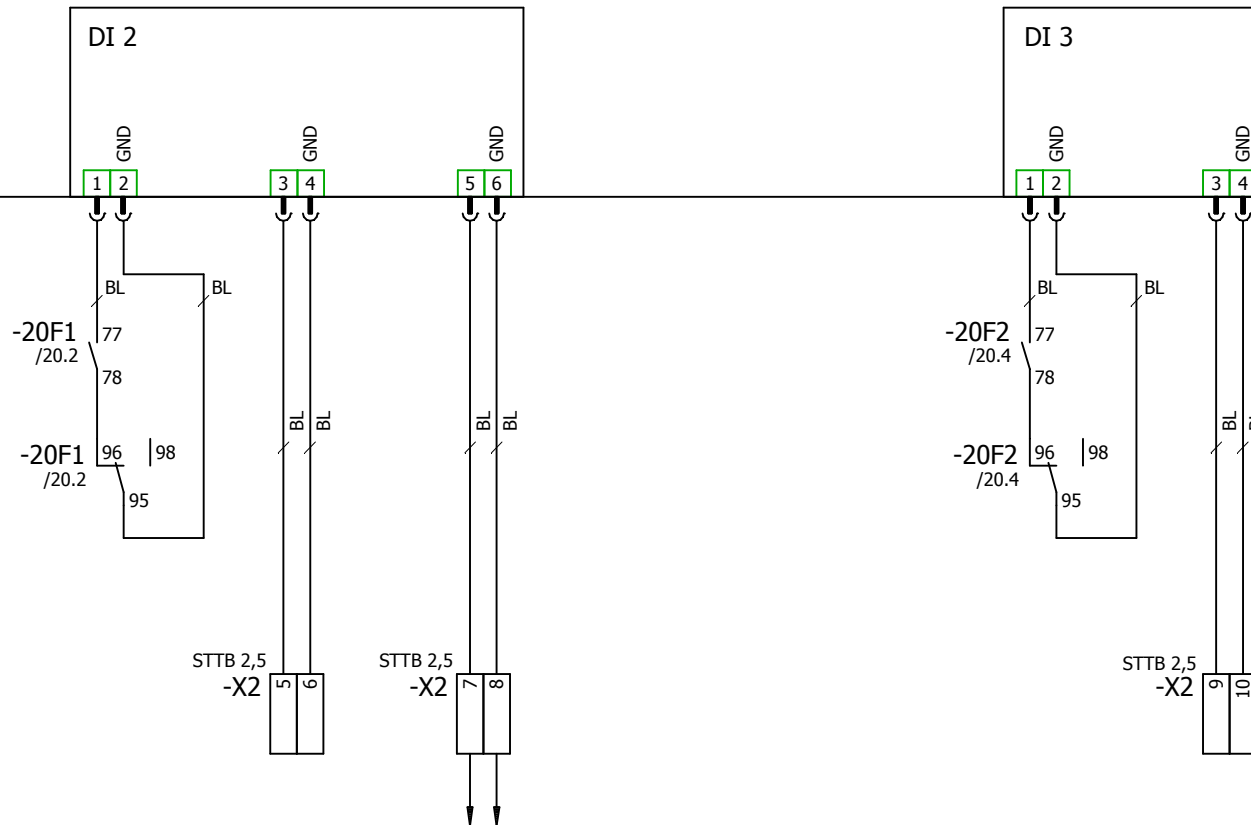
drawn with ELCAD (R)				KKT chillers - a brand of ait - deutschland GmbH		circuit diagram 909080-00529(z) ab 90801906		Platine digital Eingänge / PCB digital input		sheet 8
c			date	23.10.2018						sh. 23
b			editor	J.Distler						
a			check							
change	date	name	norm		replacement by:	replacement for:	origin:	KKT		

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PCB

Digitale Eingänge / digital inputs

KKT chillers



Direktstarter Pumpe 1
direct starter
pump 1

Strömungswächter
Pumpe 1
flow switch
pump 1

Fernsteuerung 2
remote control 2
1=Start/run
0=Stop/stop

Direktstarter Pumpe 2
direct starter
pump 2

Strömungswächter
Pumpe 2
flow switch
pump 2

drawn with ELCAD (R)

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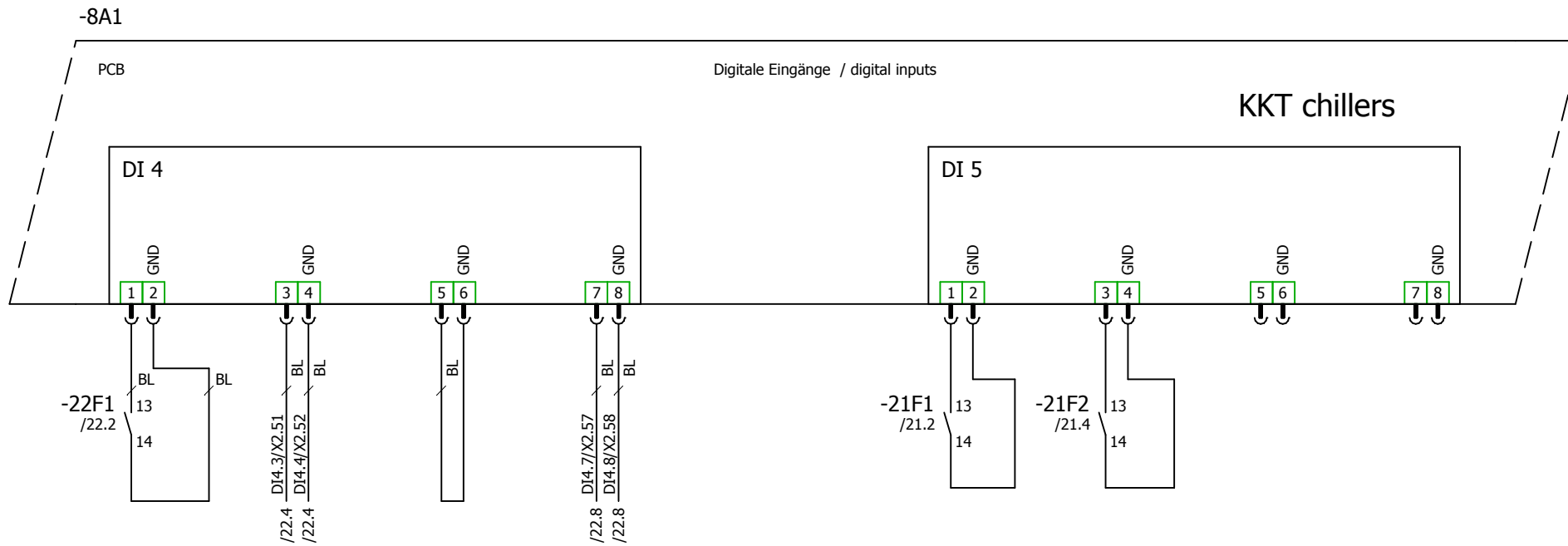
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KKT chillers - a brand of ait - deutschland GmbH	
replacement by:	replacement for:



circuit diagram	909080-00529(z) ab 90801906
cBoxX	
-	

Platine digitale Eingänge / PCB digital input



MSS Lüfter 1
circuit breaker
fan 1

Störung Lüfter 1
fault fan 1

MSS Lüfter 2 und FU
circuit breaker and FU
fan 2

Störung Lüfter 2
fault fan 2

MSS
Kompressor 1
circuit breaker
compressor 1

MSS
Kompressor 2
circuit breaker
compressor 2

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drawn with ELCAD (R)

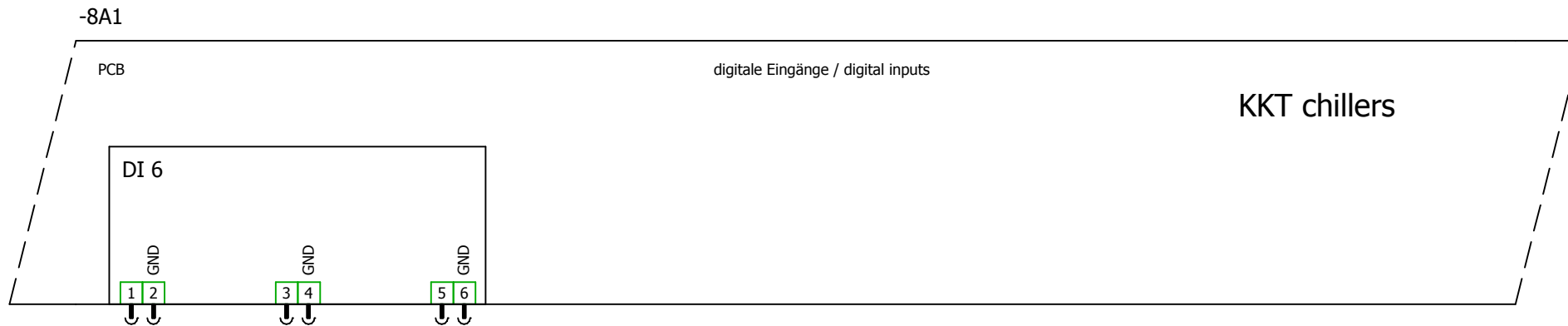
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change	date	name	norm	

KKT chillers - a brand of ait - deutschland GmbH	
replacement by:	replacement for:




circuit diagram	909080-00529(z) ab 90801906
cBoxX	
-	origin: KKT

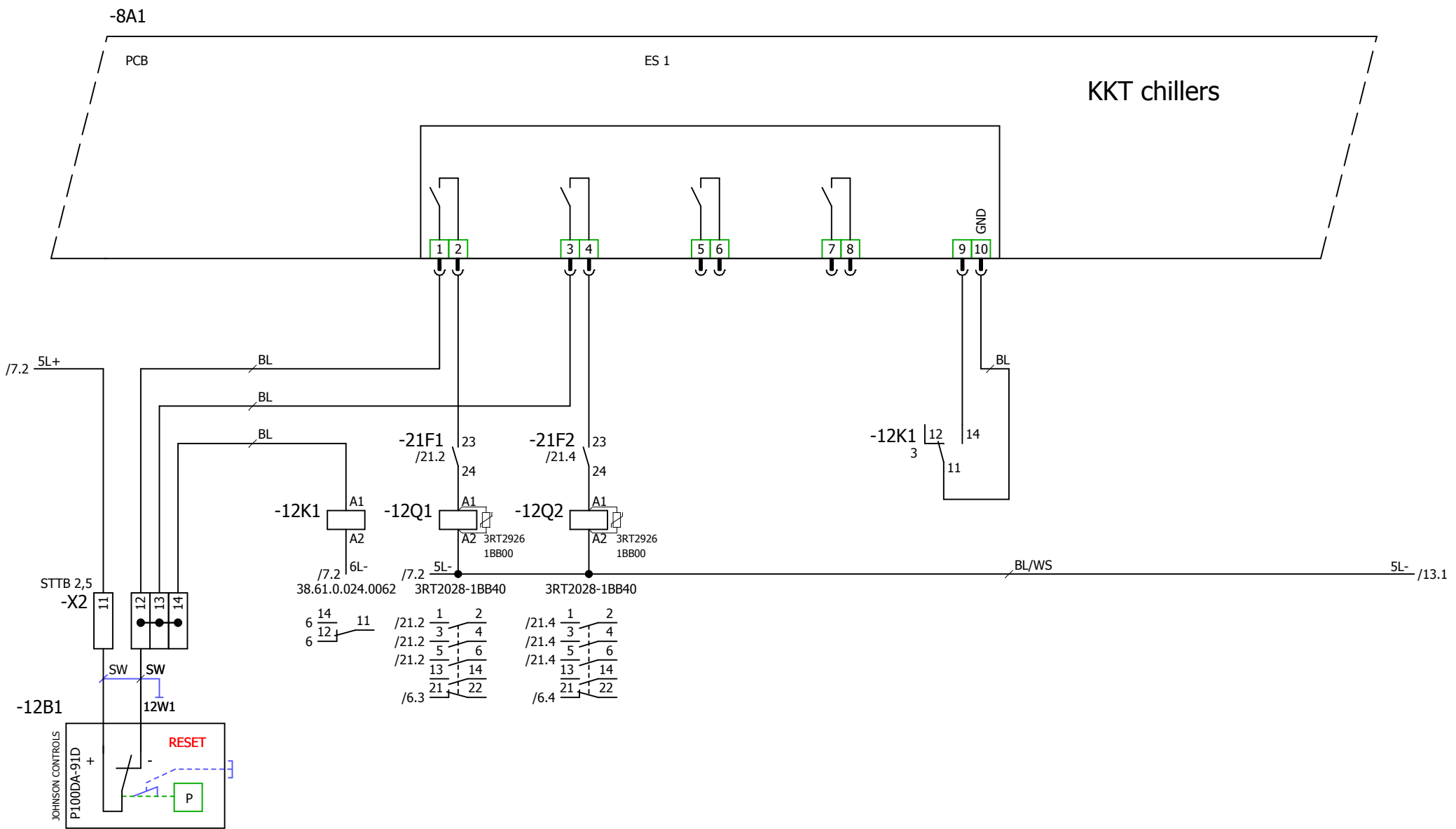
Platine digital Eingänge / PCB digital input		sheet 10
		sh. 23



drawn with ELCAD (R)

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b		editor	J.Distler							
a		check								
change	date	name	norm	replacement by:	replacement for:	origin:	KKT	-	Platine digital Eingänge / PCB digital input	sheet 11 sh. 23



Hochdruckschalter
high pressure switch

Freigabe Hochdruck
release high pressure

Anforderung
Kompressor 1
requirement
compressor 1

Anforderung
Kompressor 2
requirement
compressor 2

Freigabe Hochdruck
release high pressure

drawn with ELCAD (R)

c		date	23.10.2018
b		editor	J.Distler
a		check	
change	date	name	norm

KKT chillers - a brand of ait - deutschland GmbH	
replacement by:	replacement for:



circuit diagram	909080-00529(z) ab 90801906
cBoxX	
-	origin: KKT

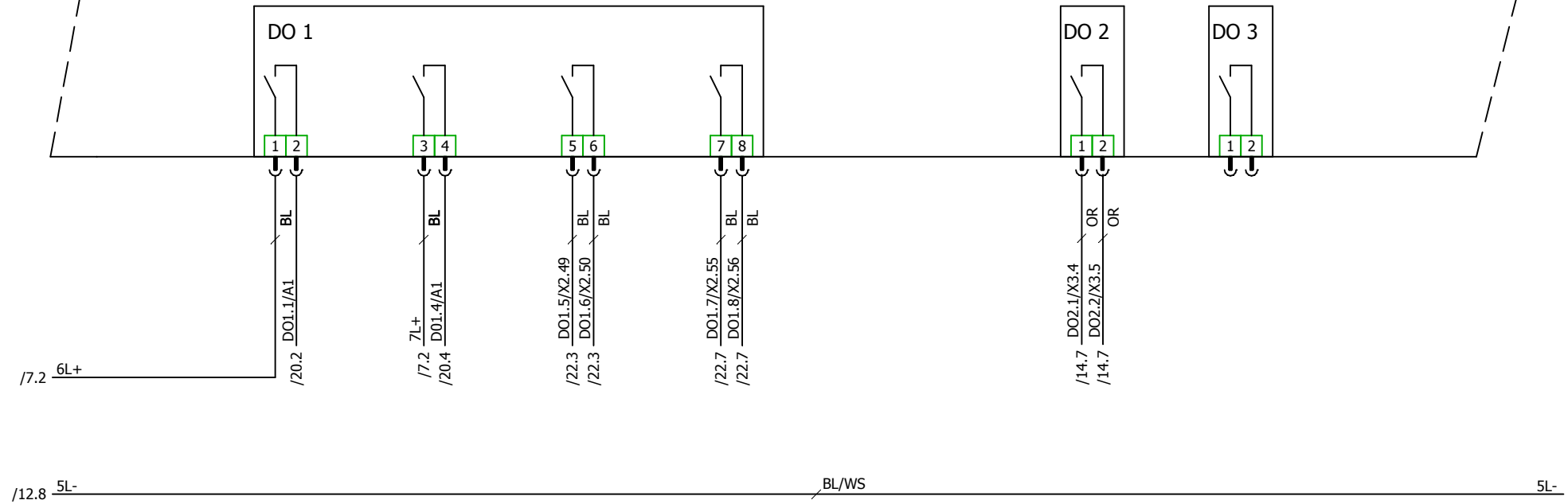
Alle Leitungen ohne Querschnittsangaben sind 0,75 mm²
All lines without cross-sectional specification are 0,75 mm²

-8A1

PCB

digital Ausgänge / digital outputs

KKT chillers



Freigabe
Pumpe 1
release
pump 1

Freigabe
Pumpe 2
release
pump 2

FU-Freigabe
Lüfter 1
release inverter
fan 1

FU-Freigabe
Lüfter 2
release inverter
fan 2

Warnmeldung
warning message
warning = low
OK = high

drawn with ELCAD (R)

Alle Leitungen ohne Querschnittsangebe sind 0,75 mm²
All lines without cross-sectional specification are 0,75 mm²

c			date	23.10.2018
b			editor	J.Distler
a			check	
change	date	name	norm	

KKT chillers - a brand of
ait - deutschland GmbH



circuit diagram 909080-00529(z) ab 90801906
cBoxX
-

replacement by: replacement for: origin: KKT

Platine digital Ausgänge/PCB digital output

sheet 13
sh. 23

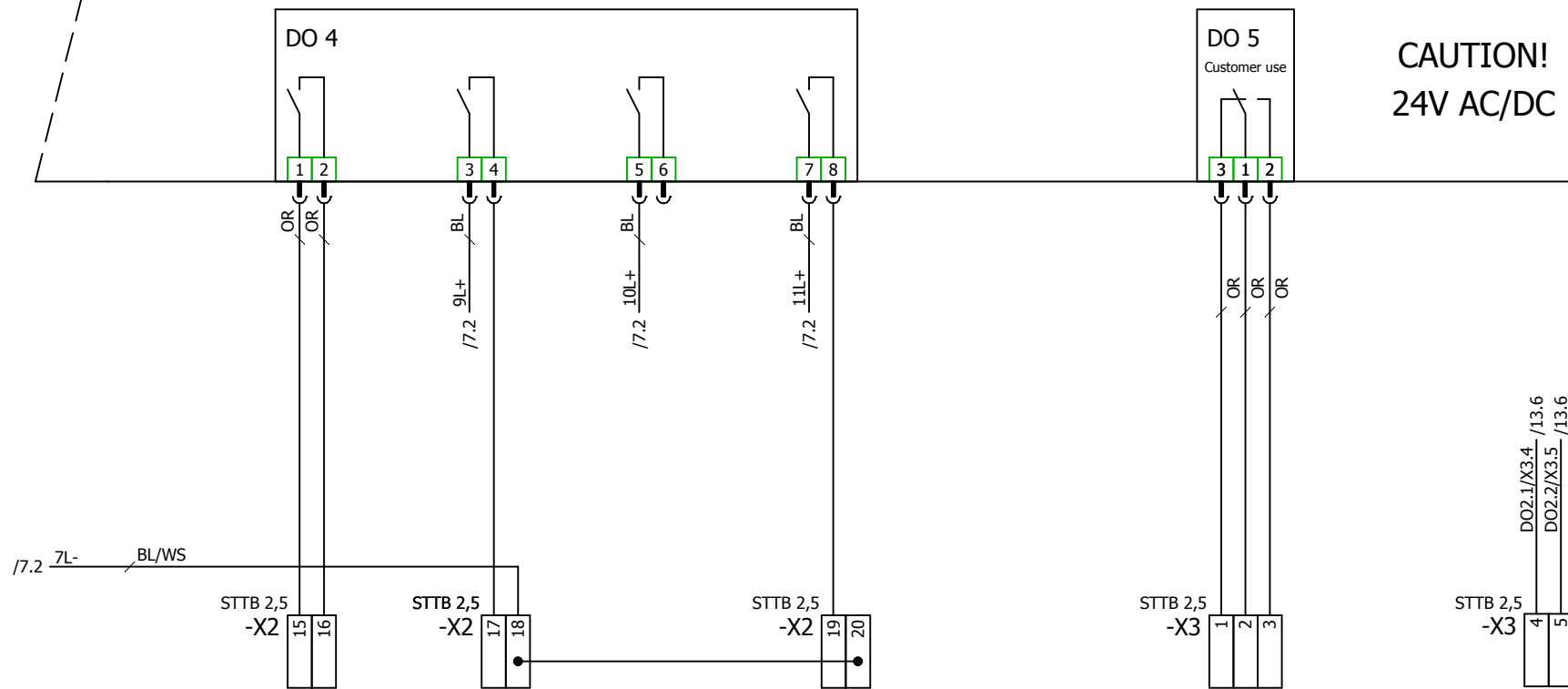
-8A1

PCB

digital Ausgänge / digital outputs

KKT chillers

CAUTION!
24V AC/DC



Multifunktionsausgang
multifunction outlet

Magnetventil
Heißgas Bypass
solenoid valve
hotgas bypass

Freigabe
Tankheizung
release tankheater

auto. Nachspeisung
automatic refill system

Sammelstörung
collective failure
X3 2/3 = OK
X3 1/2 = fault

Warnmeldung
warning message
warning = low
OK = high

Alle Leitungen ohne Querschnittsangebe sind 0,75 mm²
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drawn with ELCAD (R)

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KKT chillers - a brand of
ait - deutschland GmbH



circuit diagram 909080-00529(z) ab 90801906

cBoxX

-

replacement by: replacement for: origin: KKT

Platine digital Ausgänge / PCB digital output

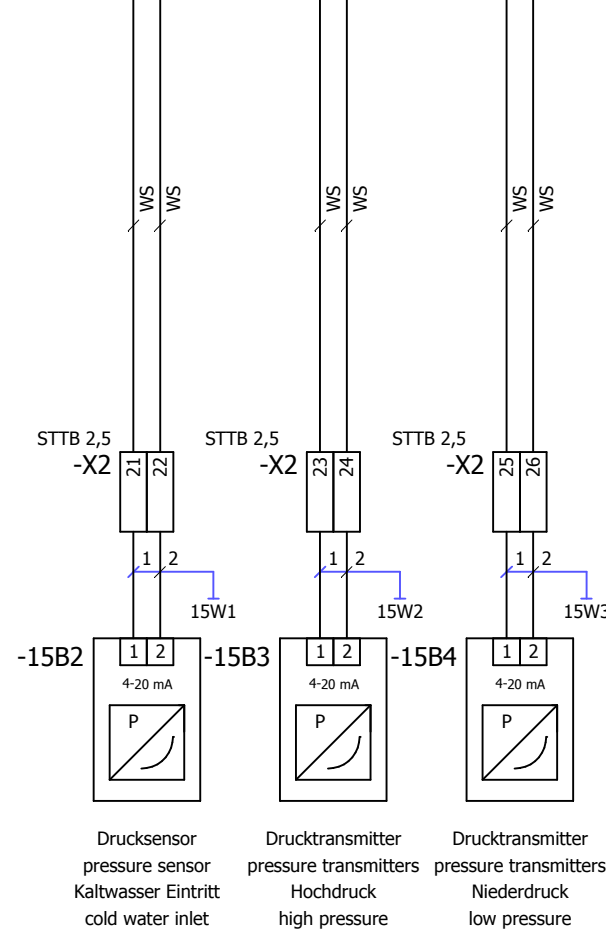
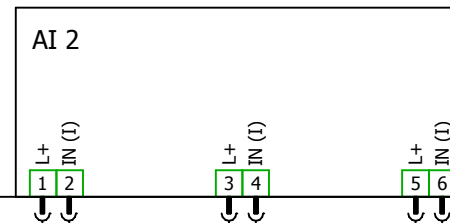
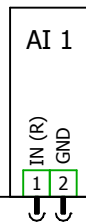
sheet 14
sh. 23

-8A1

PCB

Analoge Eingänge / analog inputs

KKT chillers



Drucksensor
pressure sensor
Kaltwasser Eintritt
cold water inlet

Drucktransmitter
pressure transmitters
Hochdruck
high pressure

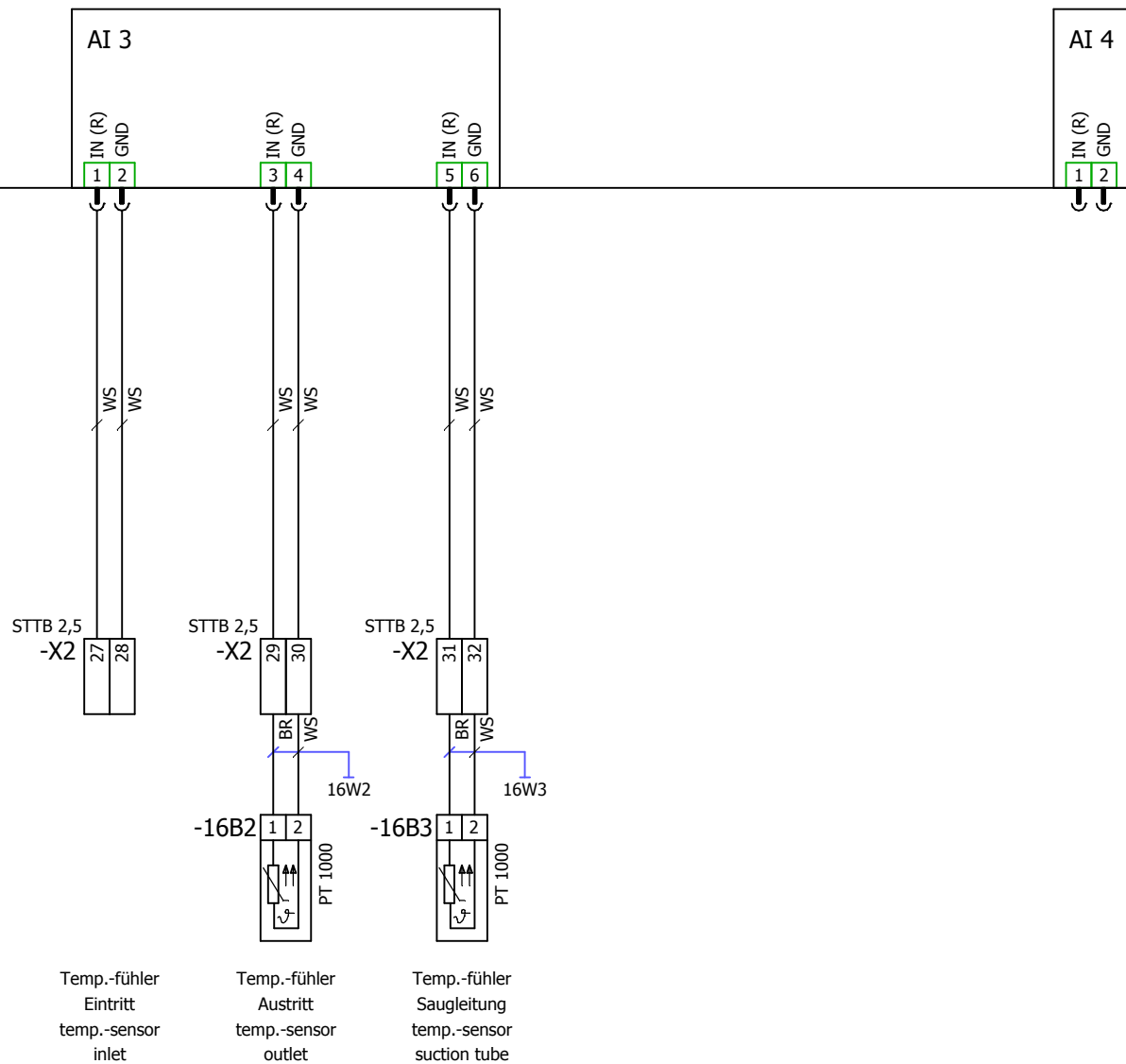
Drucktransmitter
pressure transmitters
Niederdruck
low pressure

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-8A1

PCB

Analoge Eingänge / analog inputs



drawn with ELCAD (R)

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a			check	
change	date	name	norm	

KKT chillers - a brand of ait - deutschland GmbH	
replacement by:	replacement for:



circuit diagram	909080-00529(z) ab 90801906
cBoxX	
-	origin: KKT

Platine analog Eingänge / PCB analogy input		sheet 16
		sh. 23

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PCB

analog Ausgänge / analog outputs

KKT chillers

AO 1

AO 2

OUT 0-10V
1 2
GND

OUT 0-10V
3 4
GND

OUT 0-10V
5 6
GND

OUT 0-10V
7 8
GND

OUT 0-10V
1 2
GND

OUT 0-10V
3 4
GND



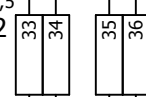
WS
WS

BL
BL
/22.4 AO1.5/X2.53
/22.4 AO1.6/X2.54

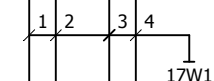
BL
BL
/22.8 AO1.7/X2.59
/22.8 AO1.8/X2.60

12L+ /7.2
8L- /7.2

STTB 2,5
-X2

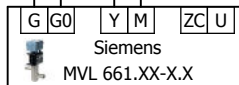


STTB 2,5
-X2



17W1

-17Y1



Einspritzventil chiller 0-10V für Lüfter 1 0-10V für Lüfter 2
expansion valve chiller 0-10V for Fan 1 0-10V for Fan 2

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replacement by:	replacement for:

	origin: KKT
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circuit diagram	909080-00529(z) ab 90801906
cBoxX	
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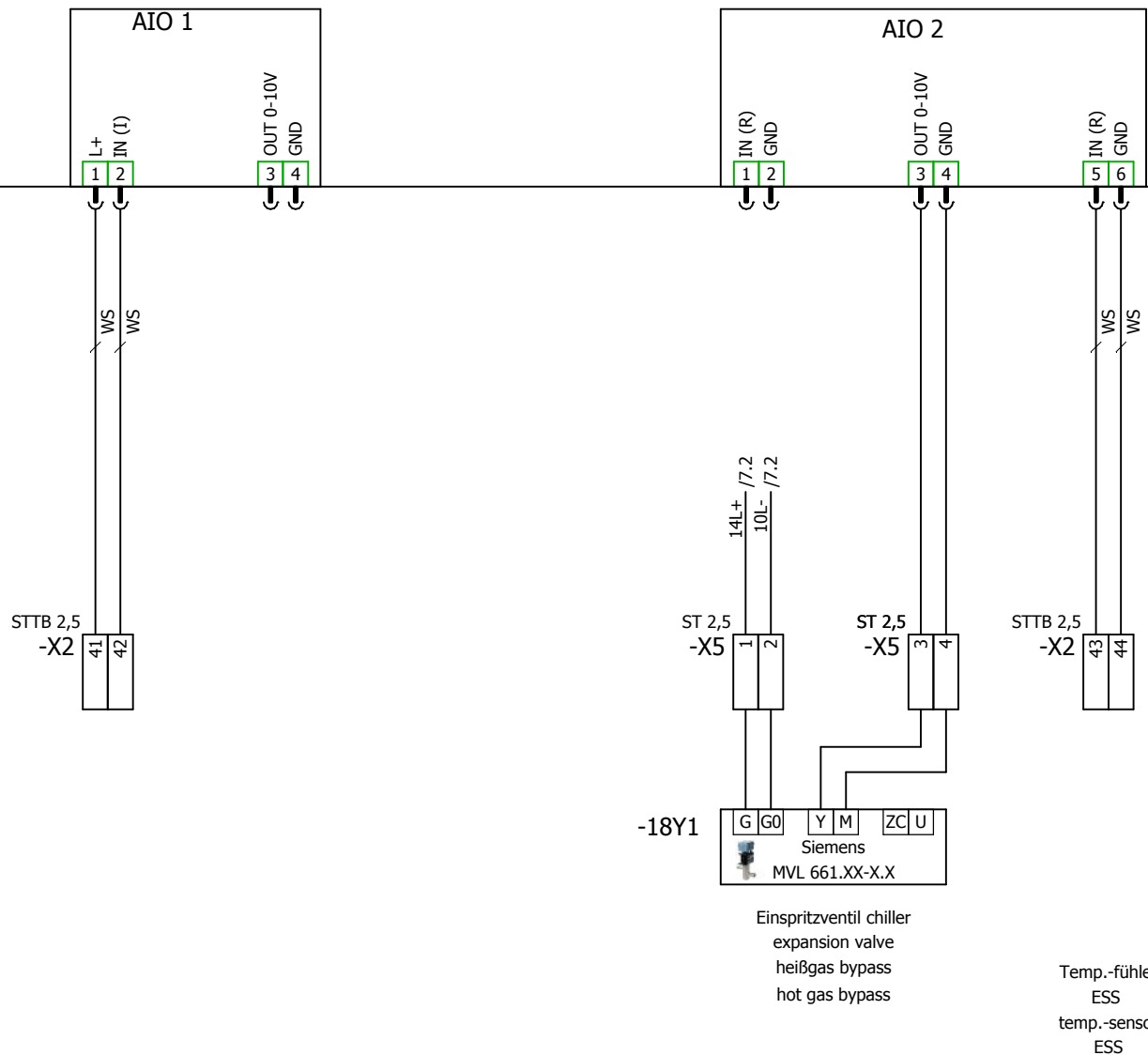
Platine analog Ausgänge/PCB analogy output	sheet 17
	sh. 23

-8A1

PCB

Analoge Ausgänge / analog outputs

KKT chillers



drawn with ELCAD (R)

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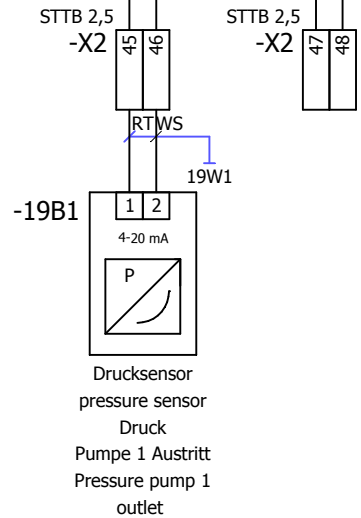
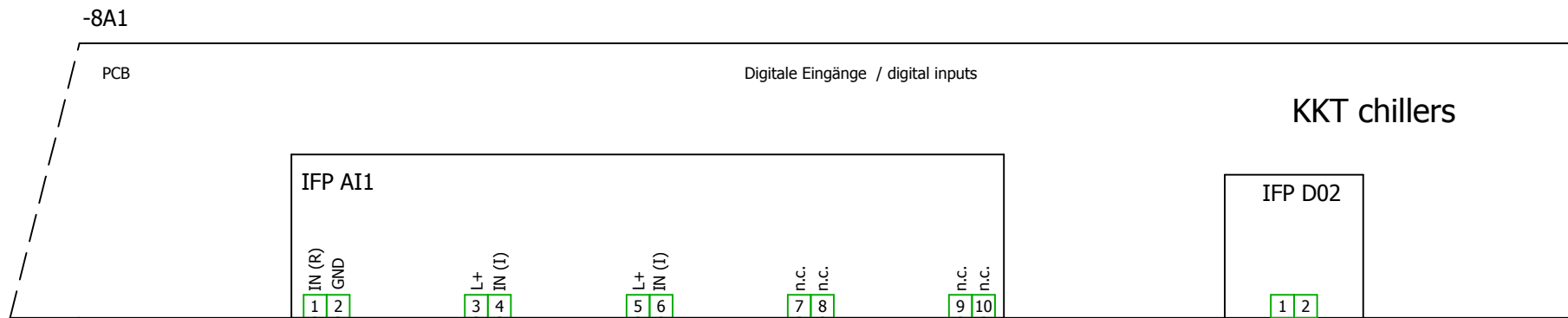
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KKT chillers - a brand of ait - deutschland GmbH	
replacement by:	replacement for:



circuit diagram	909080-00529(z) ab 90801906
cBoxX	
-	

Platine / PCB Reserve



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change	date	name	norm	

KKT chillers - a brand of
 ait - deutschland GmbH



circuit diagram 909080-00529(z) ab 90801906
 cBoxX
 -

Platine analog Eingänge / PCB analogy input

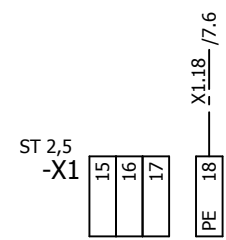
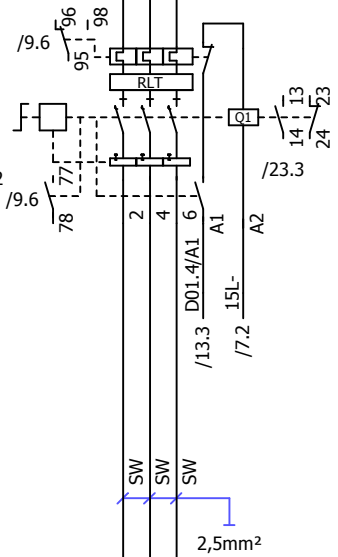
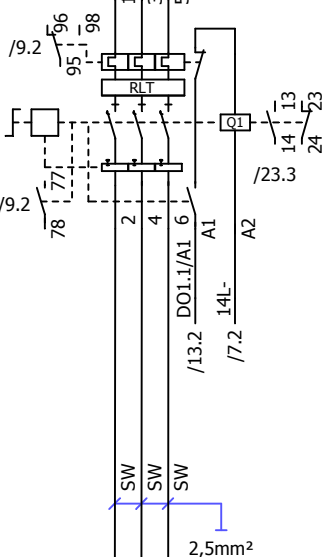
sheet	19
sh.	23

1 2 3 4 5 6 7 8

/6.8 L1 /22.1
 /6.8 L2 /22.1
 /6.8 L3 /22.1

-20F1
 3...12 A
 3RA6120-1DB32
 Setting: 7,0 A
 RESET: M
 CLASS: 10

-20F2
 3...12 A
 3RA6120-1DB32
 Setting: 7,0 A
 RESET: M
 CLASS: 10



ST 2,5
 -X1

1 2 3 GN/GE
 20W1

Grundfos
 U1 V1 W1 PE

M
 3~

2,9 kW
 5,3 A

-20M1
 Pumpe 1
 pump 1

ST 2,5
 -X1

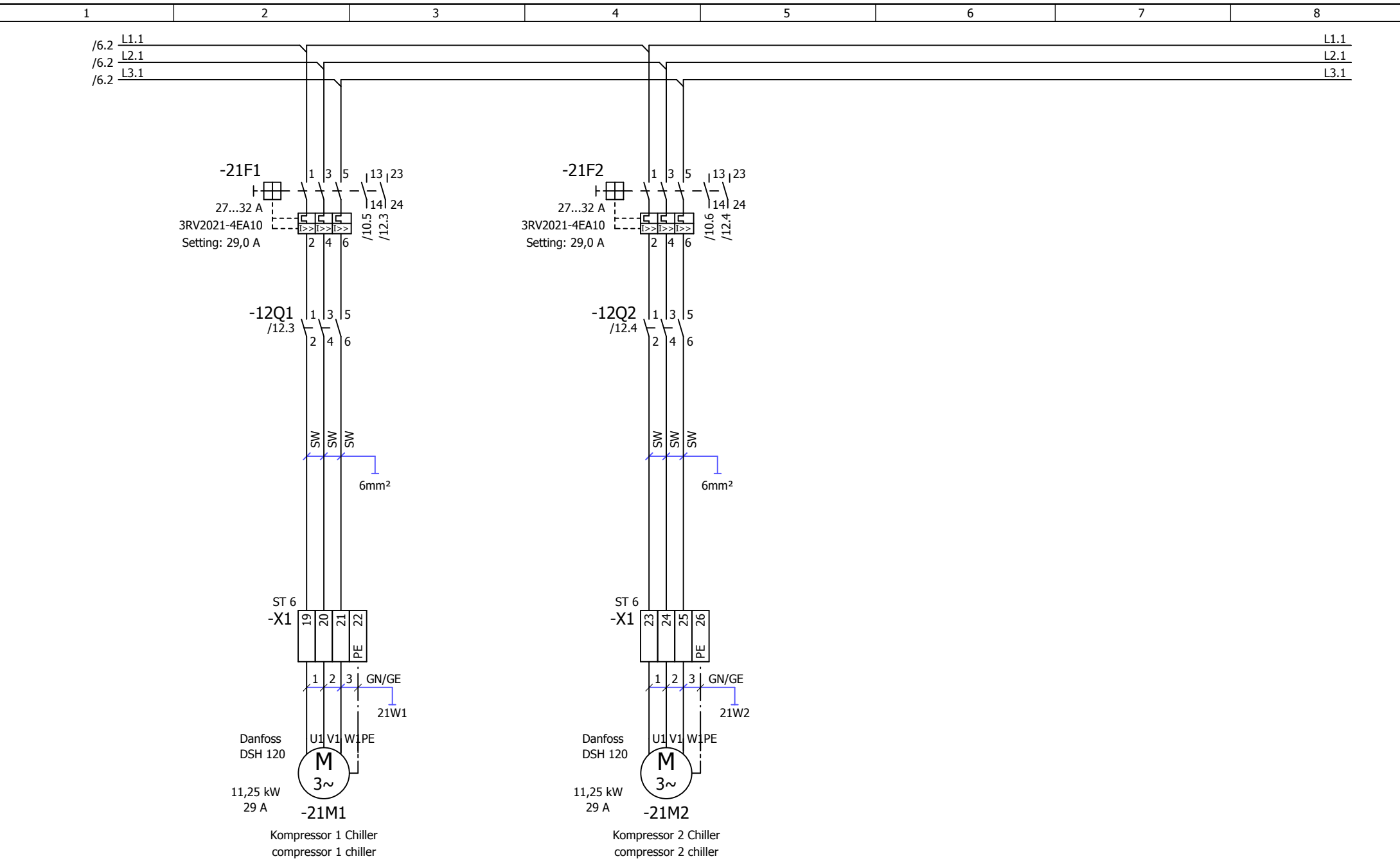
1 2 3 GN/GE
 20W2

Grundfos
 U1 V1 W1 PE

M
 3~

2,9 kW
 5,3 A

-20M2
 Pumpe 2
 pump 2



drawn with ELCAD (R)

Alle Leitungen ohne Querschnittsangabe sind 0,75 mm²
 All lines without cross-sectional specification are 0,75 mm²

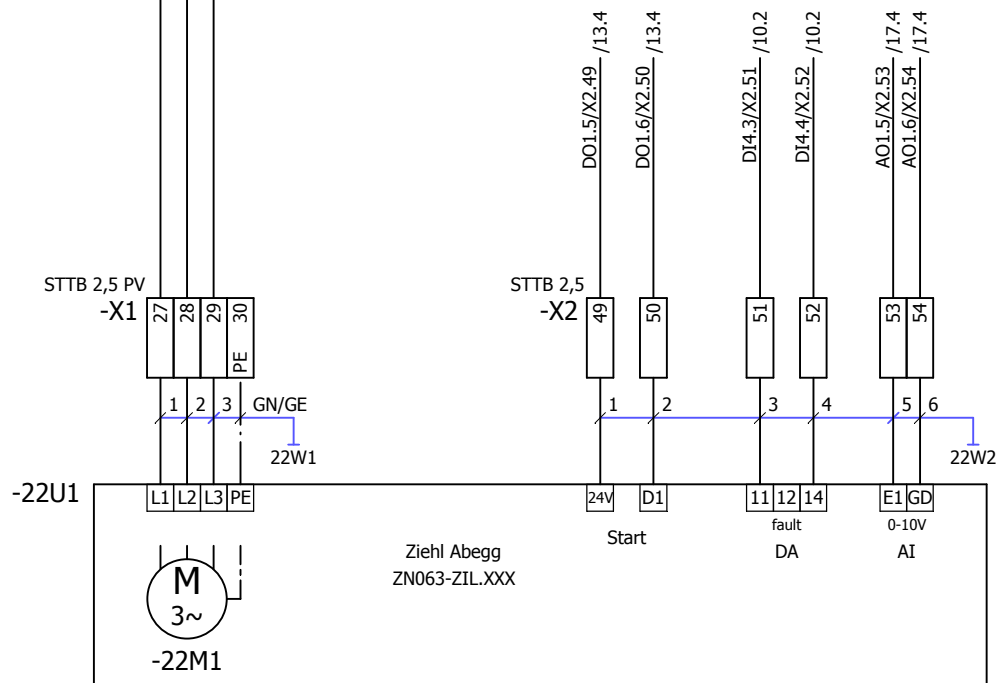
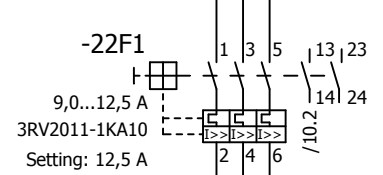
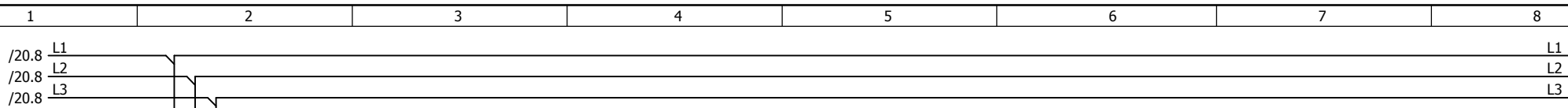
c		date	23.10.2018
b		editor	J.Distler
a		check	
change	date	name	norm

KKT chillers - a brand of
 ait - deutschland GmbH

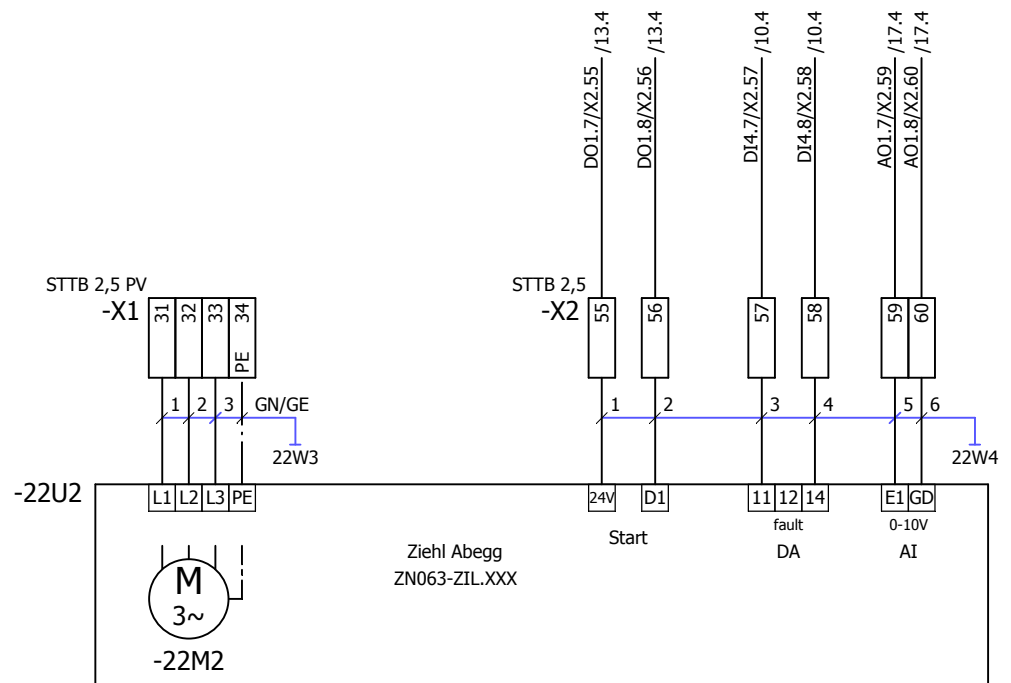
replacement by: replacement for:



circuit diagram 909080-00529(z) ab 90801906
 cBoxX



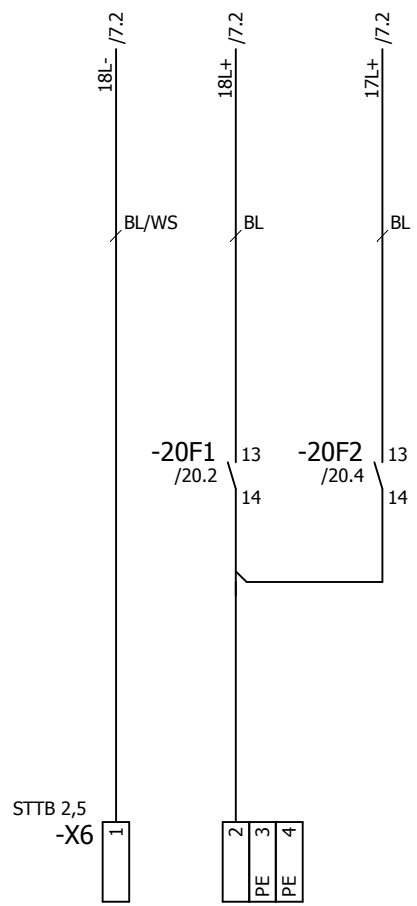
Kondensatorlüfter 1
condenser fan 1



Kondensatorlüfter 2
condenser fan 2


Alle Leitungen ohne Querschnittsangabe sind 0,75 mm²
All lines without cross-sectional specification are 0,75 mm²

drawn with ELCAD (R)				KKT chillers - a brand of ait - deutschland GmbH		circuit diagram 909080-00529(z) ab 90801906		-	
c			date	23.10.2018	replacement by:	replacement for:	origin:	KKT	sheet 22
b			editor	J.Distler					
a			check						
change	date	name	norm						sh. 23



drawn with ELCAD (R)

Alle Leitungen ohne Querschnittsangabe sind 0,75 mm²
 All lines without cross-sectional specification are 0,75 mm²

c			date	23.10.2018	KKT chillers - a brand of ait - deutschland GmbH		circuit diagram	909080-00529(z) ab 90801906		
b			editor	J.Distler			cBoxX			
a			check							
change	date	name	norm		replacement by:	replacement for:	origin:	KKT	sheet 23 sh. 23	

Motorklappe / motor flap