



DIVISION
DESIGN AND ENGINEERING
Hovestraße 10
D-48431 Rheine
Tel.: 05971 / 58 - 0
Telefax.: 05971 / 58 - 209



DIVISION
WATER PURIFICATION AND WASTE WATER TREATMENT
Burgsteinfurter Damm 89
D-48485 Neuenkirchen
Tel.: 05973 / 63 - 01
Telefax.: 05973 / 63 - 200

Electrical Circuit Diagramm

customer : AMEC Rail
project name : MULTI-PURPOSE-VEHICLE (MPV)
MASTER
order-number : 160 866 M

ADDITIONAL EQUIPMENT:	BUILT-IN MPV
VIDEO-SYSTEM	
TCA-SYSTEM	X
TRIP-COCK	

designer : MOH
checked at : 10.07.2000 by: KAP
highest page number: 260
number of pages : 139

i	28.04.04	BEU	1.inspection at : 16.11.00/19.01.01		by: BEU	7.inspection at : 16.01.2003		by: GRO	Datei: Titel_FE.MSF	
h	18.07.03	BEU	2.inspection at : 09.05.2001		by: HWG	8.inspection at : 18.07.2003		by: BEU		
g	16.01.03	GRO	3.inspection at : 19.07.2001		by: KAP	9.inspection at : 28.04.2004		by: BEU		
f	28.10.02	VKO	4.inspection at : 13.11.2001		by: ZIE	10.inspection at : 27.07.2005		by: VKO		
e	07.10.02	VKO	5.inspection at : 07.10.2002		by: VKO	11.inspection at :		by:		
d	13.11.01	ZIE	j	27.07.2005	VKO	6.inspection at : 28.10.2002		by: VKO	12.inspection at :	
c	19.07.01	KAP	DATE	28.04.2004	MULTI-PURPOSE-VEHICLE (MPV)		Deckblatt		160 866 M	
b	09.05.01	HWG	DRAWN	MOH	MASTER		COVER PAGE		=	
a	16.11.00	BEU	CHECK.	KAP					+	
REV.	DATE				Revision j				5.661.557 167-4	pg. 1
										260 pg.



0	1	2	3	4	5	6	7	8	9
REVISION									
REV.	DATE	DESIGNATION				PAGE	NAME		
a	16.11.00	CSR RADIO SYSTEM TYPE SYSTEM				220	BEU		
a	19.01.01	TEXT REVISED				117, 137	BEU		
b	09.05.01	TEXT REVISED				91, 93, 97, 132	HWG		
c	19.07.01	2.OTDR				40, 50, 59a,	KAP		
c	19.07.01	2.OTDR				230, 240, 241,	KAP		
c	19.07.01	2.OTDR				242, 243, 244, 245, 246,	KAP		
d	13.11.01	TRIP COCK OFF 19S7				19	ZIE		
d	13.11.01	TRIP COCK ACTIVE 26H6				26	ZIE		
d	13.11.01	TRIP COCK RESET 50S1				50	ZIE		
e	07.10.02	DIODE COMPLETEMENTED				66	VKO		
e	07.10.02	TEXT REVISED				135	VKO		
f	28.10.02	TEXT REVISED				42	VKO		
g	16.01.03	TAZ-DIODE FITTED				66	GRO		
g	16.01.03	SELECTOR SWITCH "HORN"				42	GRO		
g	16.01.03	CONVERTER (STEINER) ADJUSTED				115	GRO		
h	18.07.03	WSP CHANGED FROM MRP-SYSTEM TO SAB WABCO KP-SYSTEM				46; 56; 63; 64; 66; 92; 241	Beu		
i	28.04.04	WSP PULSE TRAIN / SPEED				63	Beu		
j	27.07.05	OTDR EXTENSION 2AE				1, 2, 3, 4, 50, 51, 58, 59a, 60, 62,	VKO		
j	27.07.05	OTDR EXTENSION 2AE				62a, 230, 240, 242, 243, 245, 246	VKO		

Inhalt:

Blatt	Benennung	Blatt	Benennung
1	Deckblatt COVER PAGE	31	Bereich 01 Leistung AREA 01 POWER
1.1	Revision INSPECTION	32	Bereich 01 Leistung AREA 01 POWER
1.2	Deckblatt COVER PAGE	35	Bereich 01 Heizungssystem AREA 01 HEATING SYSTEM
2	Inhaltsverzeichnis LIST OF CONTENTS	36	Bereich 01 Heizungssystem AREA 01 HEATING SYSTEM
3	Inhaltsverzeichnis LIST OF CONTENTS	37	Bereich 01 Heizungssystem AREA 01 HEATING SYSTEM
4	Inhaltsverzeichnis LIST OF CONTENTS	40	Bereich 02 SPS AREA 02 PLC
6	Legende der Klemmenleiste LEGEND OF TERMINAL STRIP	41	Bereich 02 Eingänge AREA 02 INPUTS
7	Übersicht: Bereiche OUTLINE: AREAS MASTER	42	Bereich 02 Eingänge AREA 02 INPUTS
8	Reserve SPARE	43	Bereich 02 Eingänge AREA 02 INPUTS
9	Übersicht: Klemmenleisten OUTLINE: TERMINAL STRIP	44	Bereich 02 Eingänge AREA 02 INPUTS
10	Bereich 01 Bridge AREA 01 BRIDGE	45	Bereich 02 Eingänge AREA 02 INPUTS
10.1	Bereich 01 Bridge AREA 01 BRIDGE	46	Bereich 02 Eingänge AREA 02 INPUTS MASTER
11	Bereich 01 Eingänge AREA 01 INPUTS	47	Bereich 02 Eingänge AREA 02 INPUTS
12	Bereich 01 Eingänge AREA 01 INPUTS	48	Bereich 02 Eingänge AREA 02 INPUTS
13	Bereich 01 Eingänge AREA 01 INPUTS	49	Bereich 02 Eingänge AREA 02 INPUTS
14	Bereich 01 Eingänge AREA 01 INPUTS	50	Bereich 02 Eingänge AREA 02 INPUTS
15	Bereich 01 Eingänge AREA 01 INPUTS	51	Bereich 02 Ausgänge AREA 02 OUTPUTS
16	Bereich 01 Eingänge AREA 01 INPUTS	52	Bereich 02 Ausgänge AREA 02 OUTPUTS
17	Bereich 01 Eingänge AREA 01 INPUTS	53	Bereich 02 Ausgänge AREA 02 OUTPUTS
18	Bereich 01 Eingänge AREA 01 INPUTS	54	Bereich 02 Ausgänge AREA 02 OUTPUTS
19	Bereich 01 Eingänge AREA 01 INPUTS	55	Bereich 02 Eingänge AREA 02 OUTPUTS
20	Bereich 01 Eingänge AREA 01 INPUTS	56	Bereich 02 Ausgänge AREA 02 OUTPUTS MASTER
21	Bereich 01 Ausgänge AREA 01 OUTPUTS	57	Bereich 02 Ausgänge AREA 02 OUTPUTS
22	Bereich 01 Ausgänge AREA 01 OUTPUTS	58	Bereich 02 Ausgänge AREA 02 OUTPUTS
22.1	Bereich 01 Ausgänge AREA 01 OUTPUTS	59	Bereich 02 Ausgänge AREA 02 OUTPUTS
23	Bereich 01 Ausgänge AREA 01 OUTPUTS	59a	Bereich 02 Ausgänge AREA 02 OUTPUTS
24	Bereich 01 Ausgänge AREA 01 OUTPUTS	60	Bereich 02 Bridge AREA 02 BRIDGE
25	Bereich 01 Ausgänge AREA 01 OUTPUTS	61	Bereich 02 Eingänge AREA 02 ANALOG INPUTS
26	Bereich 01 Ausgänge AREA 01 OUTPUTS	62	Bereich 02 Ausgänge AREA 02 ANALOG OUTPUTS
29	Bereich 01 / AREA 01 DISPLAY	62a	Bereich 02 Ausgänge AREA 02 ANALOG OUTPUTS
30	Bereich 01 Leistung AREA 01 POWER	63	Bereich 02 GSS AREA 02 WSP MASTER

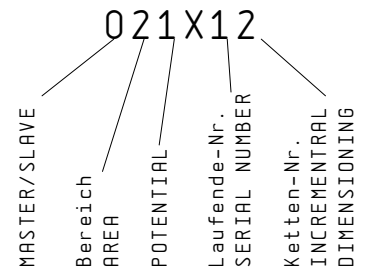
Inhalt:

Blatt	Benennung	Blatt	Benennung
64	Bereich 02 GSS AREA 02 WSP MASTER	113	Bereich 04 Motor 1 AREA 04 ENGINE 1
65	Bereich 02 Sicherungen AREA 02 FUSES	114	Bereich 04 Motor 4 AREA ENGINE 04
66	Bereich 02 Sicherungen AREA 02 FUSES MASTER	115	Bereich 04 Motor 1 AREA 04 ENGINE 1
67	Bereich 02 Batterie AREA 02 BATTERY	116	Bereich 04 Motor 1 AREA 04 ENGINE 1
68	Bereich 02 Schaltschrank AREA 02 CONTROL CABINET	117	Bereich 04 Motor 1 AREA ENGINE 1
70	Bereich 02 Schnellbremse AREA 02 EMERGENCY BRAKE	118	Bereich 04 Motor 1 AREA 04 ENGINE 1
71	Bereich 02 Schnellbremse AREA 02 EMERGENCY BRAKE	119	Bereich 04 Motor 1 AREA 04 ENGINE 1
72	Bereich 02 Motor AREA 02 MOTOR	130	Bereich 05 Motor 2 AREA 05 ENGINE 2
73	Bereich 02 Ladekontrolle AREA 02 CHARGING CONTROL	130.1	Bereich 05 Motor 2 AREA 05 ENGINE 2
74	Bereich 02 Diagnose AREA 02 DIAGNOSTIC	131	Bereich 05 Motor 2 AREA 05 ENGINE 2
80	Bereich 02 Beleuchtung AREA 02 CAB LIGHTING	132	Bereich 05 Motor 2 AREA 05 ENGINE 2
81	Bereich 02 Beleuchtung AREA 02 LIGHTING FRAME	133	Bereich 05 Motor 2 AREA 05 ENGINE 2
82	Bereich 02 Sirene AREA 02 SIREN	134	Bereich 05 Motor 2 AREA 05 ENGINE 2
90	Bereich 03 Pneumatik AREA 03 PNEUMATIC	135	Bereich 05 Motor 2 AREA ENGINE 2
90.1	Bereich 03 Pneumatik AREA 03 PNEUMATIC	135.1	Bereich 05 Motor 2 AREA ENGINE 2
91	Bereich 03 Pneumatik AREA 03 PNEUMATIC	136	Bereich 05 Motor 2 AREA 05 ENGINE 2
92	Bereich 03 Pneumatik AREA 03 PNEUMATIC MASTER	137	Bereich 05 Motor 2 AREA 05 ENGINE 2
93	Bereich 03 Pneumatik AREA 03 PNEUMATIC	138	Bereich 05 Motor 2 AREA 05 ENGINE 2
94	Bereich 03 Pneumatik AREA 03 PNEUMATIC	139	Bereich 05 Motor 2 AREA 05 ENGINE 2
95	Bereich 03 Pneumatik AREA 03 PNEUMATIC	150	Bereich 06 Kraftstofftank AREA 06 FUEL TANK
96	Bereich 03 Pneumatik AREA 03 PNEUMATC	151	Bereich 06 Kraftstofftank AREA 06 FUEL TANK
97	Bereich 03 Pneumatik AREA 03 PNEUMATIC	160	Bereich 07 Batterie AREA 07 BATTERY
99	Bereich 03 Pneumatik AREA 03 PNEUMATIC	161	Bereich 07 Batterie AREA 07 BATTERY
100	Bereich 03 Pneumatik AREA 03 PNEUMATIC	162	Bereich 07 Batterie AREA 07 BATTERY
101	Bereich 03 / AREA 03 PNEUMATC	163	Bereich 07 Batterie AREA 07 BATTERY
102	Bereich 03 Heizung AREA 03 HEATING	170	Bereich 08 / AREA 08 INTER VEHICLE CONNECTORS
103	Bereich 03 Lüftung AREA 03 VENTILATION	171	Bereich 08 / AREA 08 INTER VEHICLE CONNECTORS
110	Bereich 04 Motor 1 AREA 04 ENGINE 1	180	Bereich 09 / AREA 09 CONNECTORS MASTER /MASTER
110.1	Bereich 04 Motor 1 AREA 04 ENGINE 1	190	Bordsprechanlage ON BOARD COMMUNICATIONS MASTER & SLAVE
111	Bereich 04 Motor 1 AREA 04 ENGINE 1	210	RADIO_SYSTEM NRN
112	Bereich 04 Motor 1 AREA 01 ENGINE 1	220	RADIO-SYSTEM CSR TYPE. Siemens

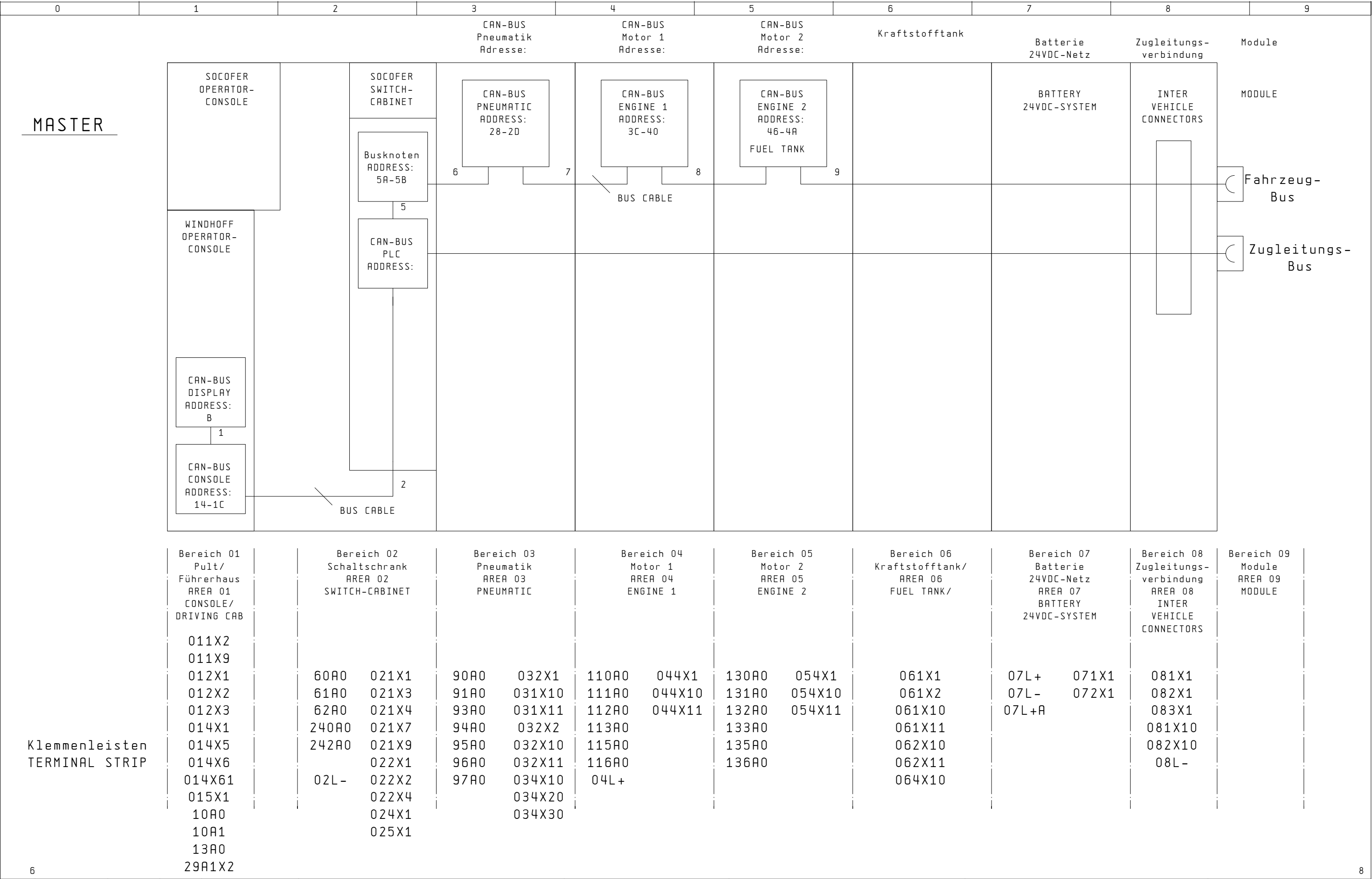
Inhalt:

3

Legende der Klemmenleisten
LEDEND OF TERMINAL STRIP



MASTER/SLAVE	Bereich:	/ AREA:	Potential:	/ POTENTIAL:	X	Laufende-Nr. SERIAL NUMBER	Ketten-Nr. INCREMENTAL DIMENSIONING
0 = MASTER	1 = Bedienpult	/ OPERATOR-CONSOLE	1 = Steuerung	/ CONTROL		1	1
1 = SLAVE	2 = Schaltschrank	/ SWITCH-CABINET	2 = Leistung	/ POWER		2	2
	3 = Pneumatik	/ PNEUMATIC	3 = Bus	/ BUS		3	3
	4 = Motor 1	/ ENGINE 1	4 = Mix Verbindung	/ MIX CONNECTION		4	4
	5 = Motor 2	/ ENGINE 2	5 = TPWS			5	5
	6 = Kraftstofftank/GSS	/ FUEL TANK/GSS	6 = OTDR			6	6
	7 = Batterie/24VDC-Netz	/ BATTERY/24VDC-SYSTEM	7 = TDLS			7	7
	8 = Zugleitungsverbindung	/ INTER VEHICLE CONNECTORS	8 = 230/400V			8	8
	9 = Module	/ MODULE	9 = Erde	/ EARTH		9	9



DATE28. 04. 2004

DRAWNMOH

CHECK.KAP

MULTI-PURPOSE-VEHICLE (MPV)
MASTER

WINDHOFF

Übersicht: Bereiche

OUTLINE: AREAS MASTER

160 866 M

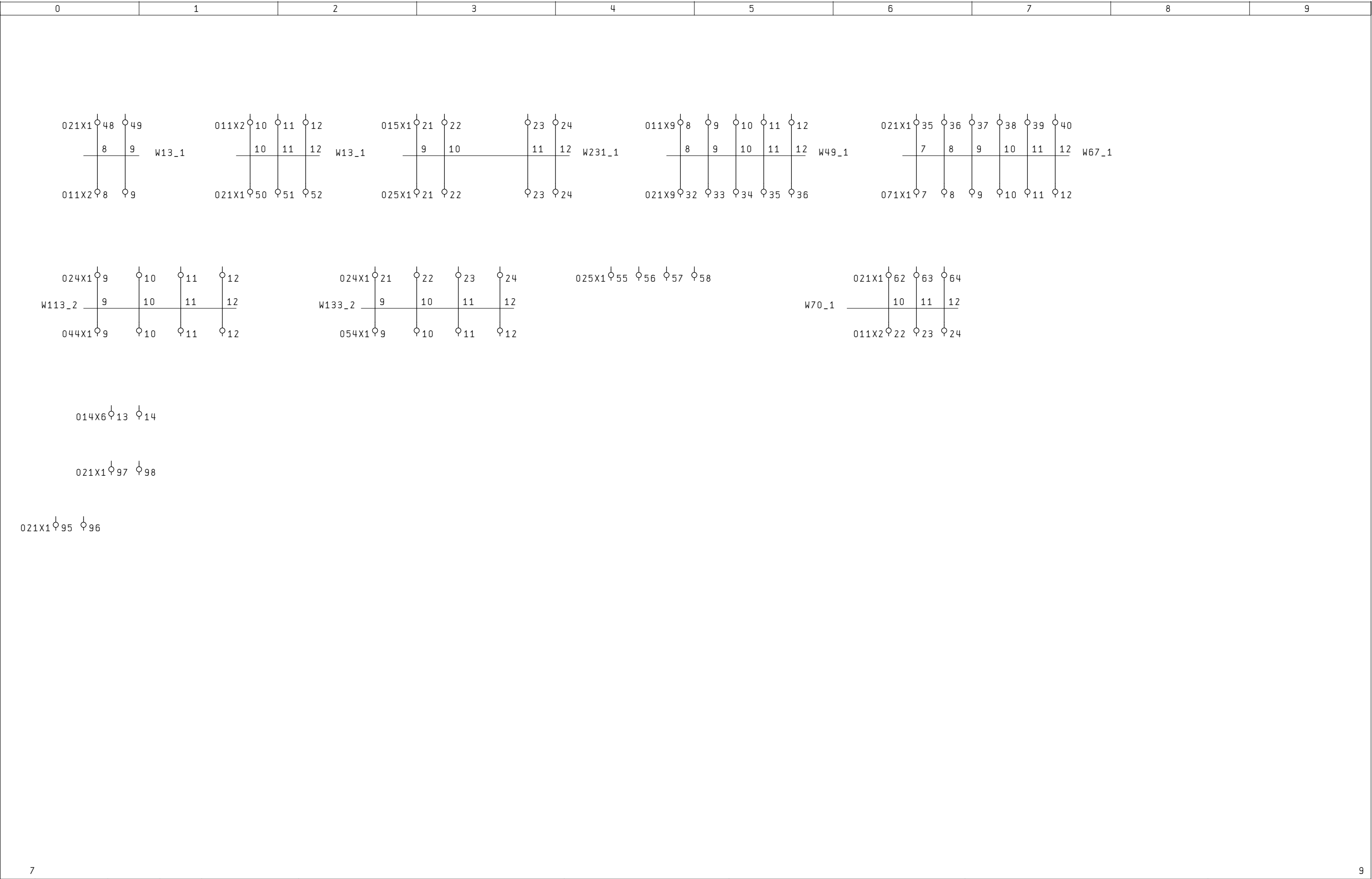
=

+

5. 661. 557 167-4

pg. 7

260 pg.



011X9

8

8

021X9

32

9

33

10

34

11

35

12

36

W49_1

021X1

35

7

071X1

7

36

8

37

9

38

10

39

11

40

12

W67_1

024X1

9

9

044X1

9

10

10

11

11

12

12

W113_2

024X1

21

9

054X1

9

22

10

23

11

24

12

W133_2

025X1

55

56

57

58

021X1

62

10

011X2

22

63

11

64

24

W70_1

014X6

13

14

021X1

97

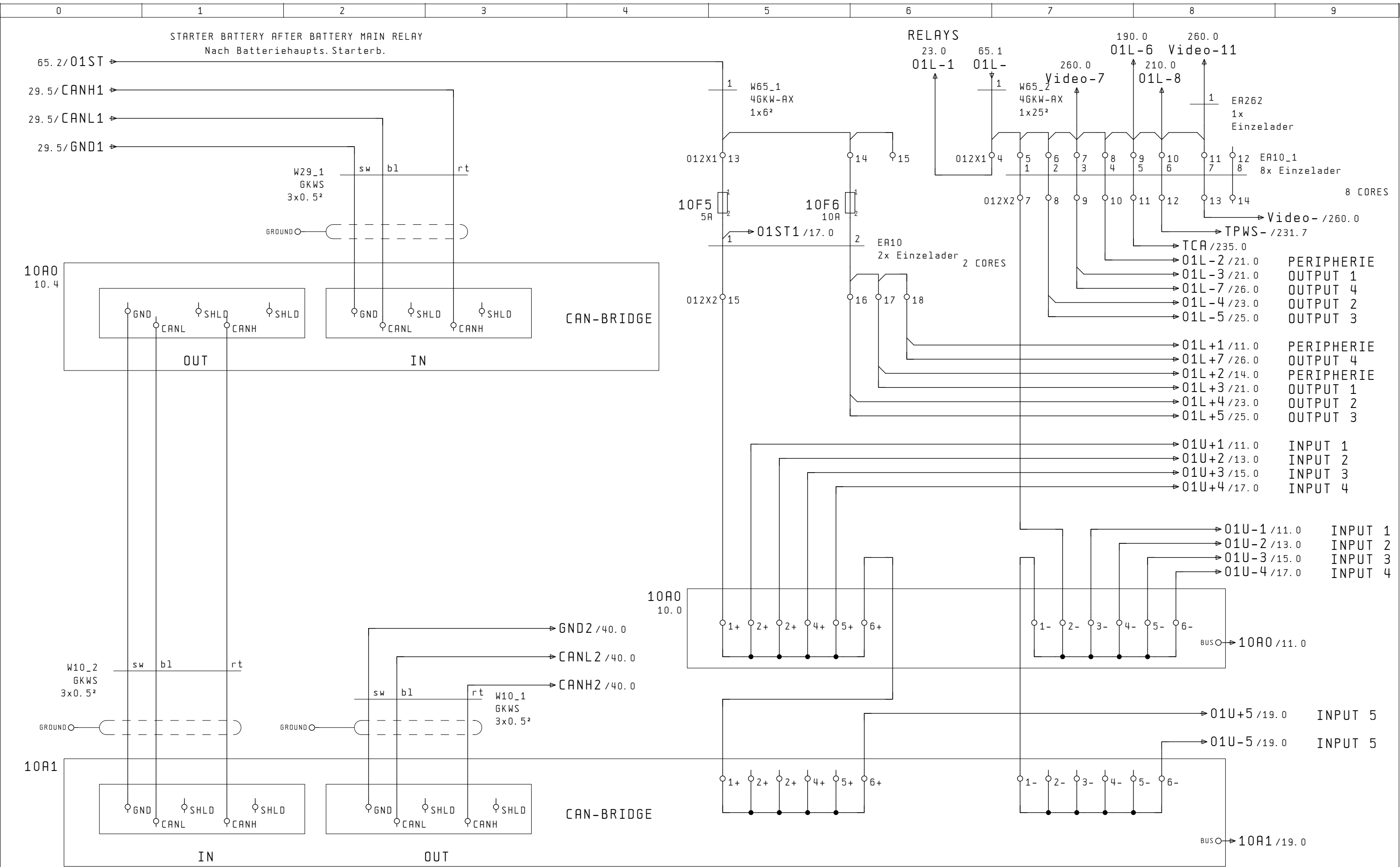
98

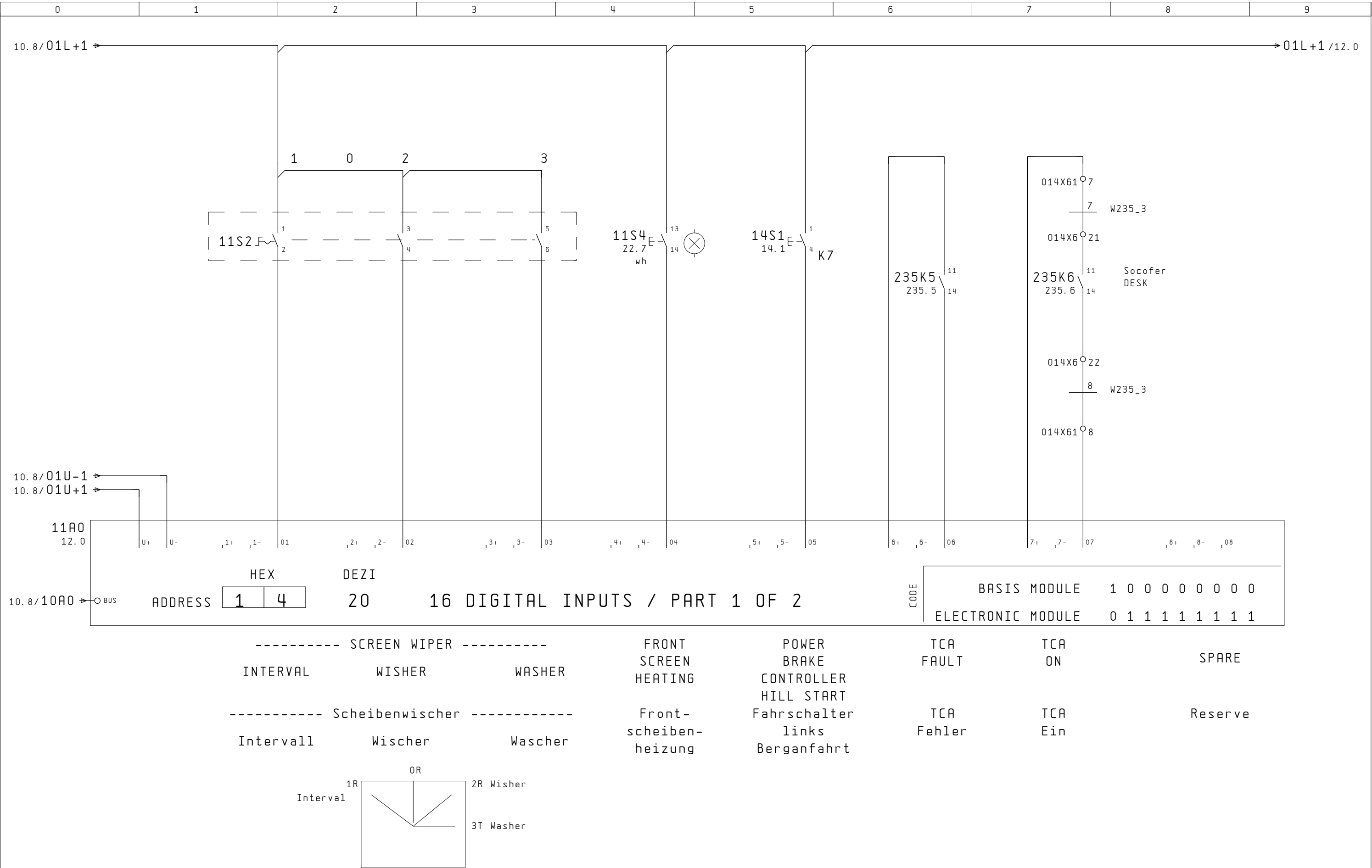
021X1

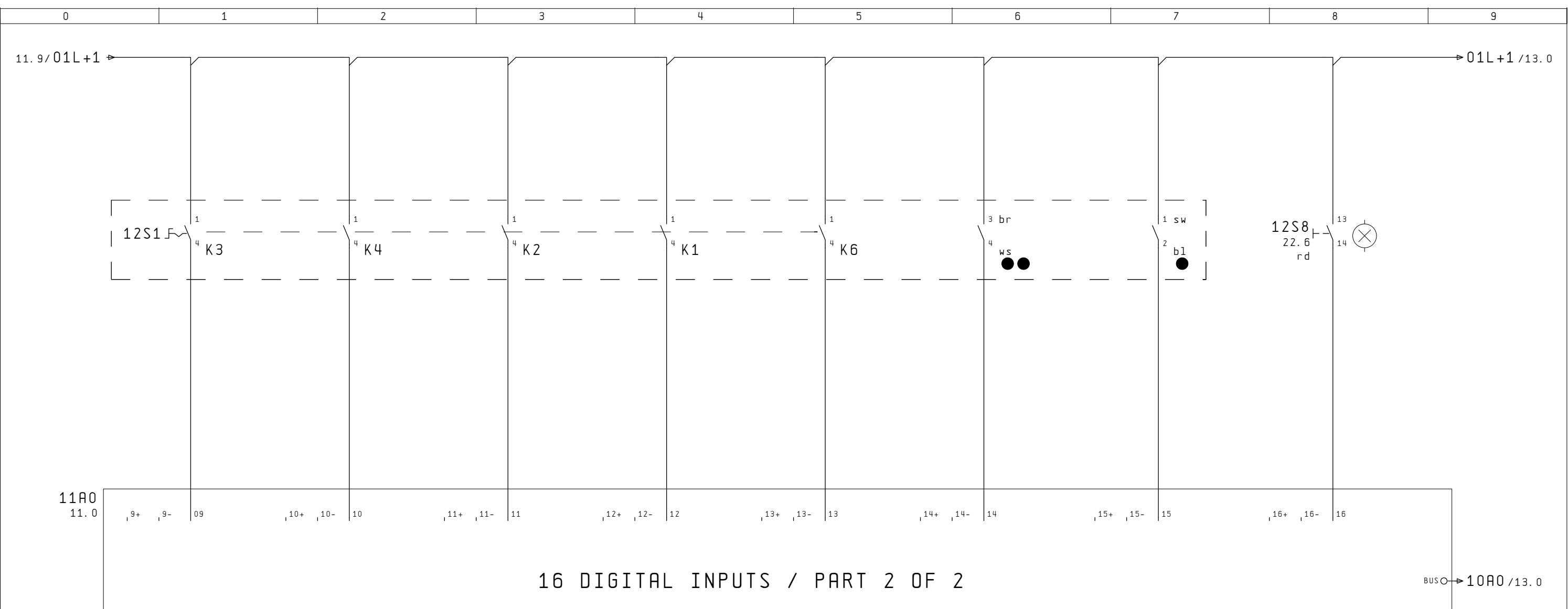
95

96

10260 pg.





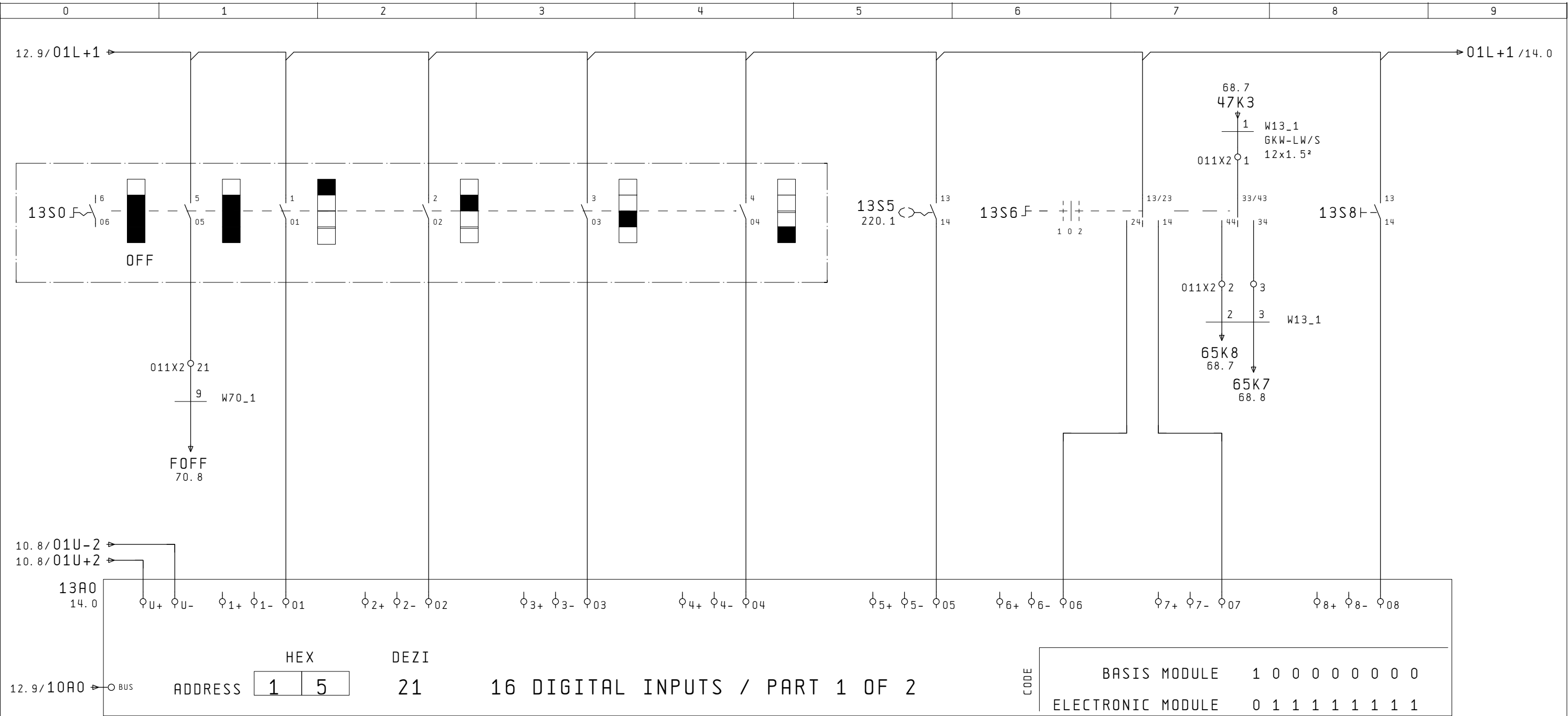


----- POWER BRAKE CONTROLLER MIDDLE -----

BRAKE DOWN	BRAKE UP	POWER DOWN	POWER UP	MIDDLE POSITION	RETARDER UP	RETARDER DOWN	DRA ON
---------------	-------------	---------------	-------------	--------------------	----------------	------------------	-----------

----- Fahrschalter mitte -----

	Bremskraft ab				Bremskraft auf N				Zugkraft ab N				Zugkraft auf				Mittel stellung	Retarder Auf	Retarder Ab	DRA Ein								
K1	—	—	—	—	—	—	—	—	—					—	—	POWER UP	Zugkraft auf	12S1										
K2	—	—	—	—	—	—	—	—					—	—	POWER DOWN	Zugkraft ab												
K3	—	—	—	—					—					—	—	BRAKE DOWN	Bremskraft ab											
K4	—	—	—									—	—	BRAKE UP	Bremskraft auf													
K5	—									—	—	EMERGENCY BRAKE	Schnellbremse															
K6	—	—	—	—					—	—	—	—	—	MIDDLE POSITION	Mittelstellung													
<table><tr><td>150°</td><td>120°</td><td>80°</td><td>40°</td><td>0°</td><td>40°</td><td>80°</td><td>120°</td></tr></table>																					150°	120°	80°	40°	0°	40°	80°	120°
150°	120°	80°	40°	0°	40°	80°	120°																					



----- DIRECTION SELECTOR -----

OFF FORWARD NEUTRAL REVERSE

----- Fahrtrichtungsschalter -----

Aus Vorwärts Neutral Rückwärts

DRIVER'S MASTER KEY

Fahrerstand Ein

----- HAND BRAKE -----

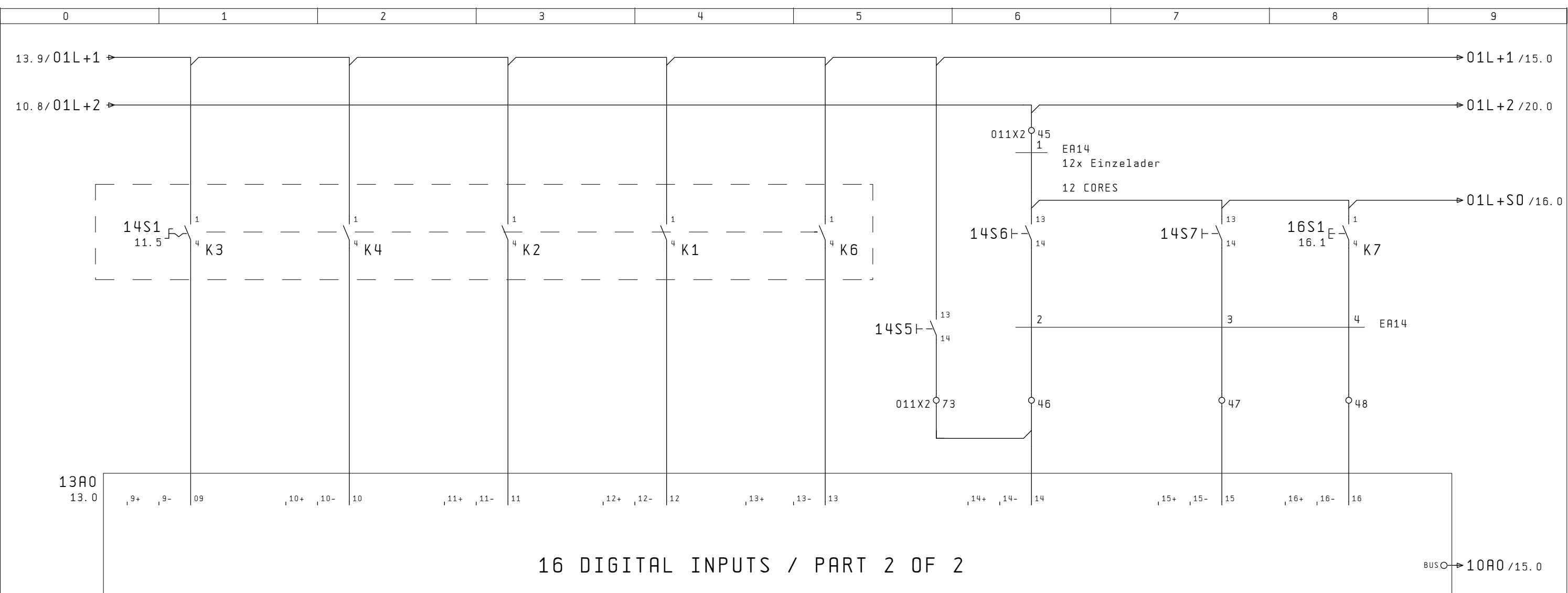
APPLY RELEASE

----- Handbremse -----

anlegen lösen

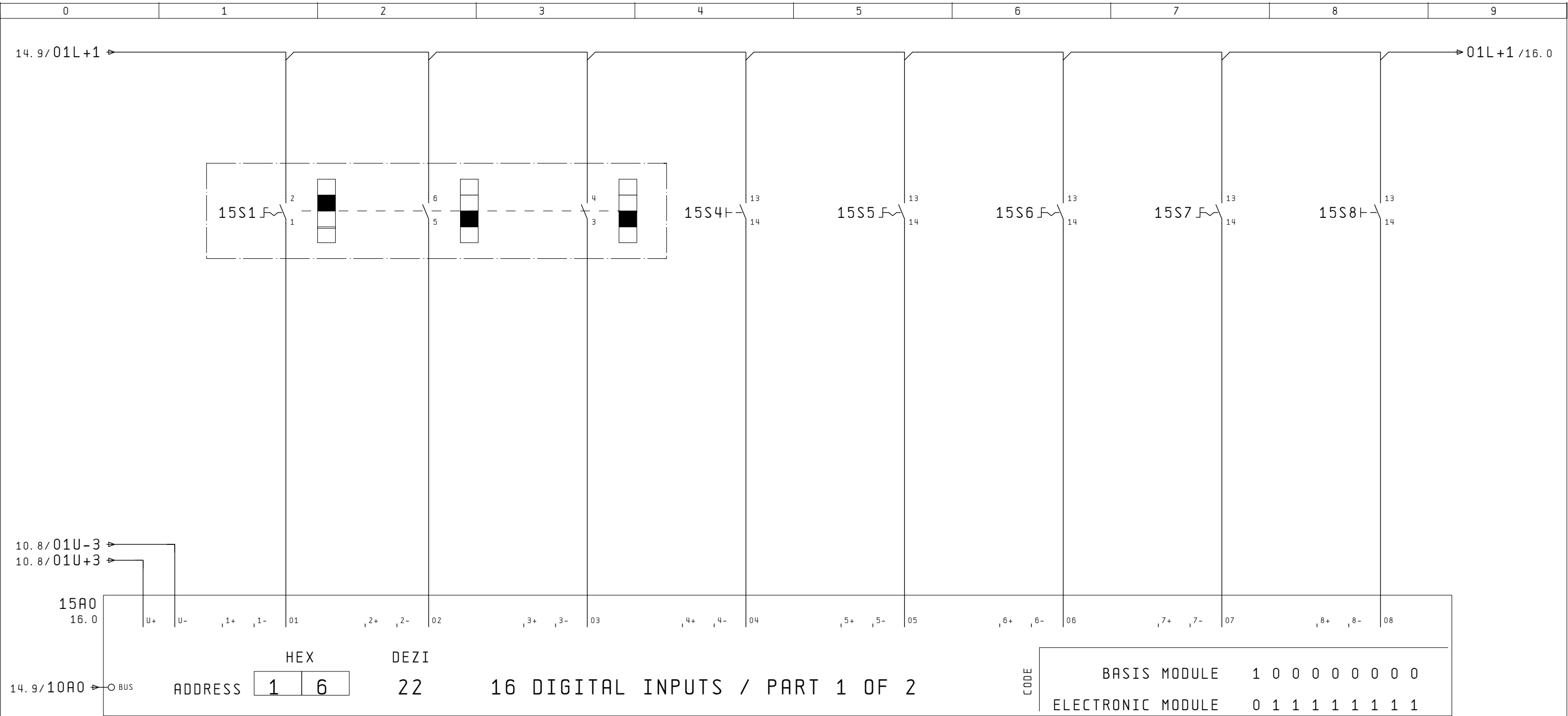
CALL TONE

Rufton Gegensprech-anlage



----- POWER BRAKE CONTROLLER LEFT -----

BRAKE DOWN		BRAKE UP		POWER DOWN		POWER UP		MIDDLE POSITION	ELECTRIC HORN LEFT + RIGHT		DSD RESET DESK	POWER BRAKE CONTROLLER HILL START
Bremskraft ab		Bremskraft auf N		Zugkraft ab N		Zugkraft auf		Mittel stellung	Elektro Horn links + rechts		DSD Reset Pult	Fahrschalter rechts Berganfahrt
K1	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	POWER UP	Zugkraft auf	14S1		
K2	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	POWER DOWN	Zugkraft ab			
K3	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	BRAKE DOWN	Bremskraft ab			
K4	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	BRAKE UP	Bremskraft auf			
K5	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	EMERGENCY BRAKE	Schnellbremse			
K6	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	— — — — —	MIDDLE POSITION	Mittelstellung			
<div>13</div> <div>150° 120° 80° 40° 0° 40° 80° 120°</div> <div>13</div>												



----- END LIGHTING -----

NIGHTLIGHT MARKERS

DAYLIGHT MARKERS

MARKERS

----- Endleuchten -----

Nachtlicht

Taglicht

Markierung

WALKWAY LIGHTING DESK

Laufsteg-beleuchtung Pult

----- WORKING LIGHTS -----

LEFT

RIGHT

FRONT

----- Arbeitsscheinwerfer -----

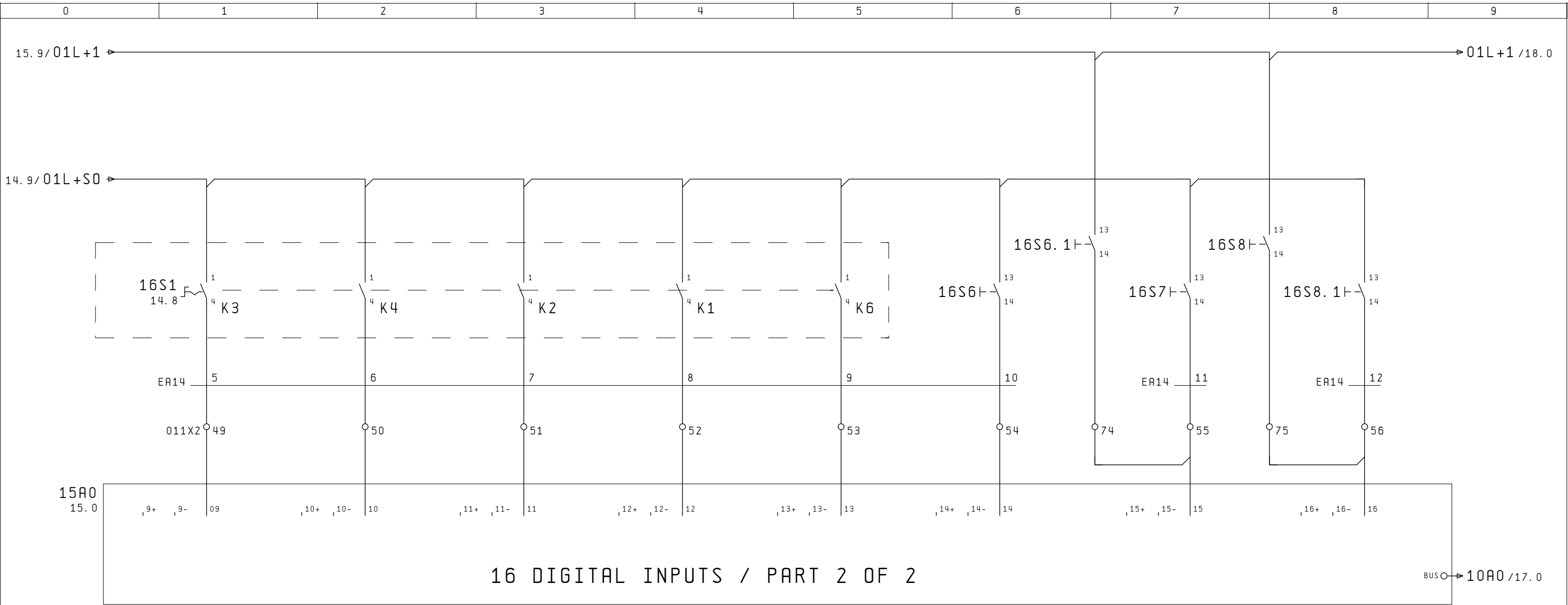
links

rechts

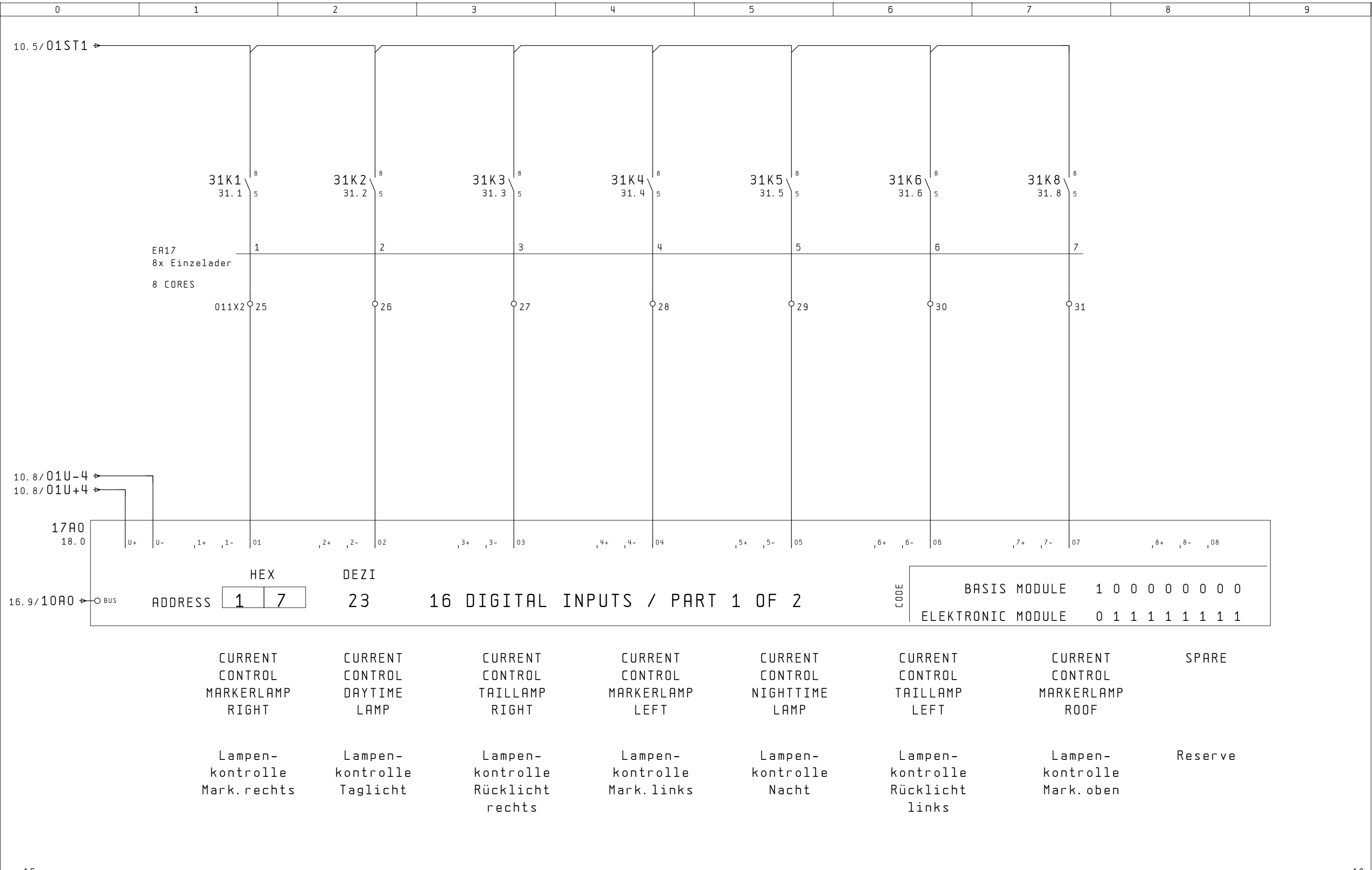
vorne

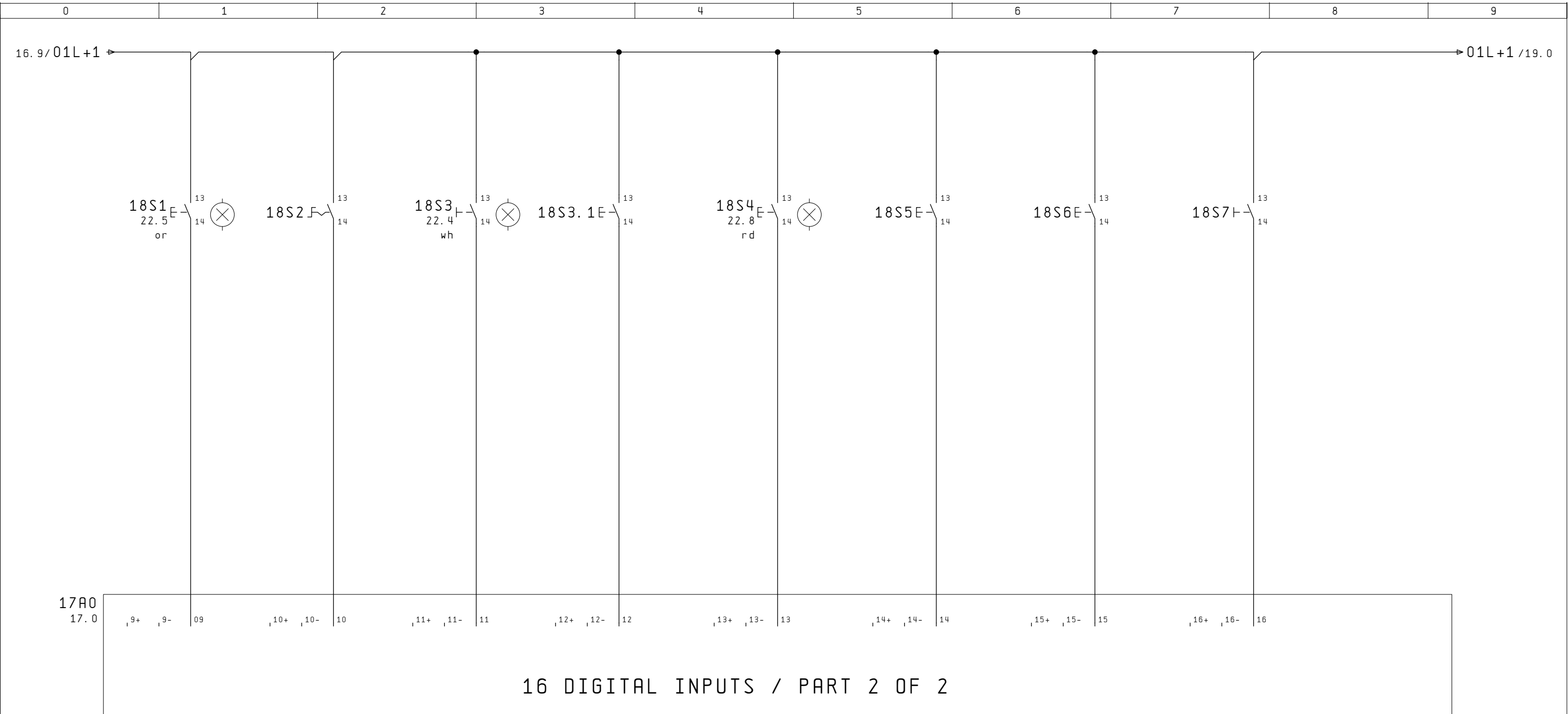
CAB LIGHTING DESK

Kabinen-beleuchtung Pult

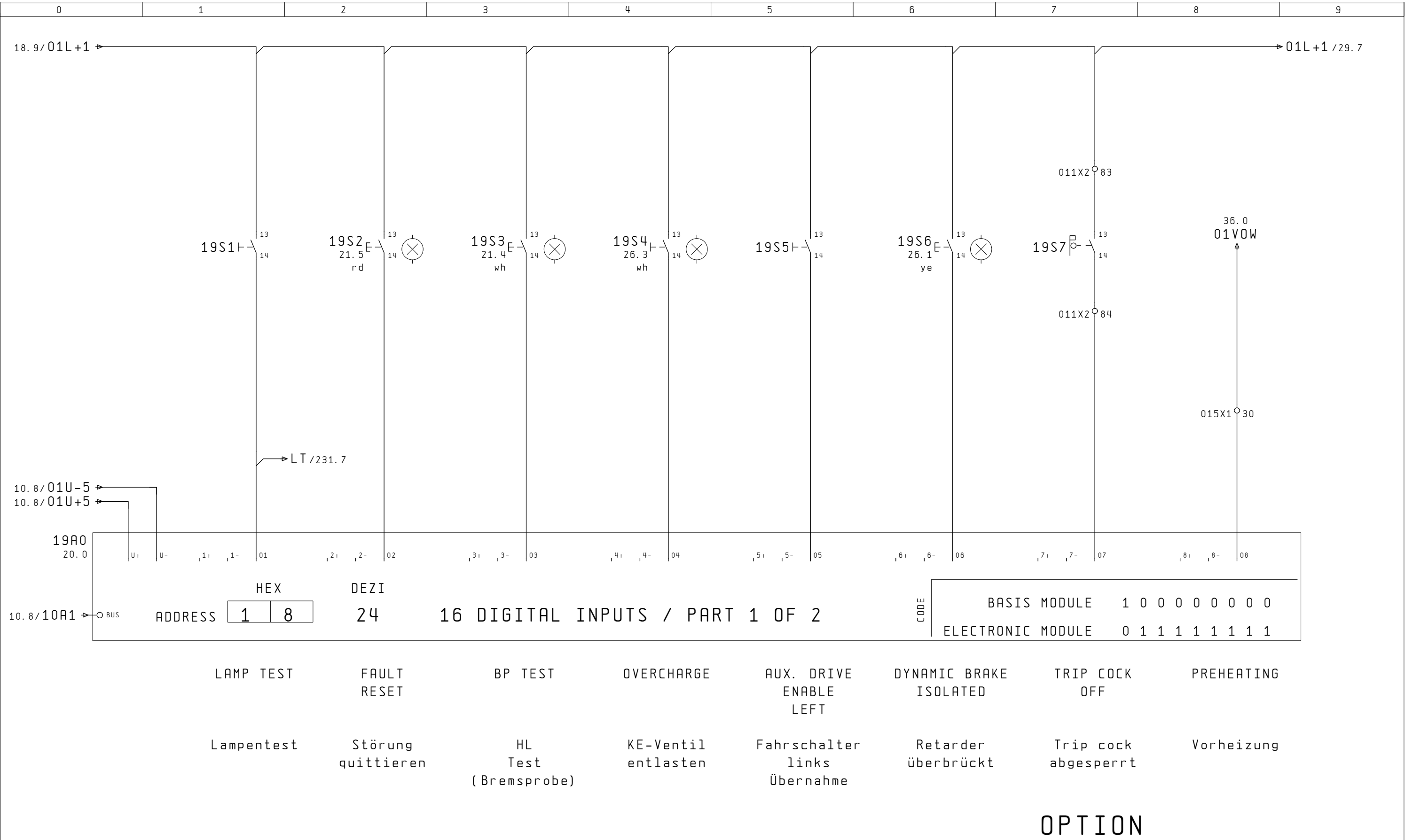


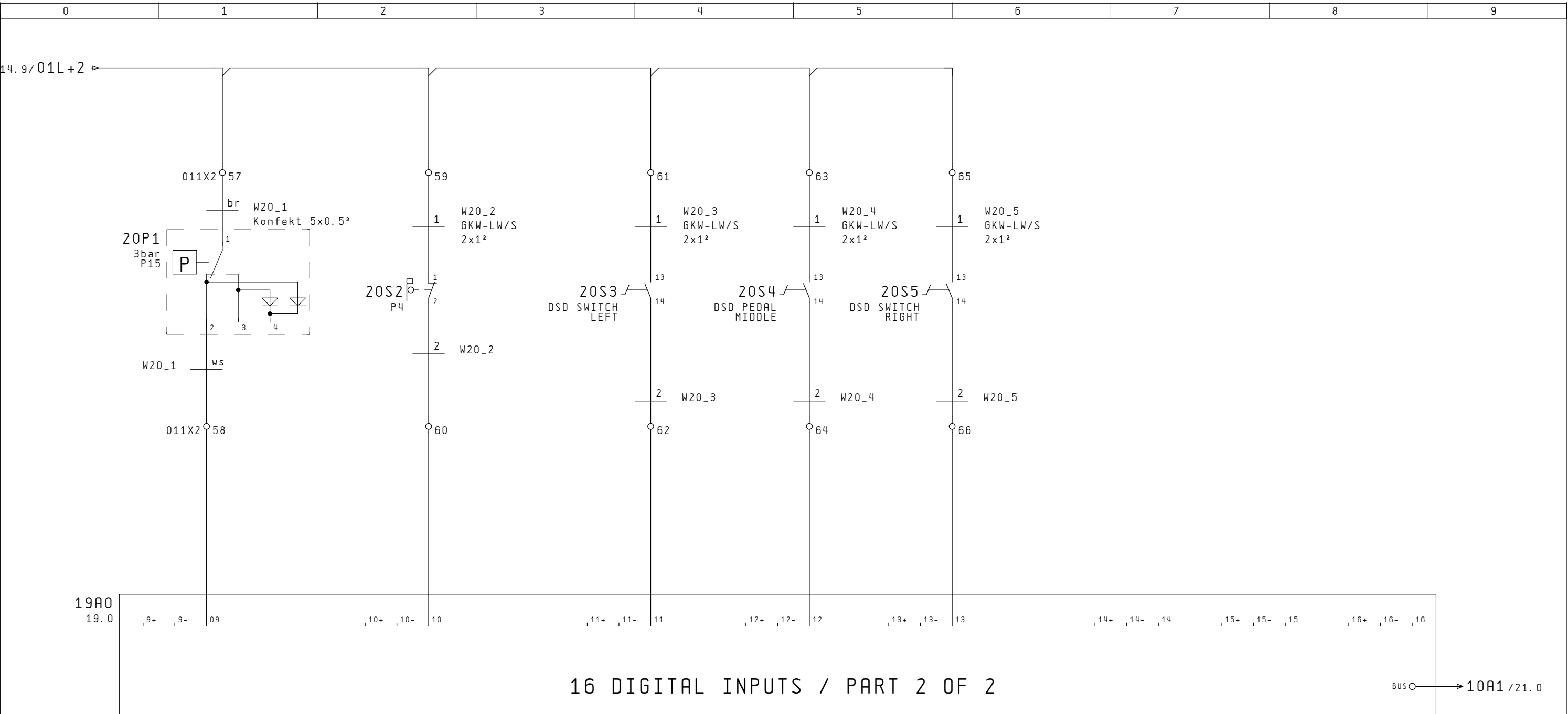
----- POWER BRAKE CONTROLLER RIGHT -----										AUX. DRIVE ENABLE RIGHT		WARNING HORN HIGH LEFT + RIGHT		WARNING HORN LOW LEFT + RIGHT	
BRAKE DOWN		BRAKE UP		POWER DOWN		POWER UP		MIDDLE POSITION							
----- Fahrshalter rechts -----															
Bremskraft ab		Bremskraft auf N		Zugkraft ab N		Zugkraft auf		Mittel stellung		Fahrshalter rechts Übernahme		Horn hoch links + rechts		Horn tief links + rechts	
K1	—	—	—	—	—	—	—	—	—	—	—				
K2	—	—	—	—	—	—	—	—	—	—	—				
K3	—	—	—	—	—	—	—	—	—	—	—				
K4	—	—	—	—	—	—	—	—	—	—	—				
K5	—	—	—	—	—	—	—	—	—	—	—				
K6	—	—	—	—	—	—	—	—	—	—	—				
150° 120° 80° 40° 0° 40° 80° 120°															



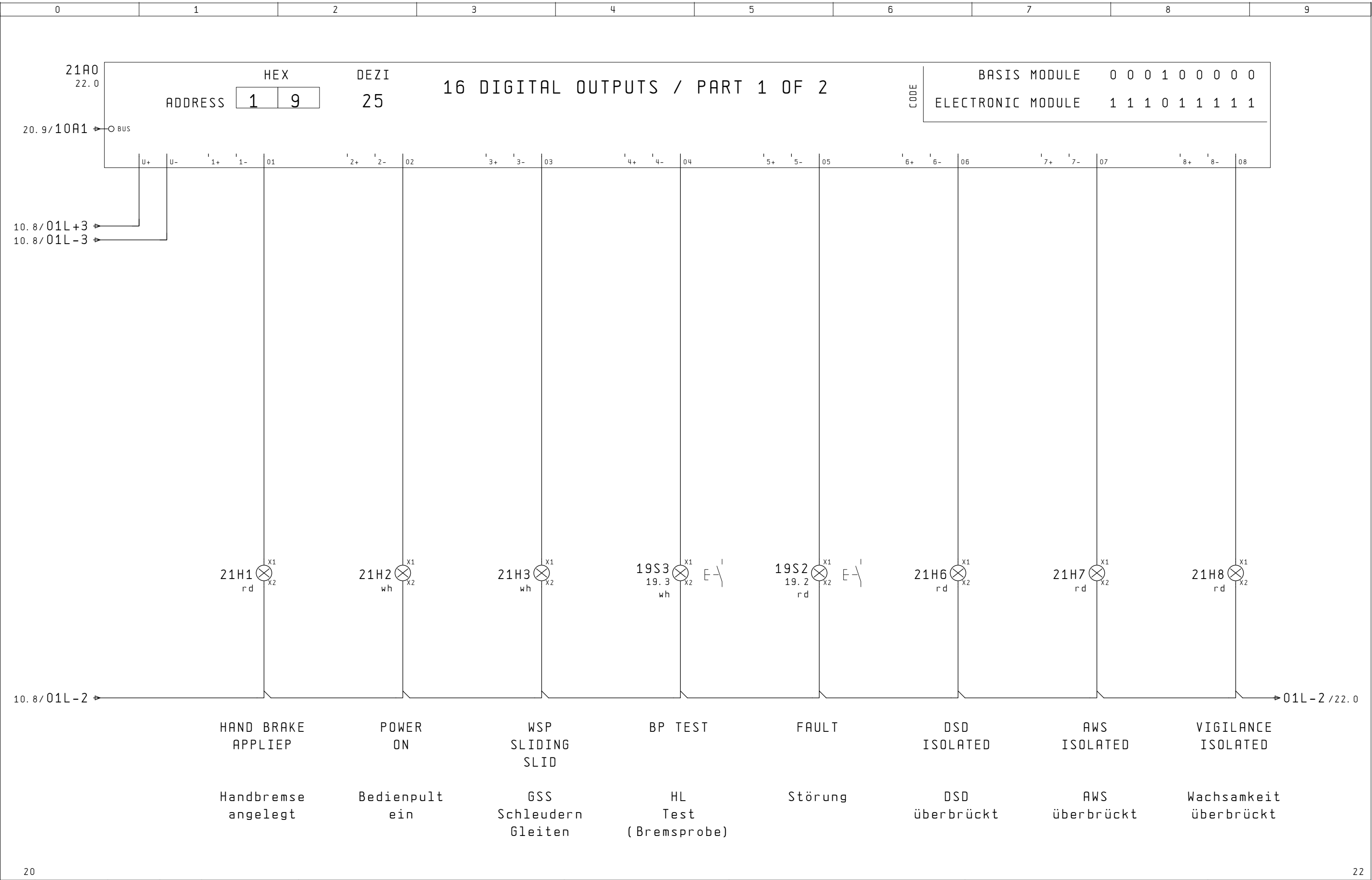


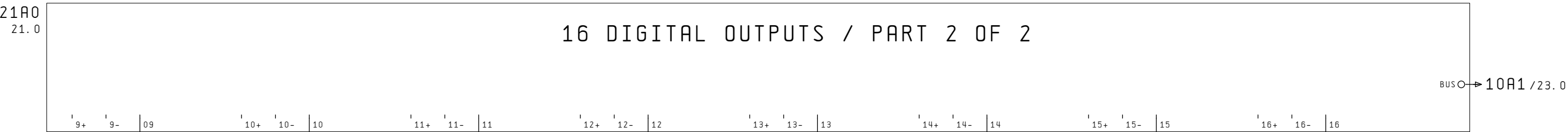
HAZARD WARNING	TAIL LAMPS	DIRECT BRAKE	DIESEL ENGINE		HILL START	CONSTANT SPEED	SANDING
			START	STOP			
Warnlicht	Rücklicht	Bremse direkt	Dieselmotor		Berganfahrt	V-Konstant	Sandung
			Start	Stop			





PRESSURE SWITCH PNEUMATIC HORNS		EMERGENCY BRAKE OFF		DSD PEDAL LEFT		DSD PEDAL MIDDLE		DSD PEDAL RIGHT		SPARE		SPARE		SPARE	
Druckschalter Pneumatik Horner		Absperrung Schnellbremse		DSD Fußtaster links		DSD Pedale mitte		DSD Fußtaster rechts		Reserve		Reserve		Reserve	

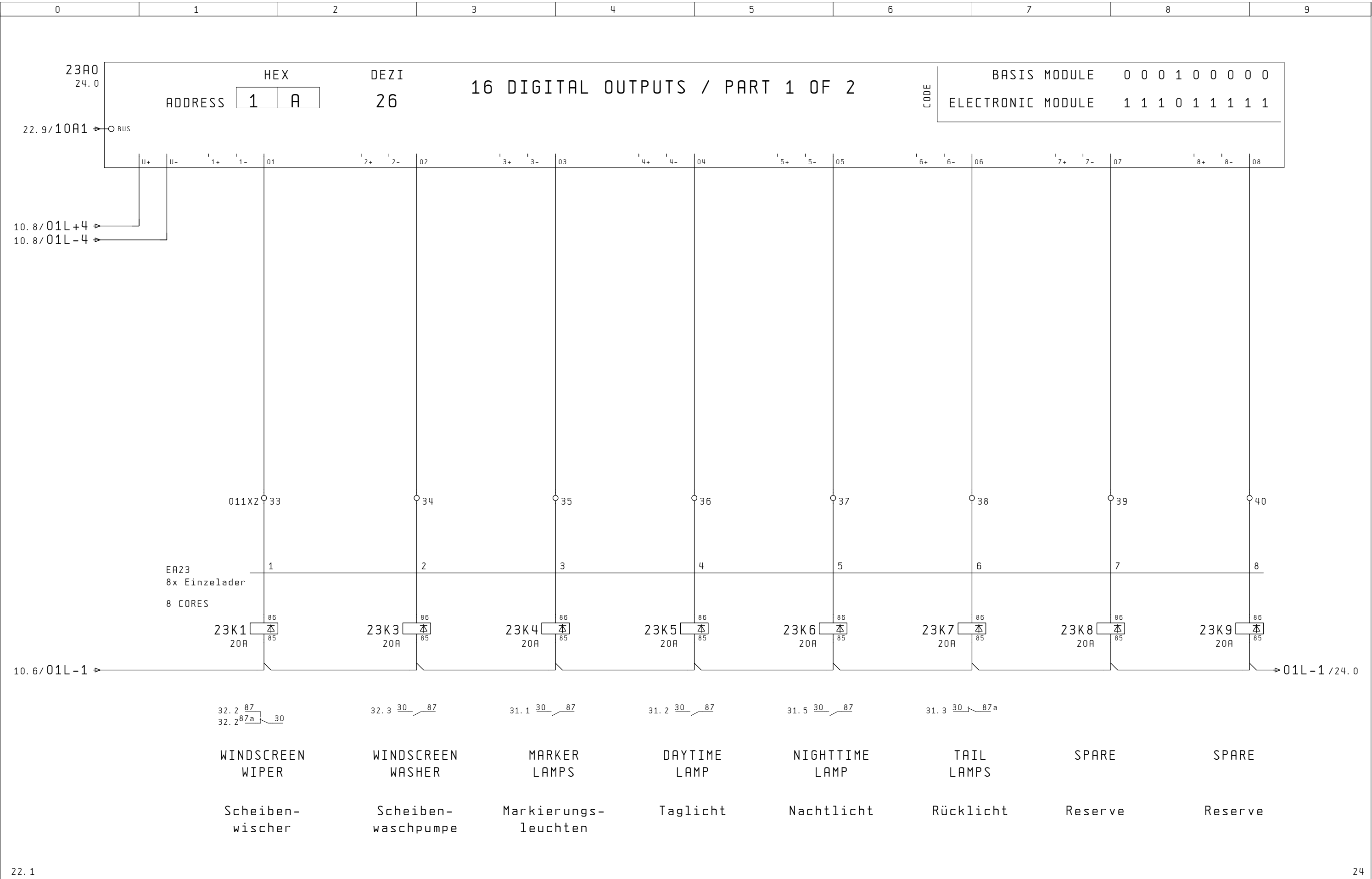


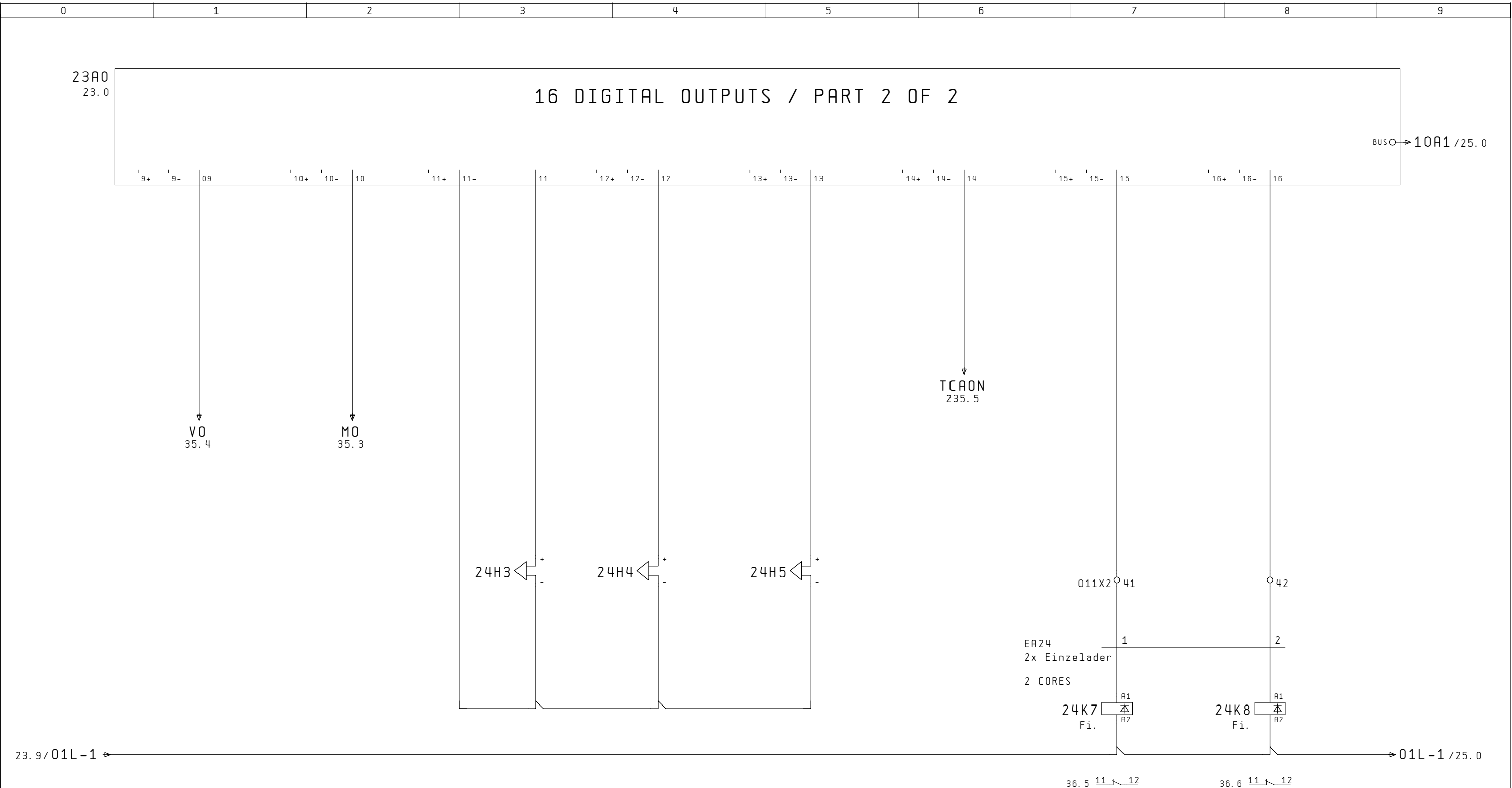


21.9 / 01L-2 →

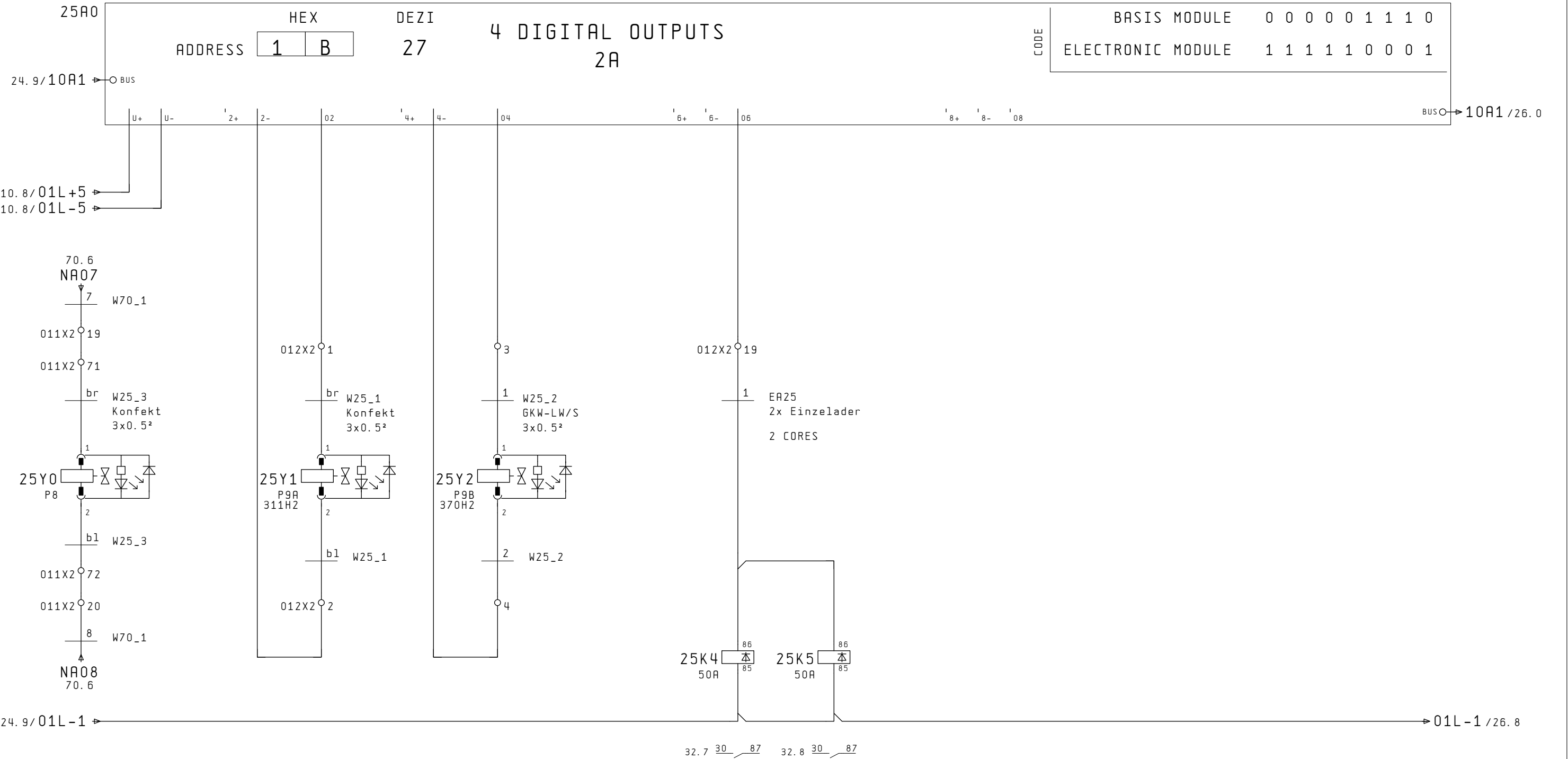
→ 01L-2 / 26.0

SIREN FAULT	SOCOFR SPEED LOW	SOCOFR SPEED HIGH	DIRECT BRAKE	HAZARD WARNING	DRA ON	FRONT SCREEN HEATING	DIESEL ENGINES STOP
Sirene defekt	Socofer Geschwindigkeit zu niedrig	Socofer Geschwindigkeit zu hoch	Bremse direkt	Warnlicht	DRA Ein	Frontscheiben- heizung	Dieselmotor Stop





PREHEATING SIGNAL FROM SLAVE	ONE ENGINE IS RUNNING	BUZZER FAULT	BUZZER CALL TONE	DSD BUZZER	TCA ON	ENGINE 1 RUNNING	ENGINE 2 RUNNING
Motorvorwärmung vom Slave	mind. ein Motor läuft	Summer Störung	Rufton vom Slave	DSD Summer	TCA Ein	Motor 1 läuft	Motor 2 läuft



EMERGENCY BRAKE VALVE

PNEUMATIC HORN LOW

PNEUMATIC HORN HIGH

WINDSCREEN HEATING

SPARE

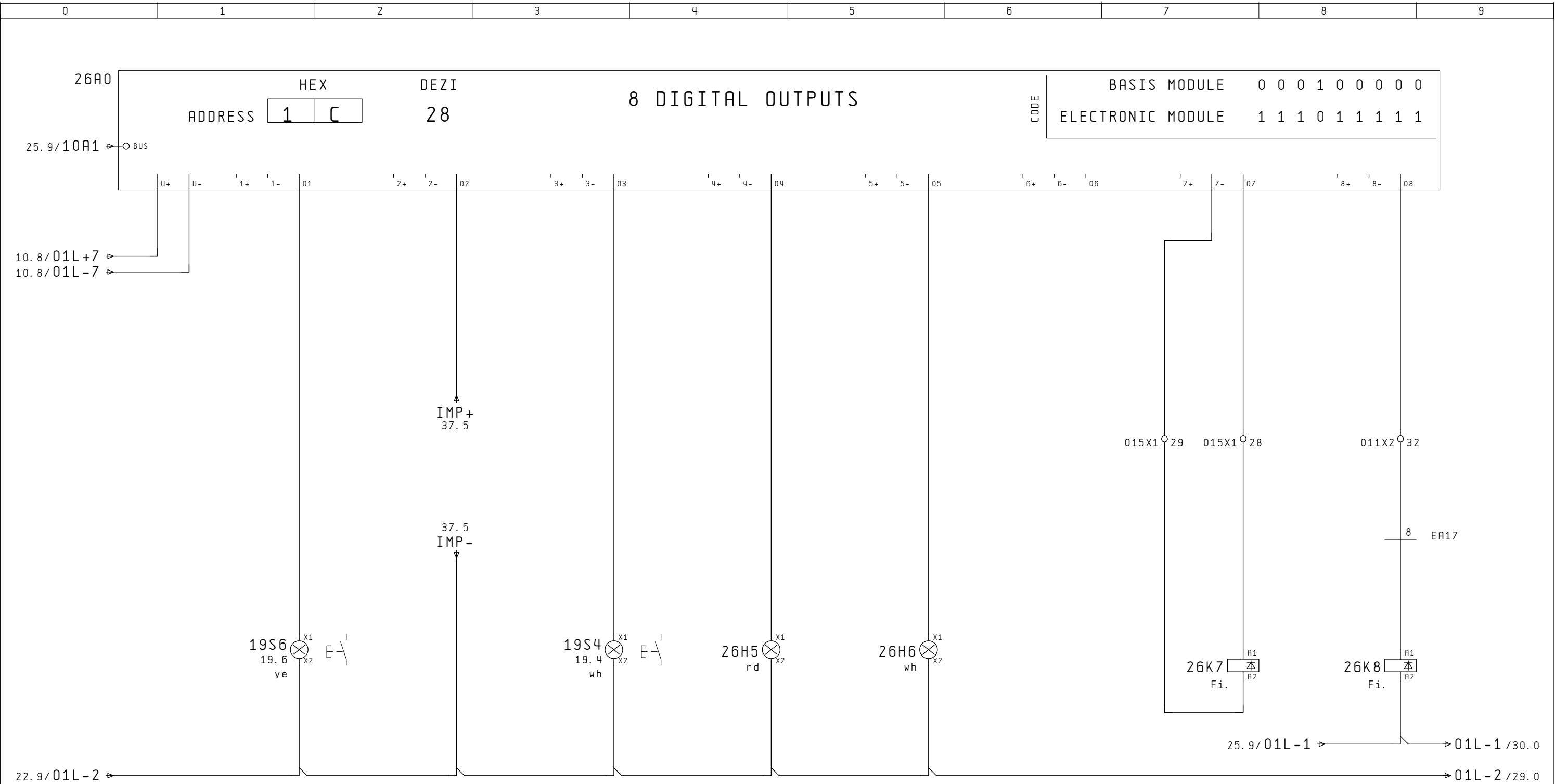
Schnellbrems-ventil

Pneumatik Horn Tief

Pneumatik Horn Hoch

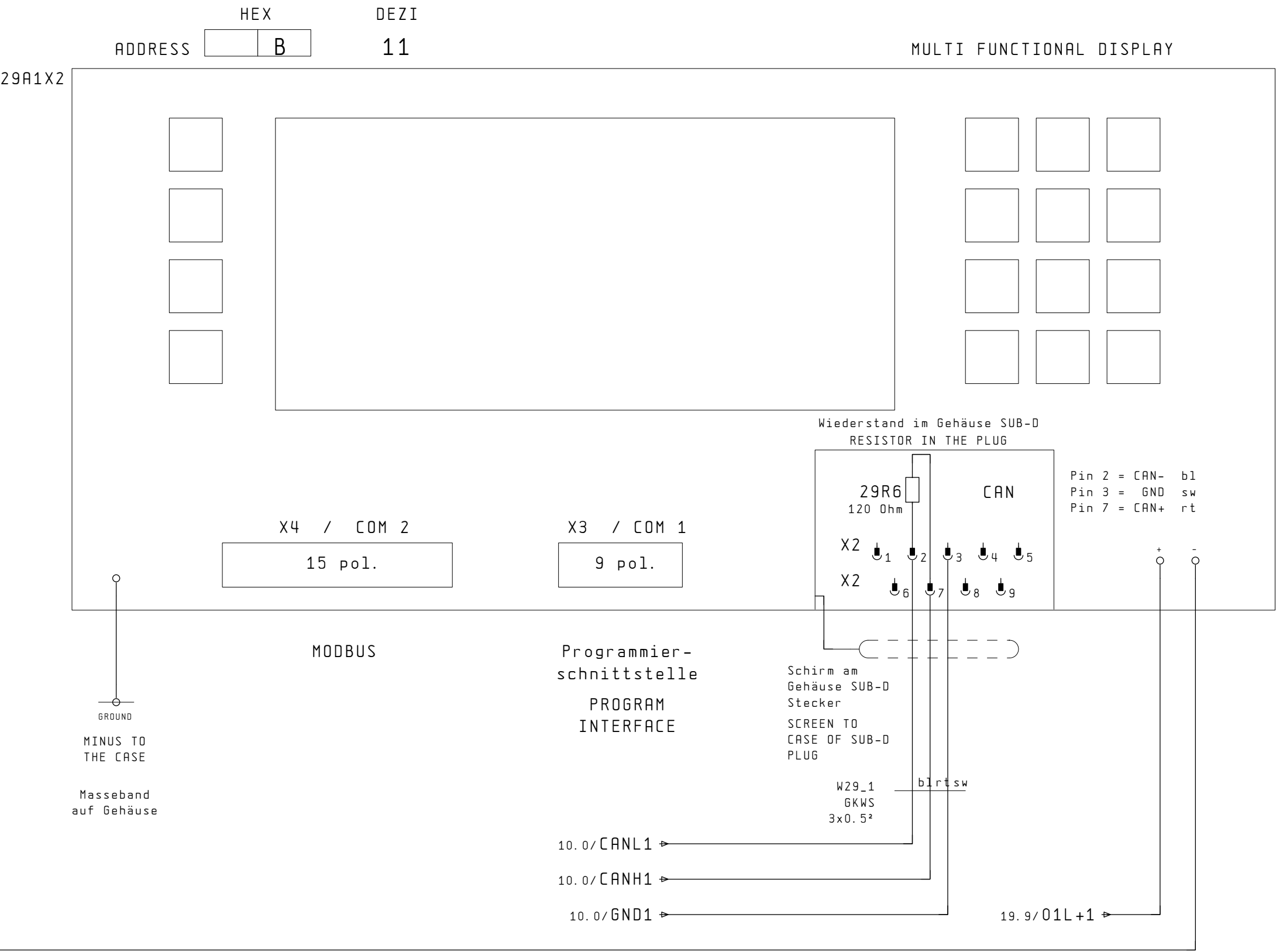
Frontscheiben-heizung

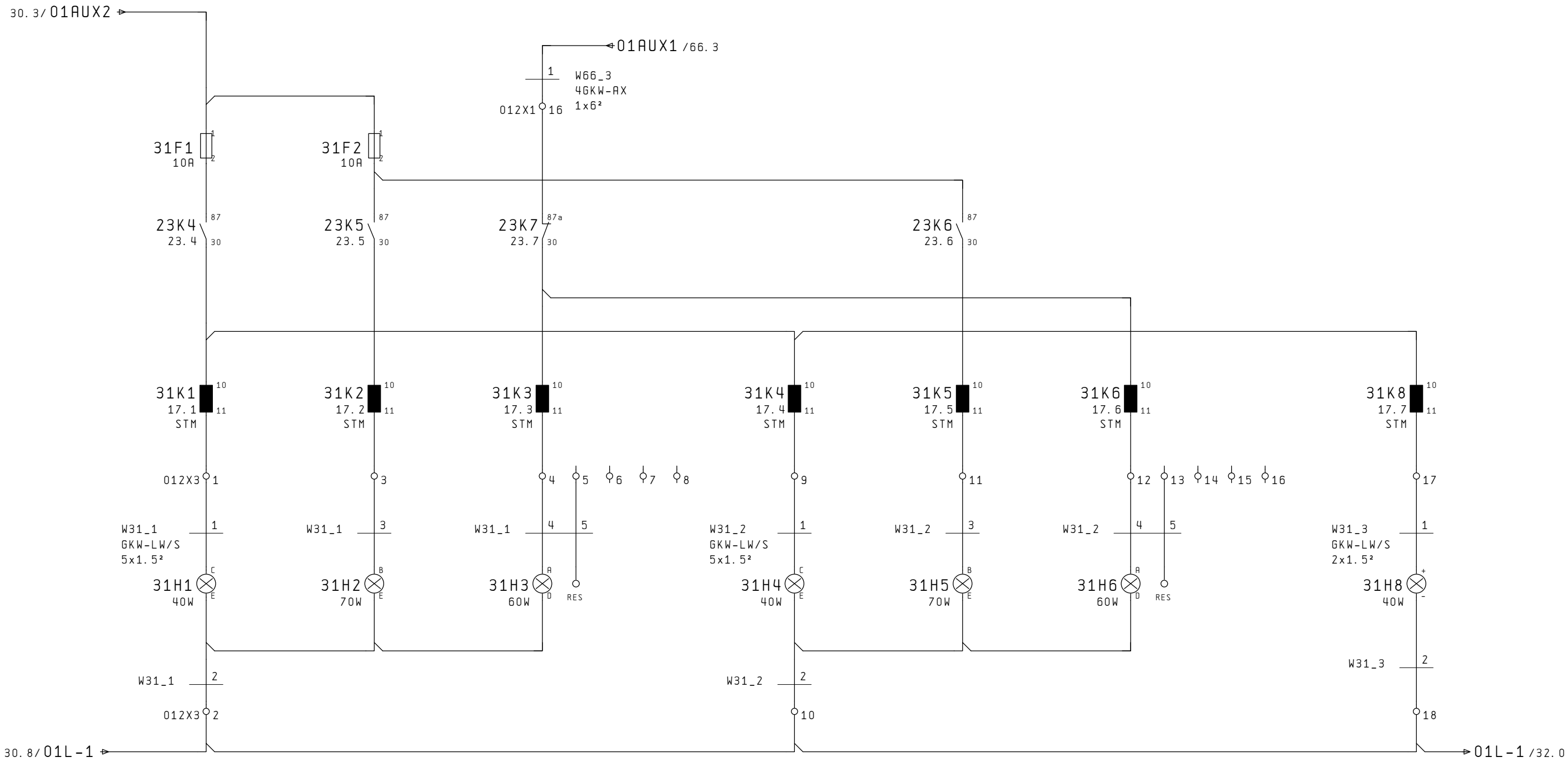
Reserve



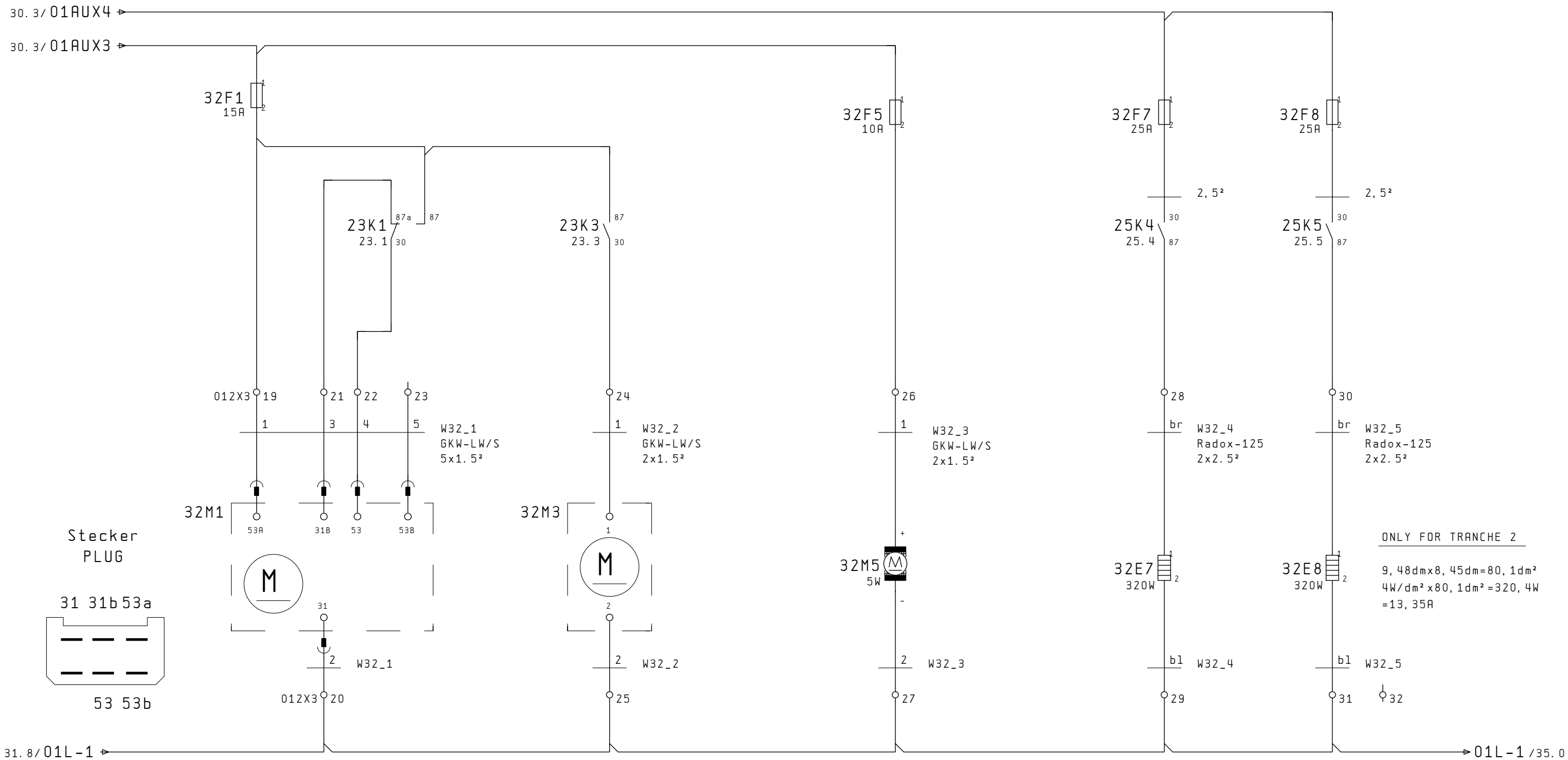
OPTION

DYNAMIC BRAKE ISOLATED	MEILEN IMPULSE	OVERCHARGE	DRA ISOLATED	TRIP COCK ACTIVE	SPARE	HEATING SYSTEM OFF TEMP.>28°C	DSD EMERGENCY BRAKE
Retarder überbrückt	Meilen Impuls	KE entlasten	DRA überbrückt	Trip Cock aktiv	Reserve	Heizung aus >28°C	DSD Schnellbremse





MARKER LAMP RIGHT	DAY TIME LIGHT	TAIL LAMP RIGHT	MARKER LAMP LEFT	NIGHT TIME LAMP	TAIL LAMP LEFT	MARKER LAMP TOP
Markierungs leuchte rechts	Taglicht	Rückleuchte rechts	Markierungs leuchte links	Nachtlicht	Rückleuchte links	Markierungs leuchte oben



WINDSCREEN
WIPER

Scheiben-
wischer

WINDSCREEN
WASHER

Scheiben-
waschpumpe

KOMPRESSOR
DRIVER
SEAT

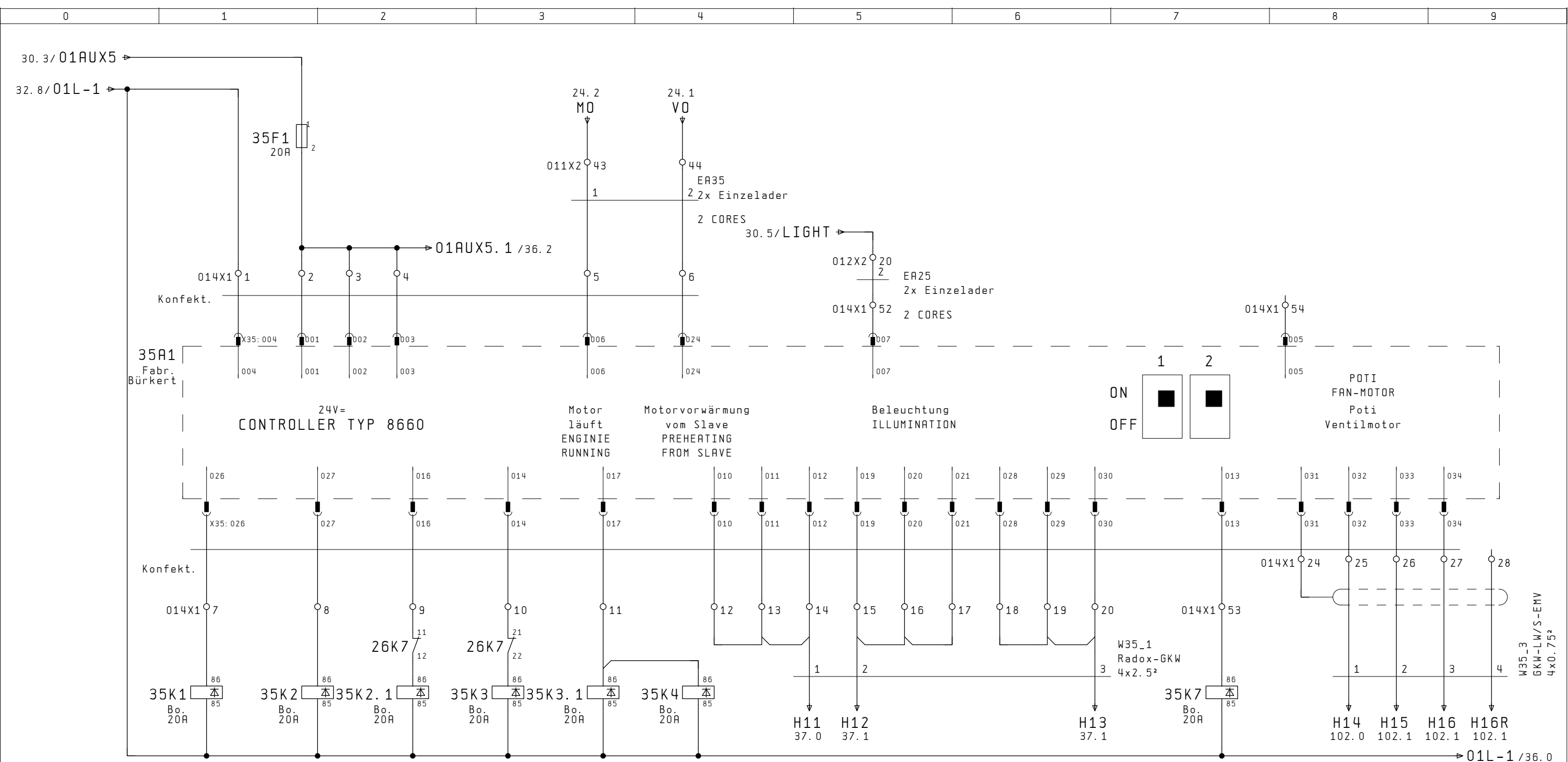
Kompressor
Fahrersitz

WINDSCREEN
HEATING
LEFT

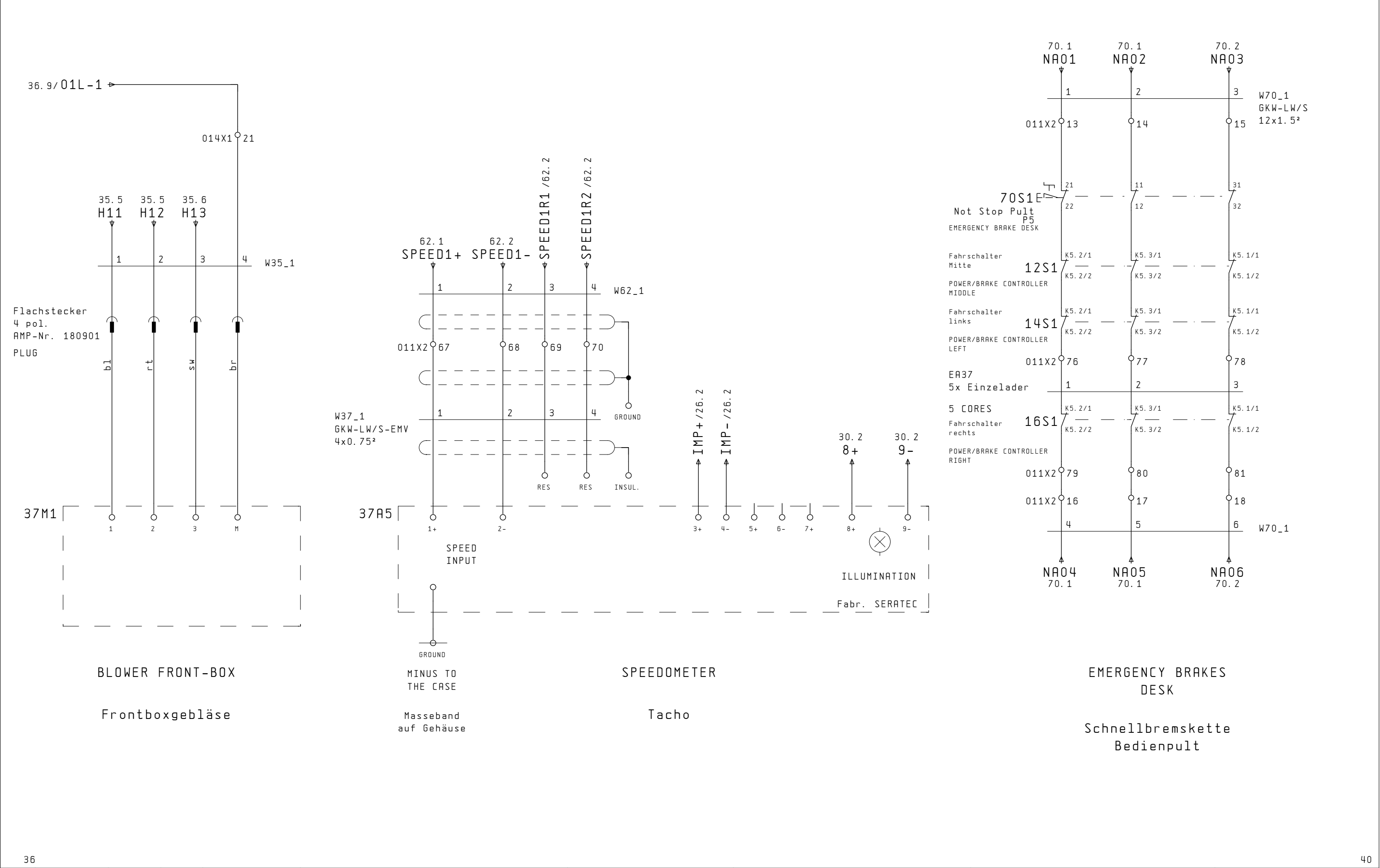
Scheiben-
heizung
links

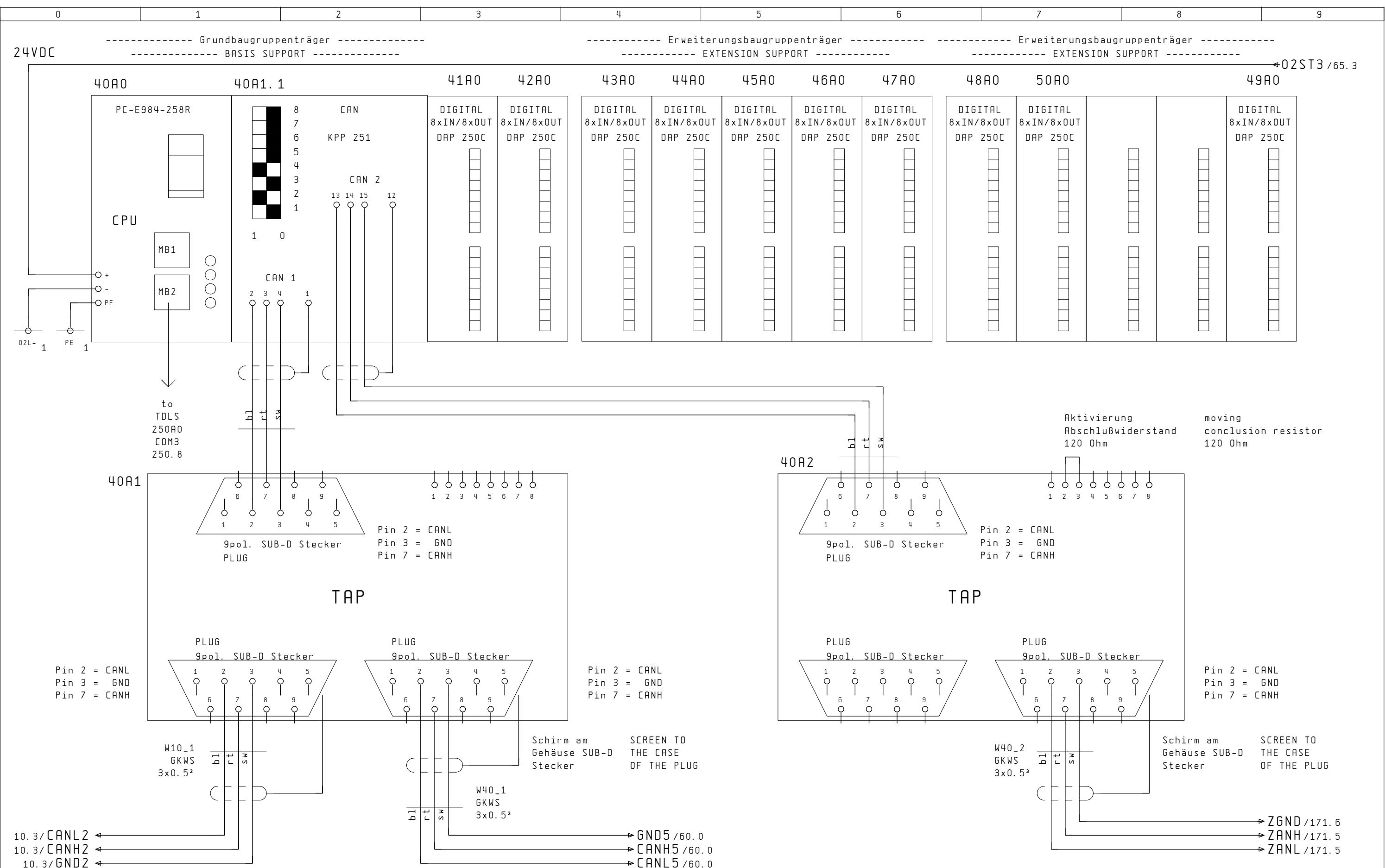
WINDSCREEN
HEATING
RIGHT

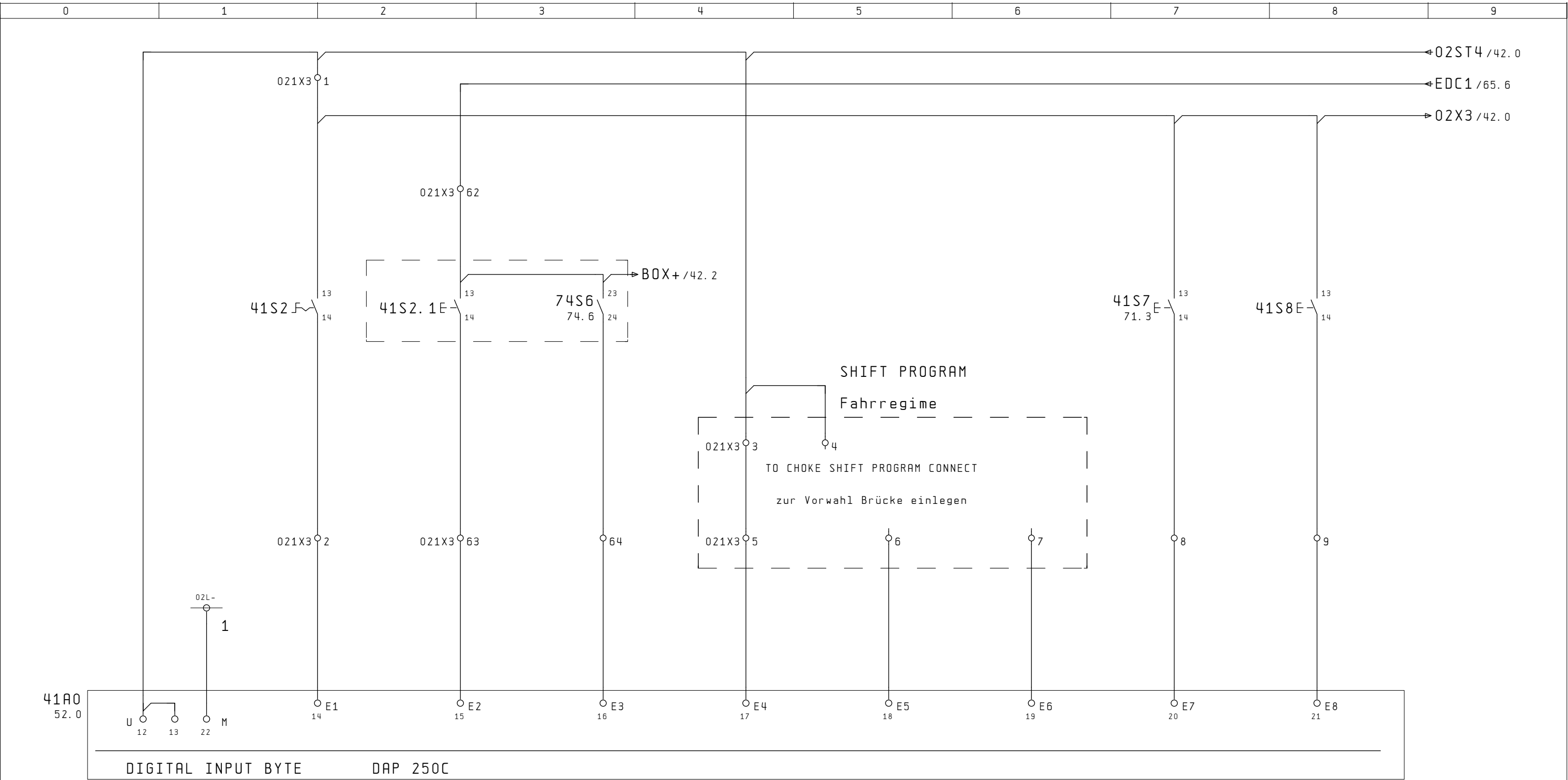
Scheiben-
heizung
rechts

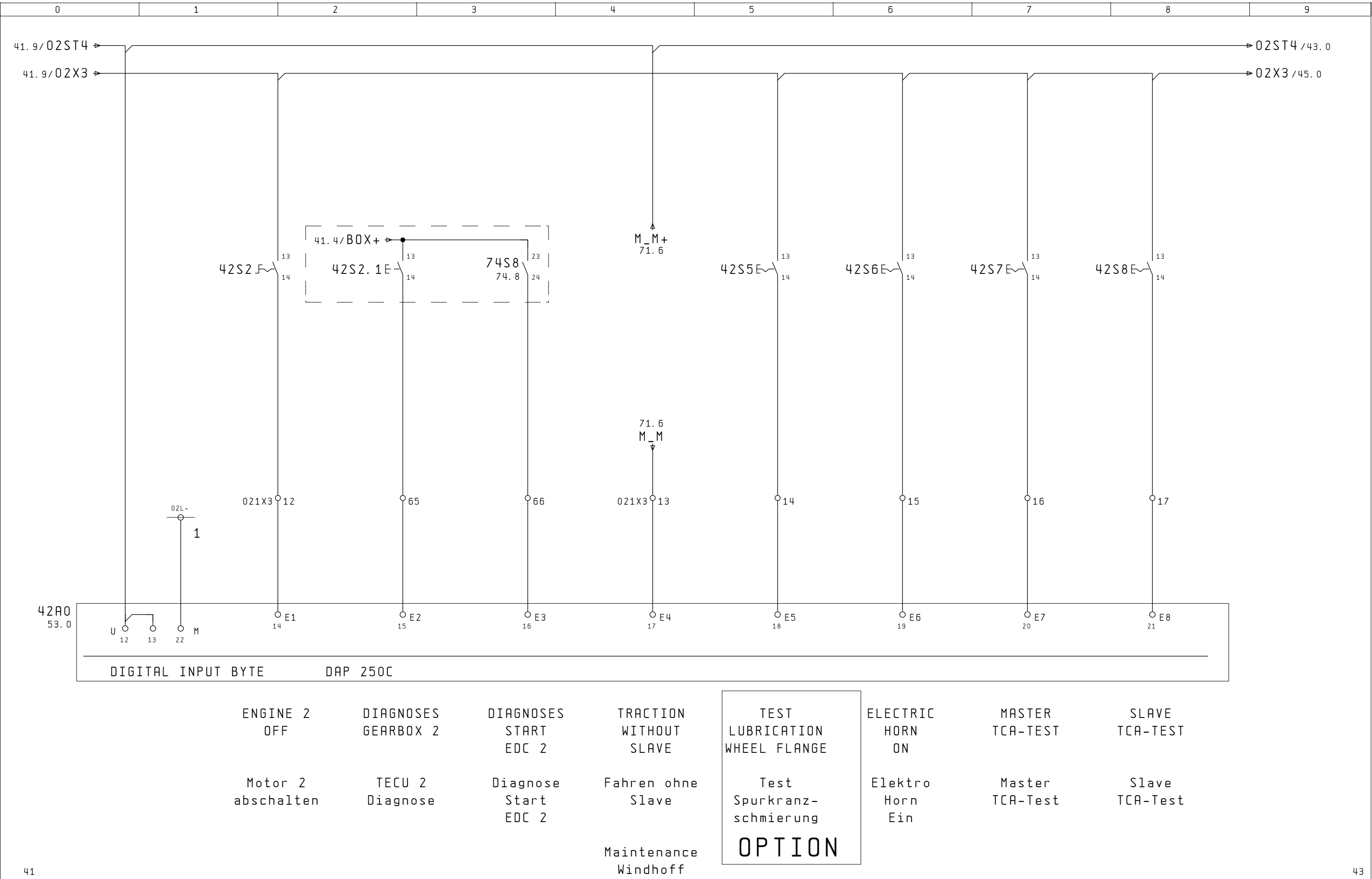


36.8	30	87	36.9	30	87	36.4	30	87	36.3	30	87	36.5	30	87	36.6	30	87	36.7	30	87		
BLOWER BACK-SIDE			HEATING SYSTEM			PREHEATING			BLOWER FRONT-BOX			FAN ROOF			POTI FAN-MOTOR							
Heckgebläse Stufe 2			ON			PUMP			Engine 1			Engine 2										
Stufe 1			Heizung Brenner Ein			Heizung Pumpe Ein			Motor1- vorwärmung Pumpe Ein			Motor2- vorwärmung Pumpe Ein										







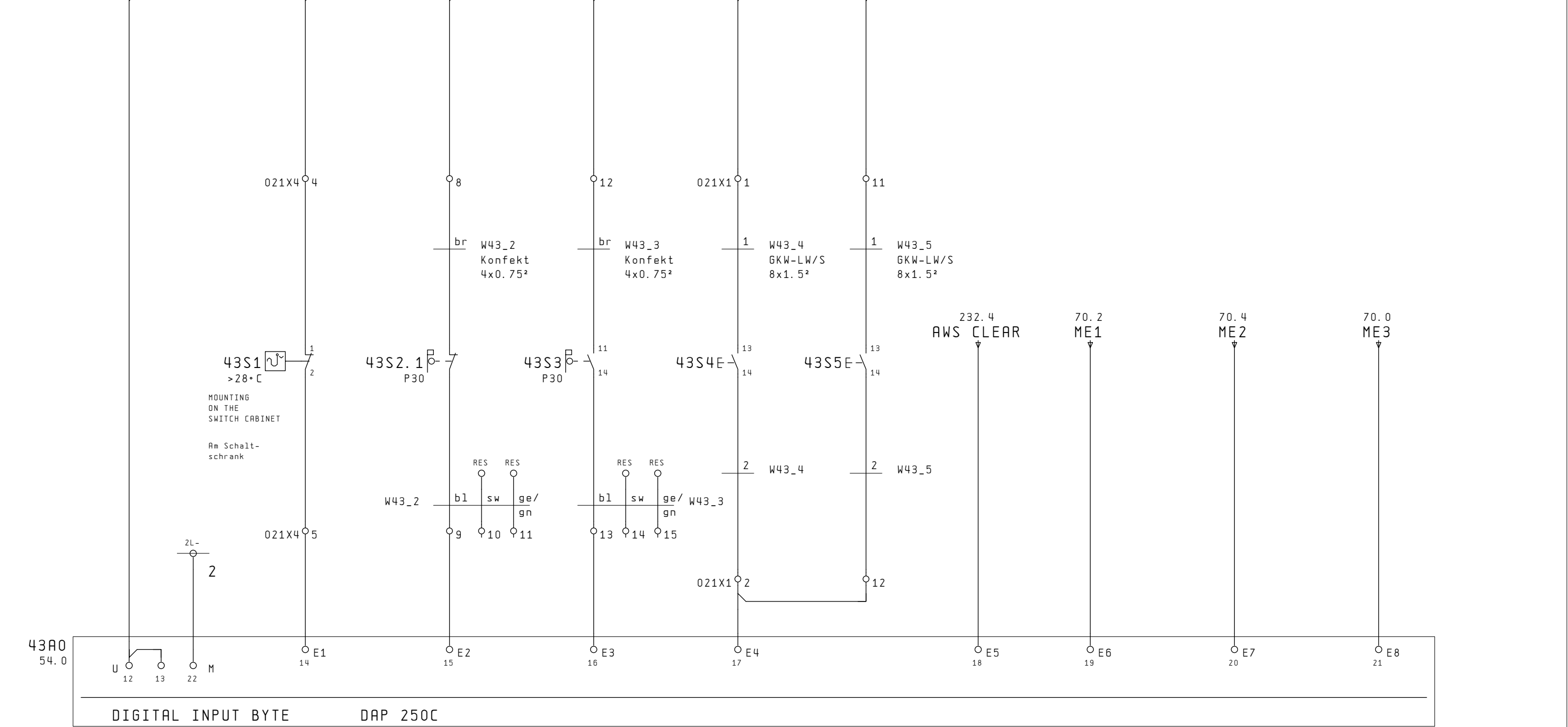


41

43

42. 9/02ST4

02ST4 /44. 0



CAB
TEMPERATURE
>28°C

Kabinen-
temperatur
>28°C

--- BRAKE SELECTION ---
PASSENGER GOODS

--- Bremse Vorwahl ---
Personen Güter

--- ELECTRIC HORN ---
FRAME
LEFT SIDE RIGHT SIDE

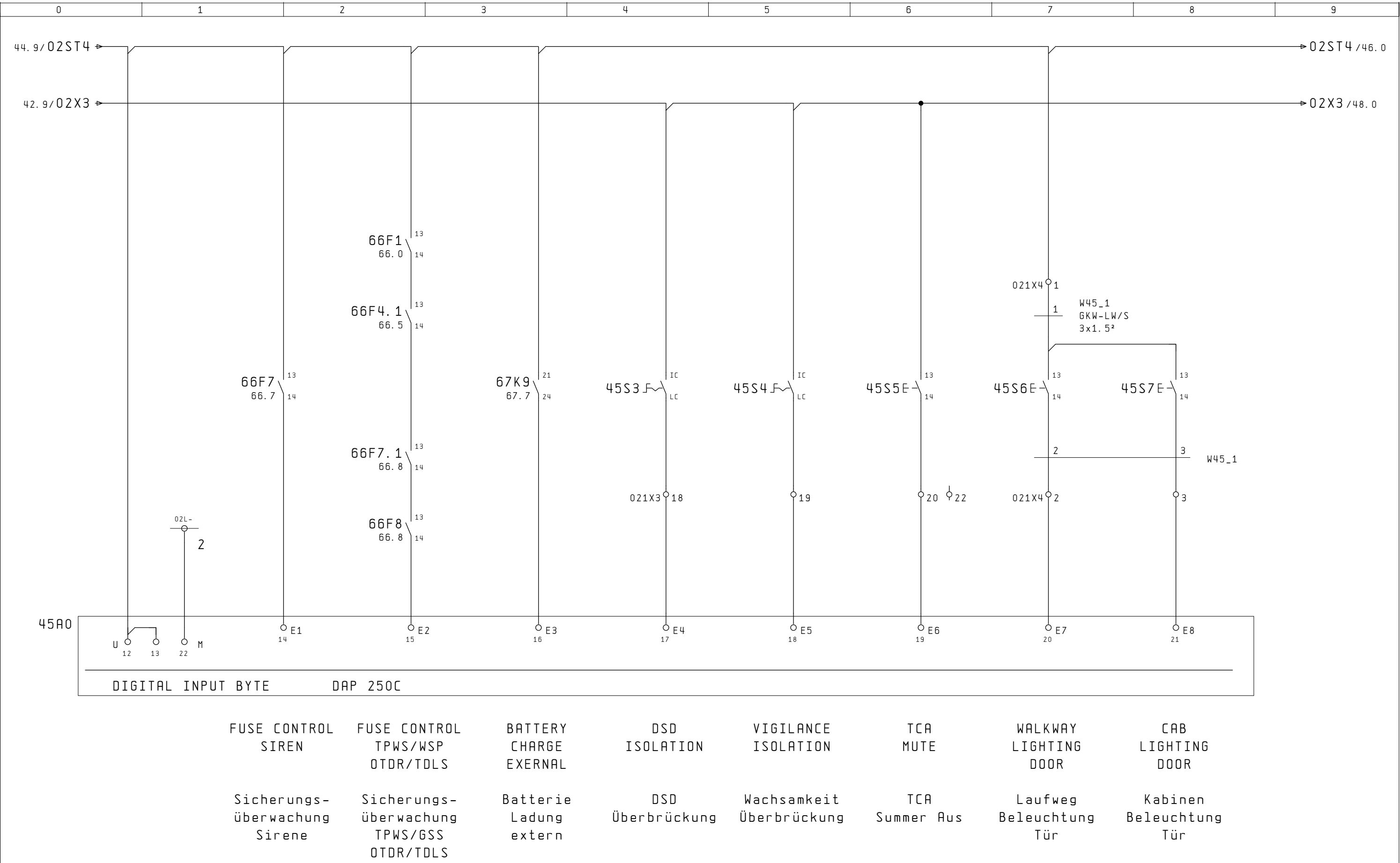
--- Elektro Horn ---
Rahmen
links rechts

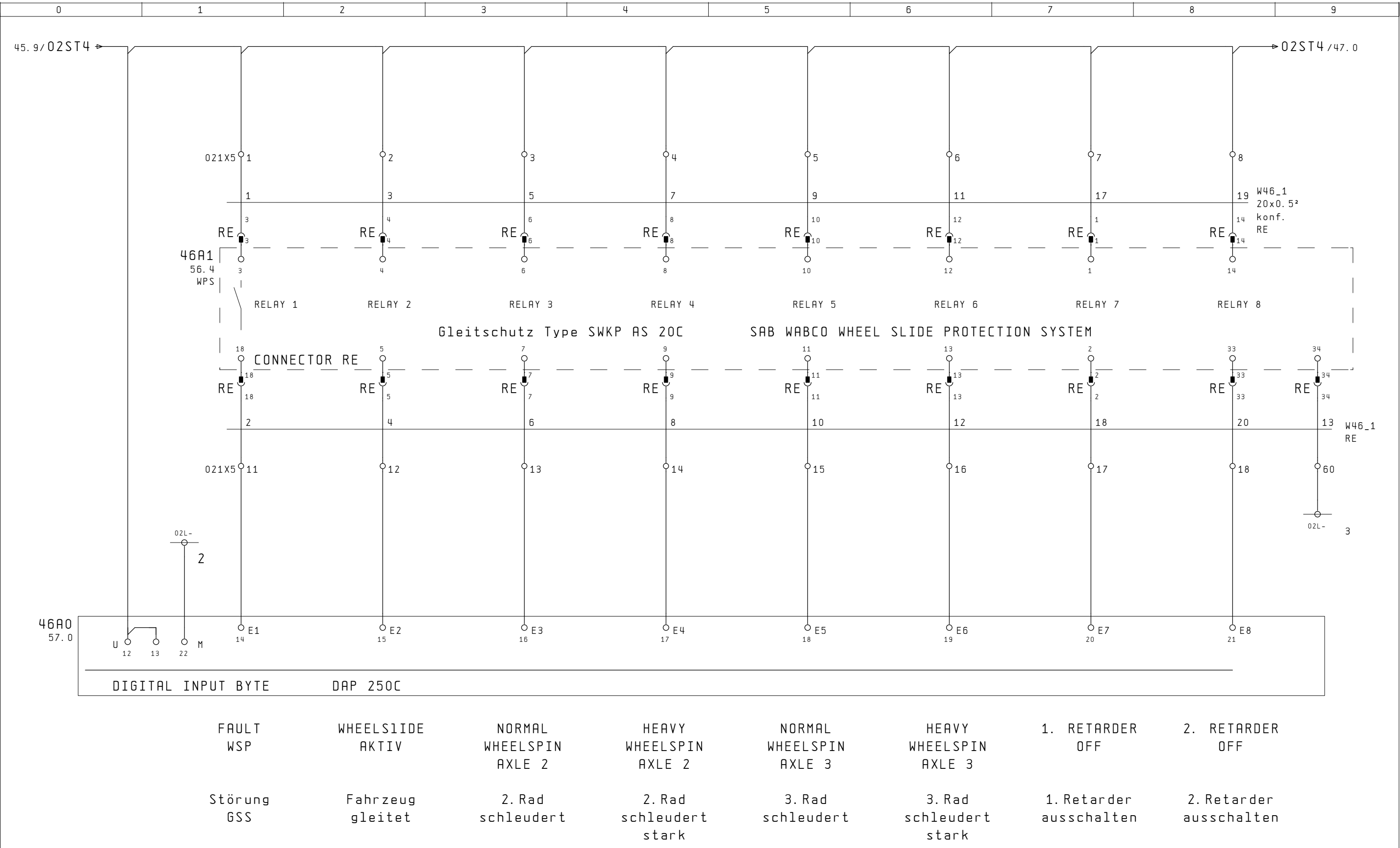
TPWS
AWS Bell
clear

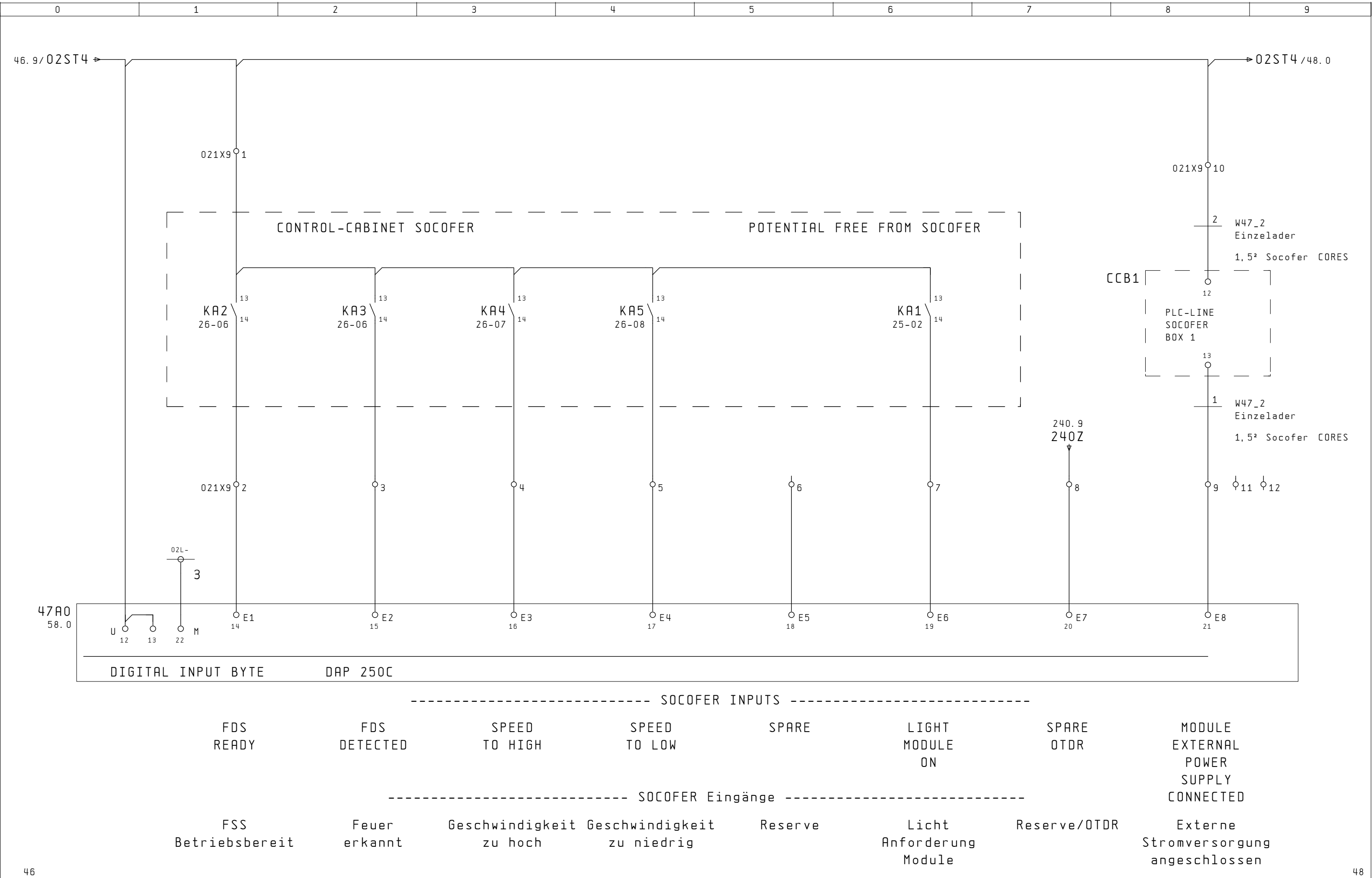
TPWS
AWS Bell
clear

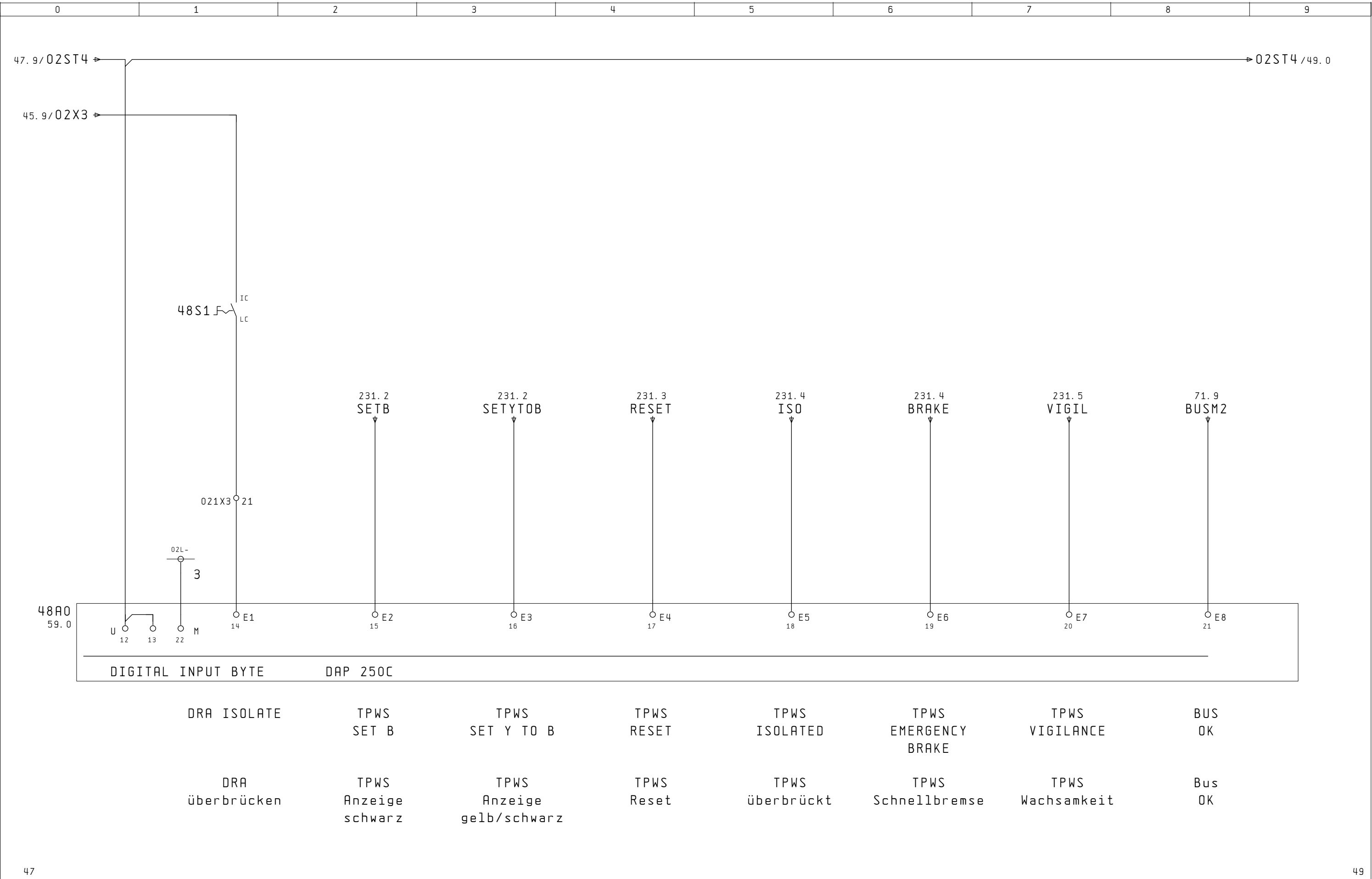
----- EMERGENCY BRAKE -----
DRIVERS FRAME TPWS
DESK

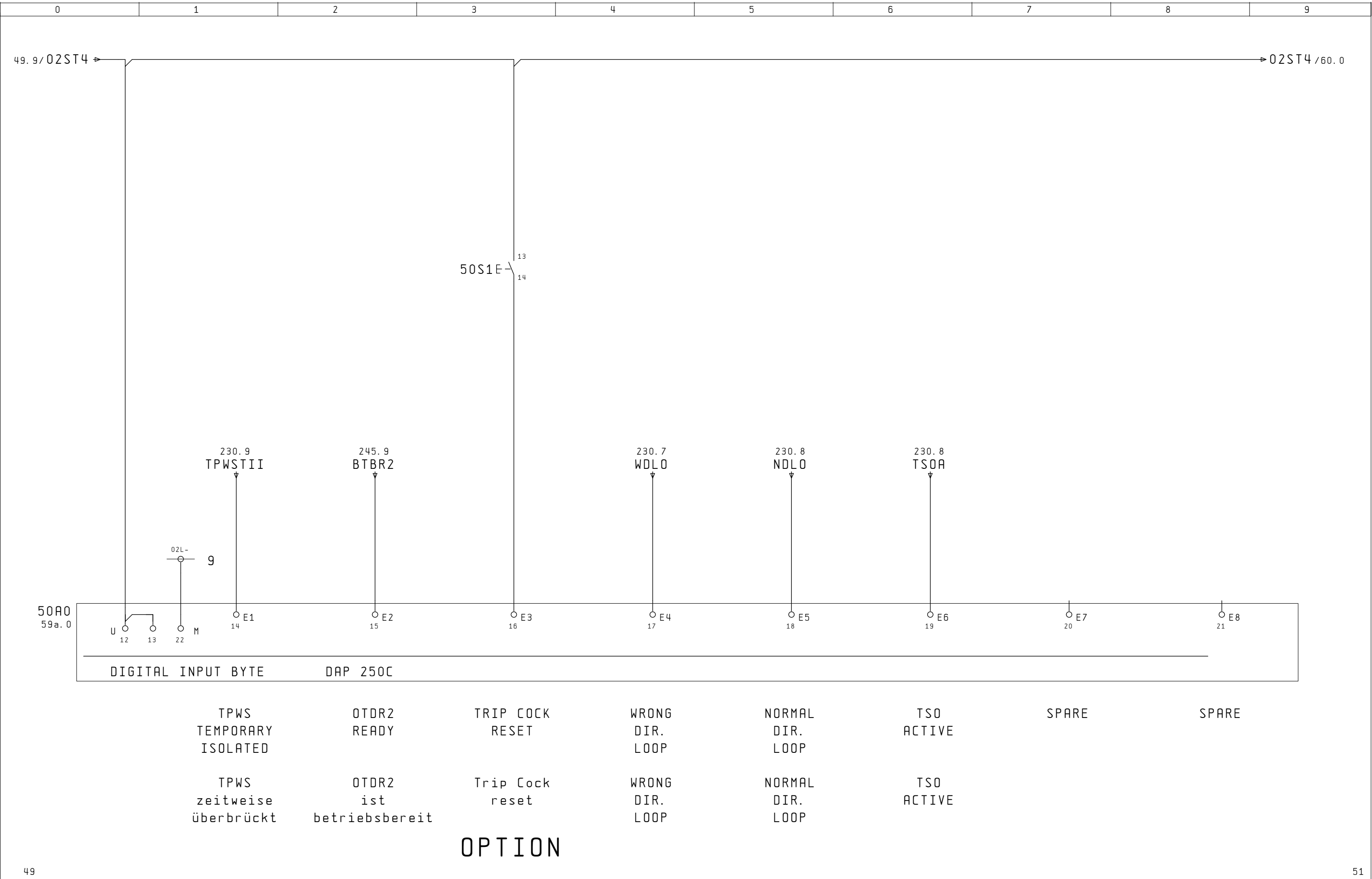
----- Schnellbremse -----
Fahrer Rahmen TPWS
Pult

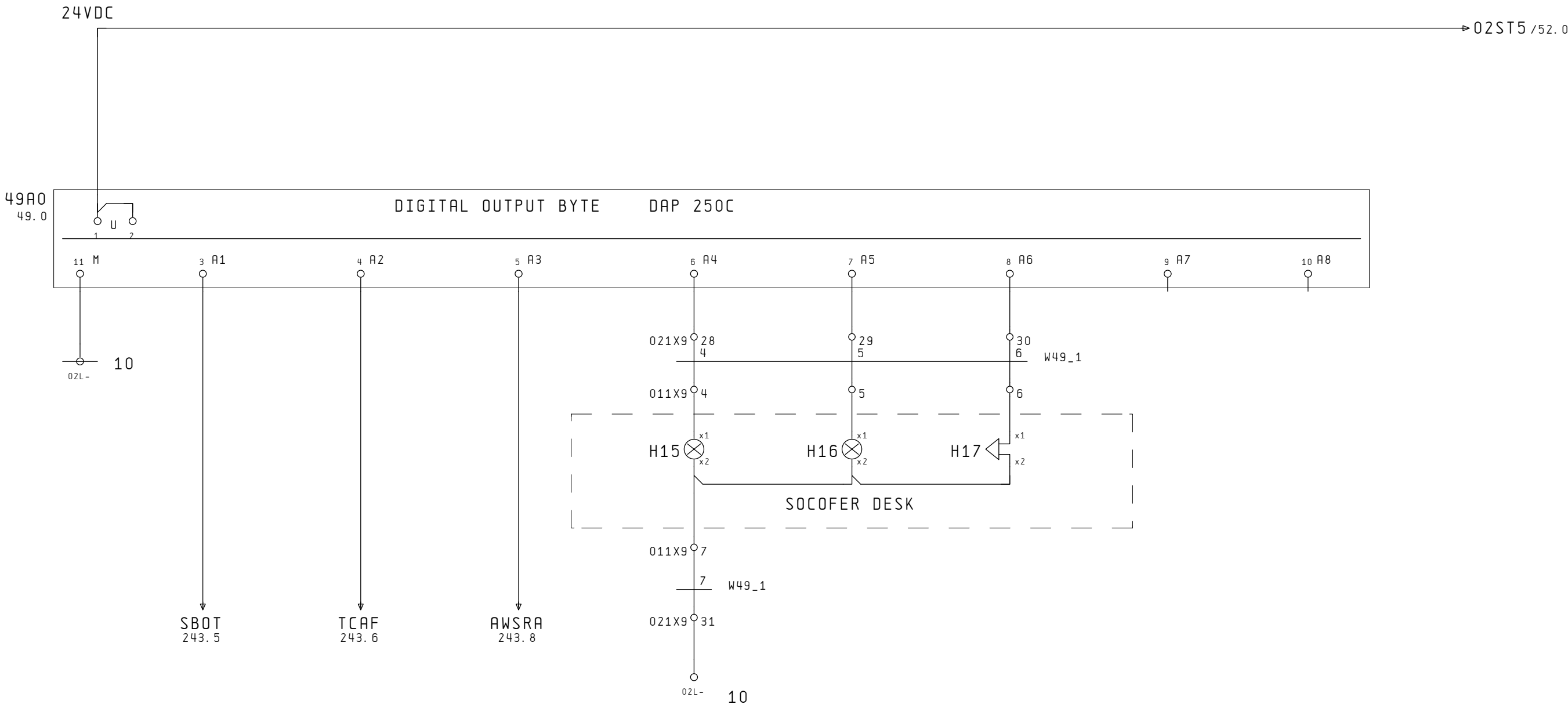


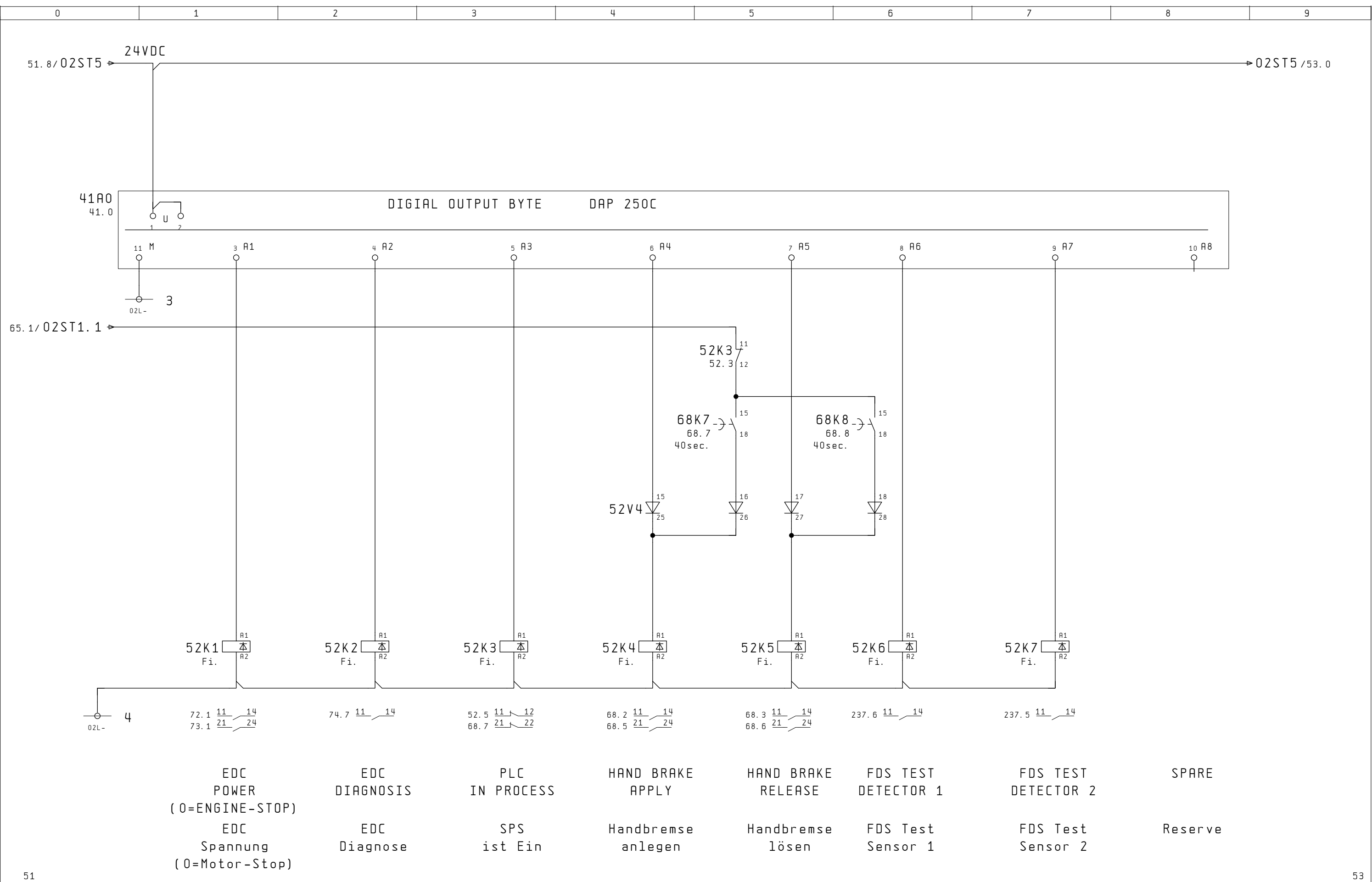


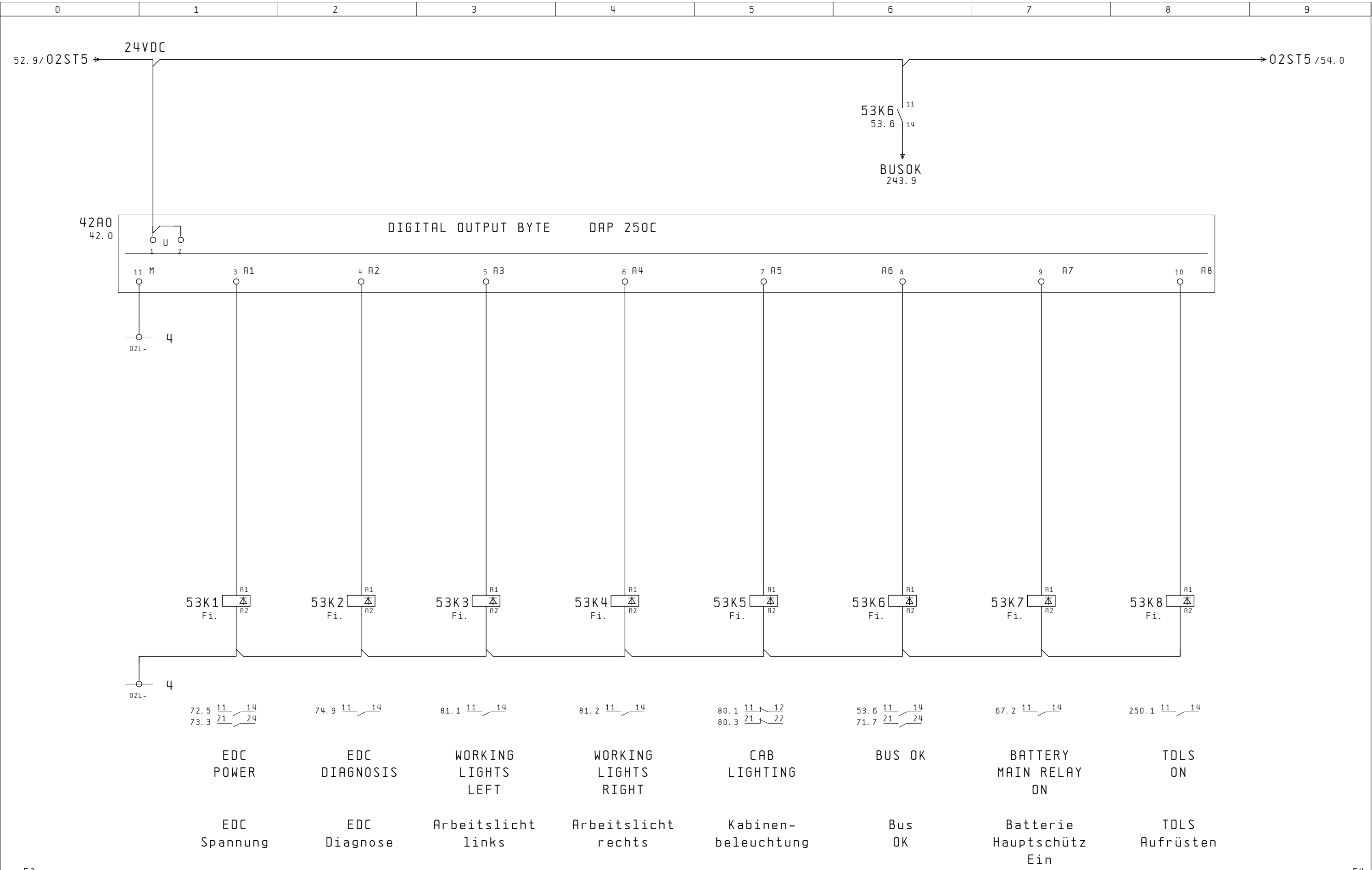


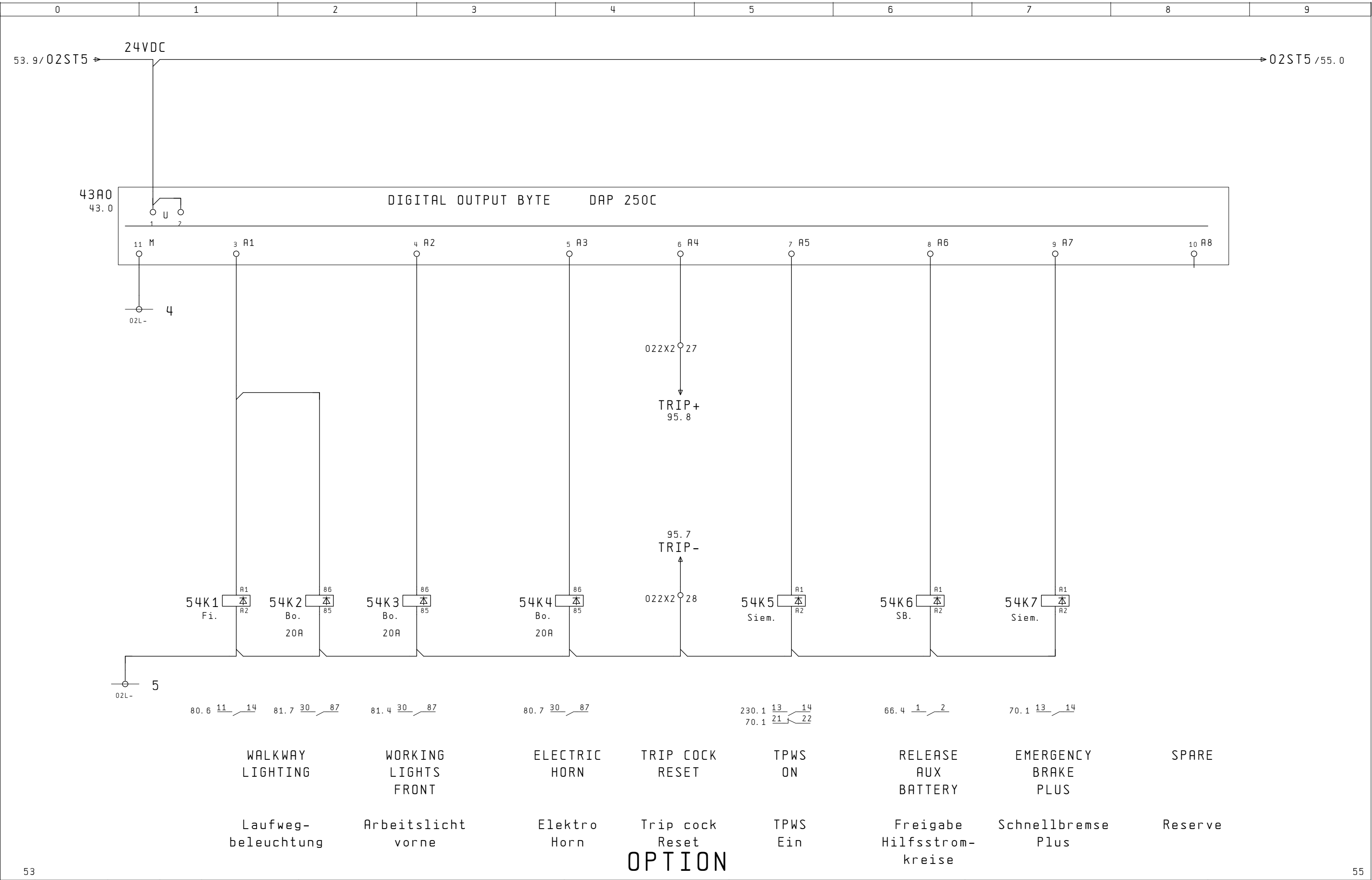


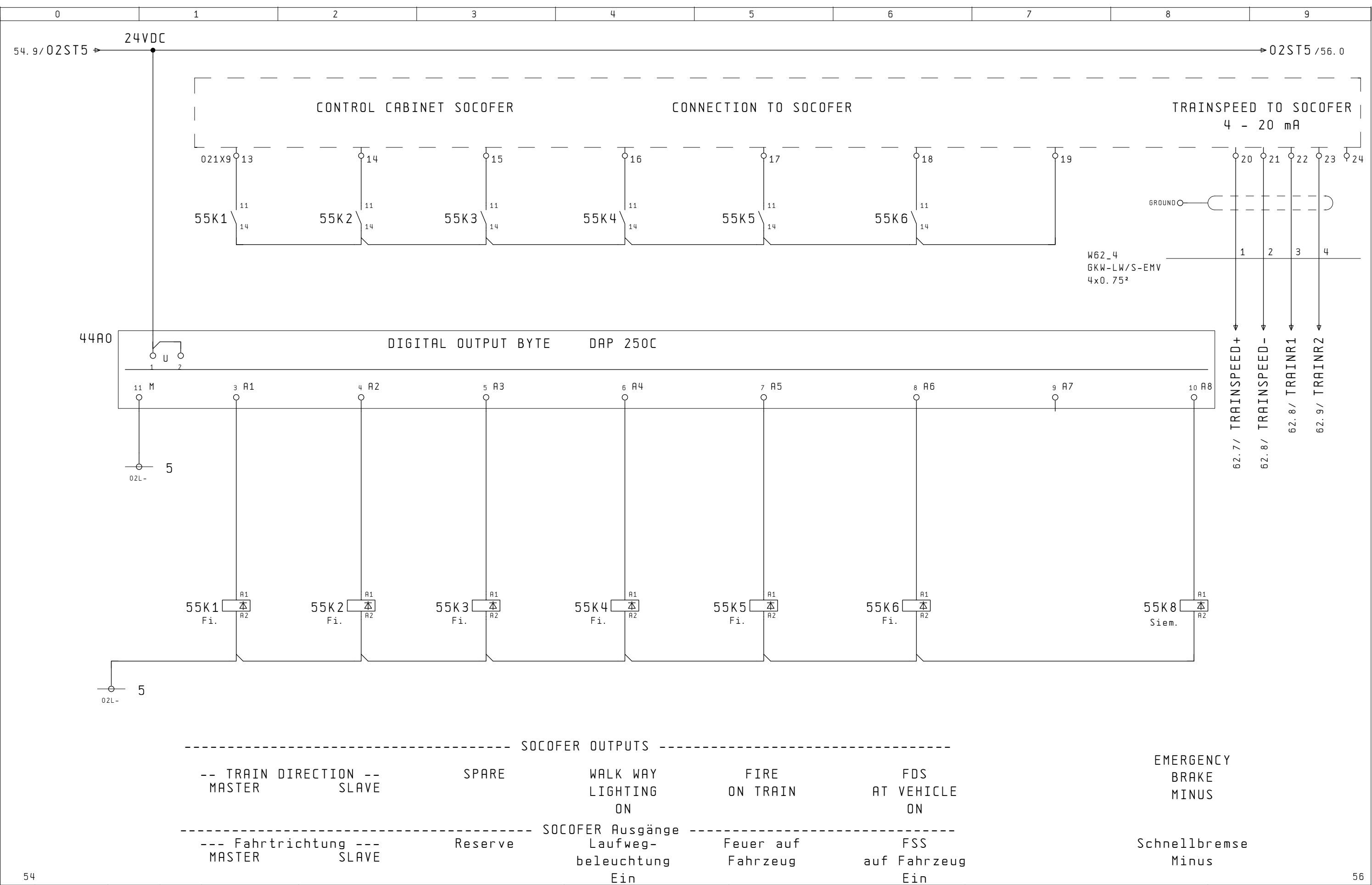


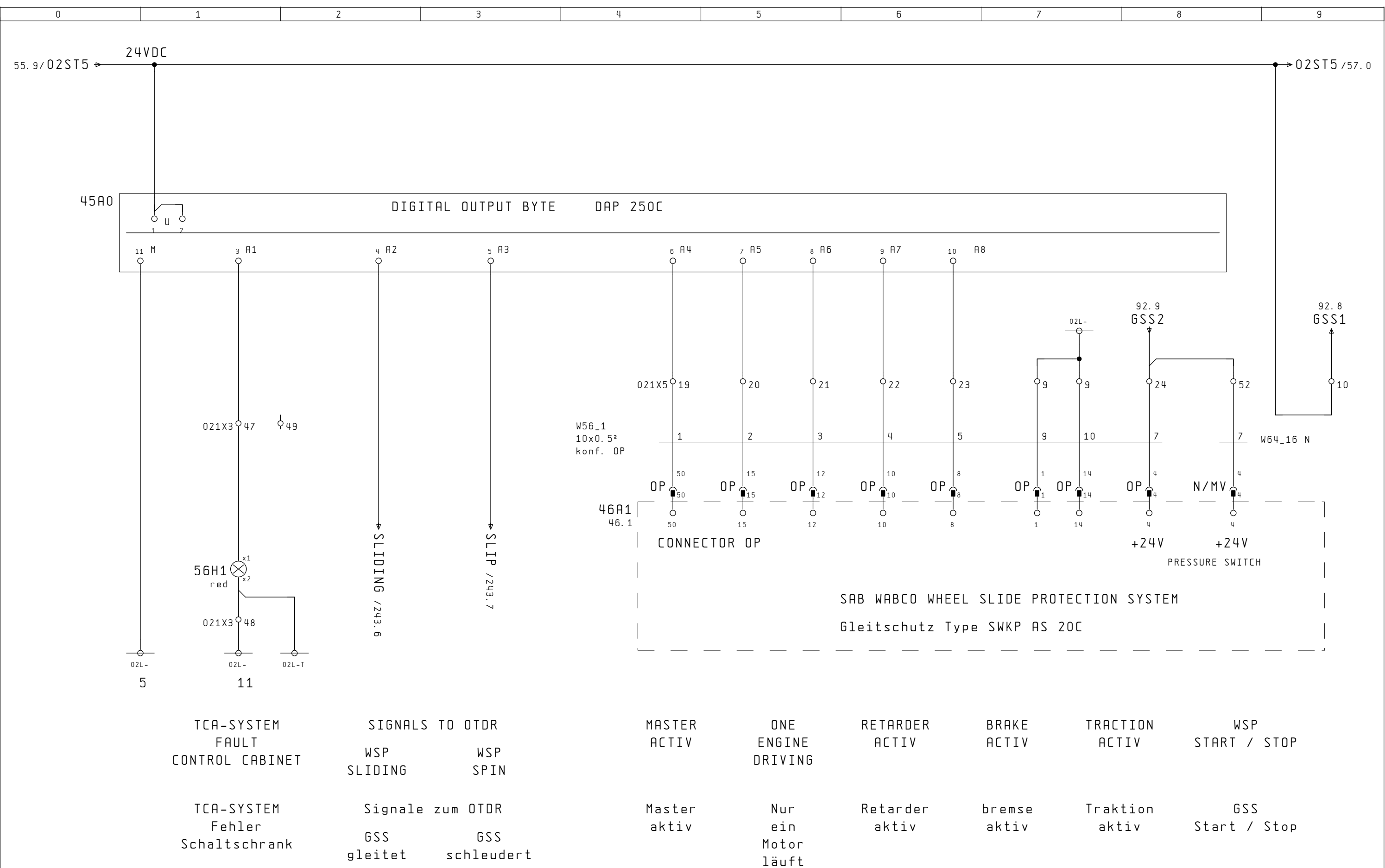


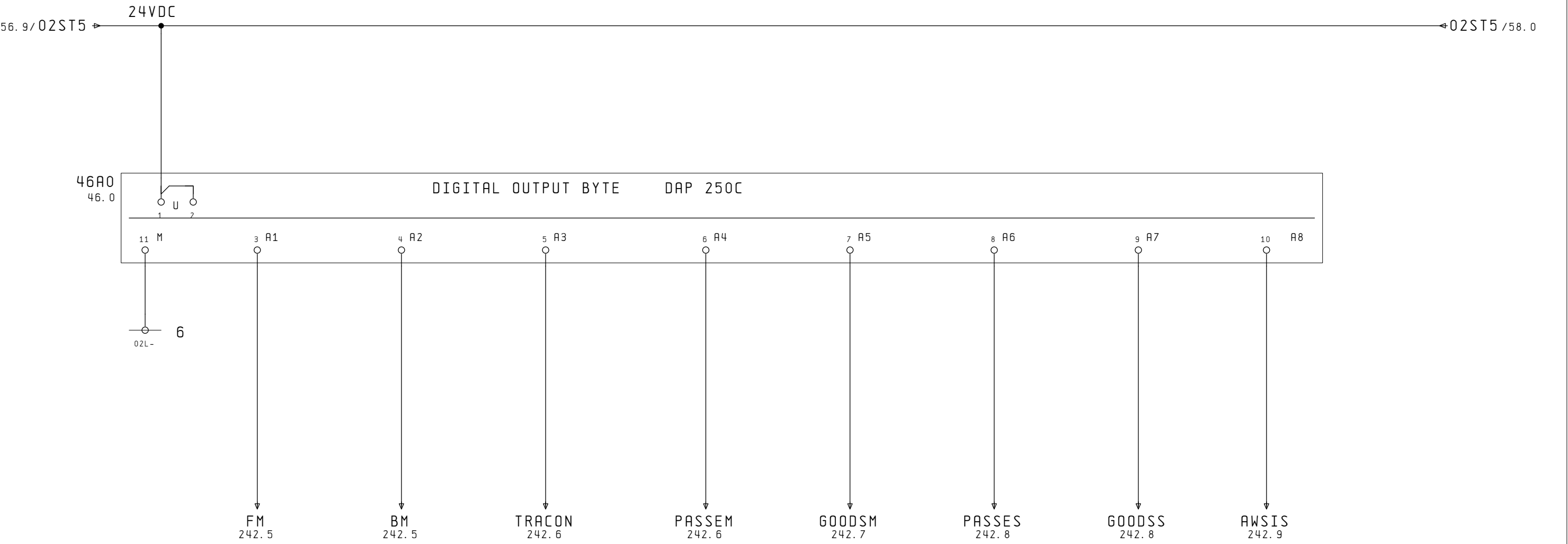










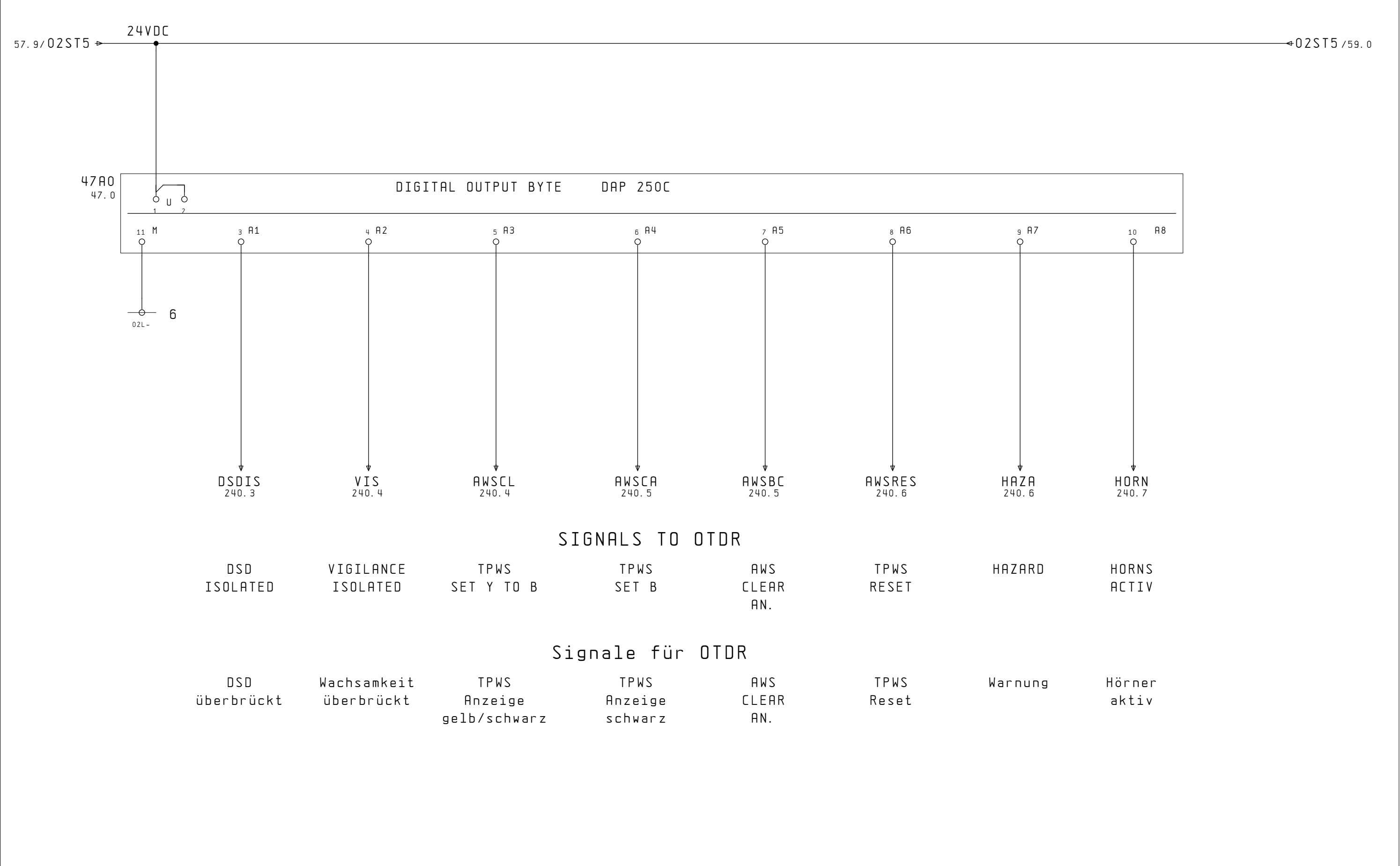


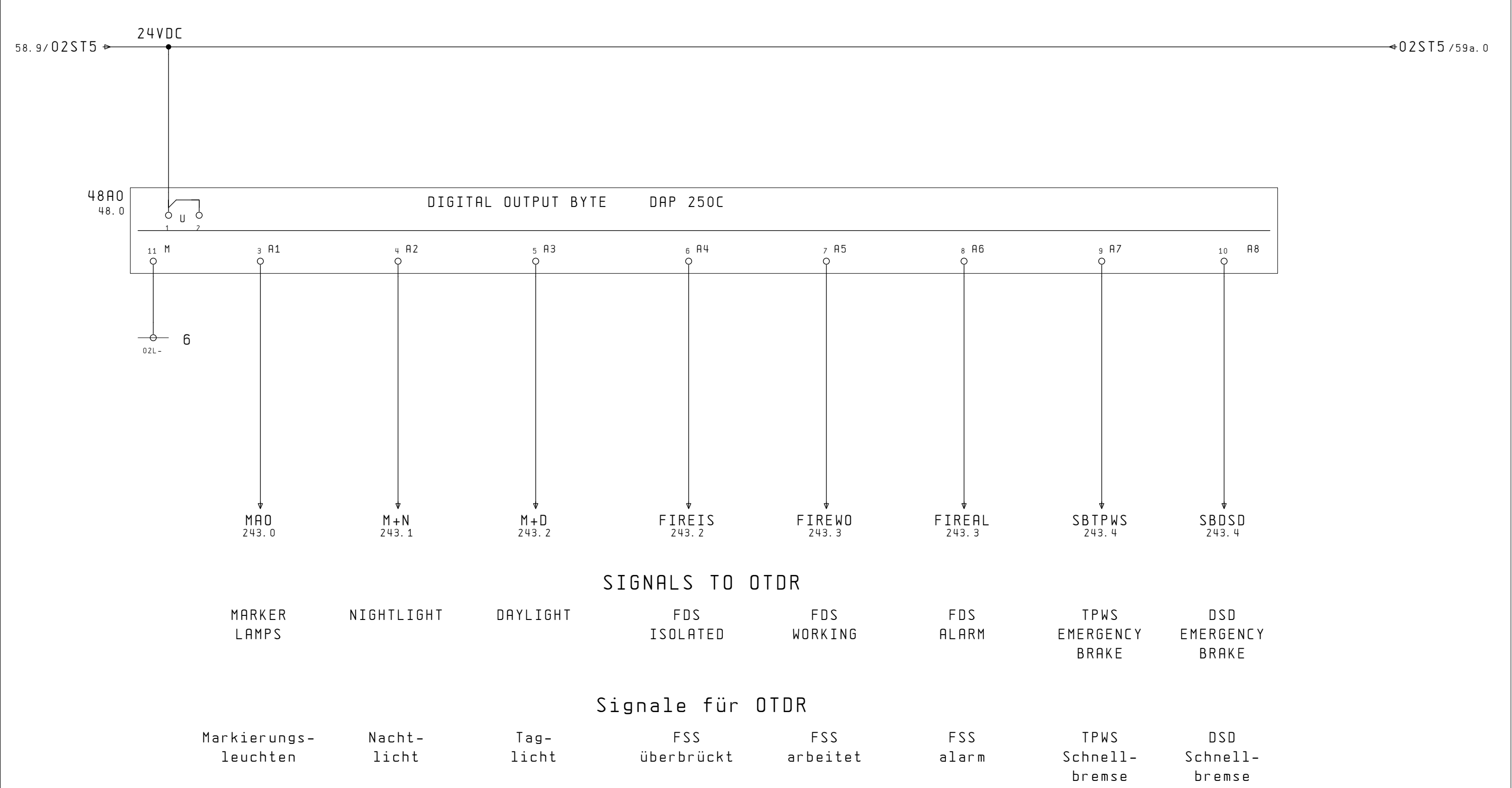
SIGNALS TO OTDR

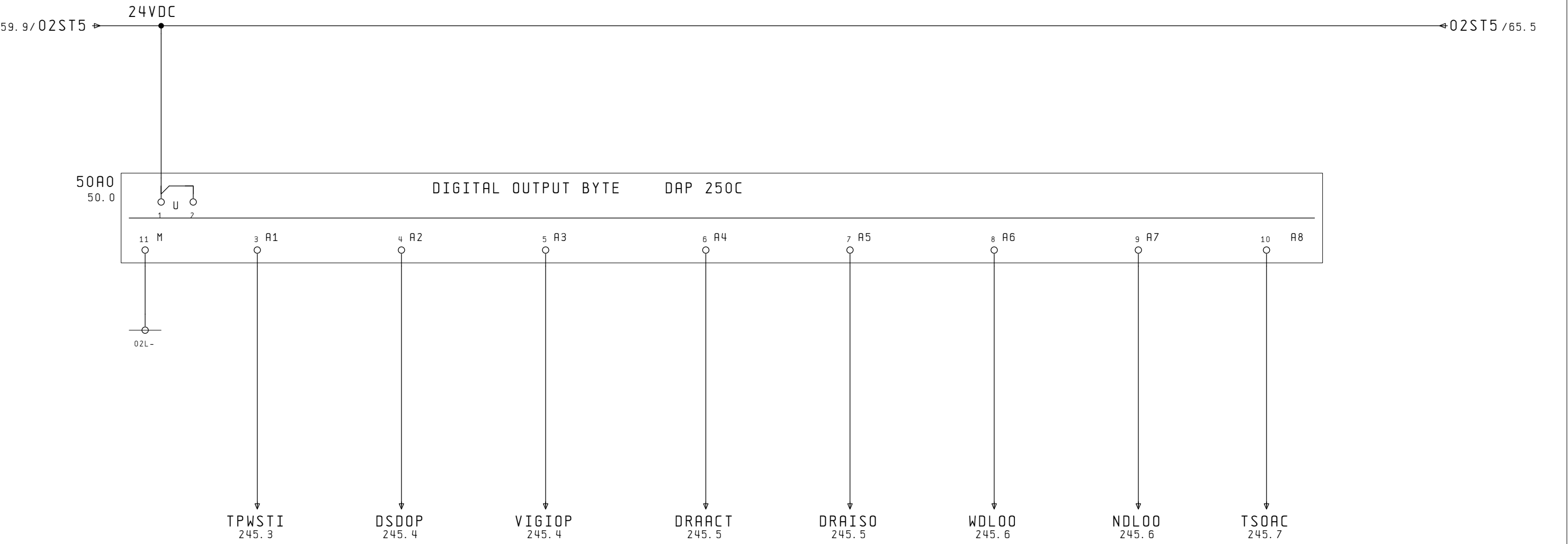
VORWARD MASTER OR SLAVE	BACKWARD MASTER OR SLAVE	TRACTION POWER	MASTER BRAKE PASSENGERS	MASTER BRAKE GOODS	SLAVE BRAKE PASSENGERS	SLAVE BRAKE GOODS	TPWS ISOLATED
-------------------------------	--------------------------------	-------------------	-------------------------------	--------------------------	------------------------------	-------------------------	------------------

Signale für OTDR

Vorwärts Master oder Slave	Rückwärts Master oder Slave	Traktion	Master Bremse Passagiere	Master Bremse Güter	Slave Bremse Passagiere	Slave Bremse Güter	TPWS überbrückt
----------------------------------	-----------------------------------	----------	--------------------------------	---------------------------	-------------------------------	--------------------------	--------------------







SIGNALS TO OTDR

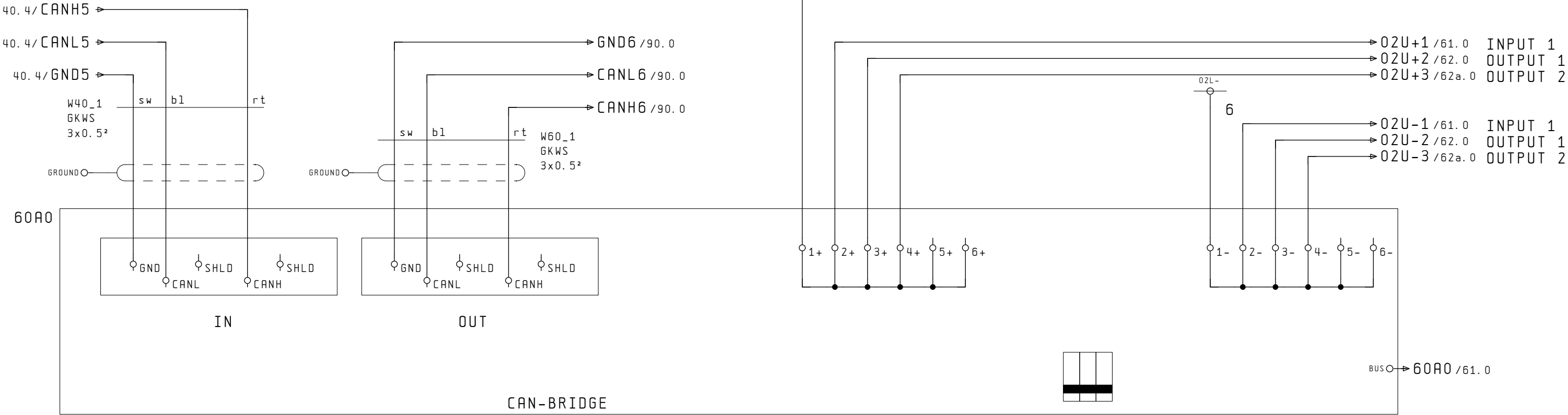
TPWS TEMPORARY ISOLATED	DSD OPERATED	VIGILANCE OPERATED	DRA ACTIVATED BY DRIVER	DRA ISOLATED BY DRIVER	WRONG DIR. LOOP	NORMAL DIR. LOOP	TSO ACTIVE
-------------------------------	-----------------	-----------------------	----------------------------	---------------------------	-----------------------	------------------------	---------------

Signale für OTDR

TPWS zeitweise abgeschaltet	DSD arbeitet	Wachsam arbeitet	DRA aktiviert von Fahrer	DRA abgeschaltet von Fahrer	WRONG DIR. LOOP	NORMAL DIR. LOOP	TSO ACTIVE
-----------------------------------	-----------------	---------------------	--------------------------------	-----------------------------------	-----------------------	------------------------	---------------

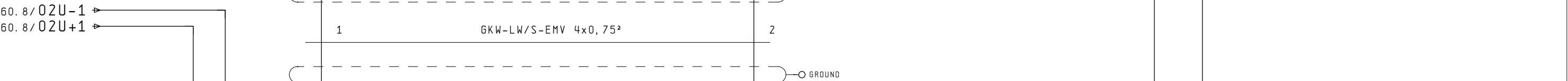
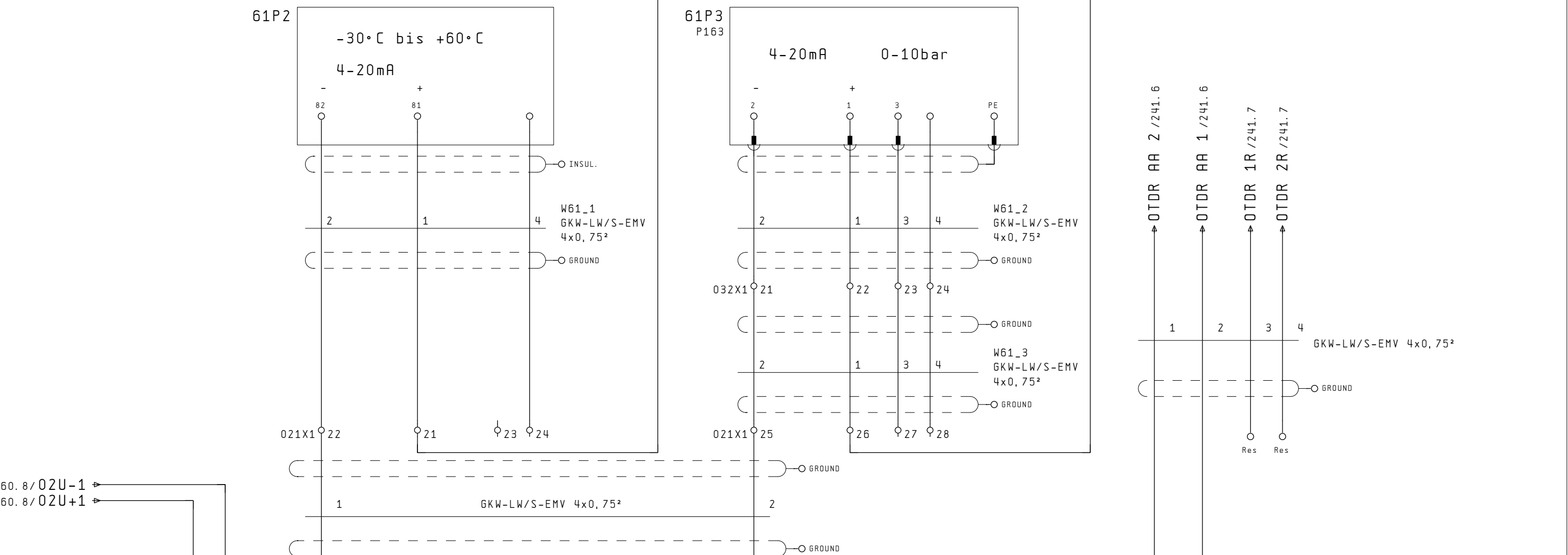
50. 9 / 02ST4

02ST4 / 61. 0



60. 8 / 02ST4

02ST4 / 65. 4



60. 8 / 60A0

BUS

1 A B C D

4-20mA

2 A B C D

4-20mA

3 A B C D

4-20mA

4 A B C D

4-20mA

BUS

60A0 / 62. 0

ADDRESS

5

A

HEX

DEZI

90

4 ANALOG INPUTS

CODE

BASIS MODULE

0 1 0 0 0 0 0 0

ELECTRONIC MODULE

1 0 1 1 1 1 1 1

AMBIENT TEMPERATURE

Außen Temperatur

BRAKE CYLINDER PRESSURE BOGIE 1

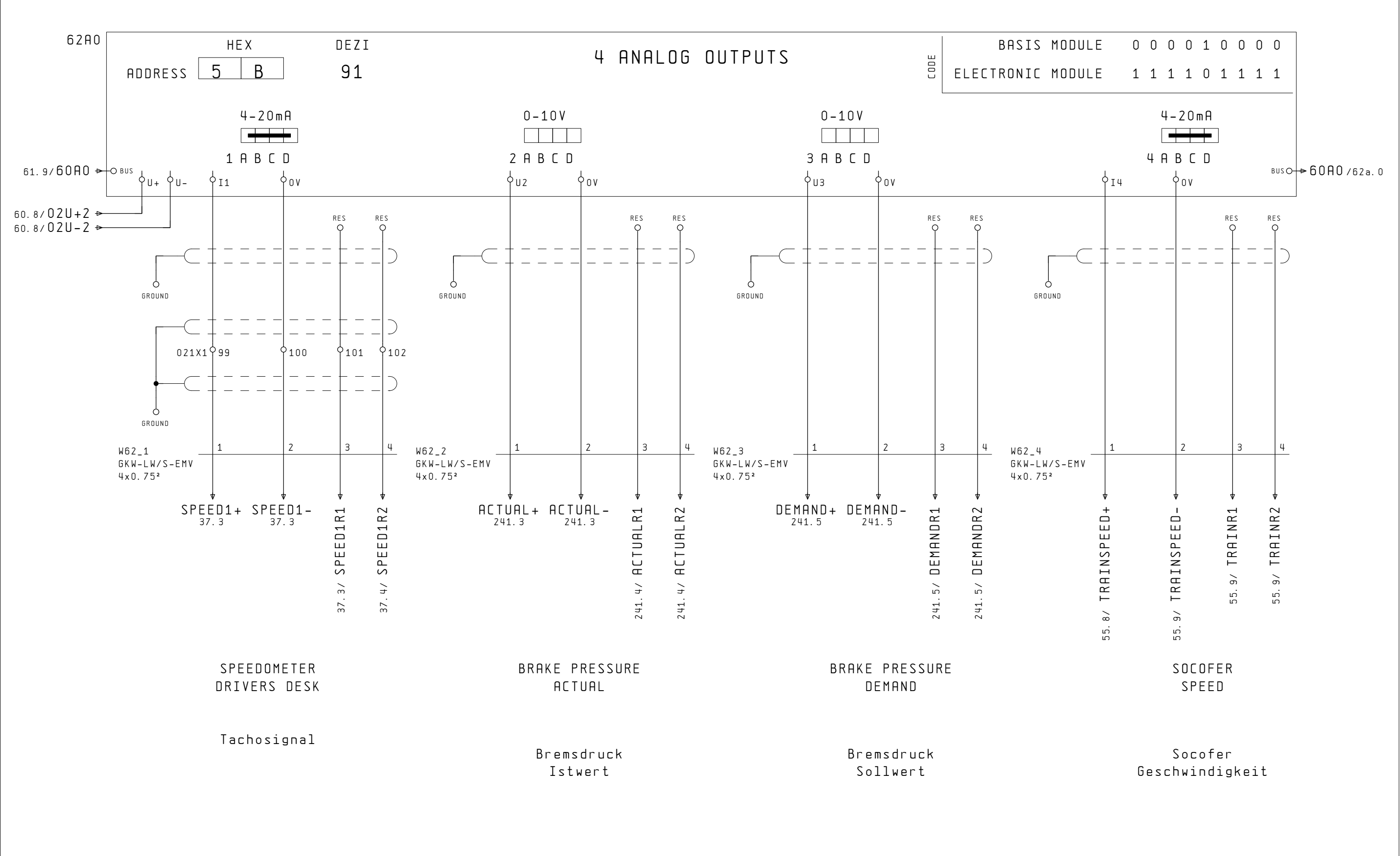
C-Druck Drehgestell 1

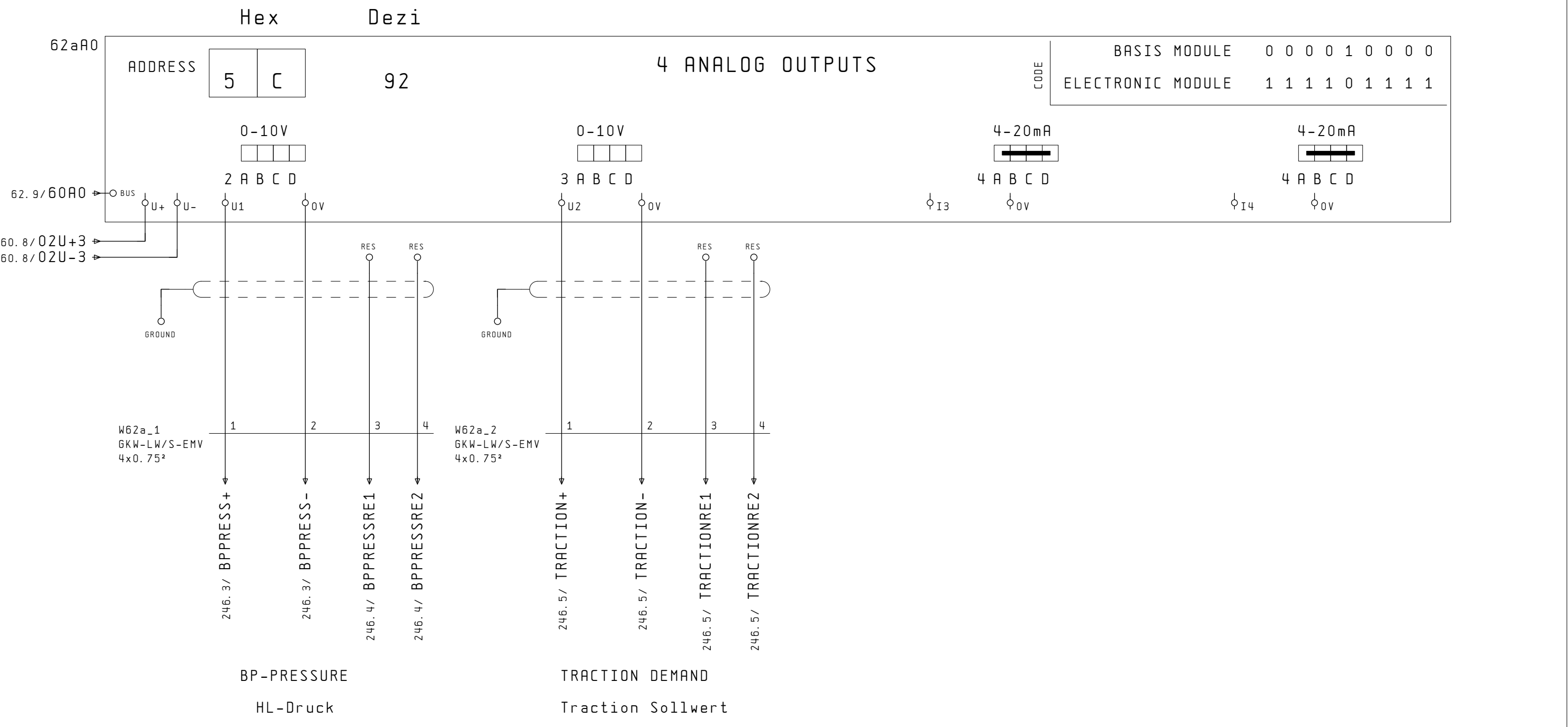
OTDR SPEED

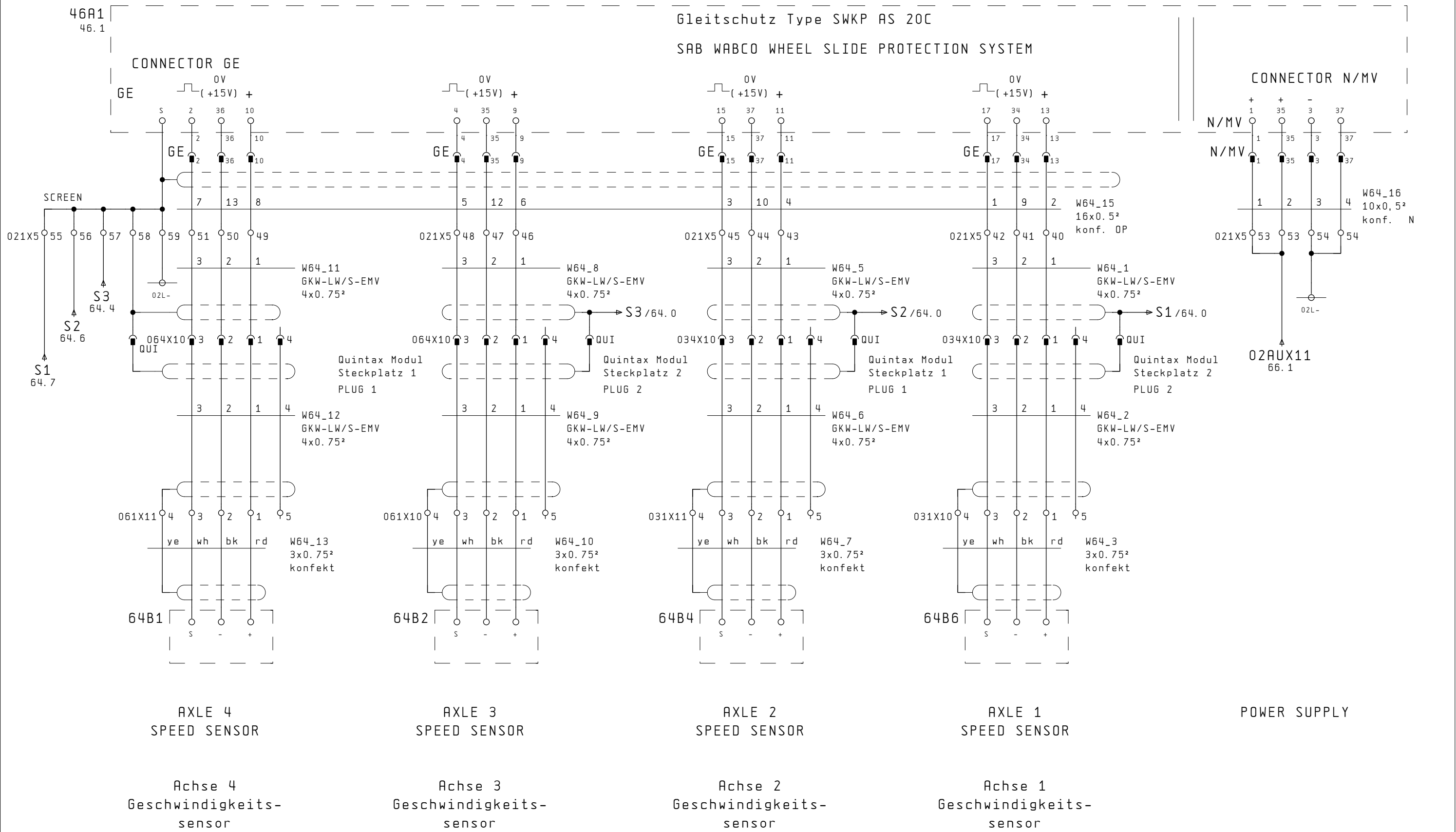
OTDR Geschwindigkeit

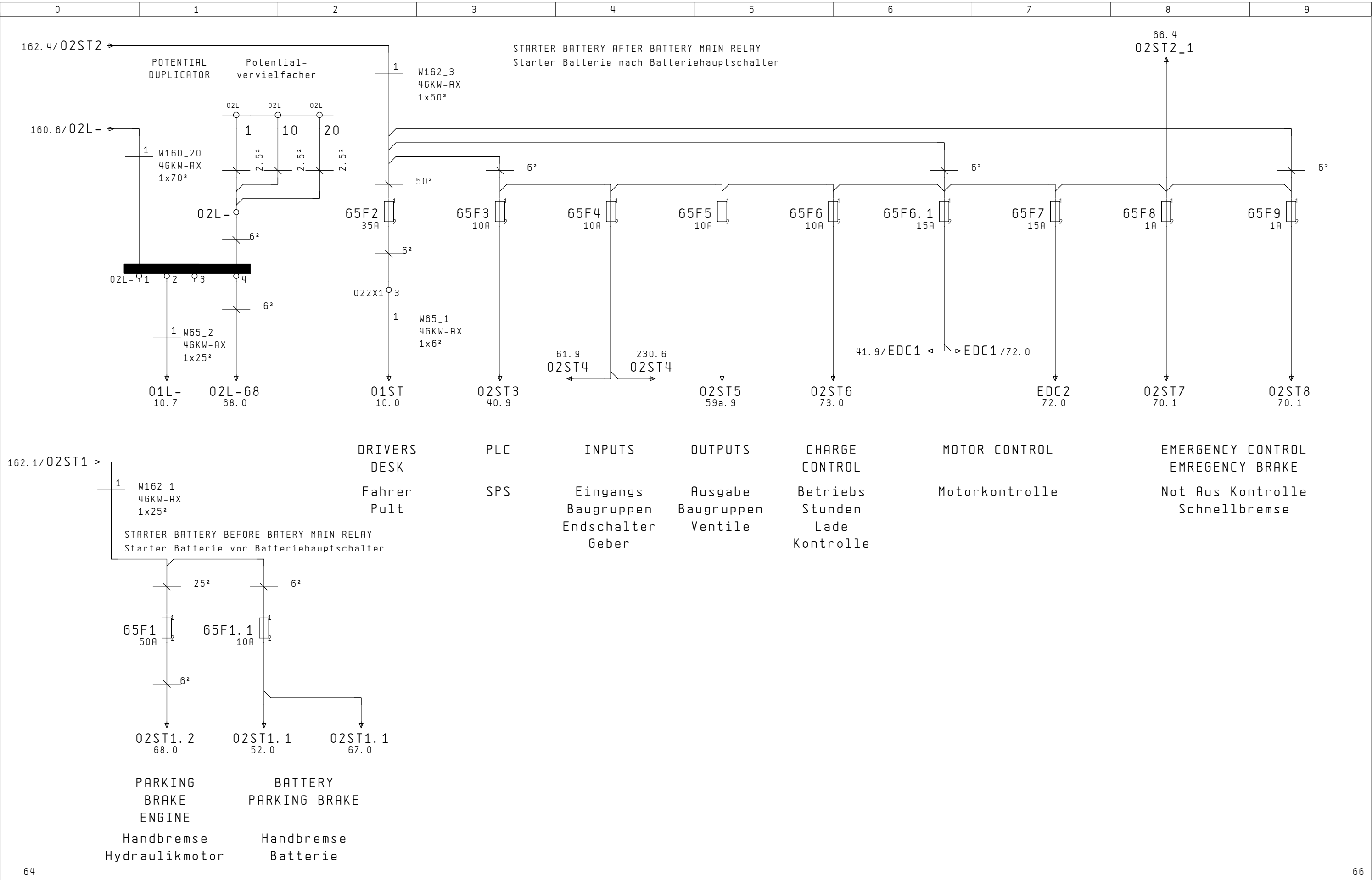
SPARE

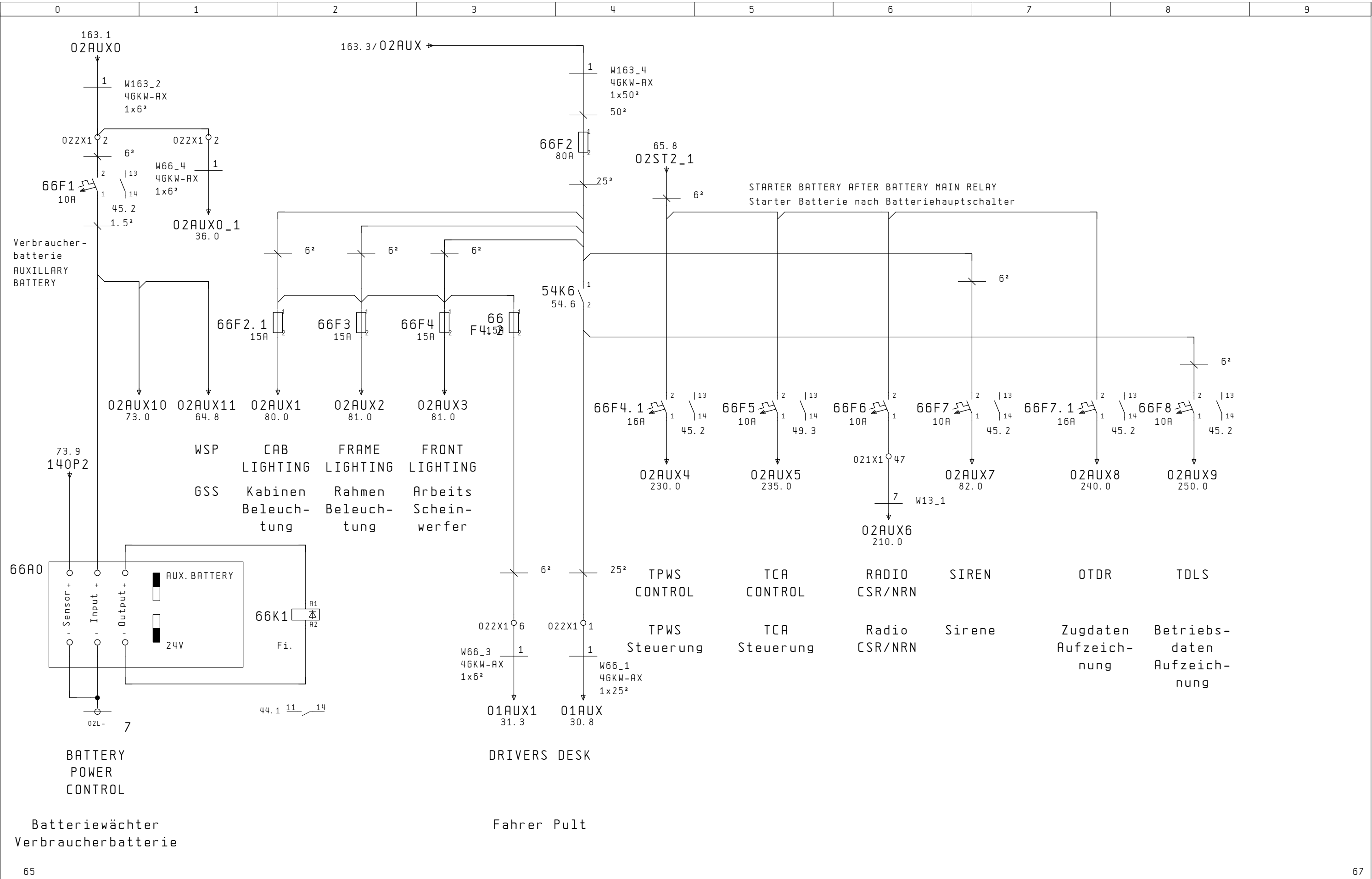
Reserve



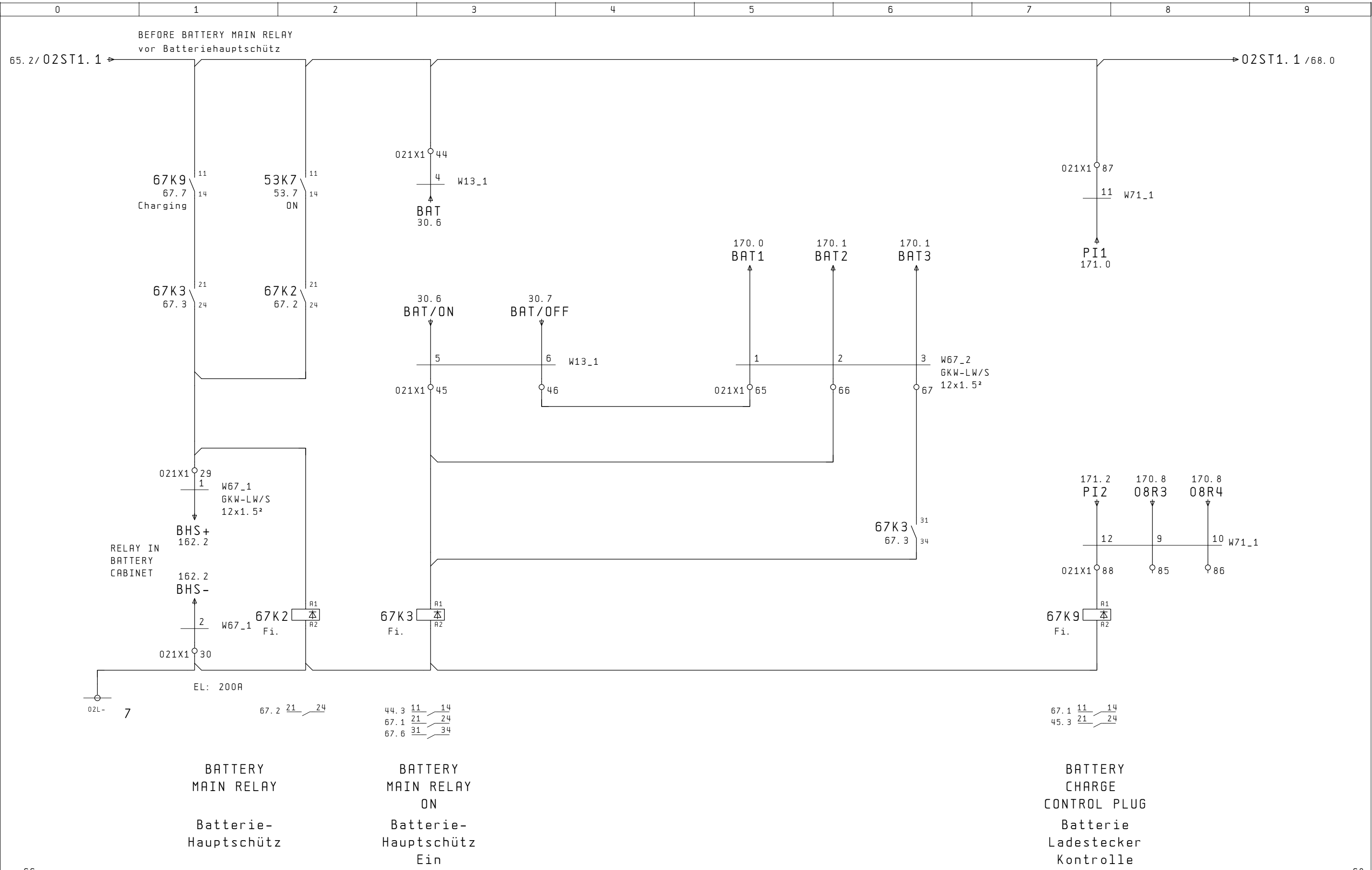


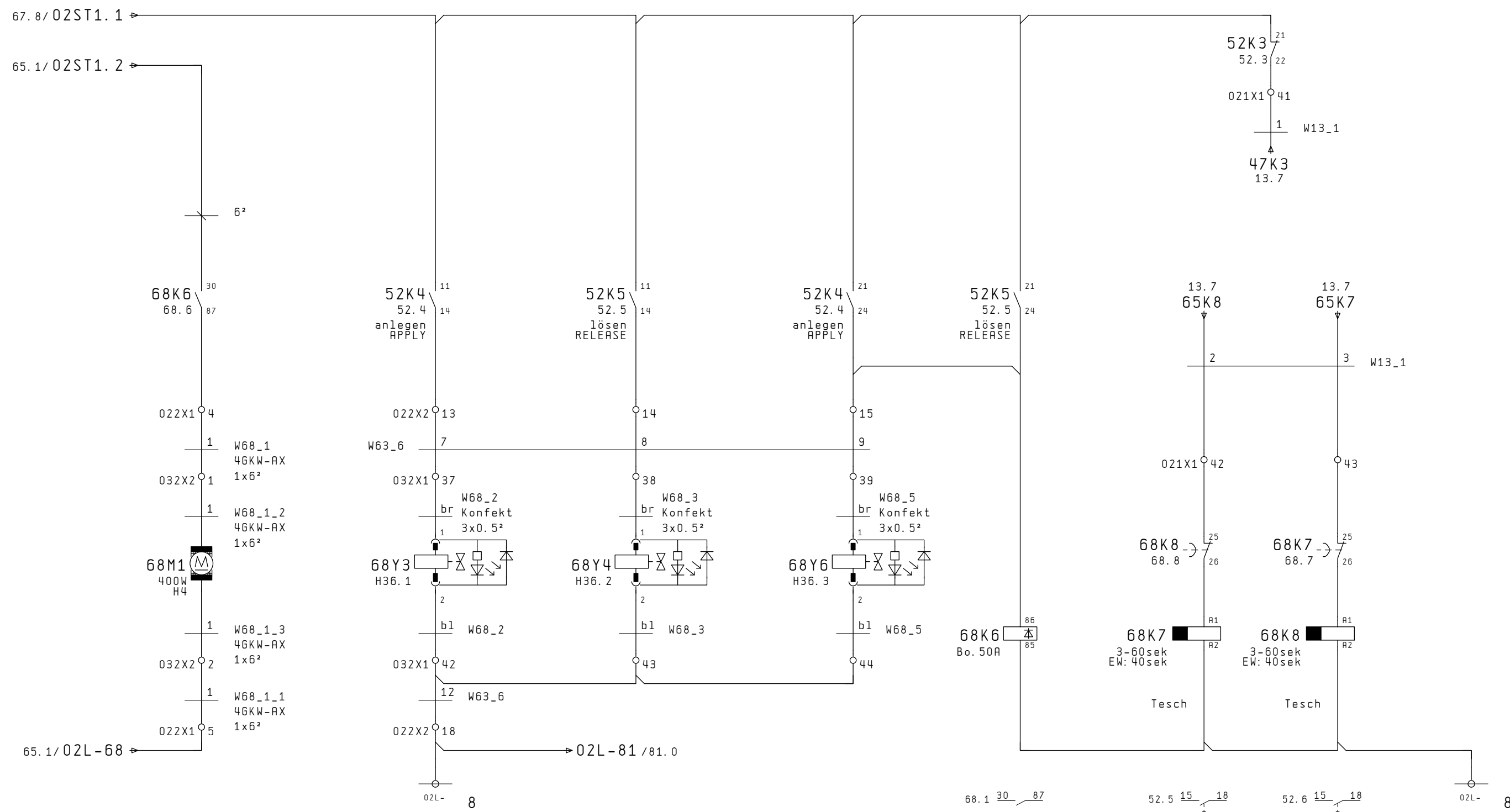




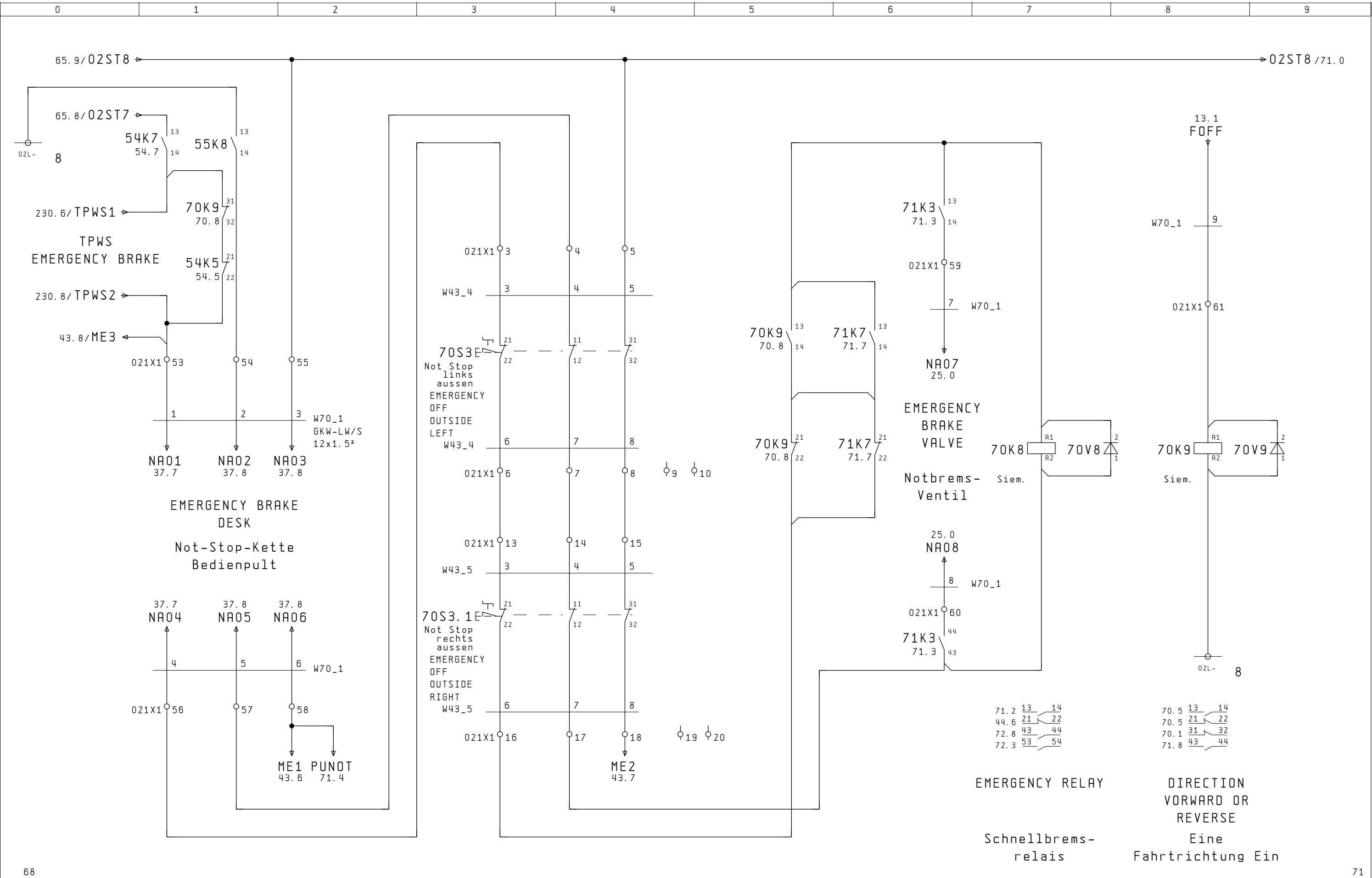


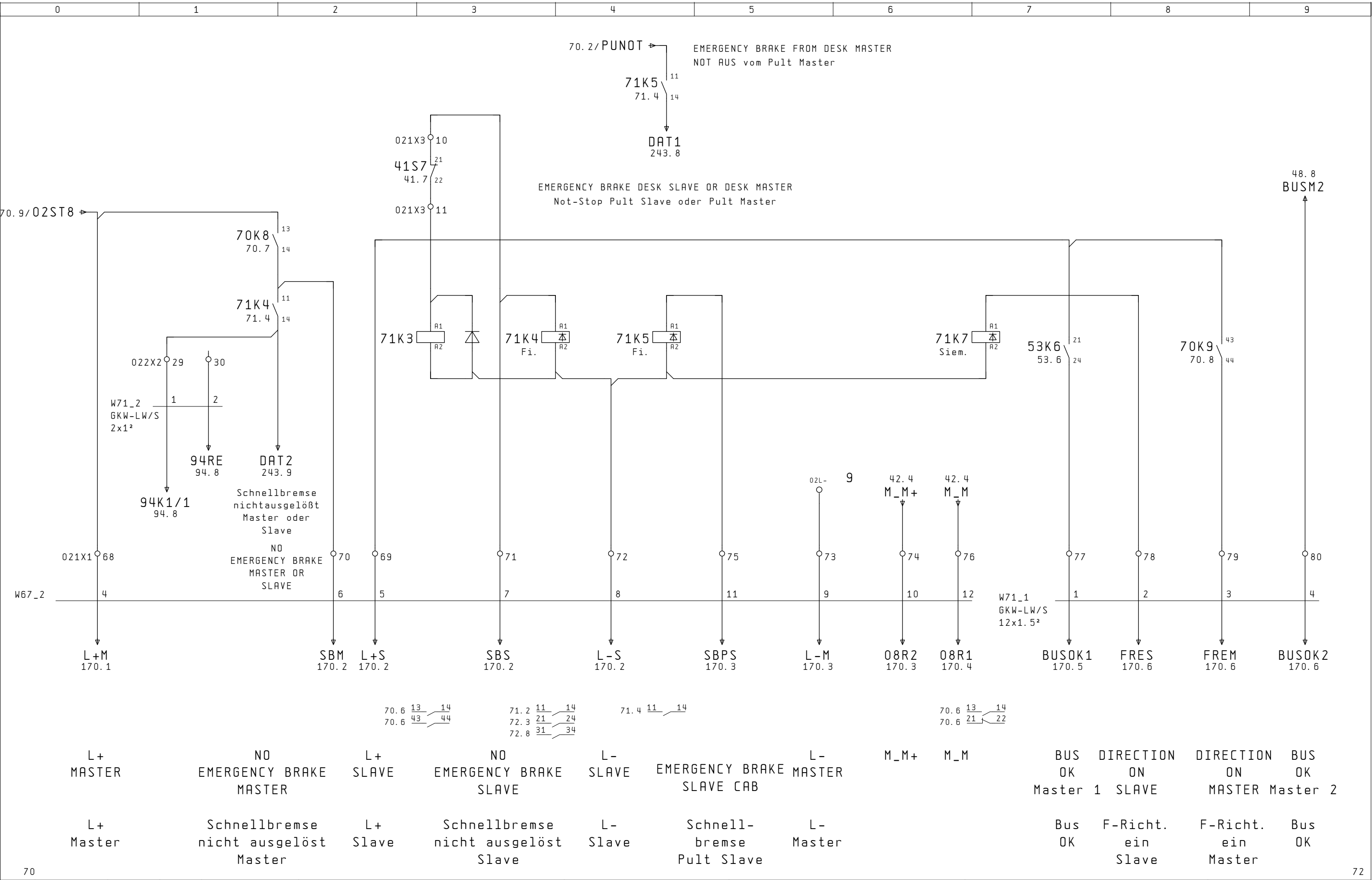
			DATE	28.04.2004	MULTI-PURPOSE-VEHICLE (MPV) MASTER			Bereich 02 Sicherungen AREA 02 FUSES MASTER	160 866 M			=	
			DRAWN	MOH								+	
h	18.07.03	Beu	CHECK.	KAP									
REV.	DATE				Revision j				5.661.557 167-4		Pg. 66		
												260 Pg.	

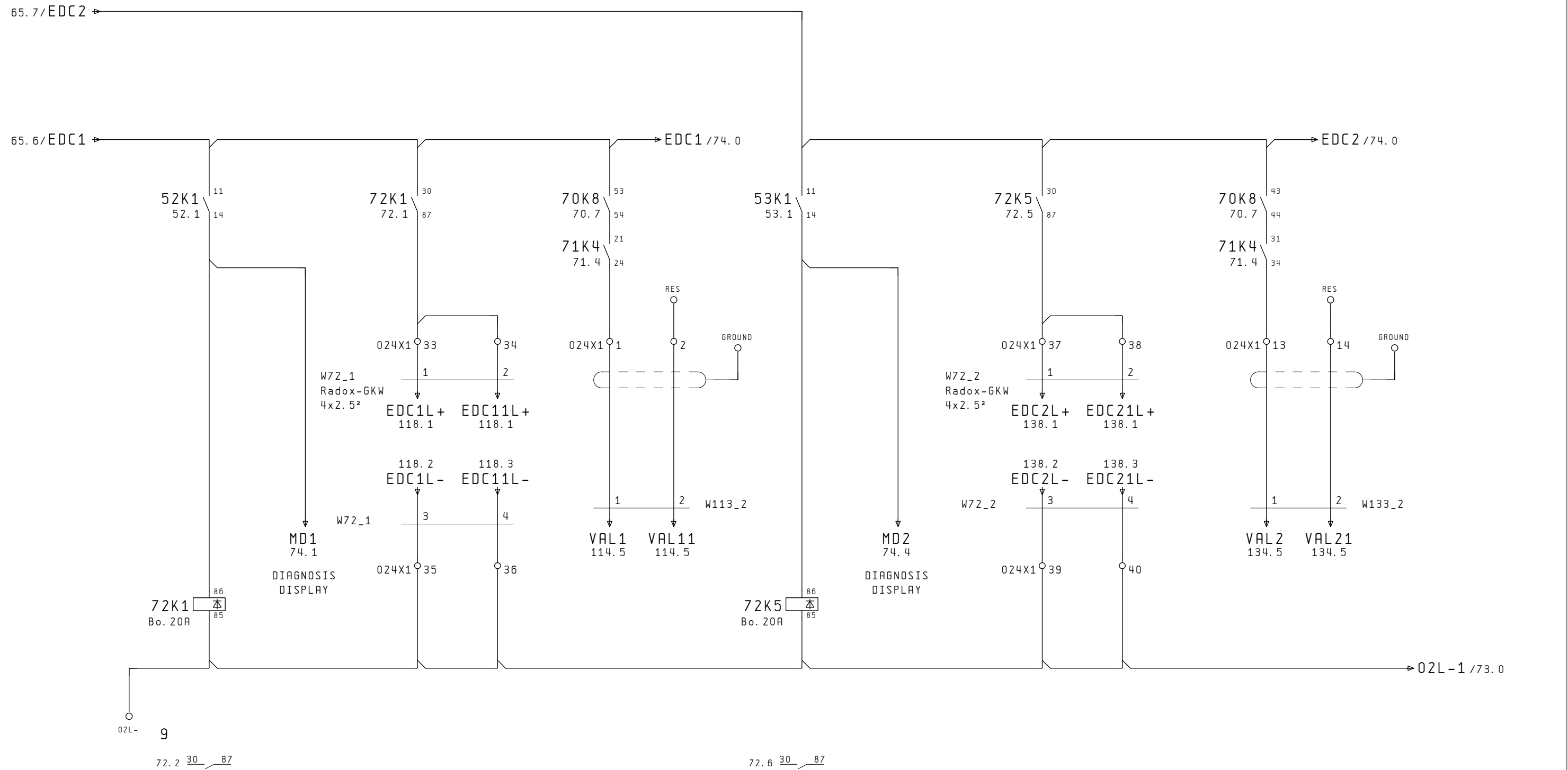


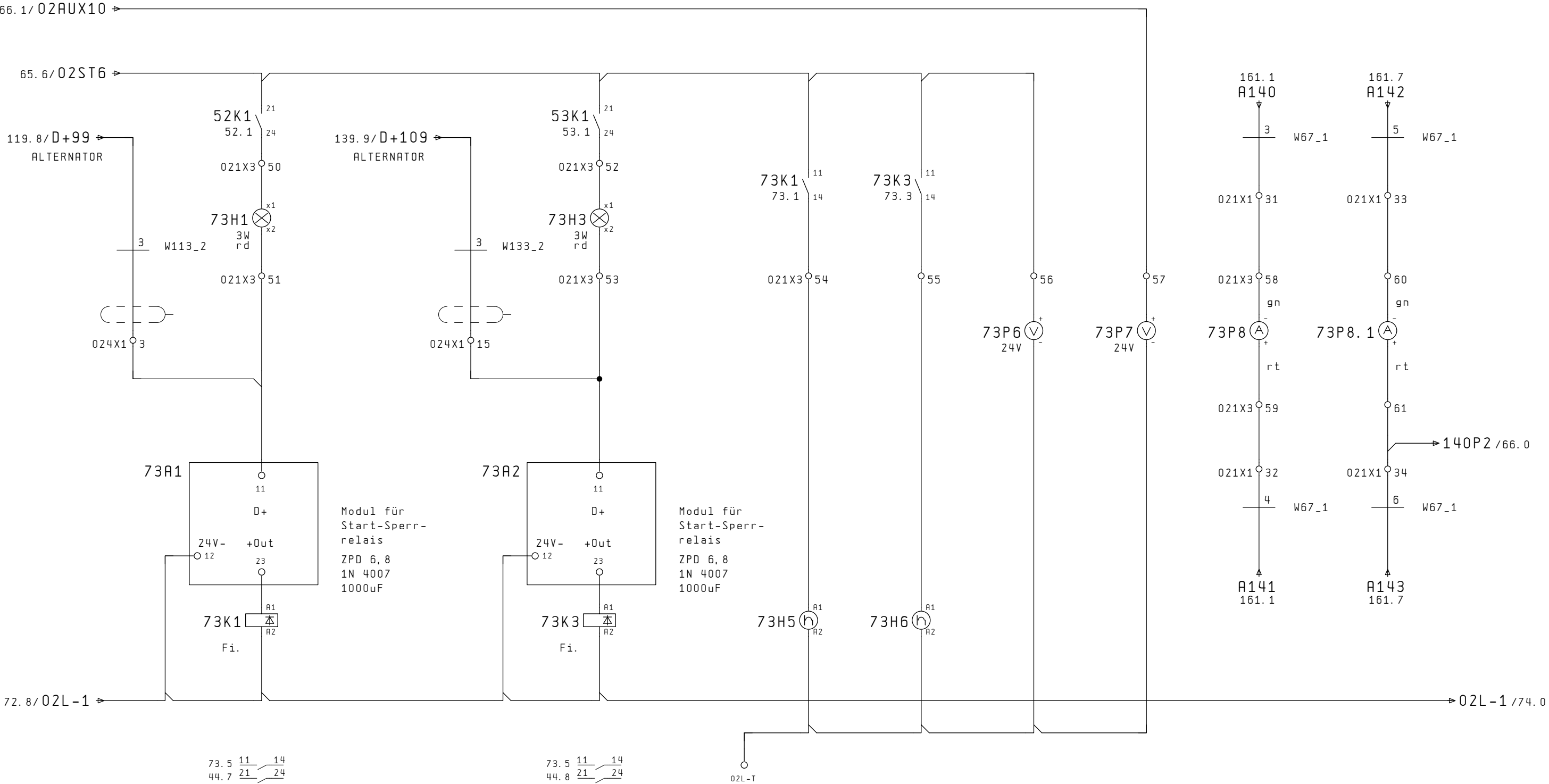


HYDRAULIC ENGINE PARKING BRAKE	PARK. BRAKE APPLY	PARK. BRAKE RELAESE	PARK. BRAKE PRESSURE	HYDRAULIC MOTOR ON	MANUELL PARK. BRAKE OPERATING	APPLY	RELEASE
Hydraulikmotor Handbremse	Handbremse anlegen	Handbremse lösen	Handbremse Druck	Hydraulik Motor Ein	Manuell Handbremse anlegen	Manuell Handbremse lösen	









CHARGE CONTROL
ENGINE 1

CHARGE CONTROL
ENGINE 2

HOURS OF OPERATION
ENGINE 1 ENGINE 2

VOLTAGE
STARTER
BATTERY

VOLTAGE
AUXILIARY
BATTERY

CURRENT
STARTER
BATTERY

CURRENT
AUXILIARY
BATTERY

Ladekontrolle
Motor 1

Ladekontrolle
Motor 2

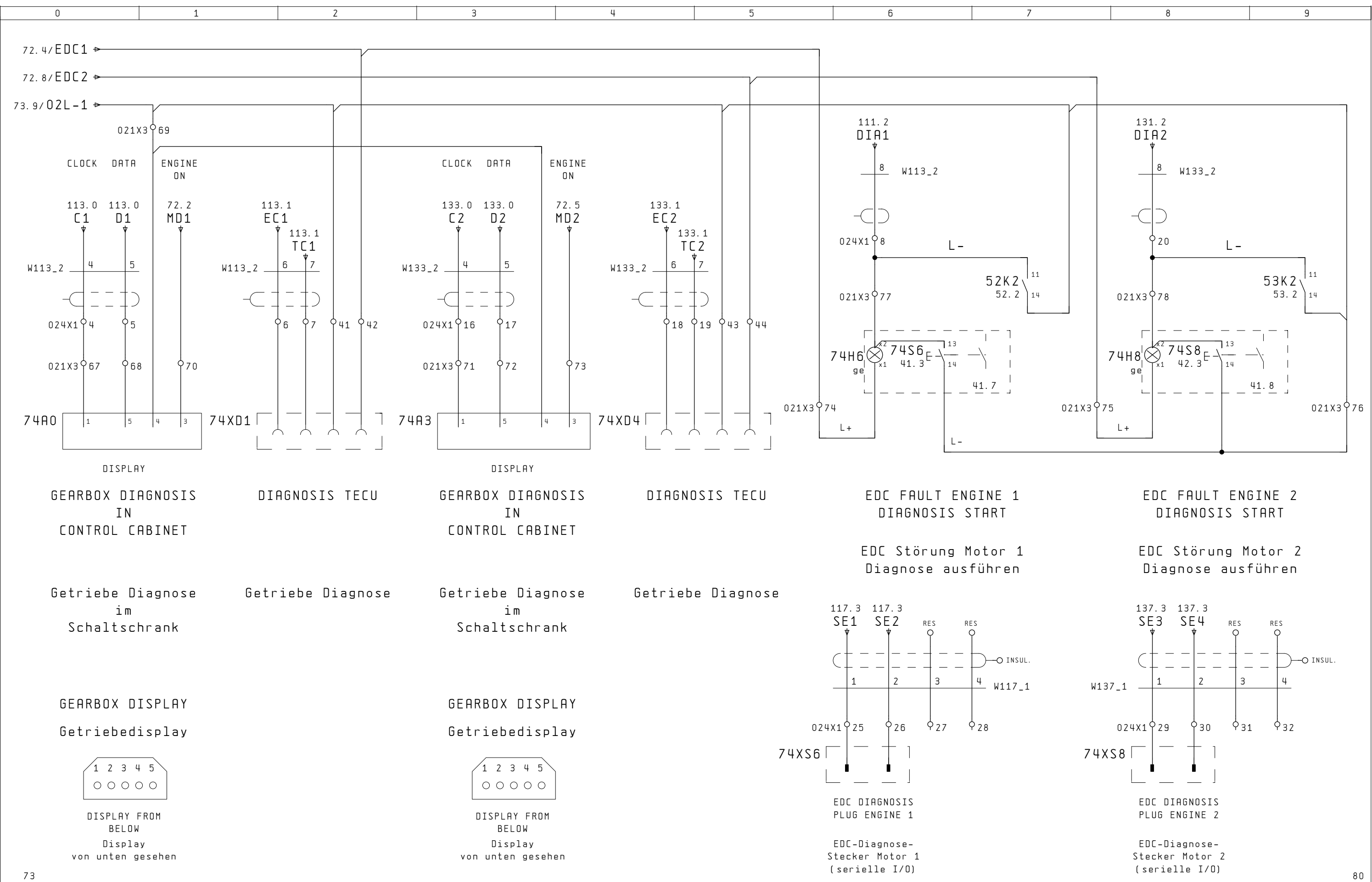
Betriebsstundenzähler
Motor 1 Motor 2

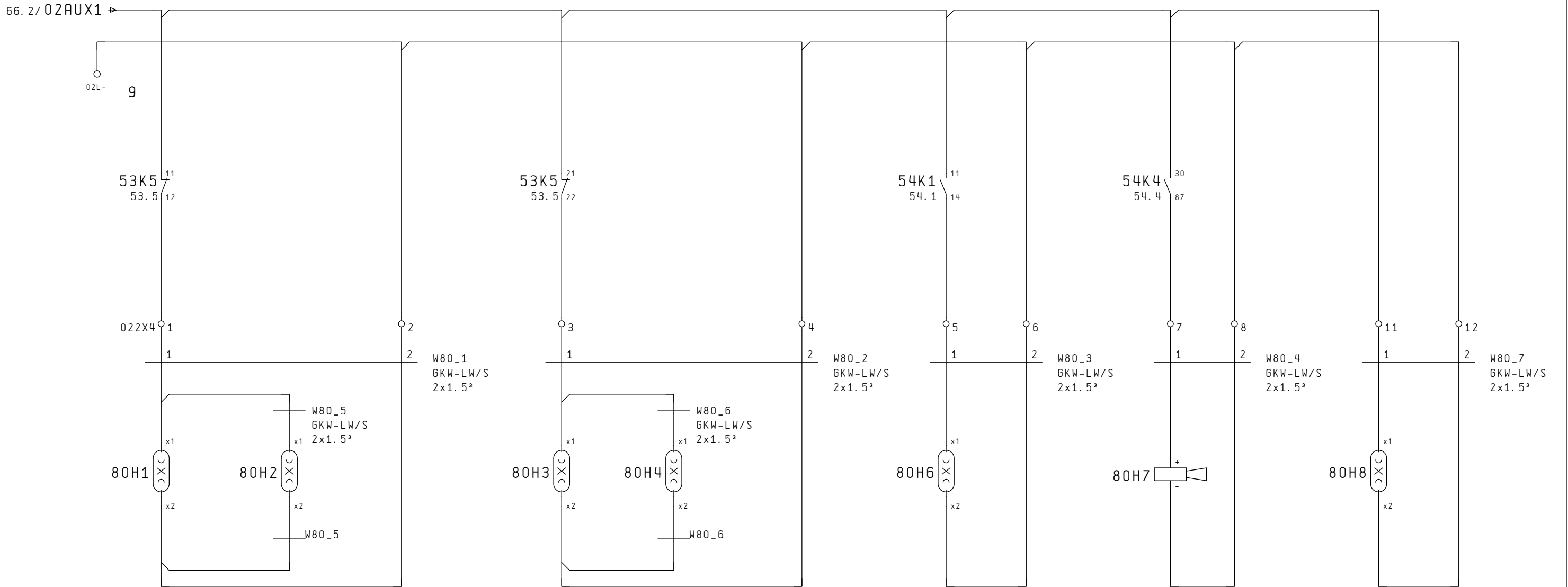
Spannung
Starter-
batterie

Spannung
Hilfs-
batterie

Strom
Starter-
batterie

Strom
Hilfs-
batterie





----- CAB LIGHTING -----

LEFT SIDE

RIGHT SIDE

WALKWAY
LIGHTING

ELECRIC
HORN

CONTROL CABINET
LIGHTING

----- Kabinenbeleuchtung -----

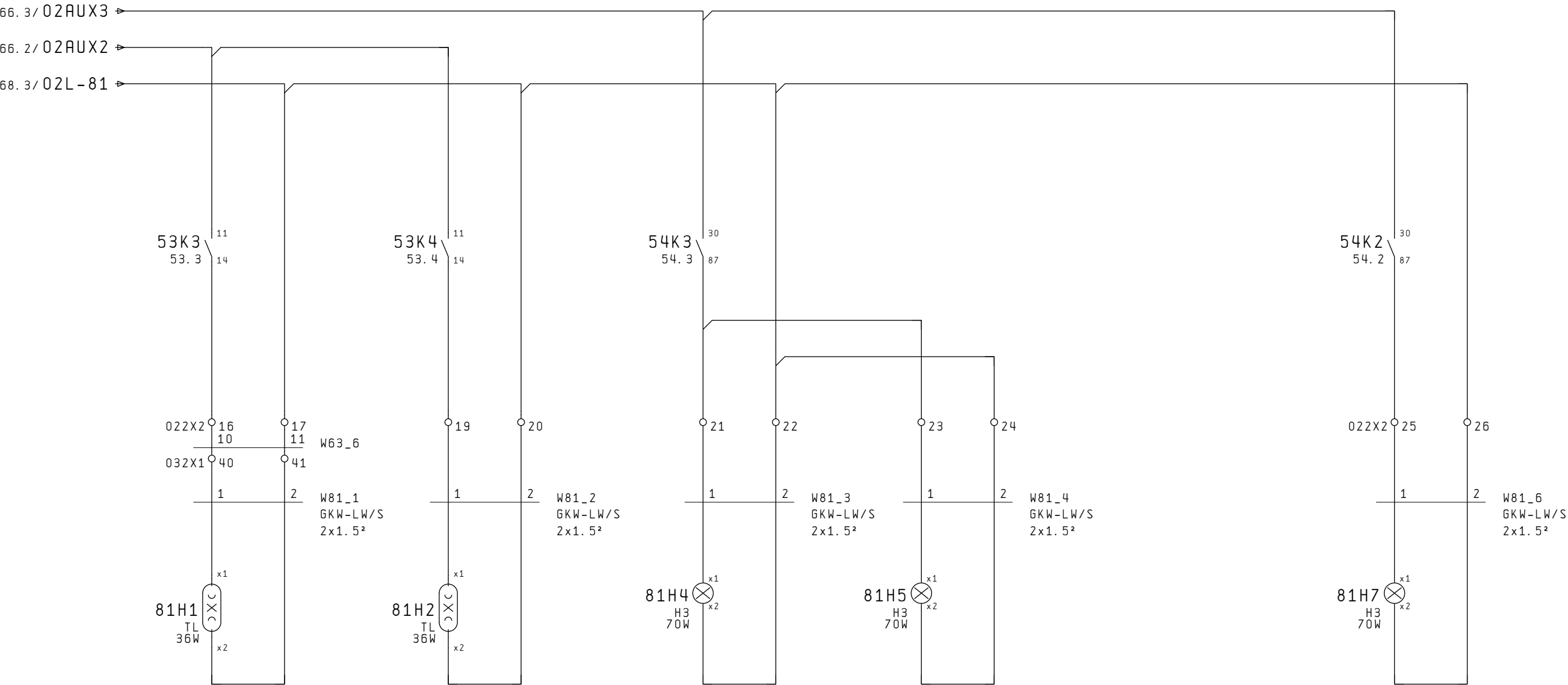
linke Seite

rechte Seite

Laufsteg-
beleuchtung

Elektro
Horn

Schaltschrank-
leuchte



----- FRAME LIGHTING -----

LEFT SIDE RIGHT SIDE

----- Rahmen Beleuchtung -----

Linke Seite rechte Seite

----- FRONT LIGHTING -----

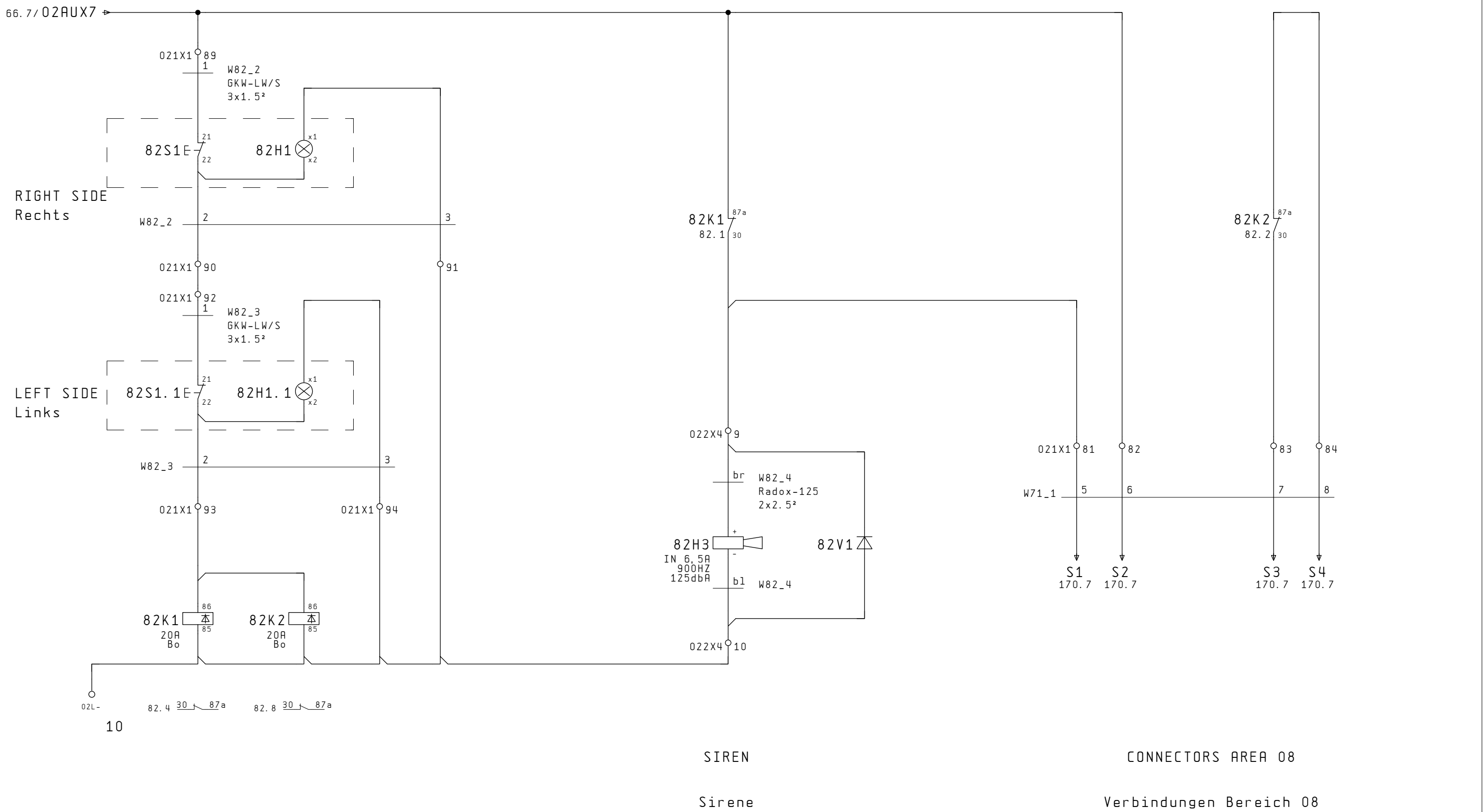
FRONT SIDE FRONT SIDE
LEFT RIGHT

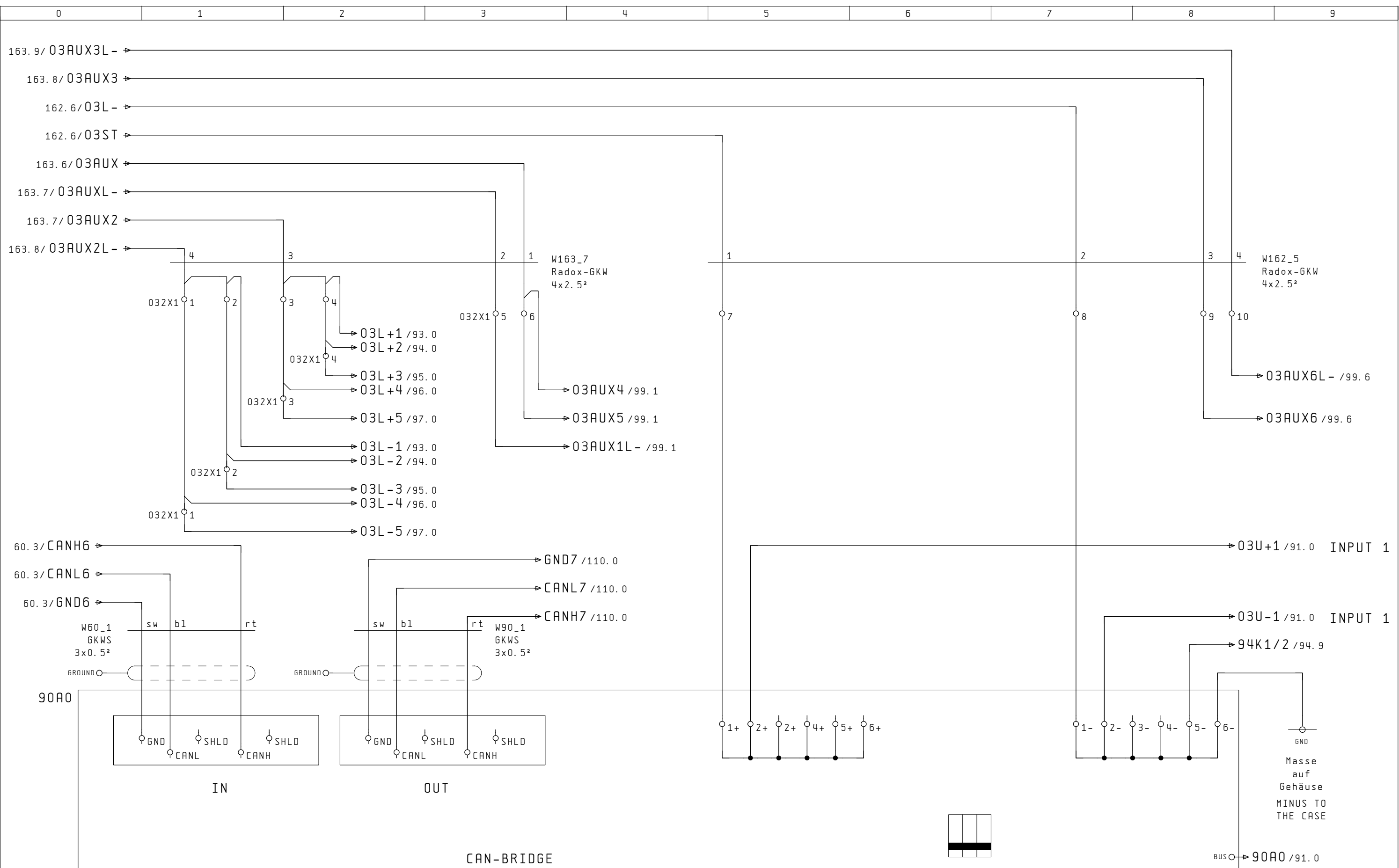
----- Arbeitsscheinwerfer -----

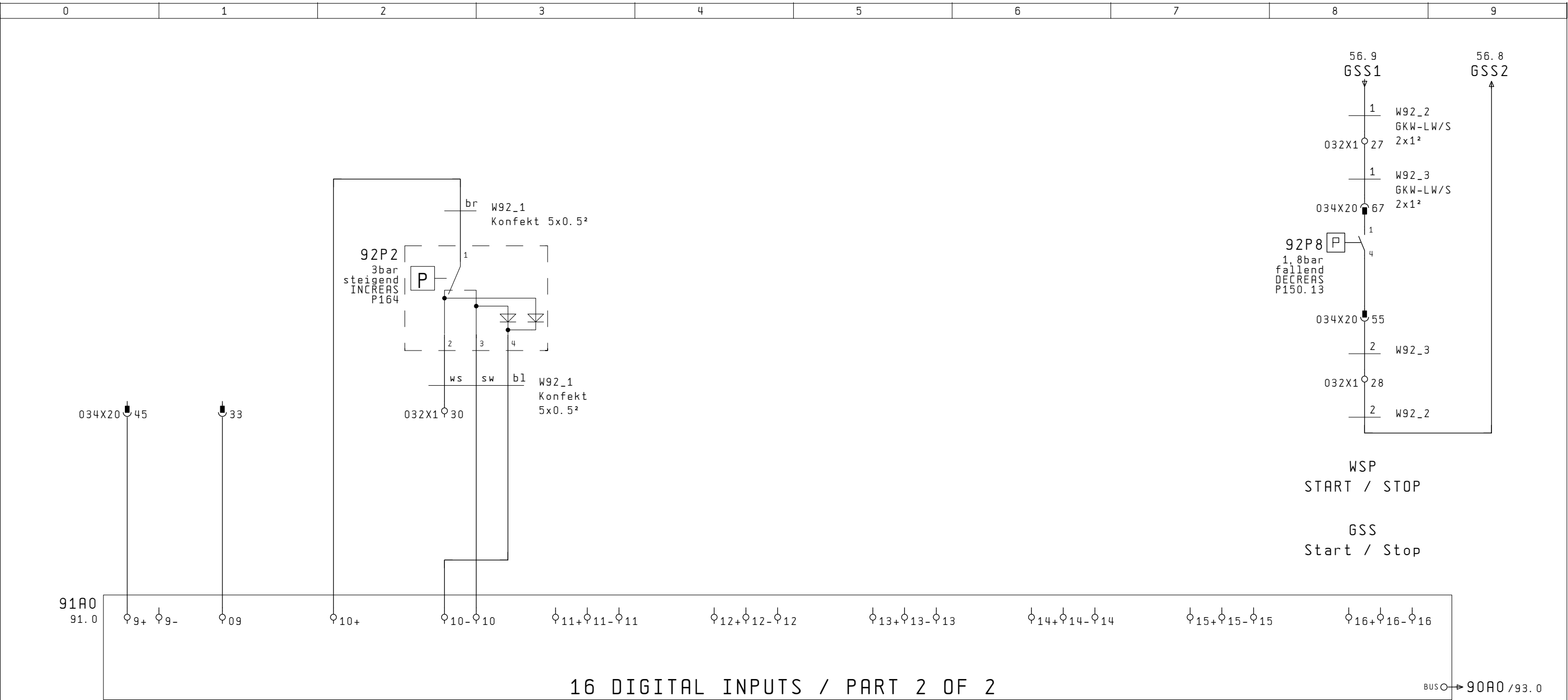
vorne vorne
links rechts

WALK WAY
LIGHTING
CROSSING SLAVE

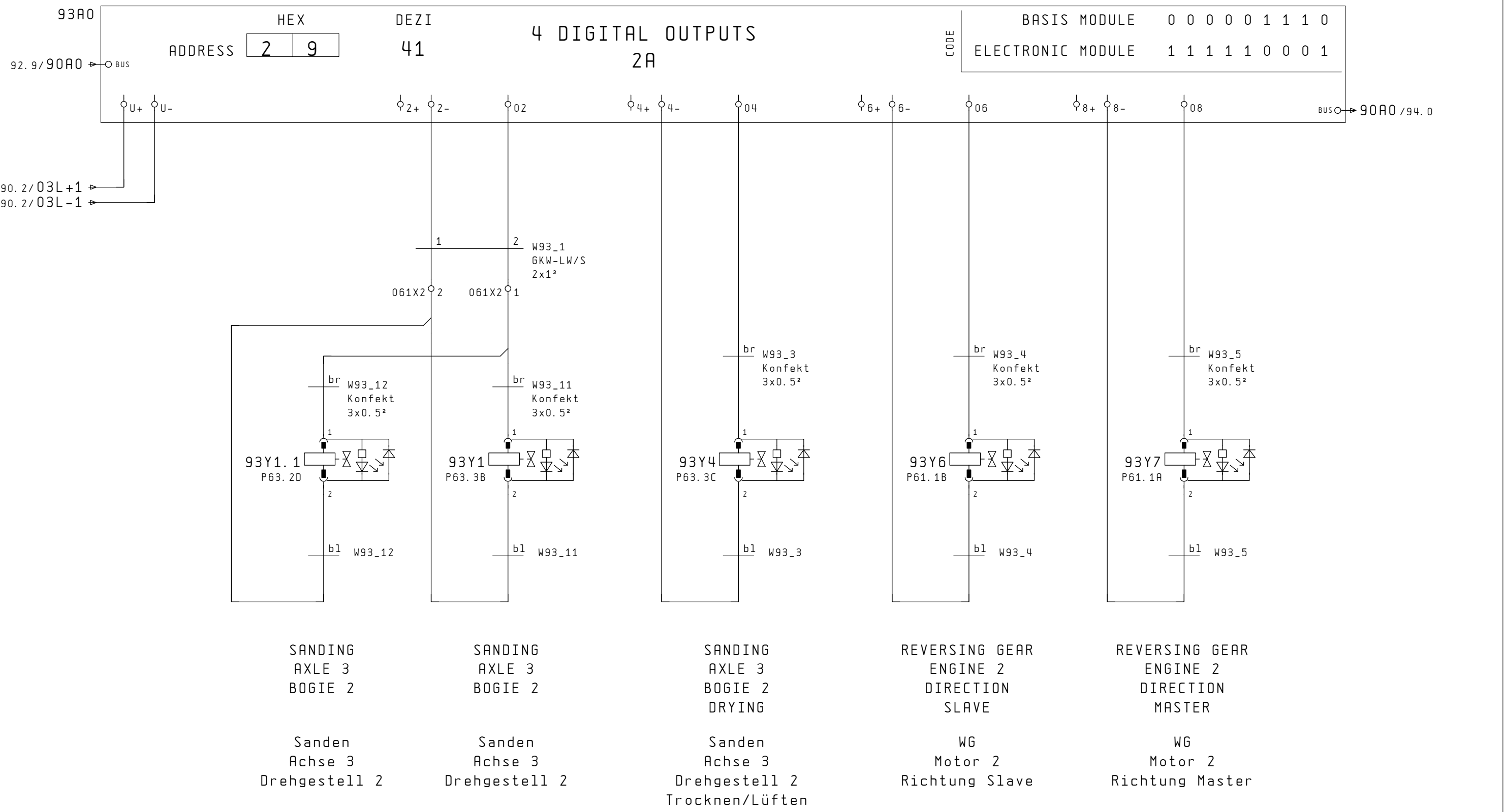
Laufstegbeleuchtung
Übergang
am Slave

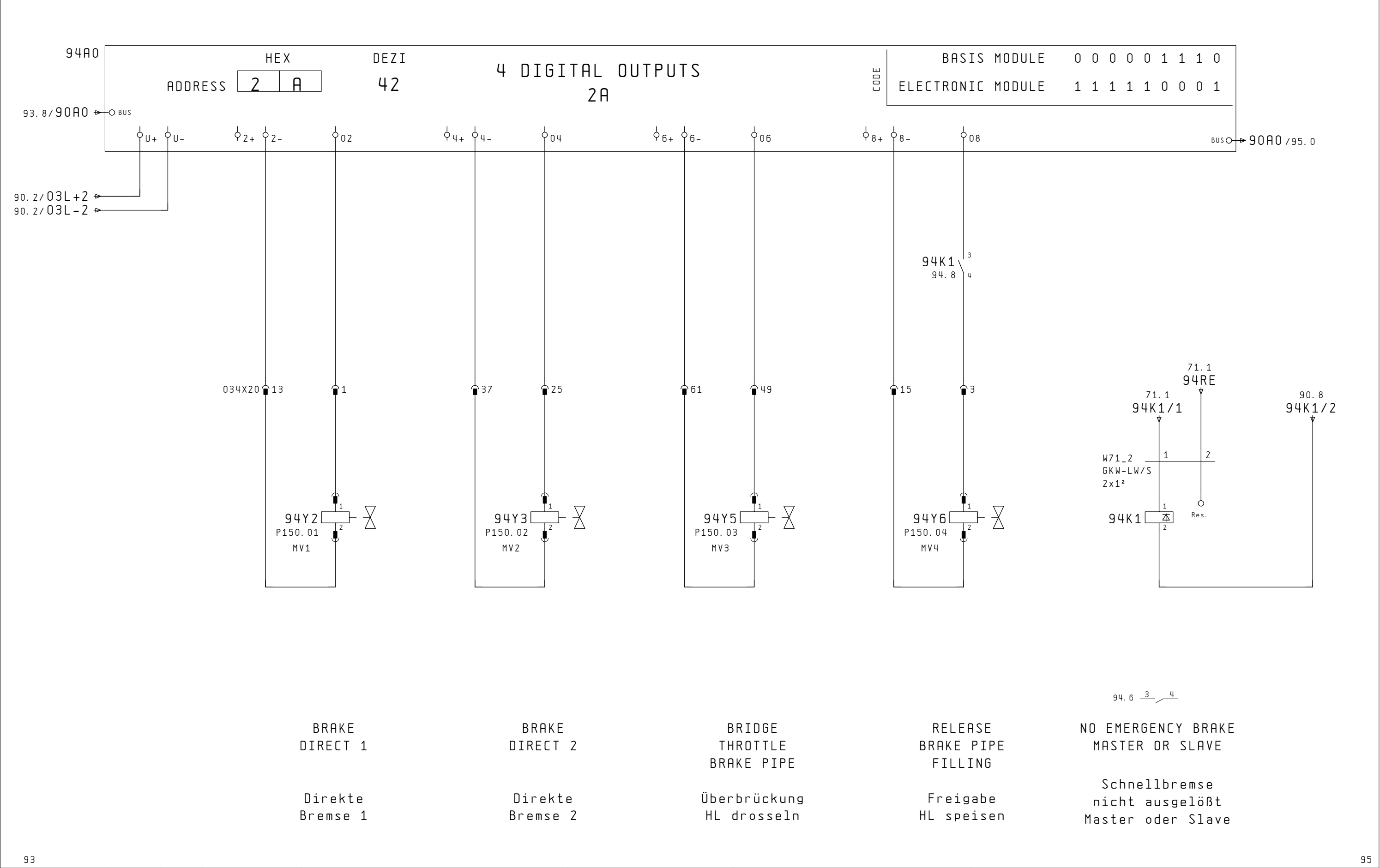


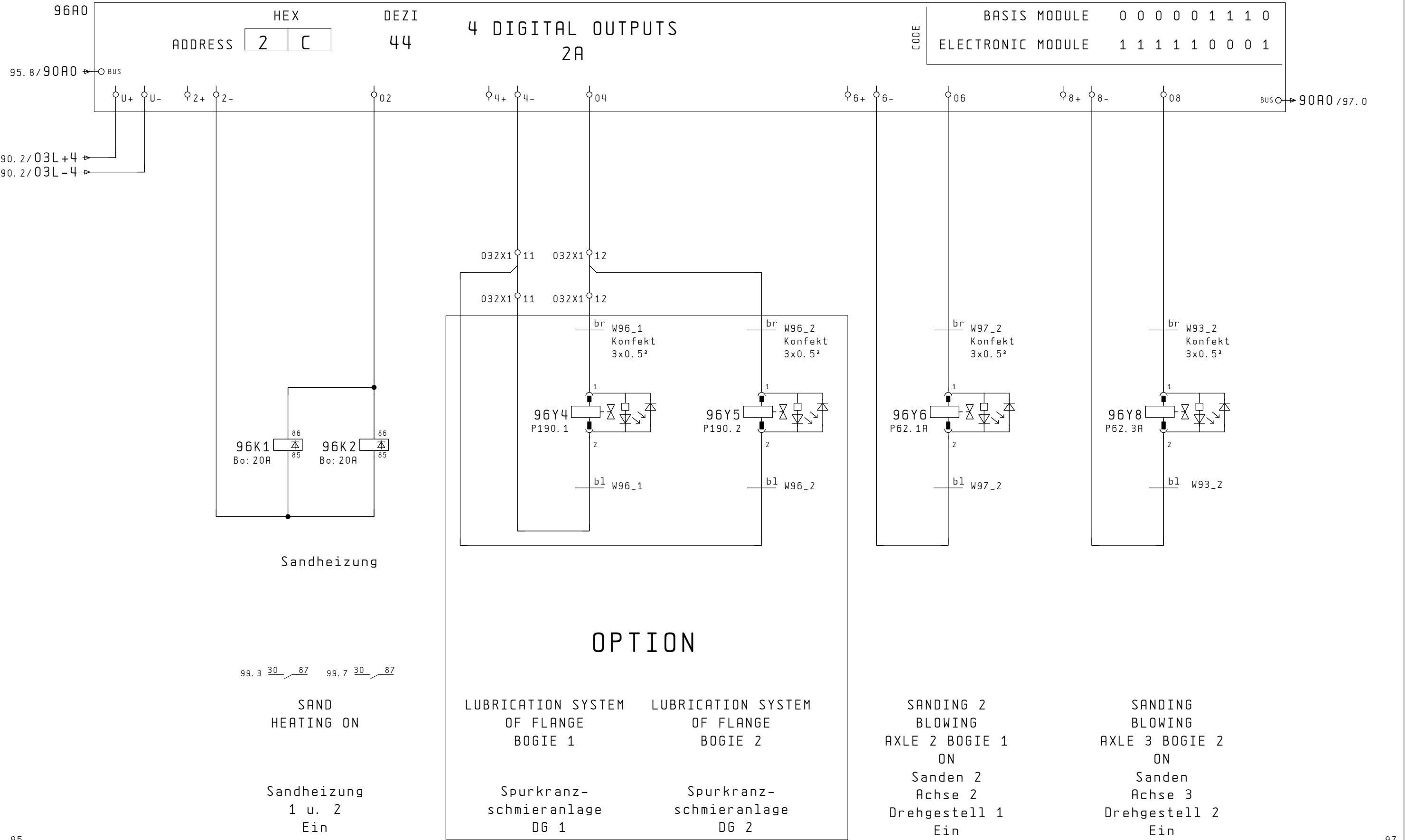


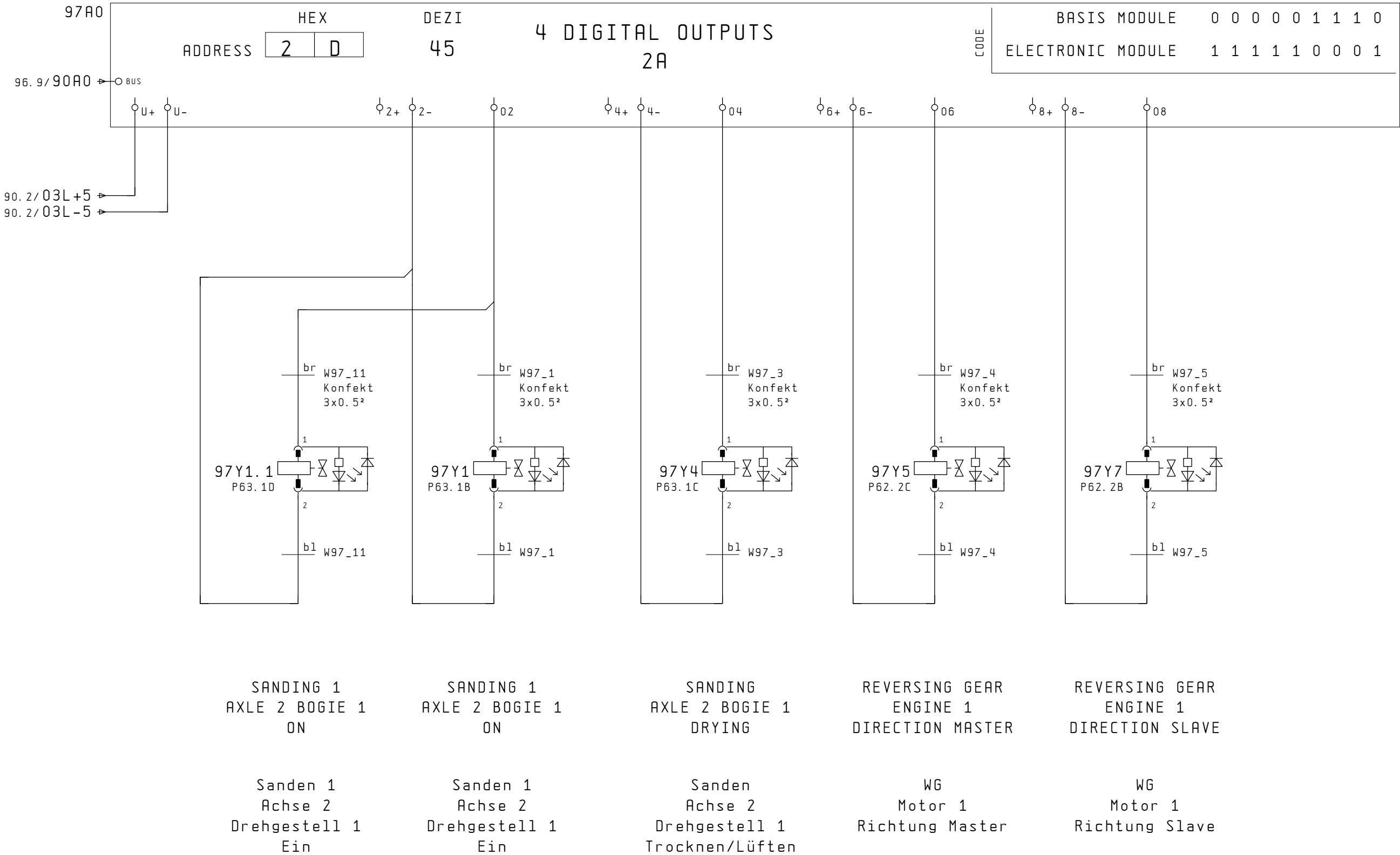


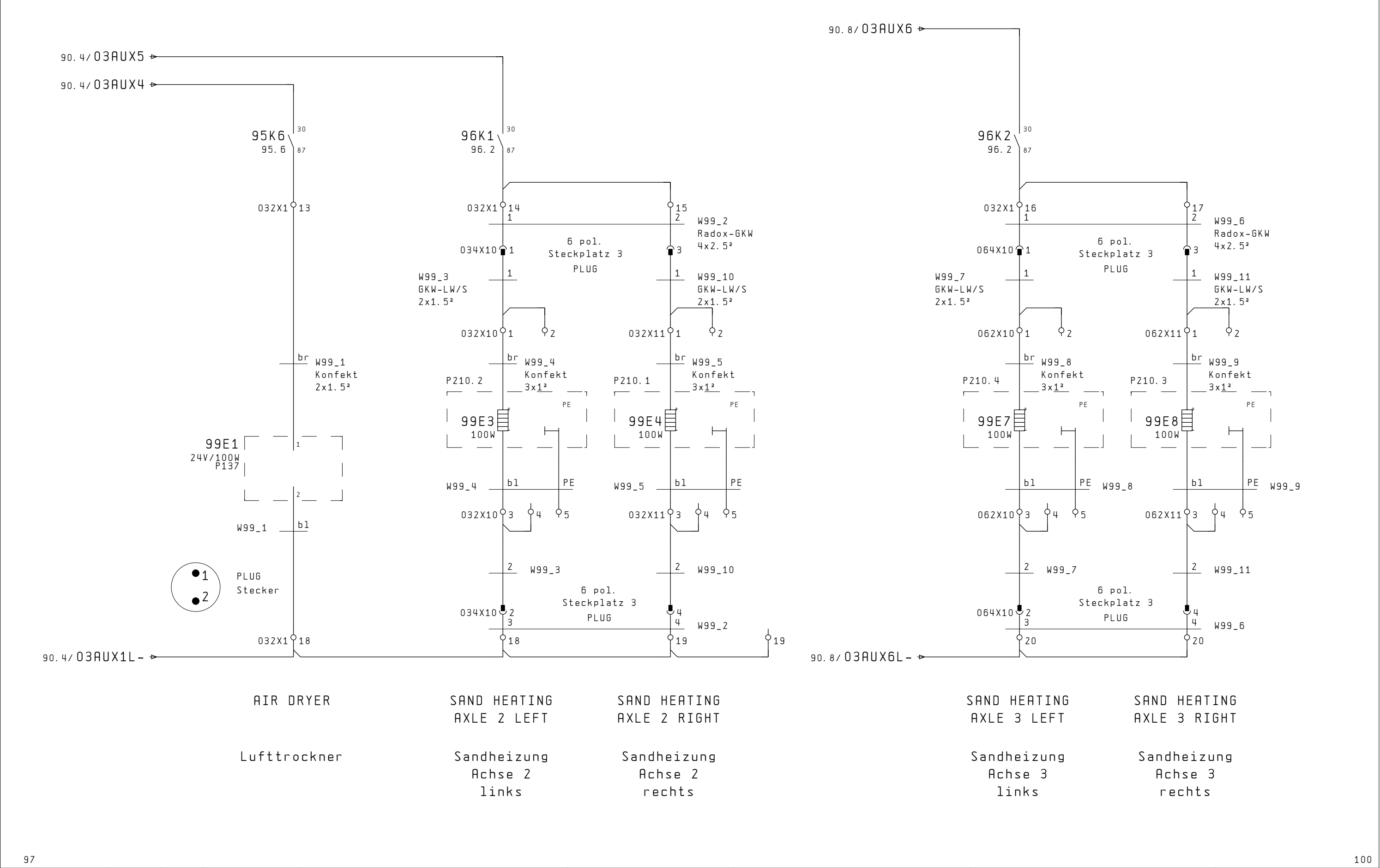
SPARE		PARKING BRAKE RELEASED		SPARE		SPARE		SPARE		SPARE		SPARE	
Reserve		Handbremse gelöst		Reserve		Reserve		Reserve		Reserve		Reserve	

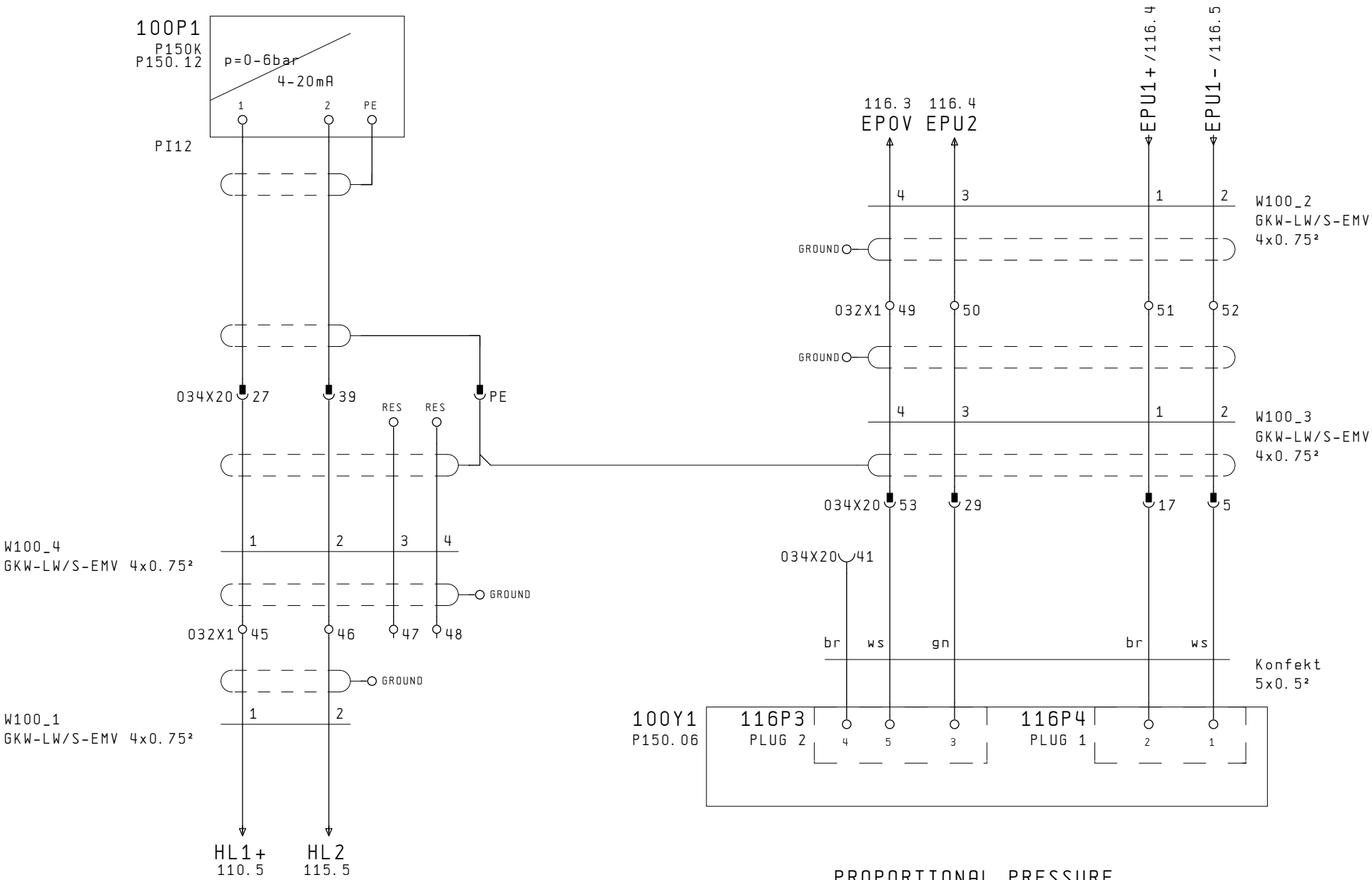










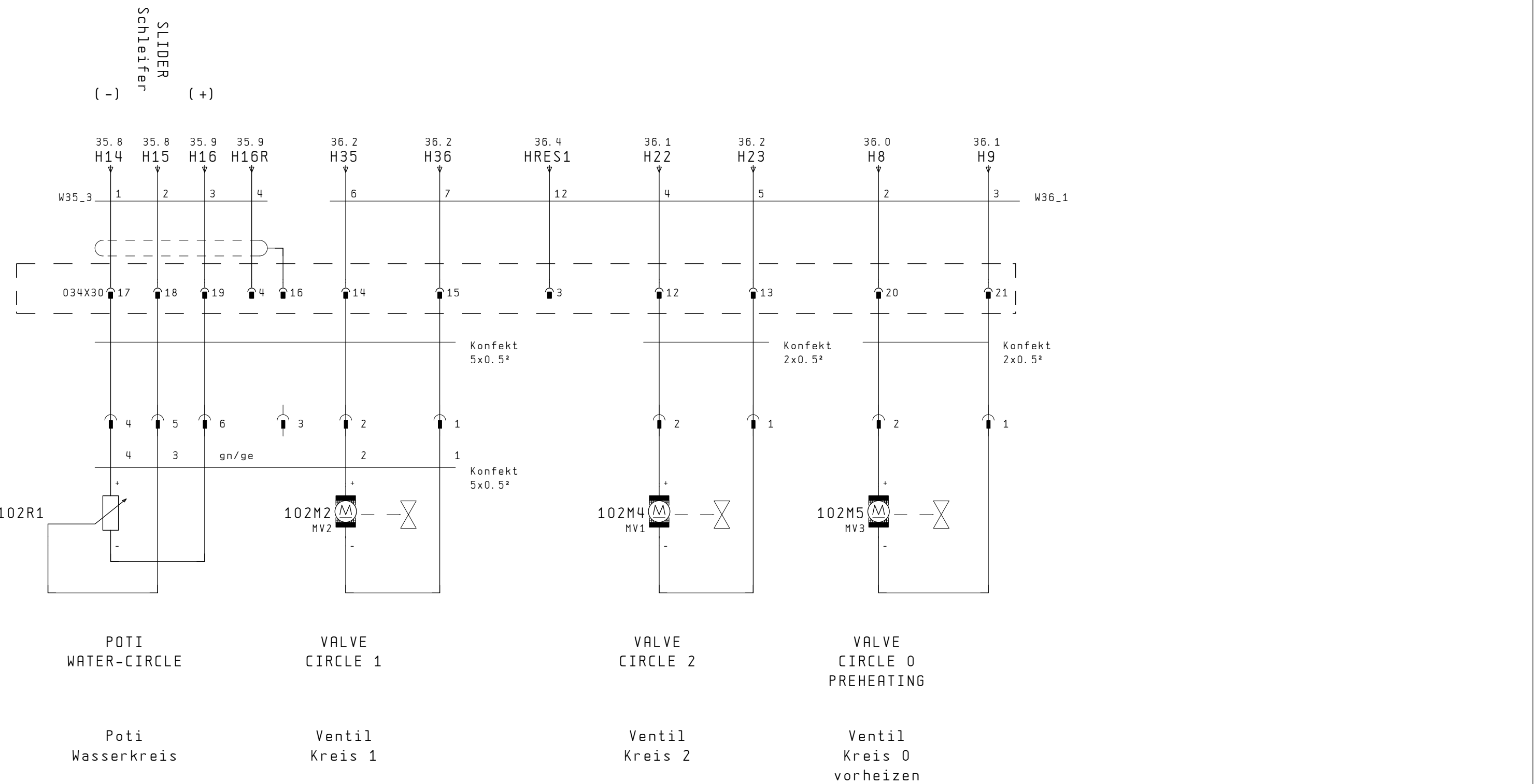


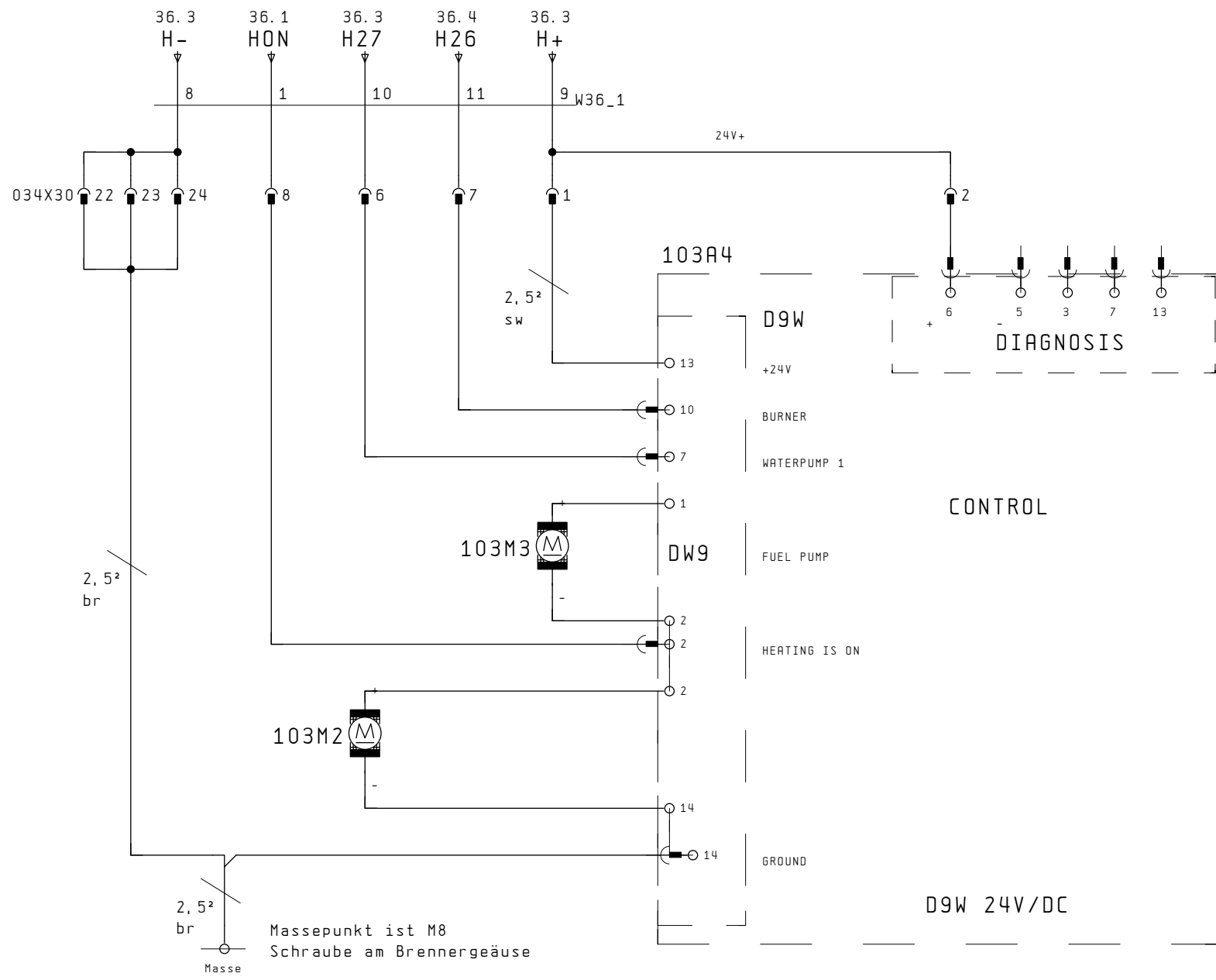
PROPORTIONAL PRESSURE
REDUCING VALVE

Poportional-Druckregelventil



5,5 bar	=	20,0 mA
5,0 bar	=	18,5 mA
3,5 bar	=	14,2 mA
0 bar	=	4,0 mA





CIRCLE 2
WATER PUMP

FUEL
PUMP

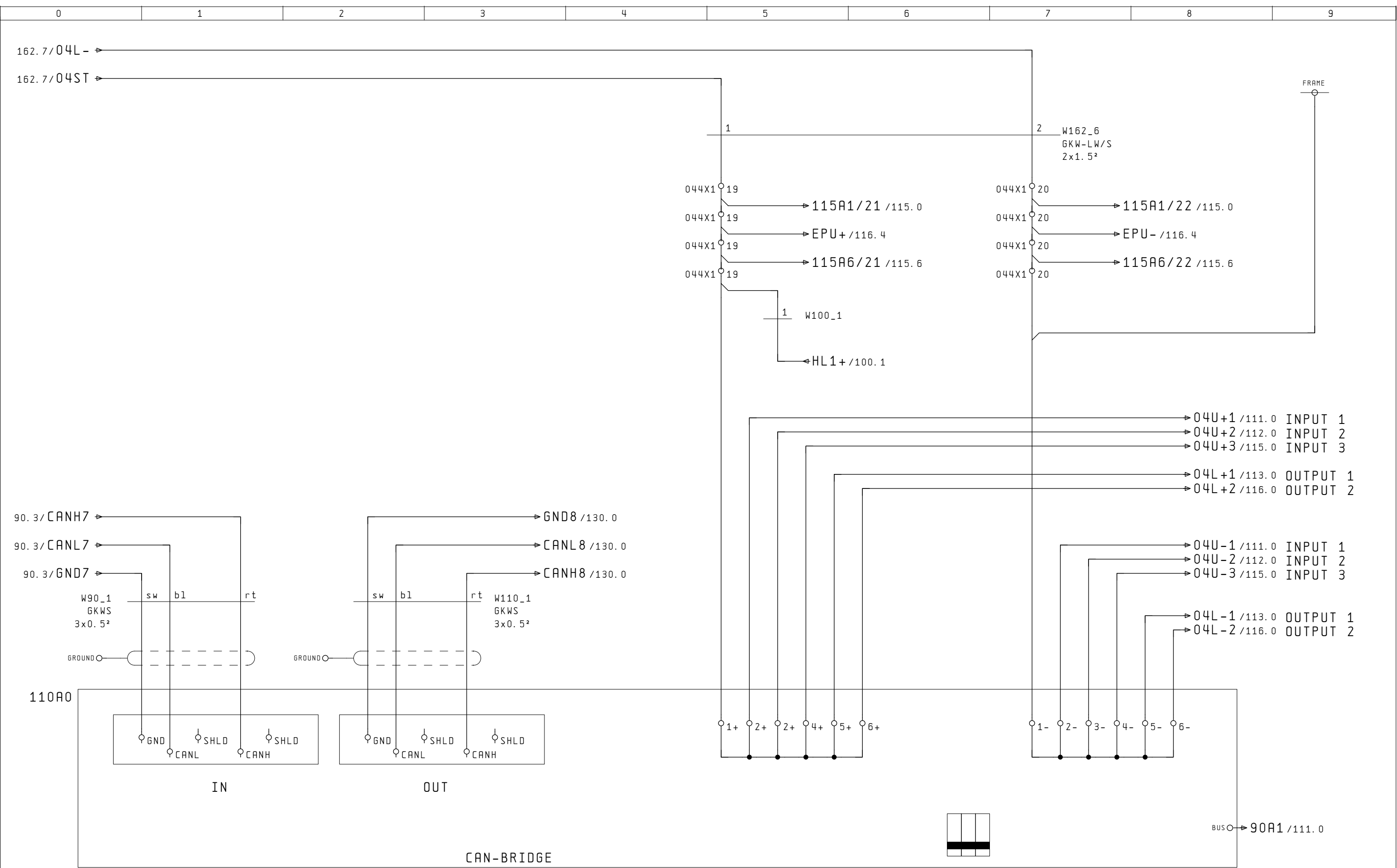
WATER HEATER

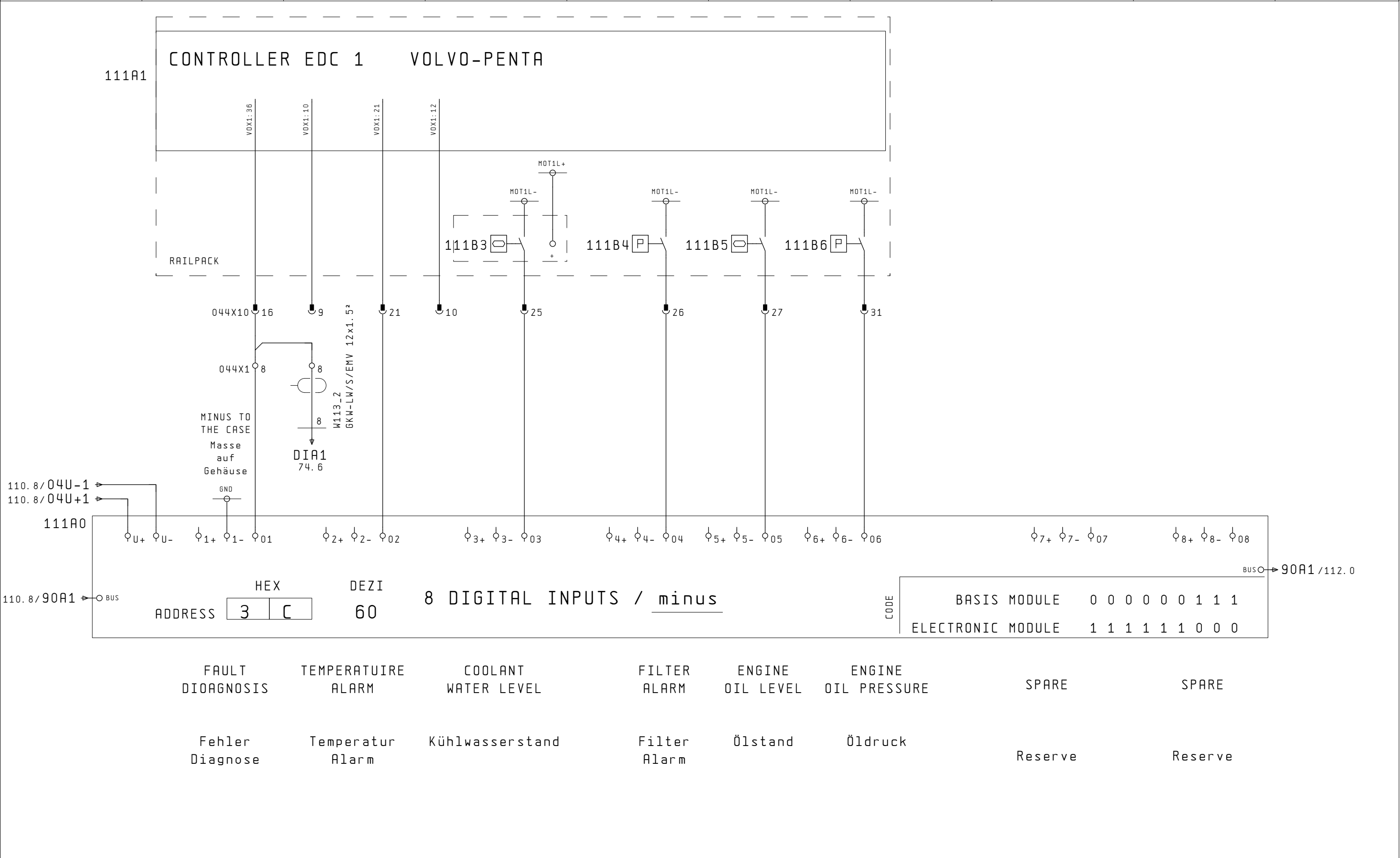
Kreis 2
Wasserpumpe

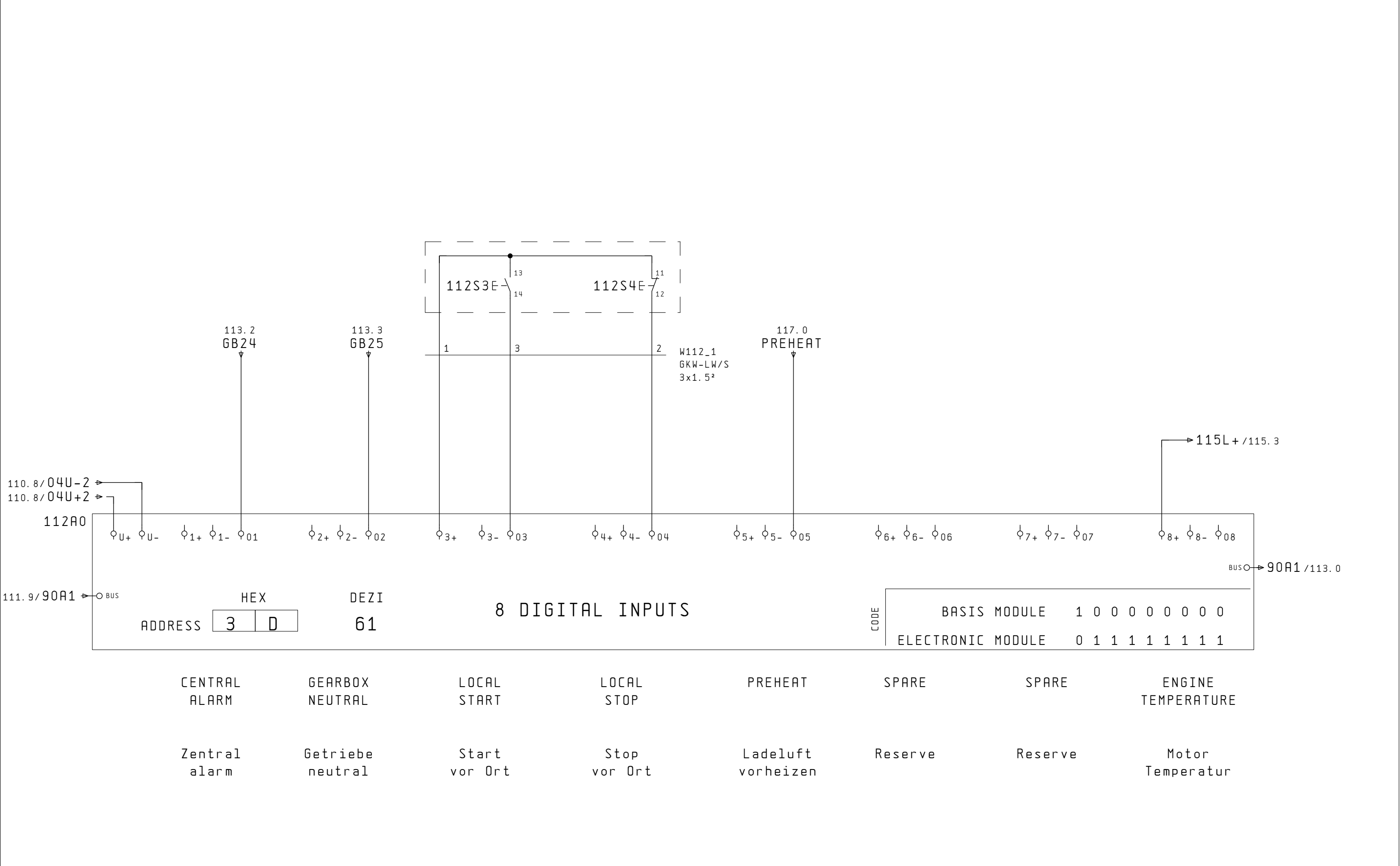
Brennstoff
Dosier-
pumpe

Warmwasserheizgerät

			DATE	28.04.2004	MULTI-PURPOSE-VEHICLE (MPV) MASTER		Bereich 03 Lüftung AREA 03 VENTILATION	160 866 M		=	
			DRAWN	MOH						+	
			CHECK.	KAP							
REV.	DATE				Revision j			5. 661. 557 167-4		Pg. 103	
										260 Pg.	

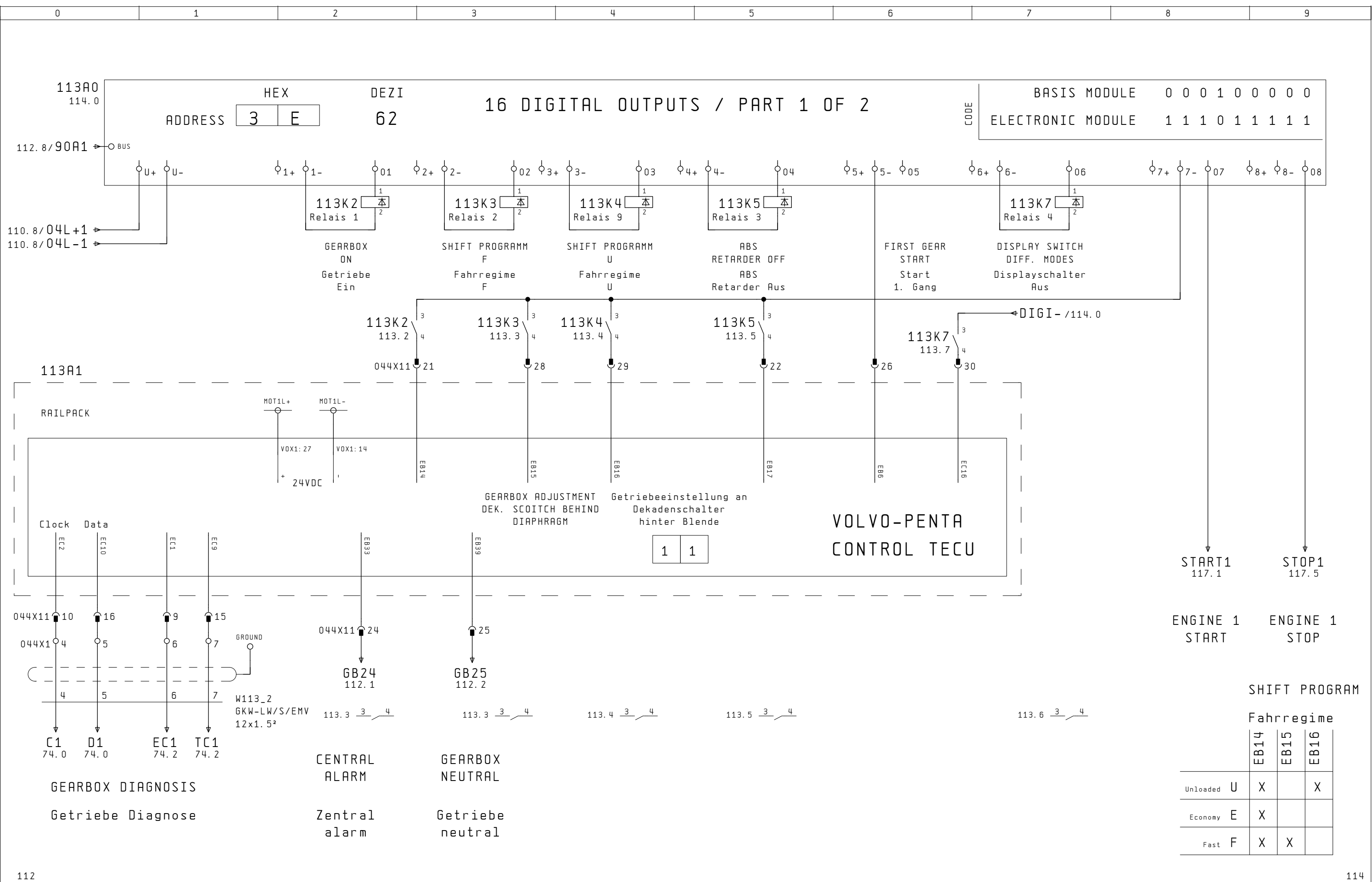


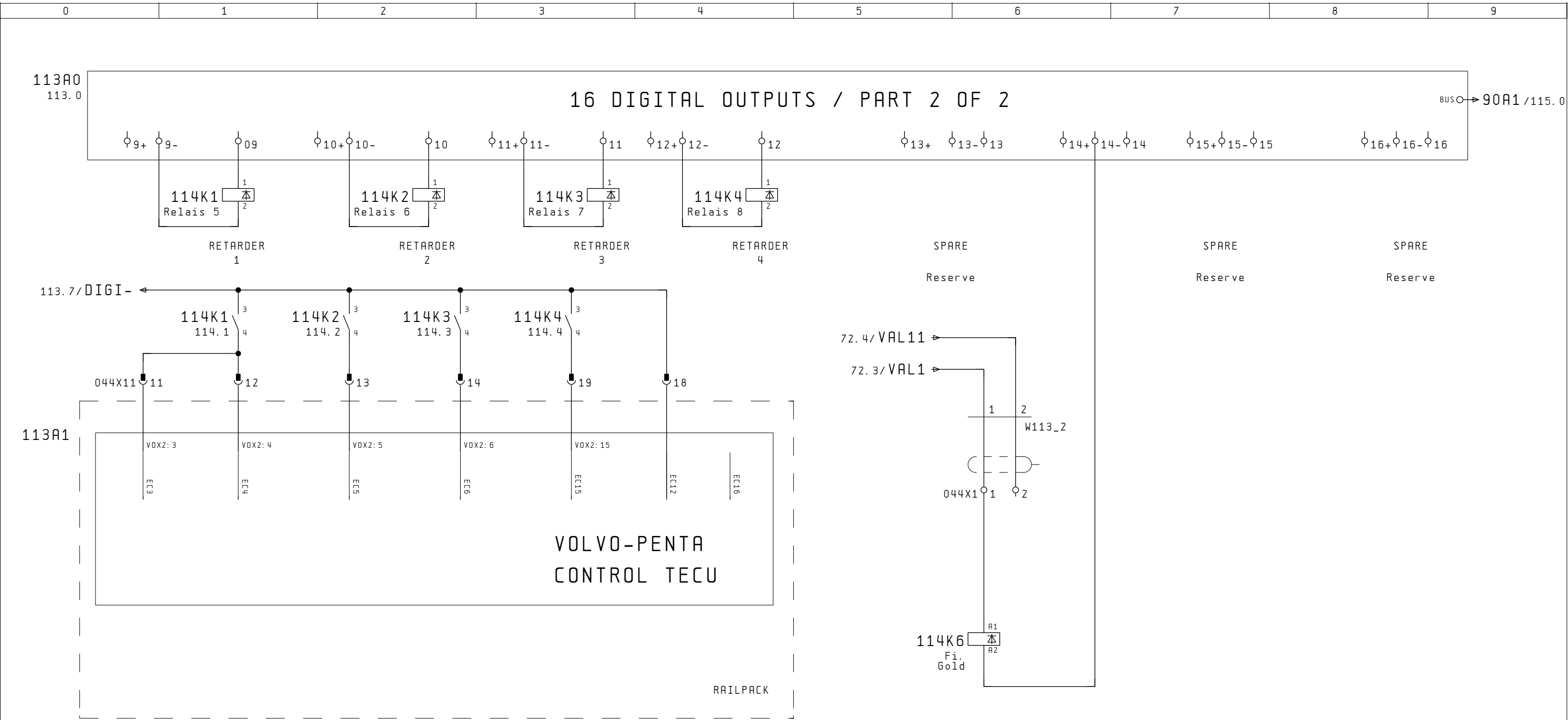


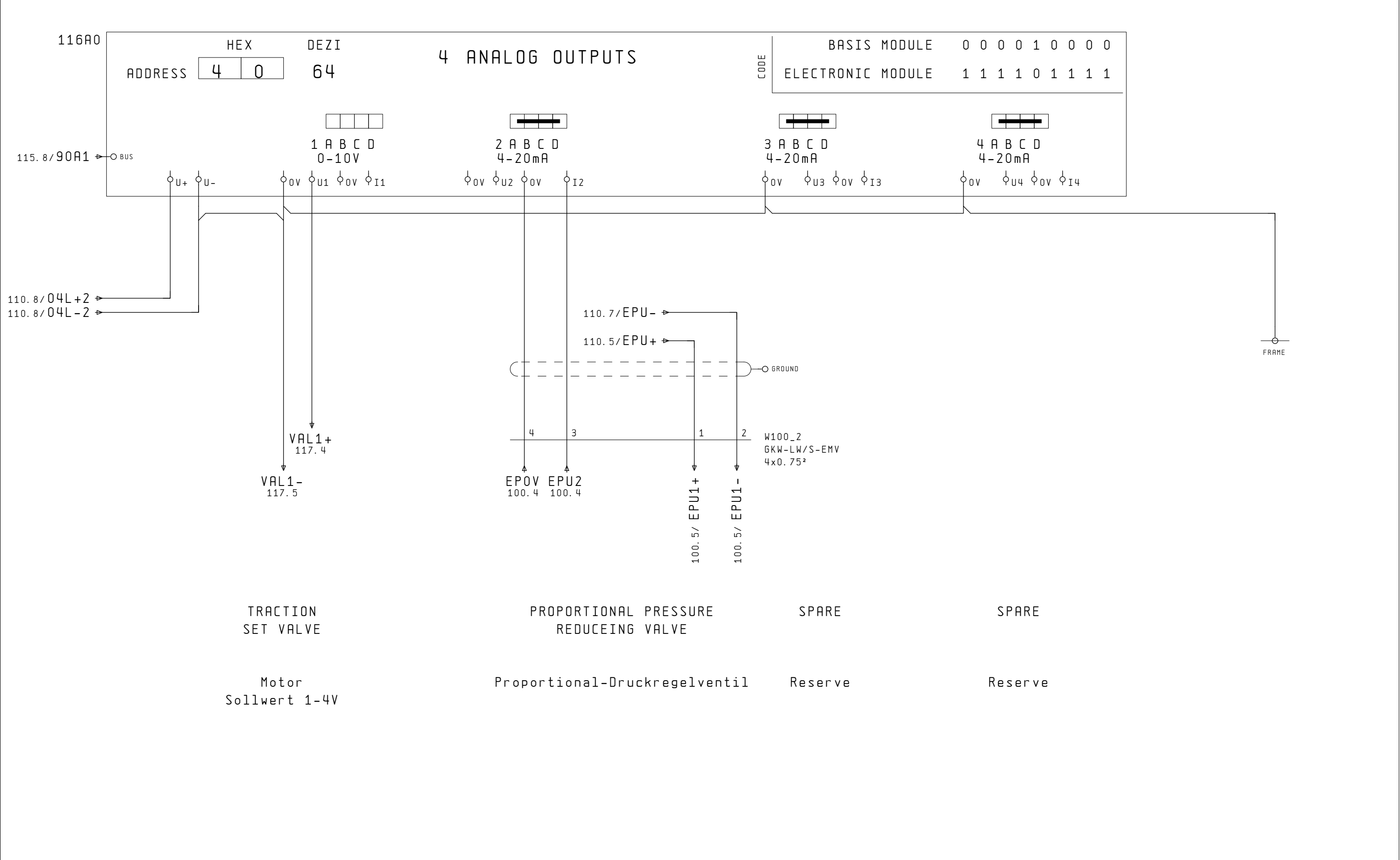


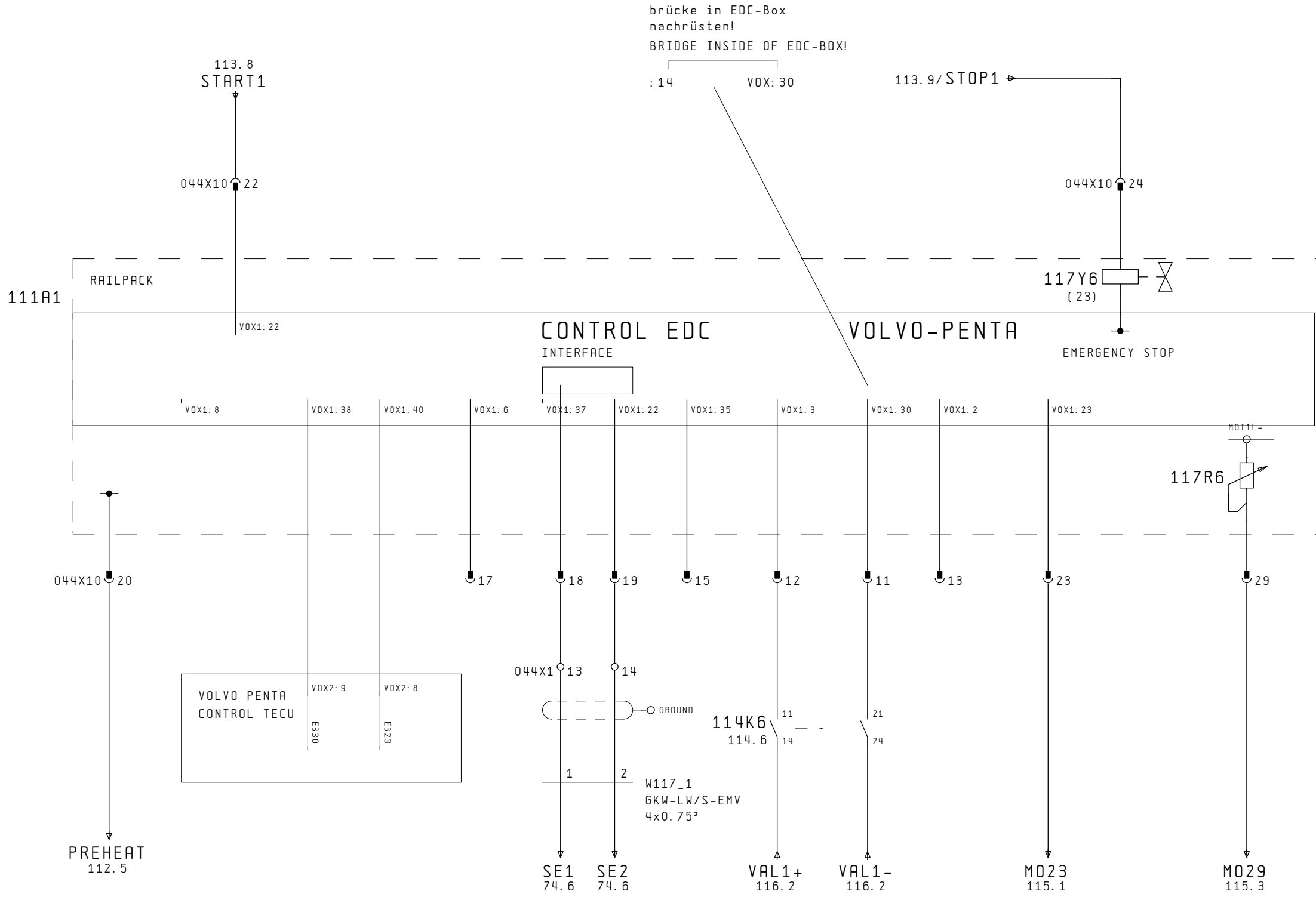
111

113









PREHEATING
IN WORK

INTERFACE
EDC / TECU

DIAGNOSIS PLUG
ENGINE 1

SPEED VALUE

REVOLUTIONS

ENGINE
TEMPERATURE

Motorvorwärmung
arbeitet

Signalaustausch
mit Getriebe-
steuerung TECU

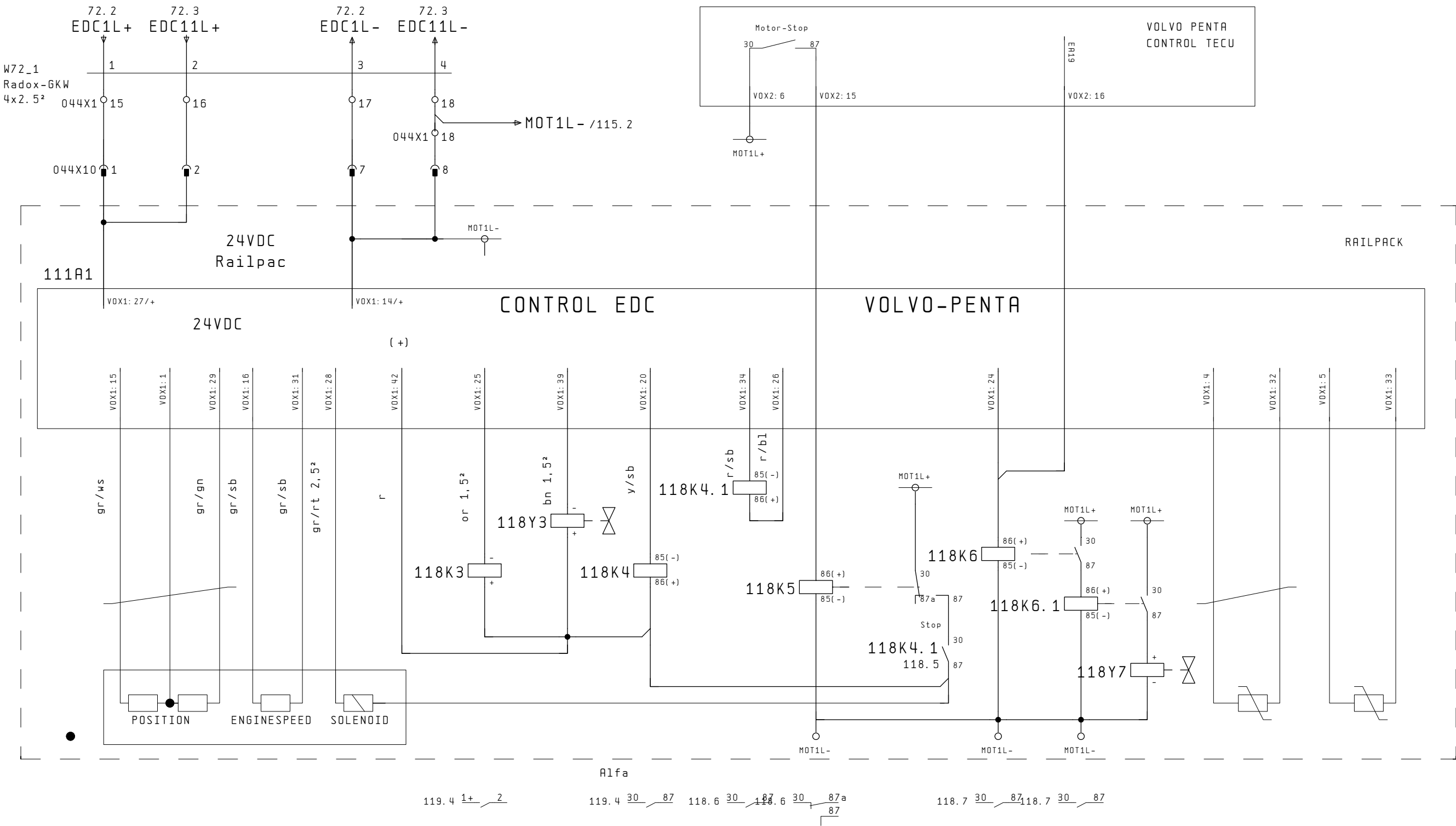
EDC-Diagnose-
Stecker Motor 1
(serielle I/O)

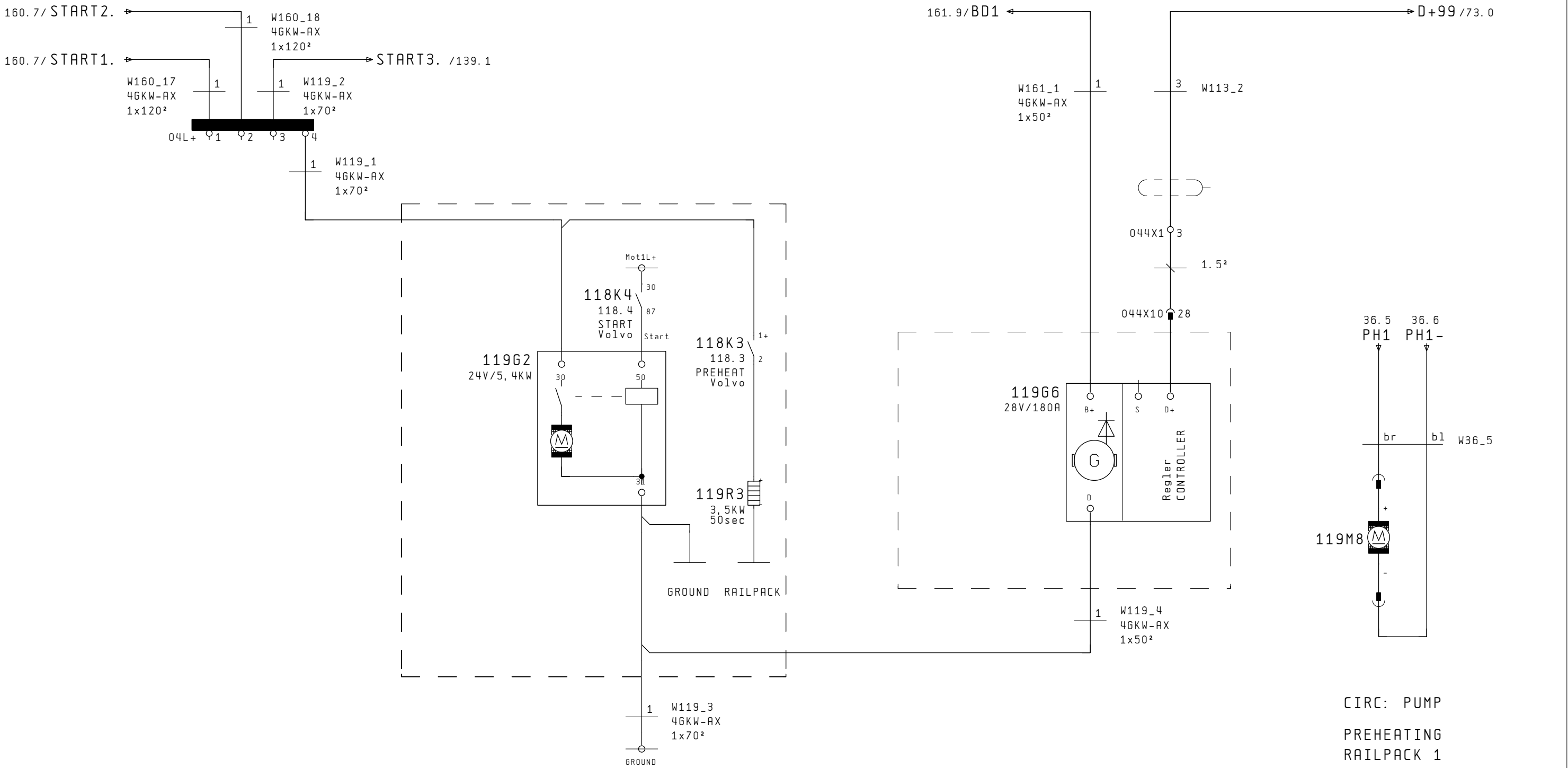
Sollwertvorgabe
Leistung/Drehzahl

Drehzahl
aus EDC: 30Imp/U
max Drehzahl: 2050U/min
max 1025Hz
4-20mA=0-2050U/min

Motor-
temperatur

1, 0-4, 0V = 0-100%





----- ENGINE 1 -----

STARTER PREHAETING

----- Motor 1 -----

Anlasser Ansaugluft
vorheizung

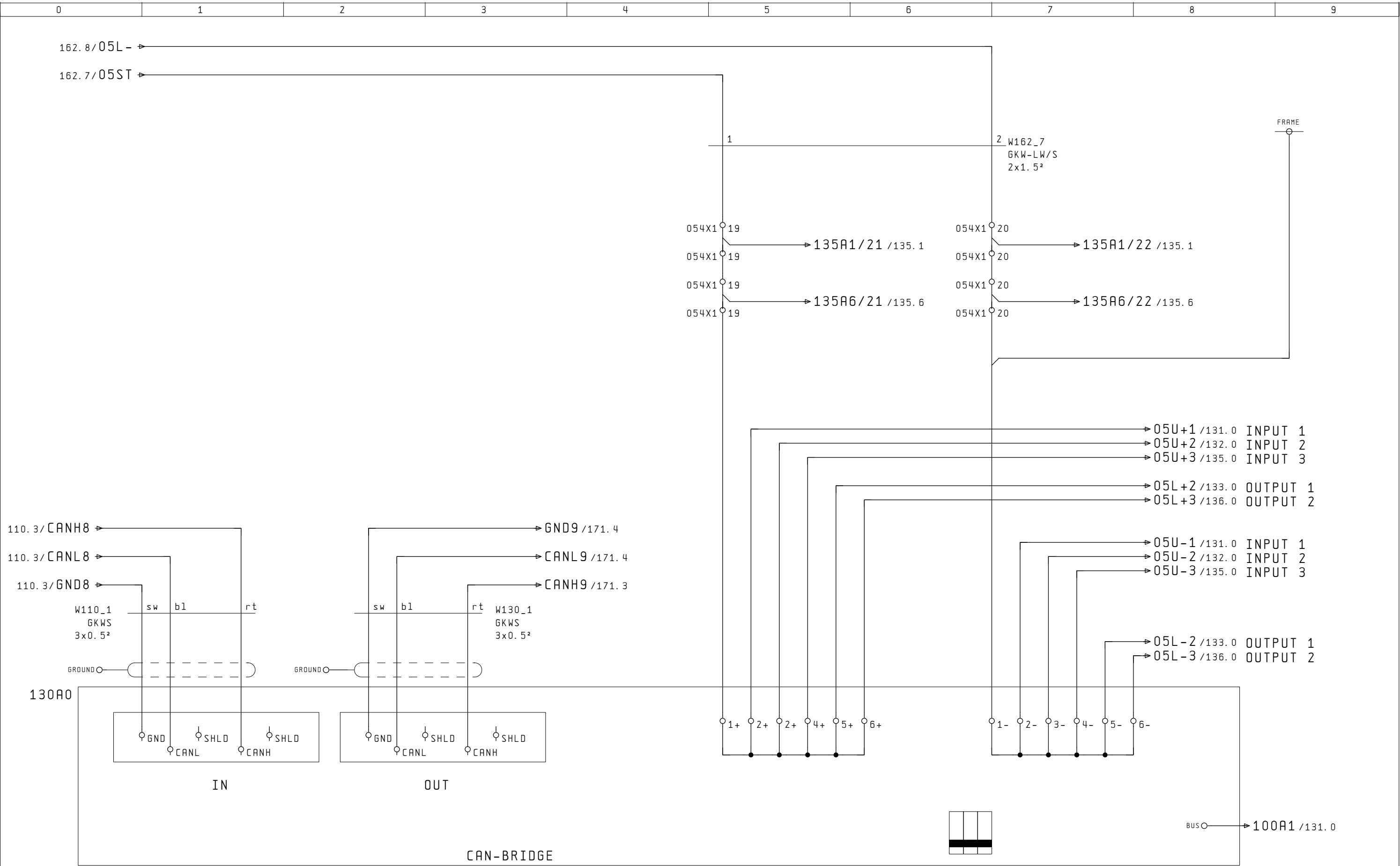
----- ENGINE 1 -----

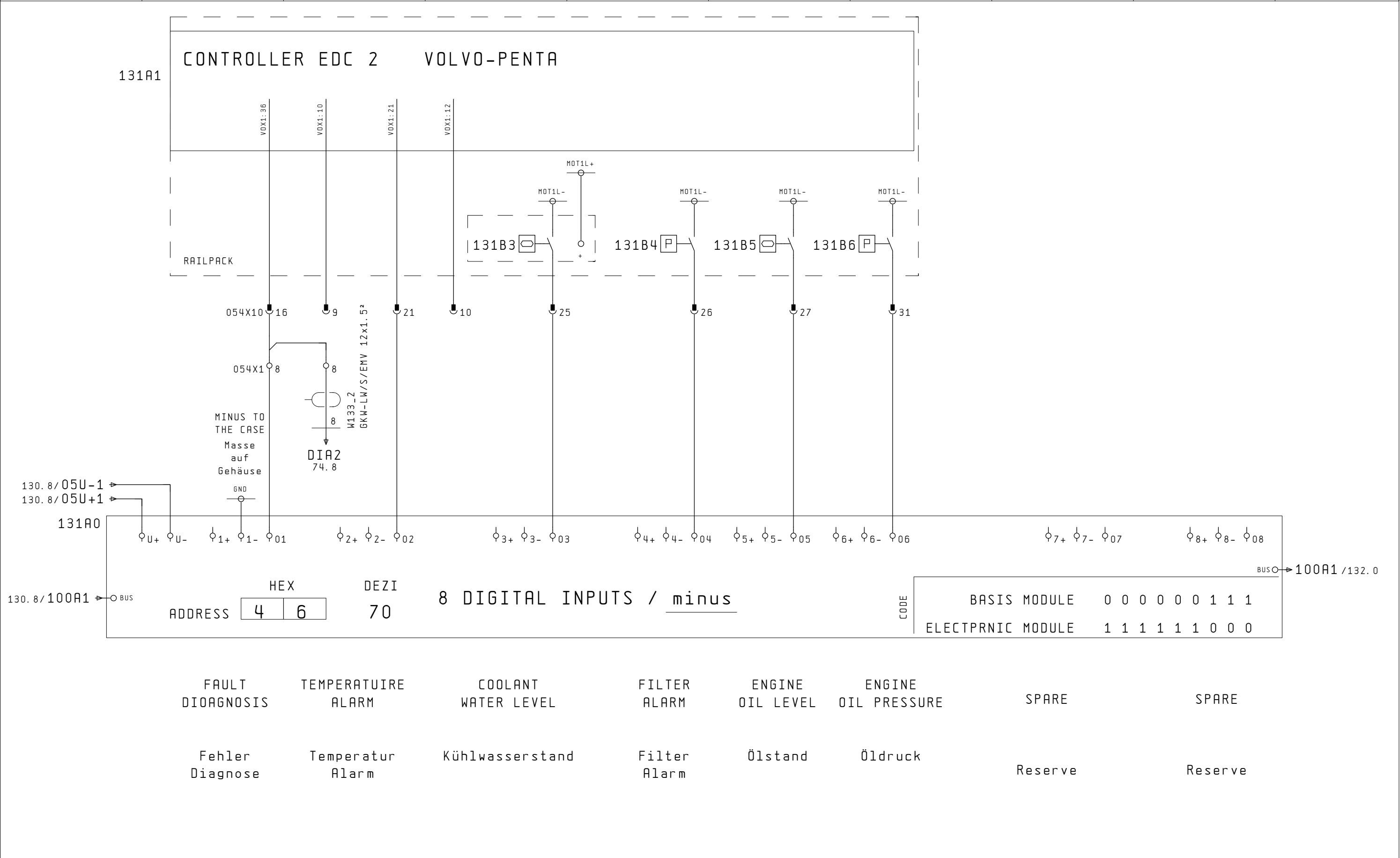
ALTERNATOR

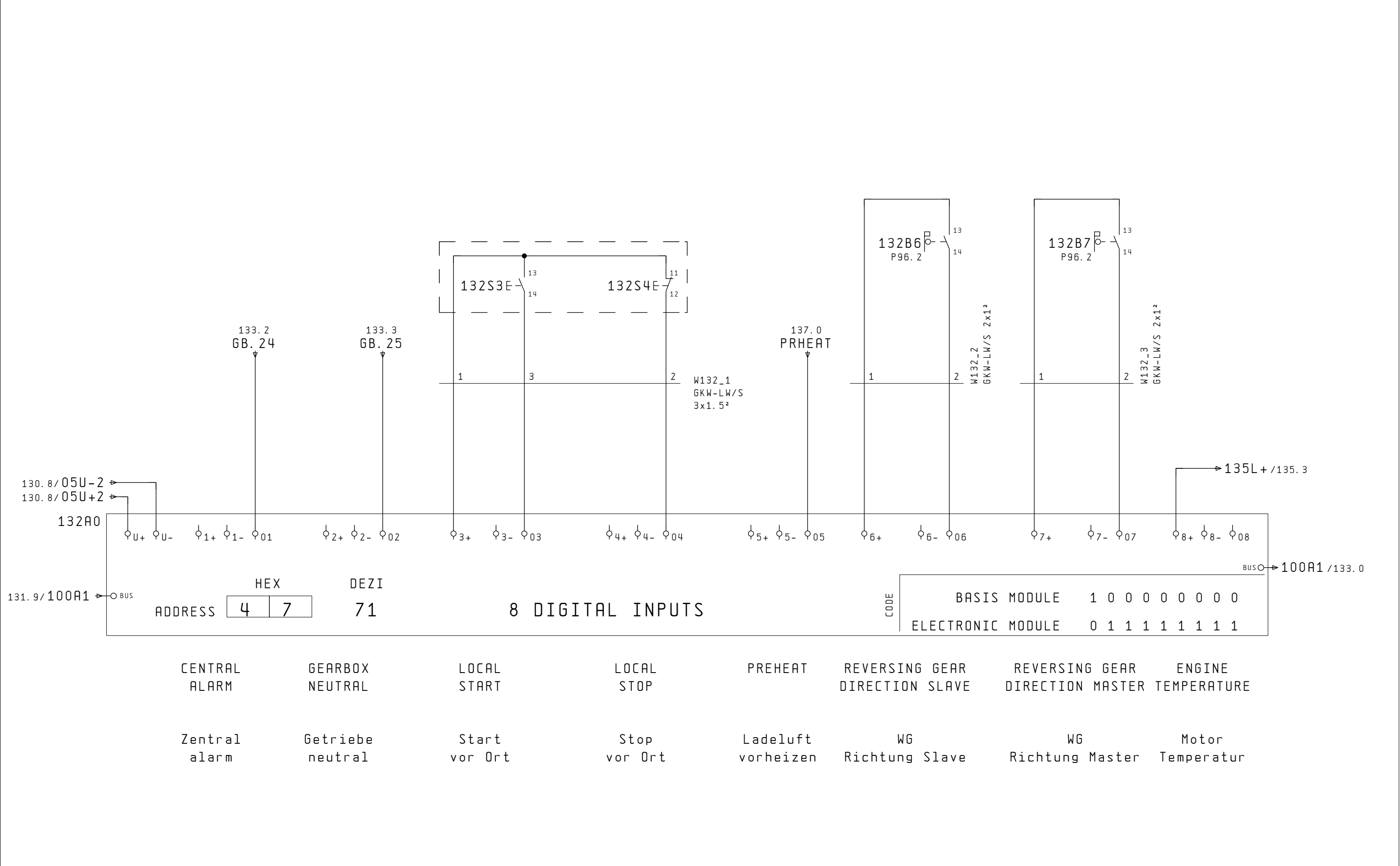
----- Motor 1 -----

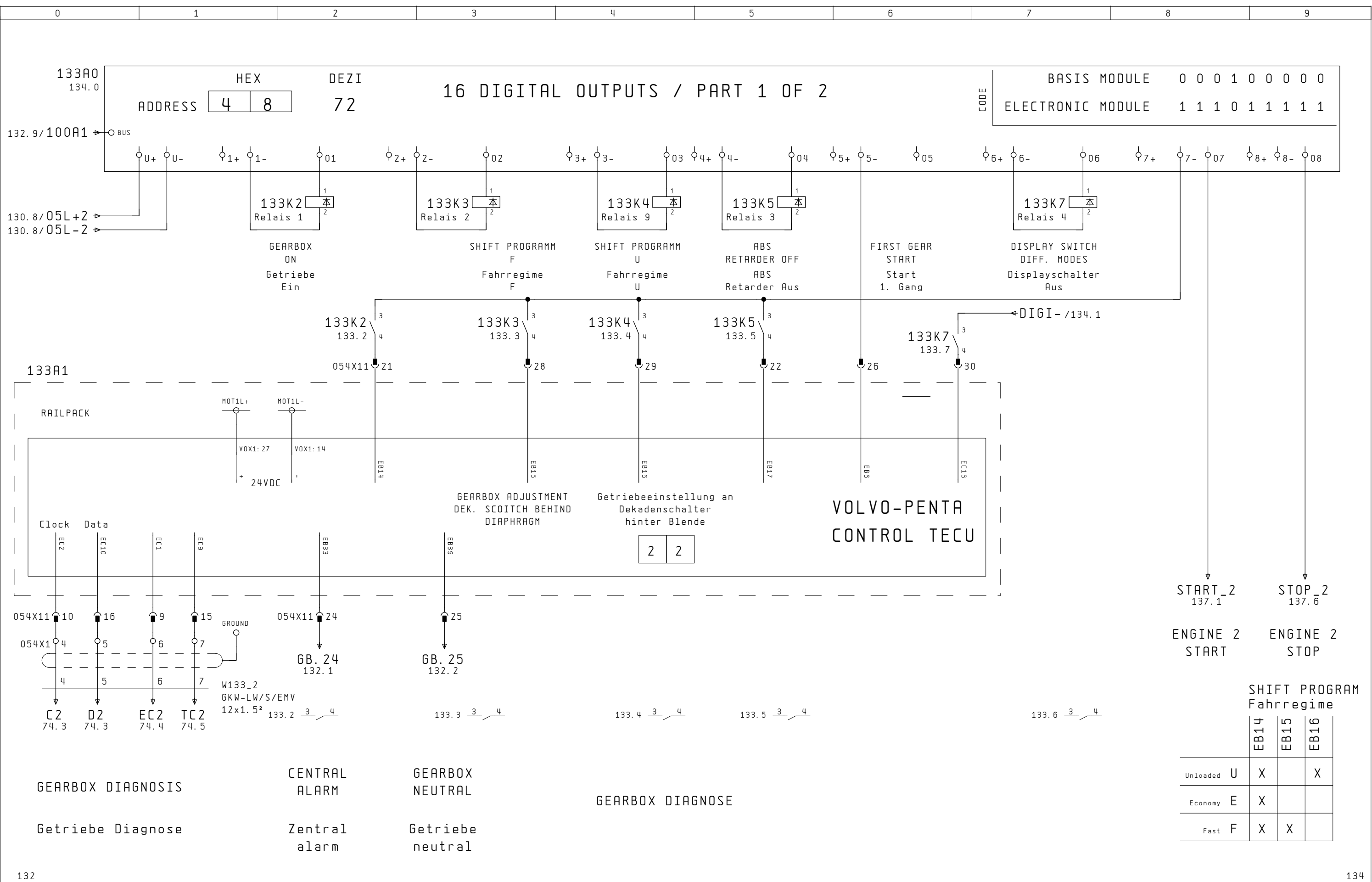
Drehstrom
Lichtmaschine

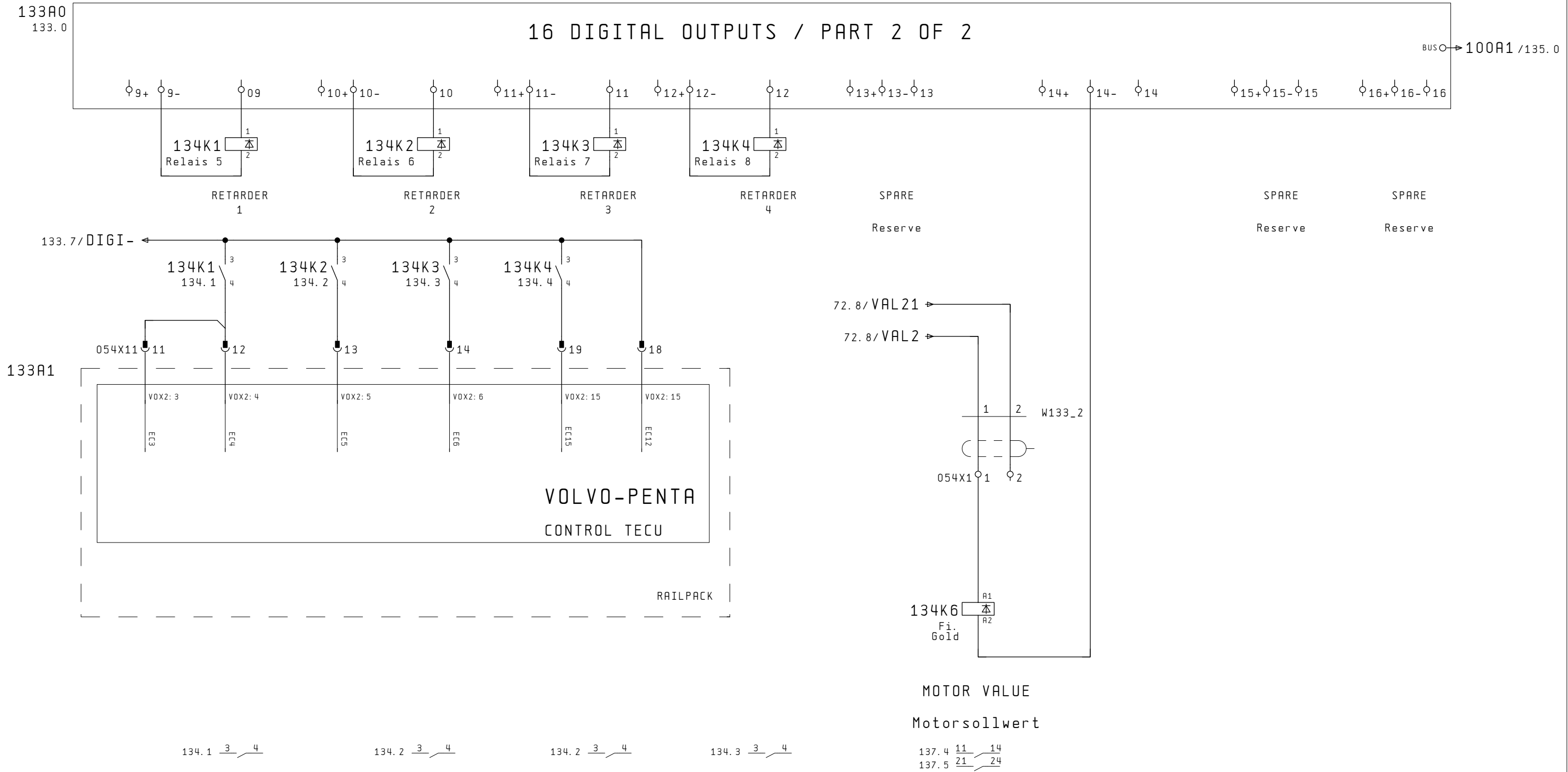
Zirkulation
Motor-
vorheizung

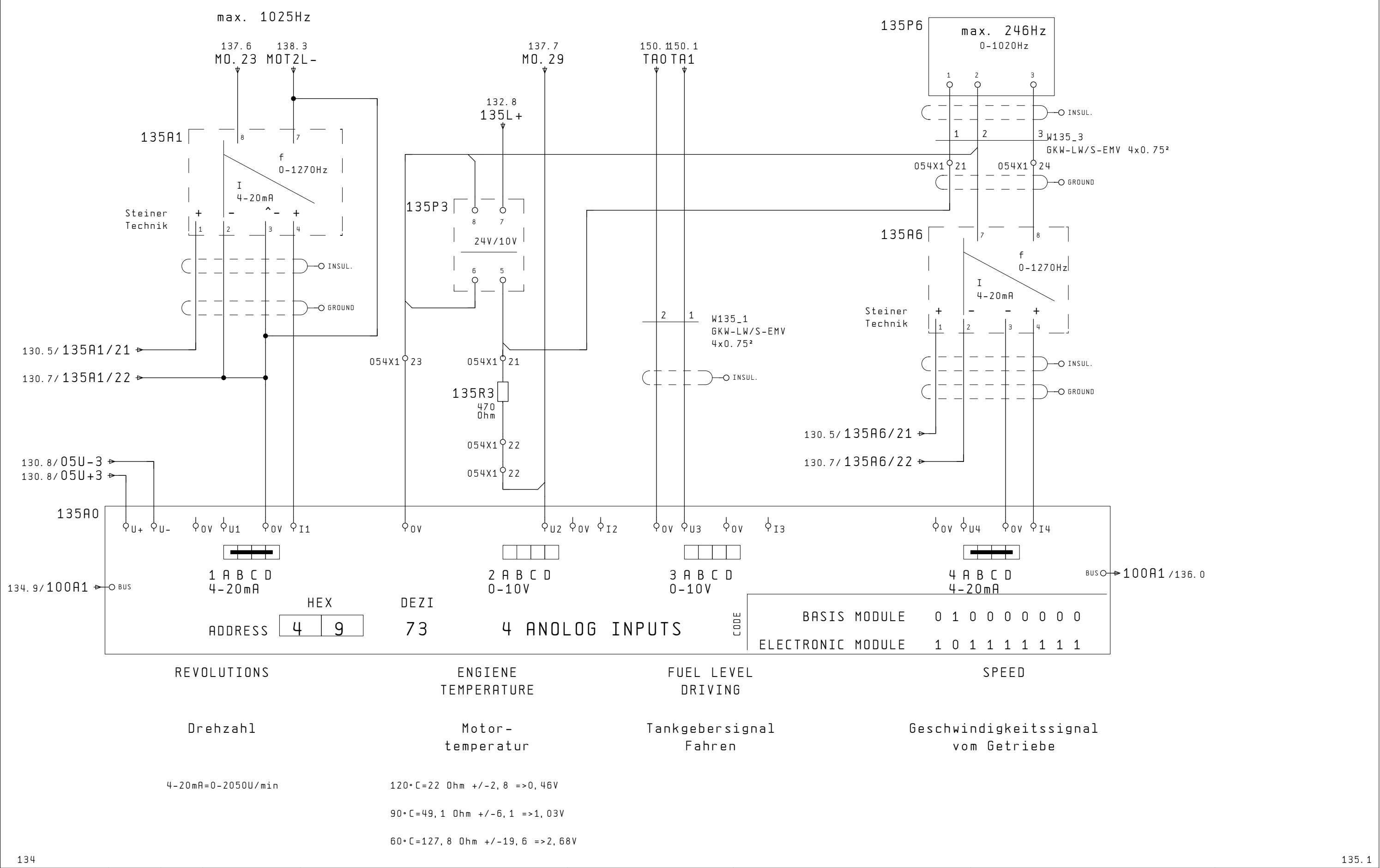


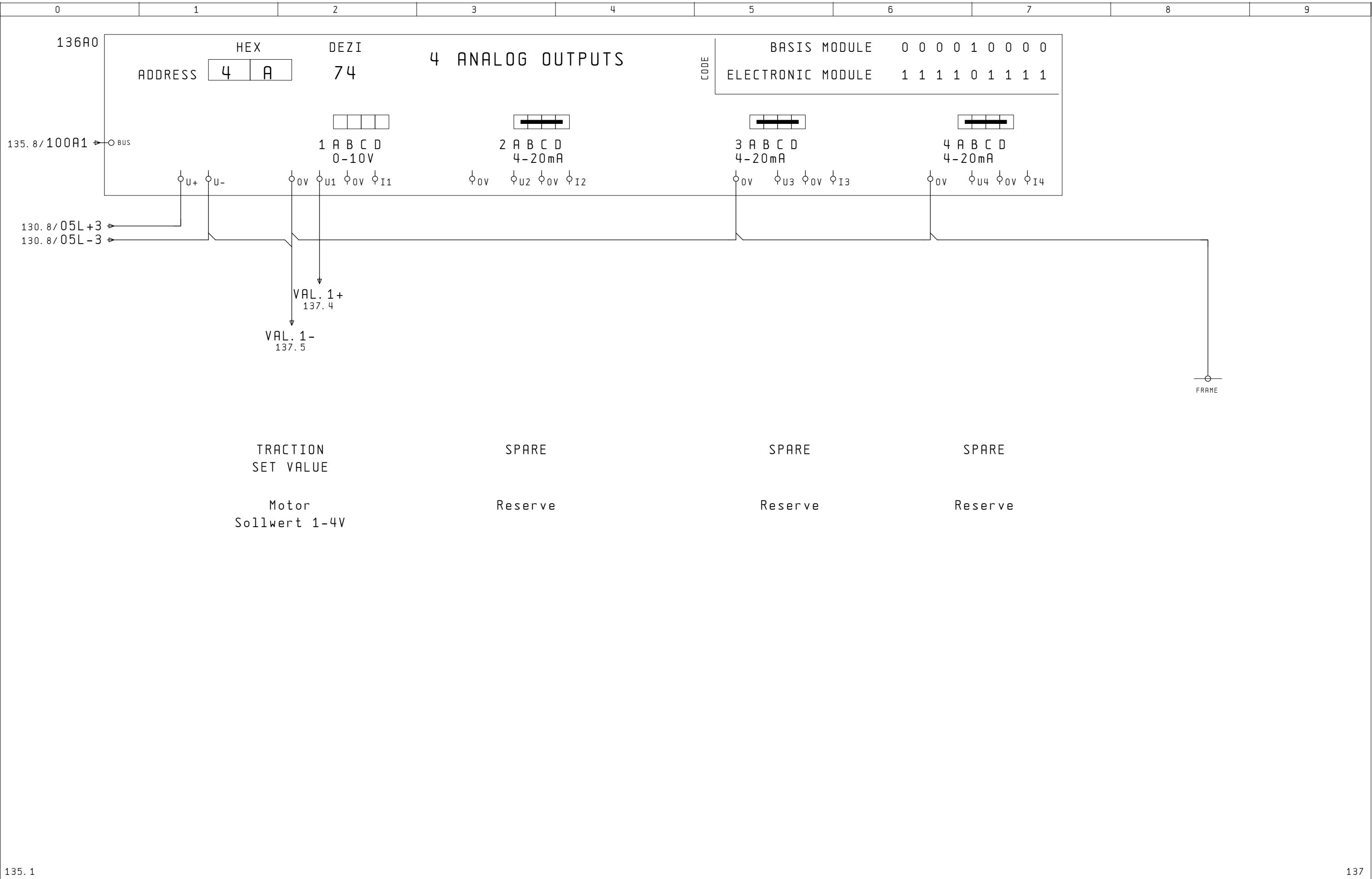


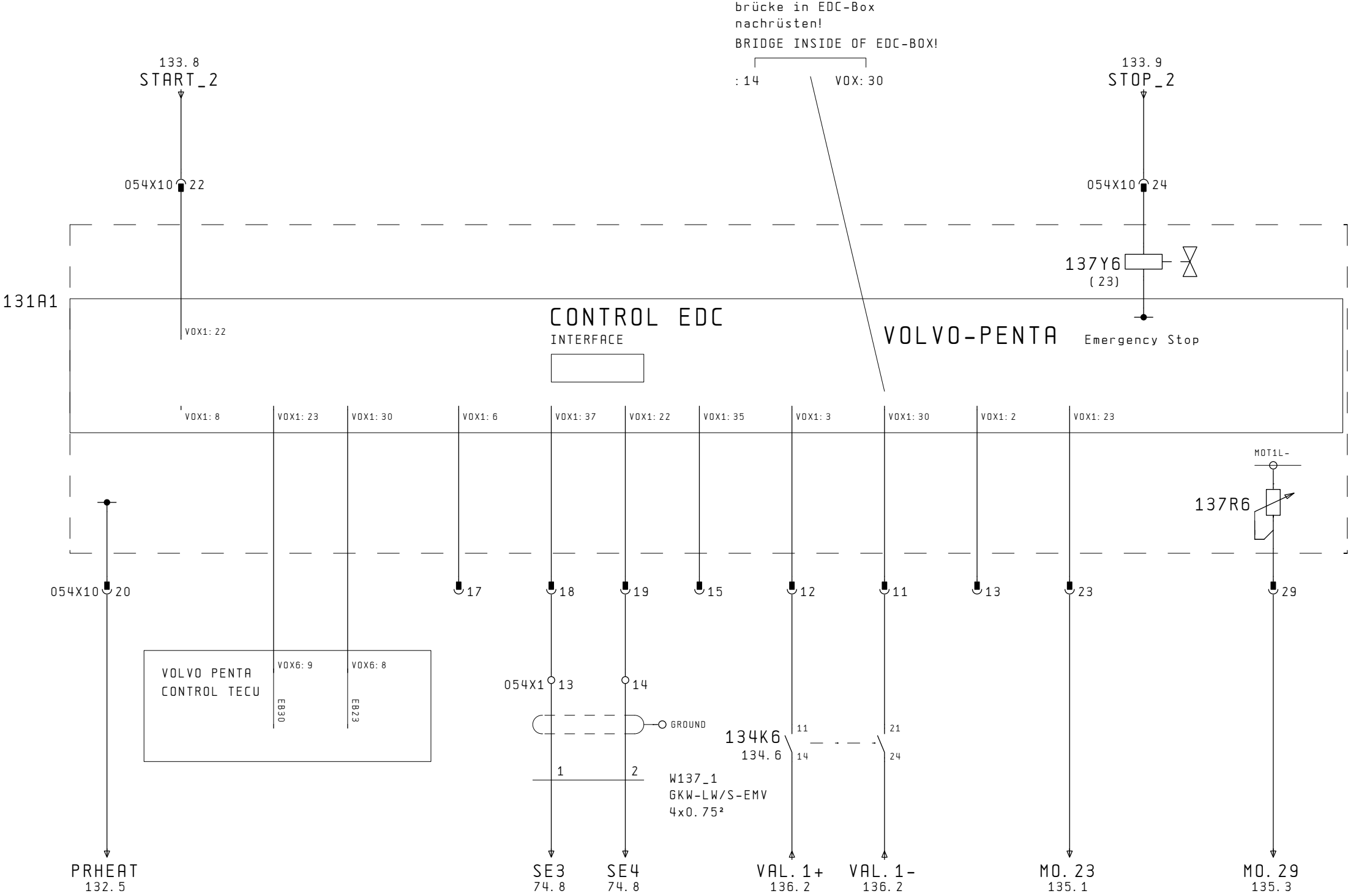












PREHEATING
IN WORK

Motorvorwärmung
arbeitet

INTERFACE
EDC / TECU

Signalaus-tausch
mit Getrie-be-
steuerung TECU

DIAGNOSIS PLUG
ENGINE 2

EDC-Diagnose-
Stecker Motor 2
(serielle I/O)

SPEED VALUE

Sollwertvorgabe
Leistung/Drehzahl

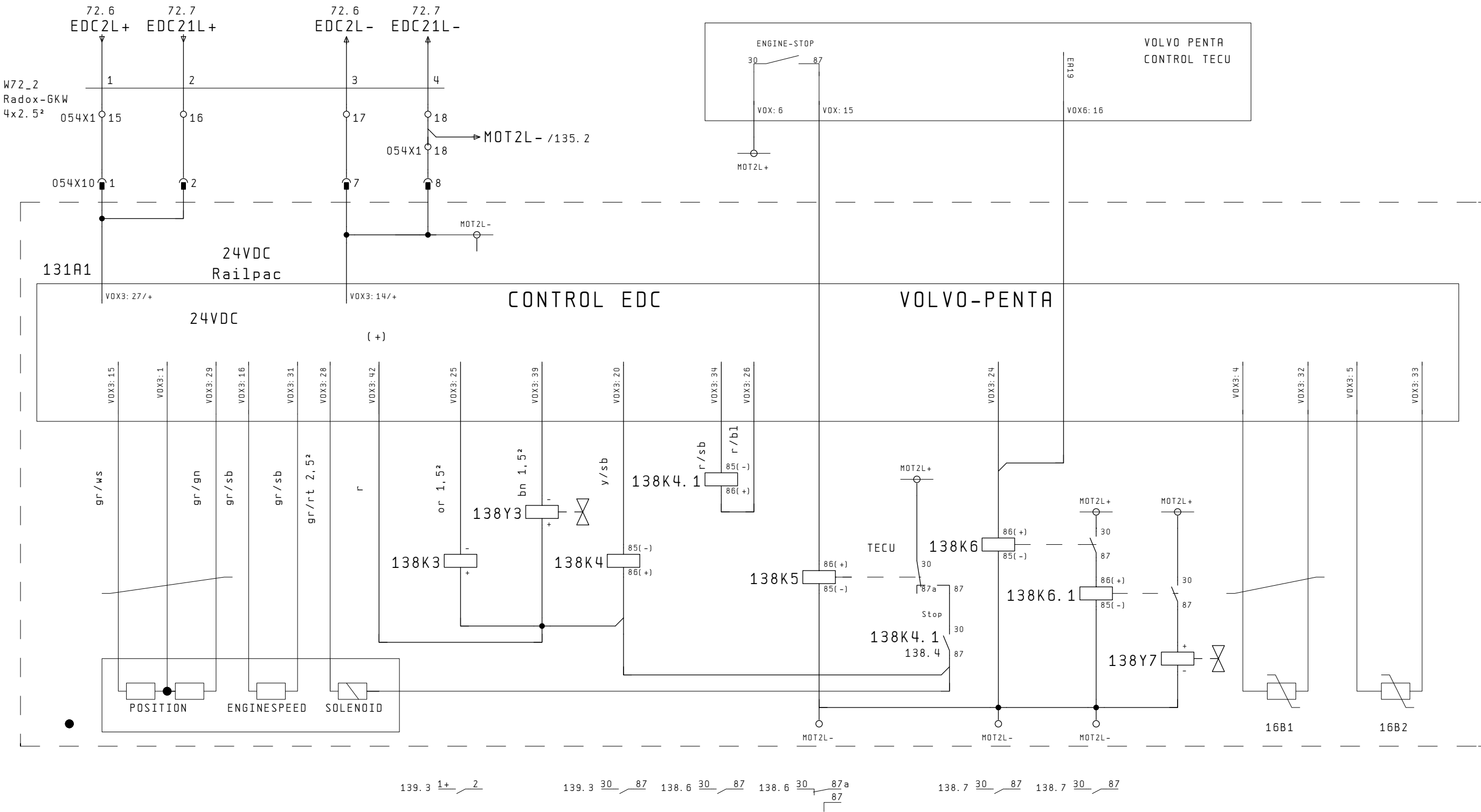
1,0-4,0V = 0-100%

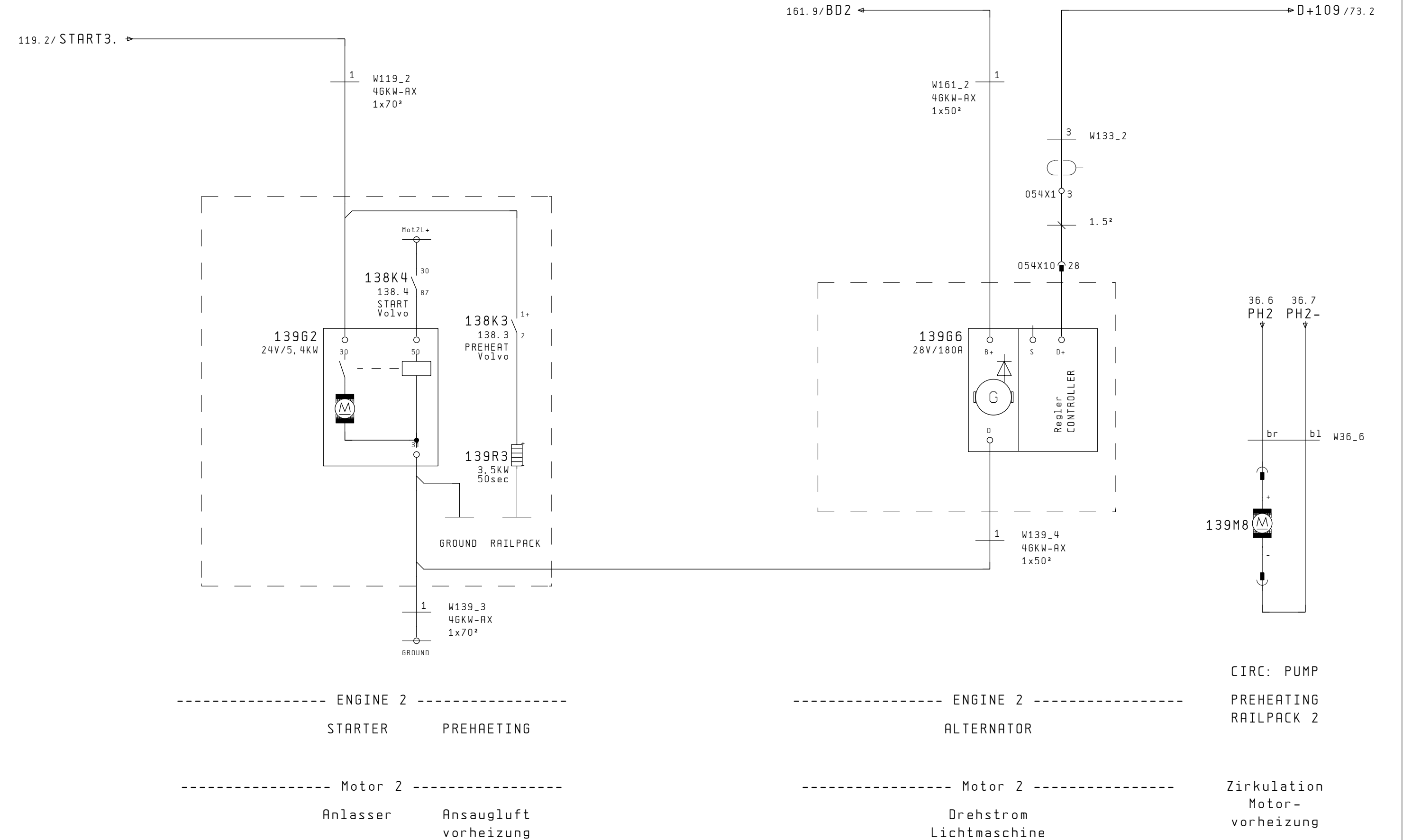
REVOLUTIONS

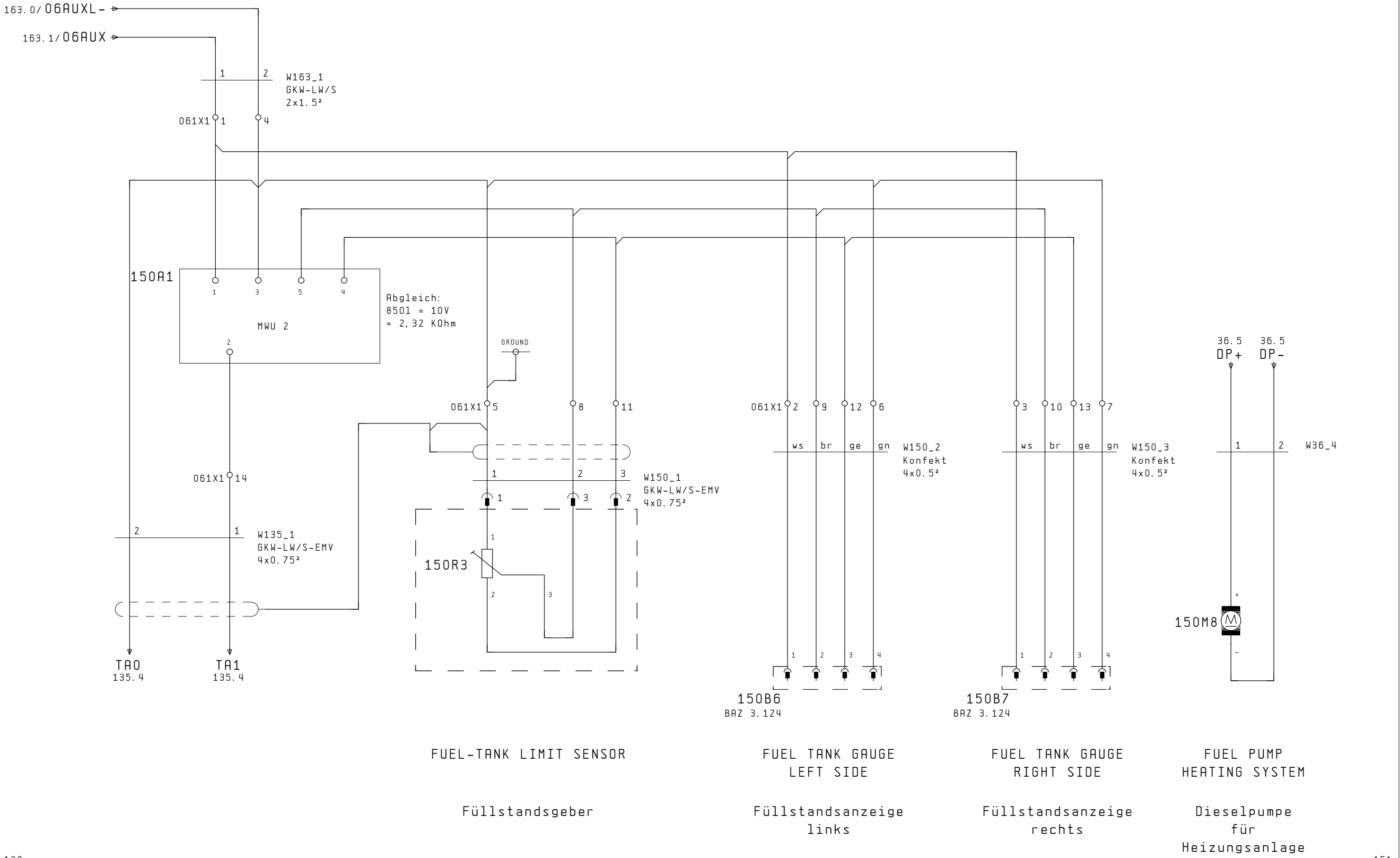
Drehzahl
aus EDC: 30Imp/U
max Drehzahl: 2050U/min
max 1025Hz
4-20mA=0-2050U/min

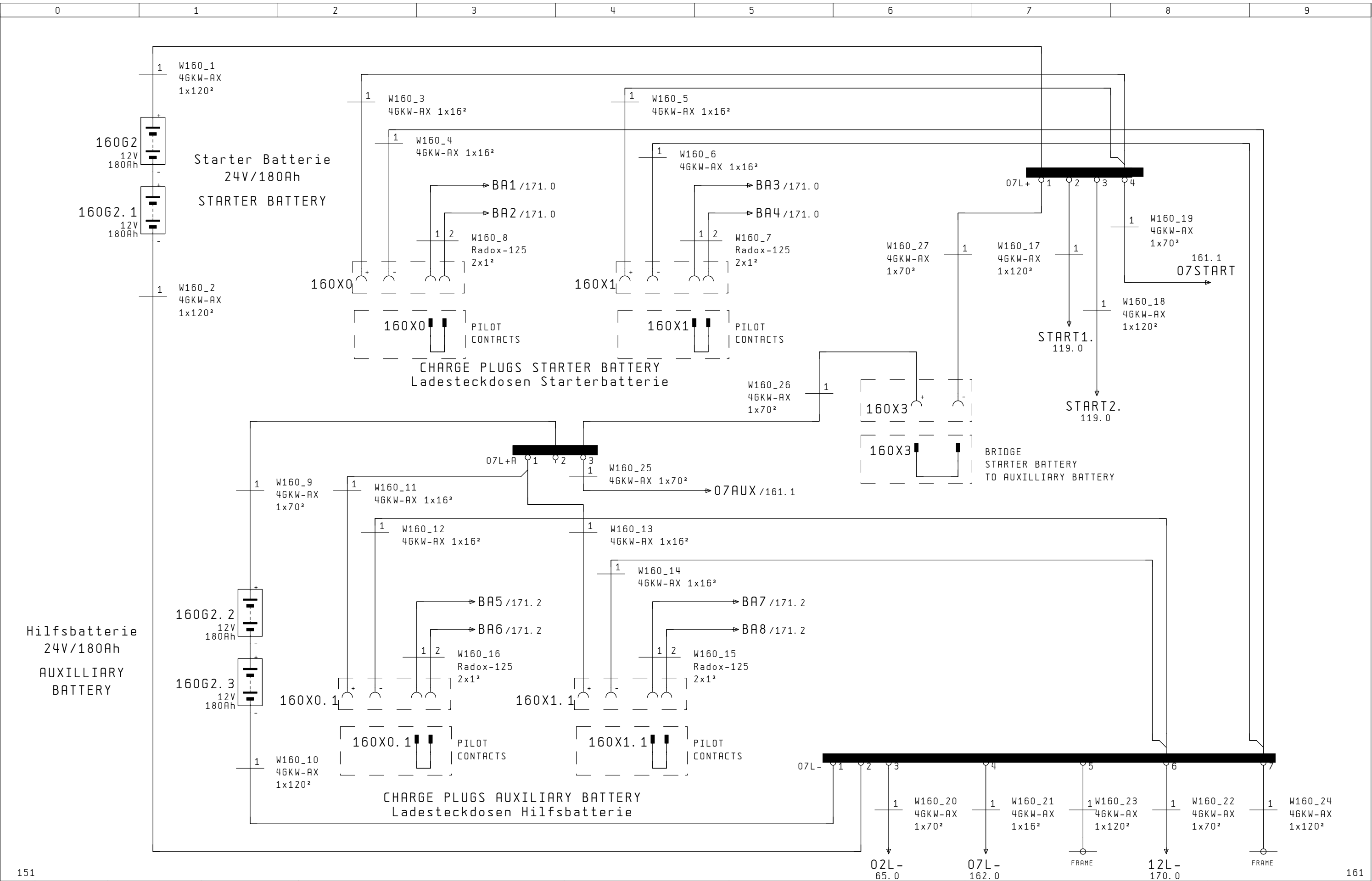
ENGINE
TEMPERATURE

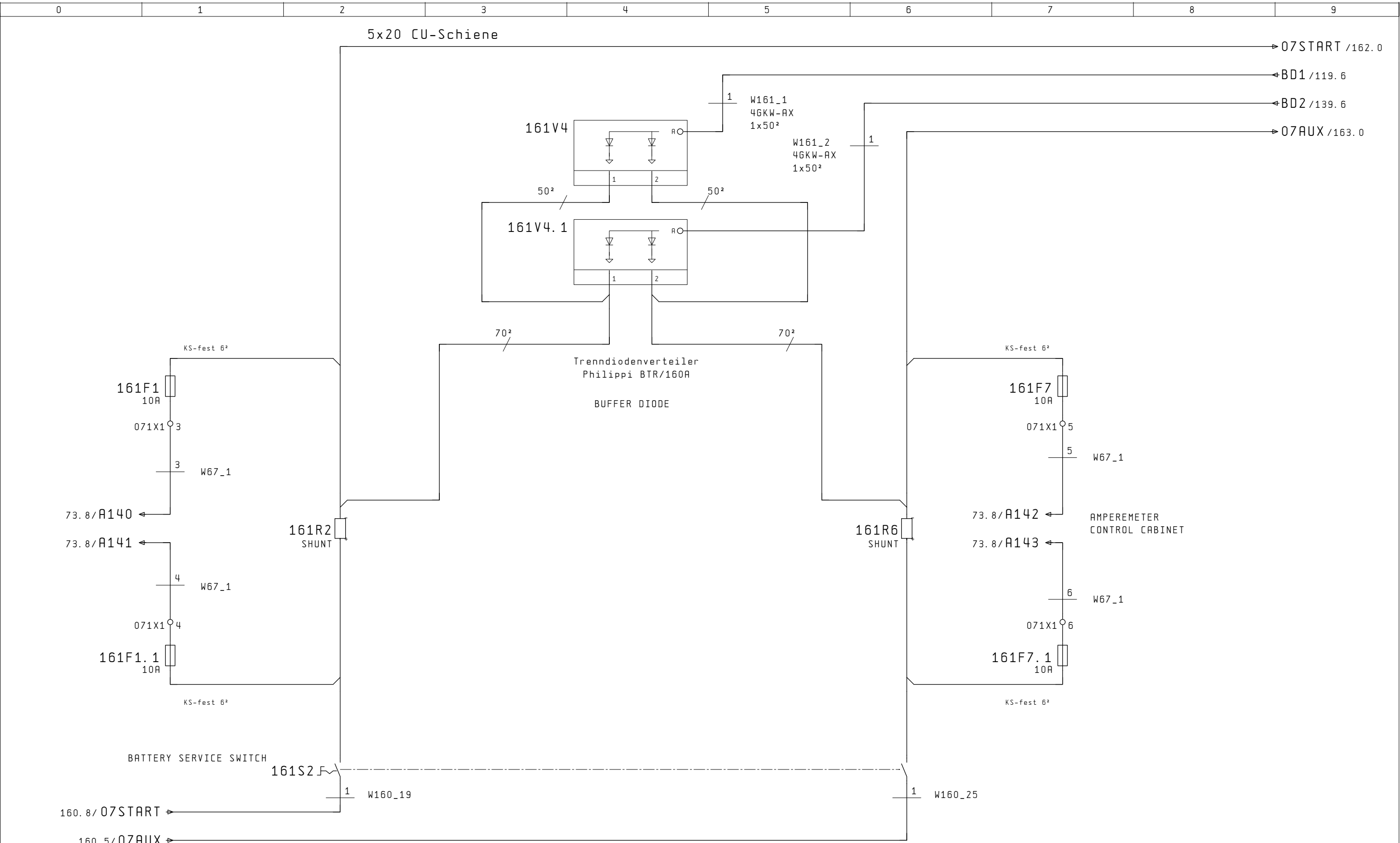
Motor-
temperatur

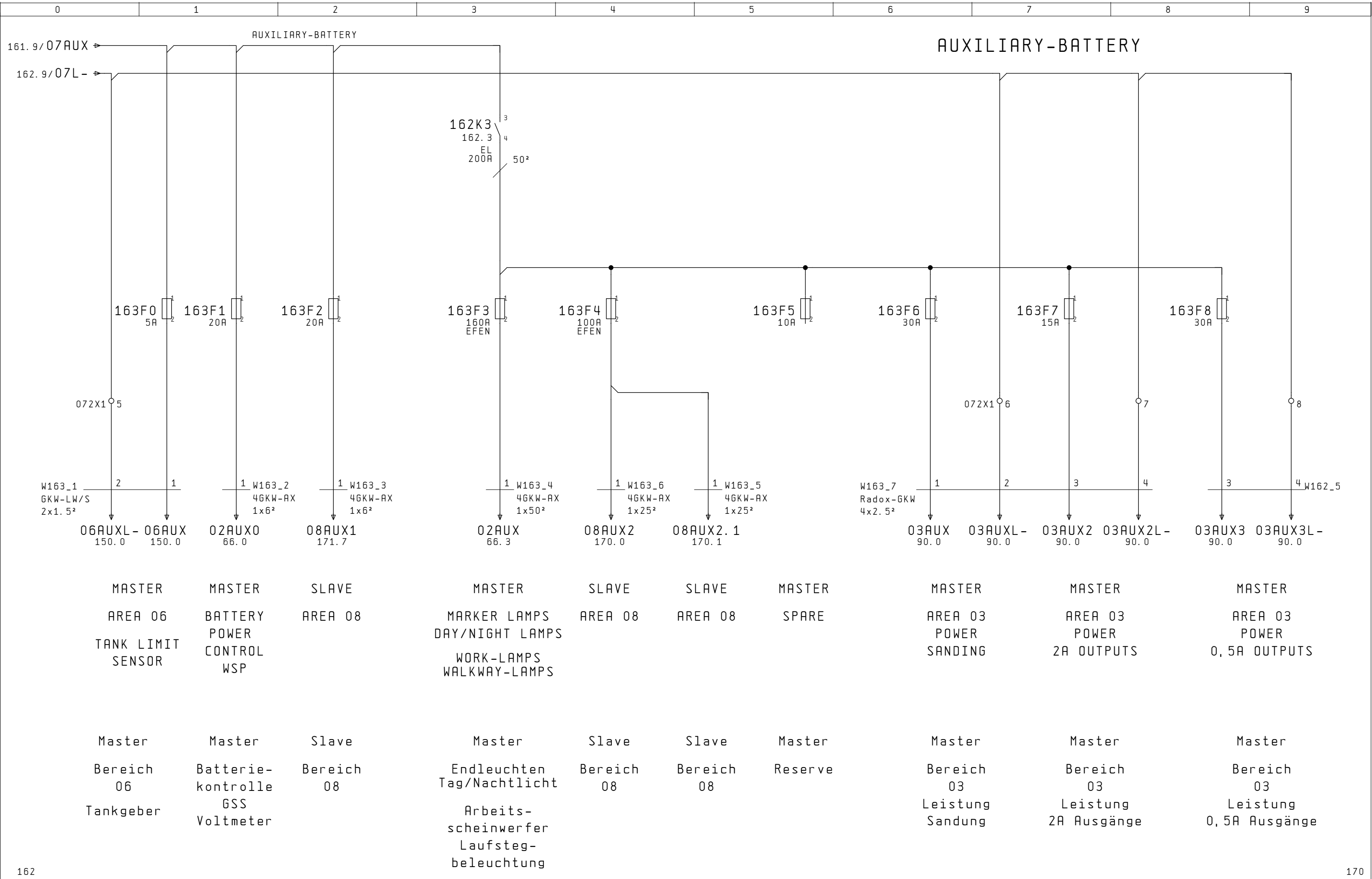


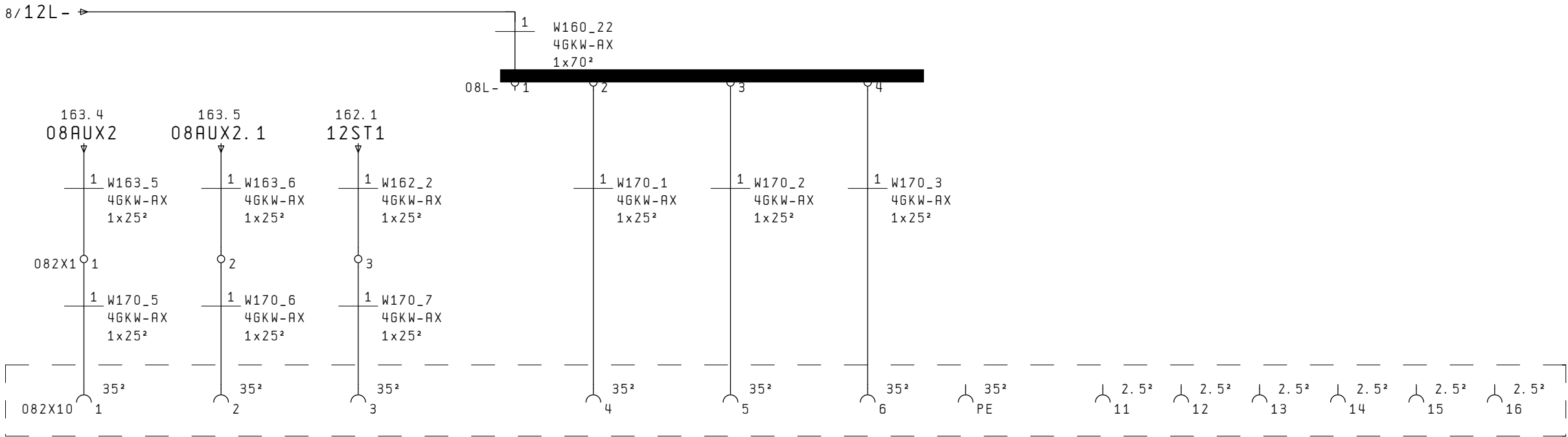






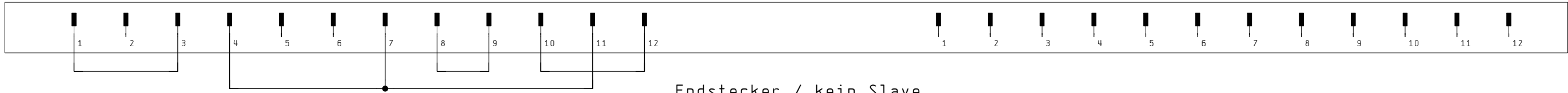
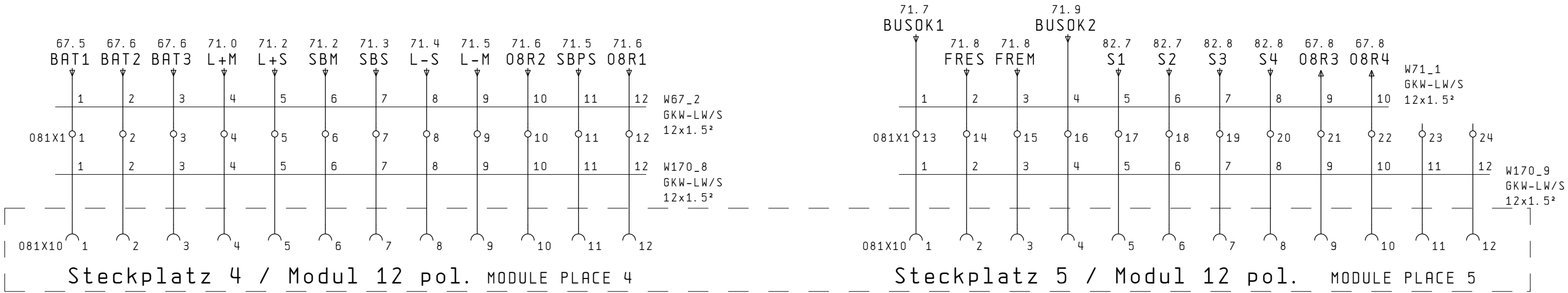






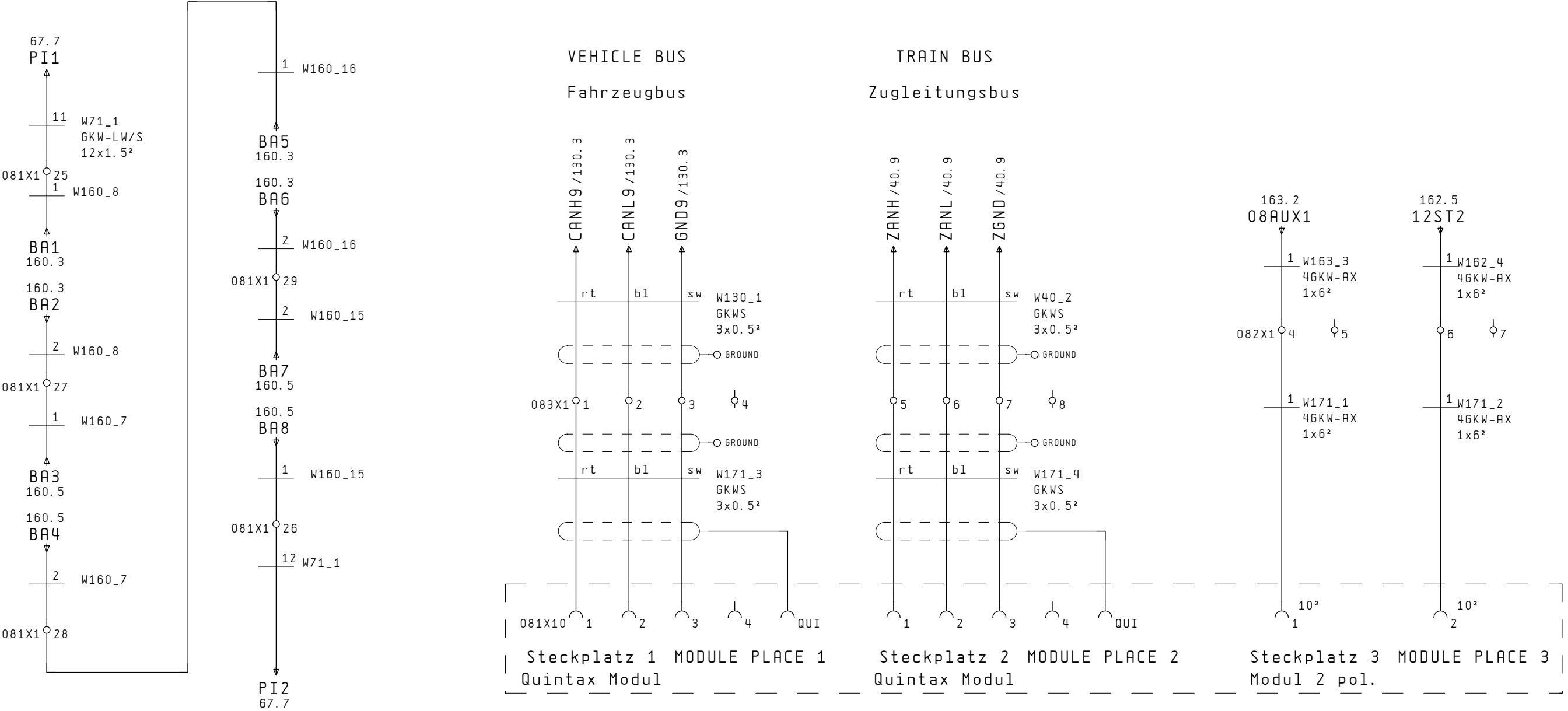
POWER CONNECTION PLUG
Leistungssteckverbindung

CONTROL CONNECTION PLUG
Steuerungssteckverbindung



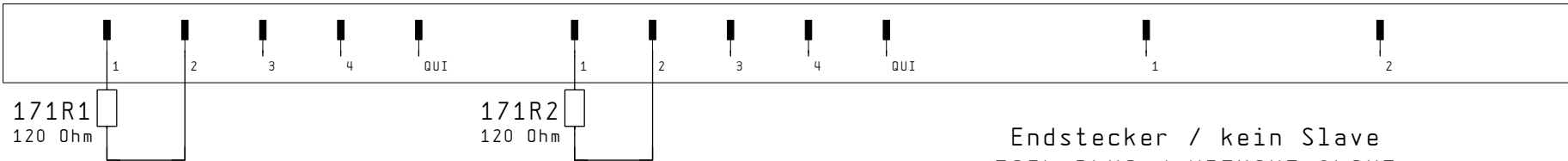
Endstecker / kein Slave
TAIL PLUG / WITHOUT SLAVE

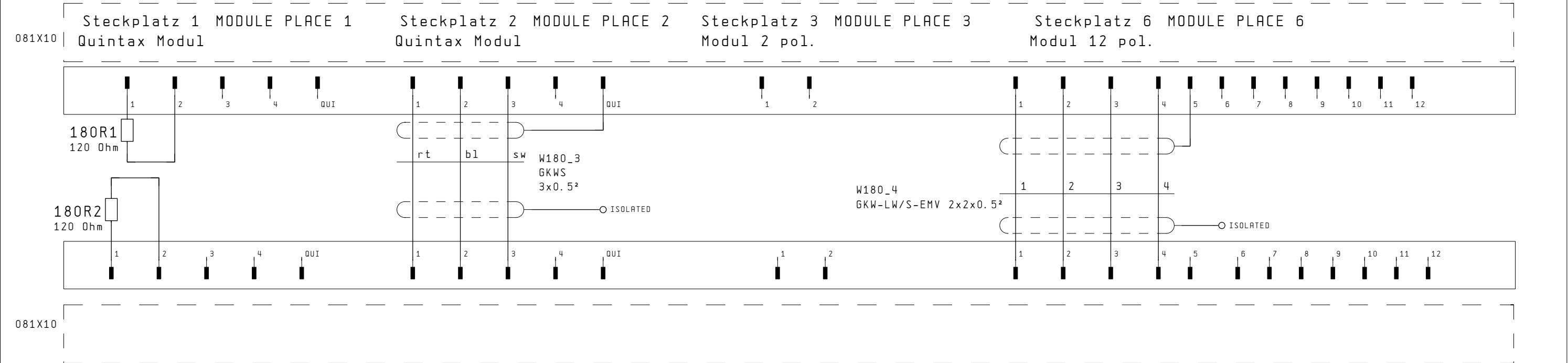
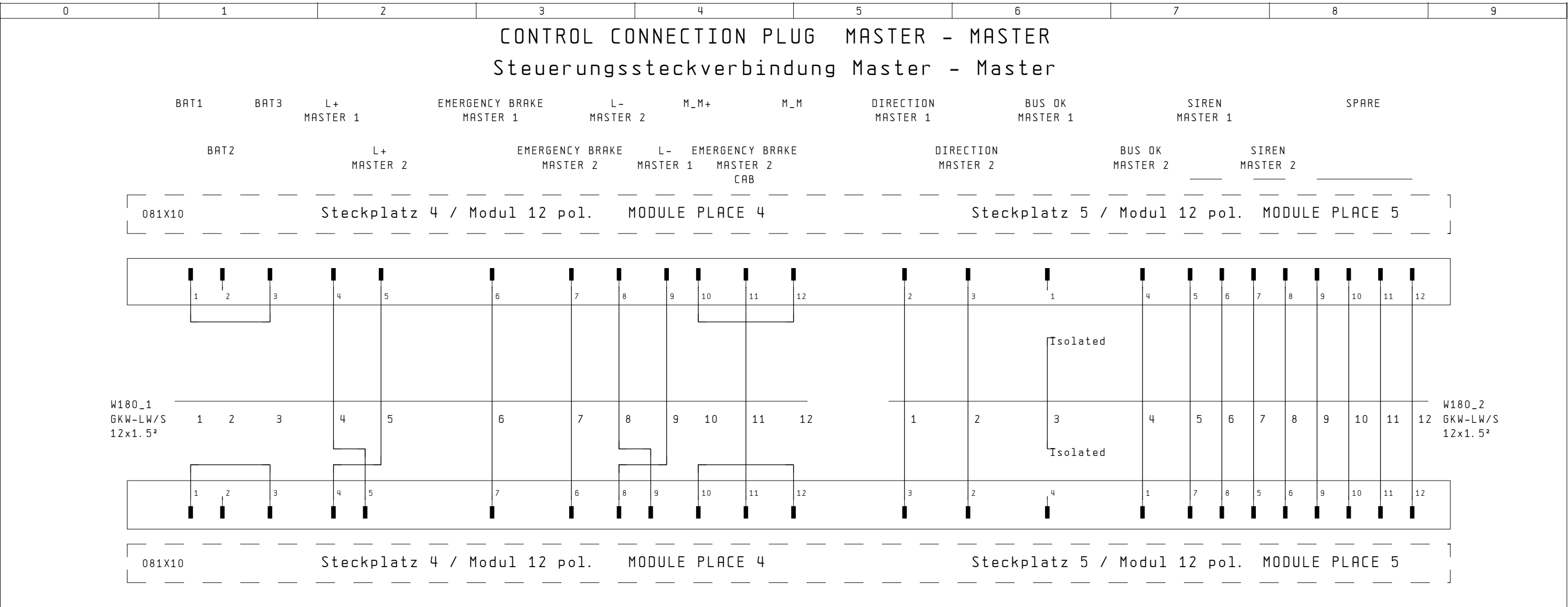
CONTROL CONNECTION PLUG
Steuerungssteckverbindung

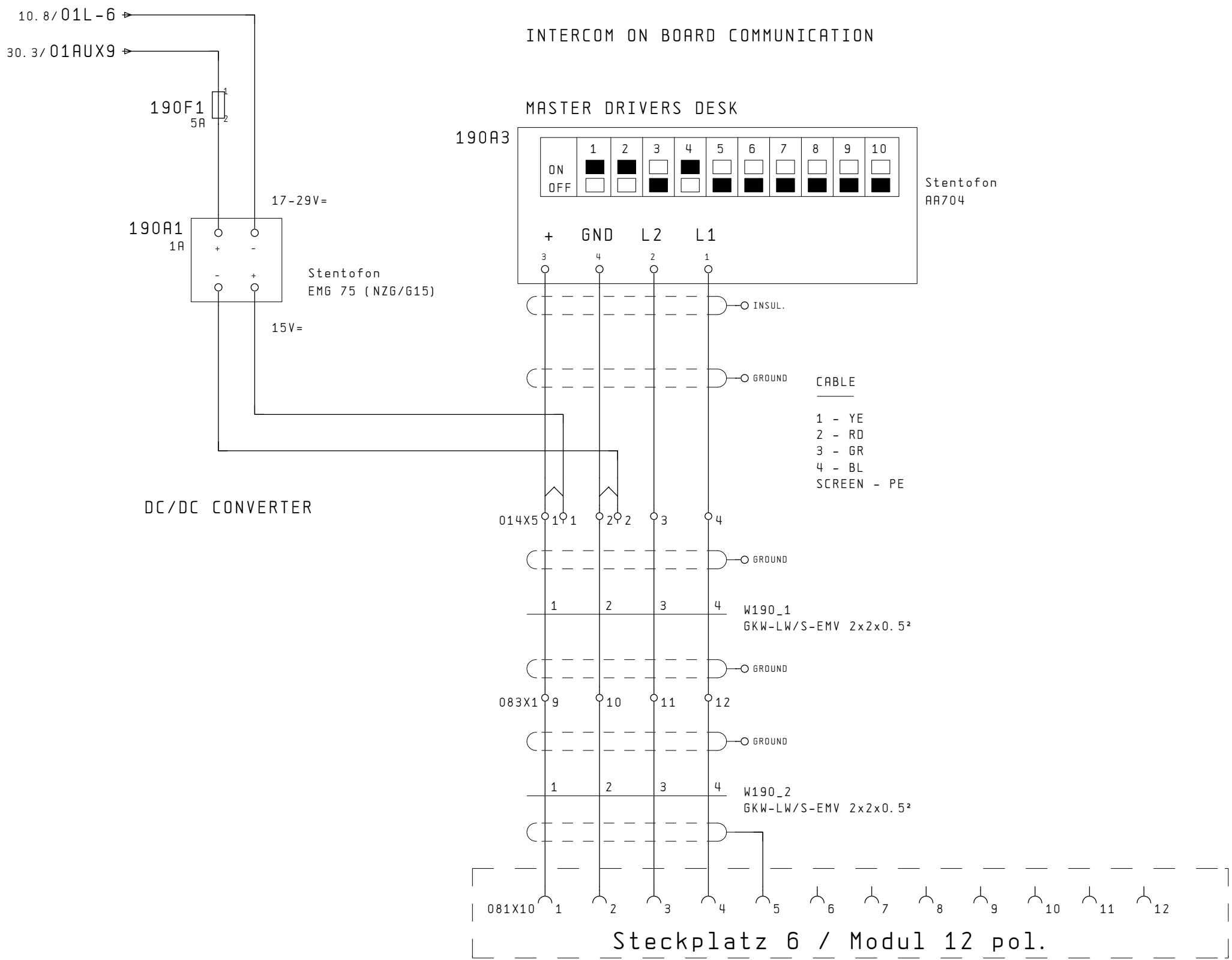


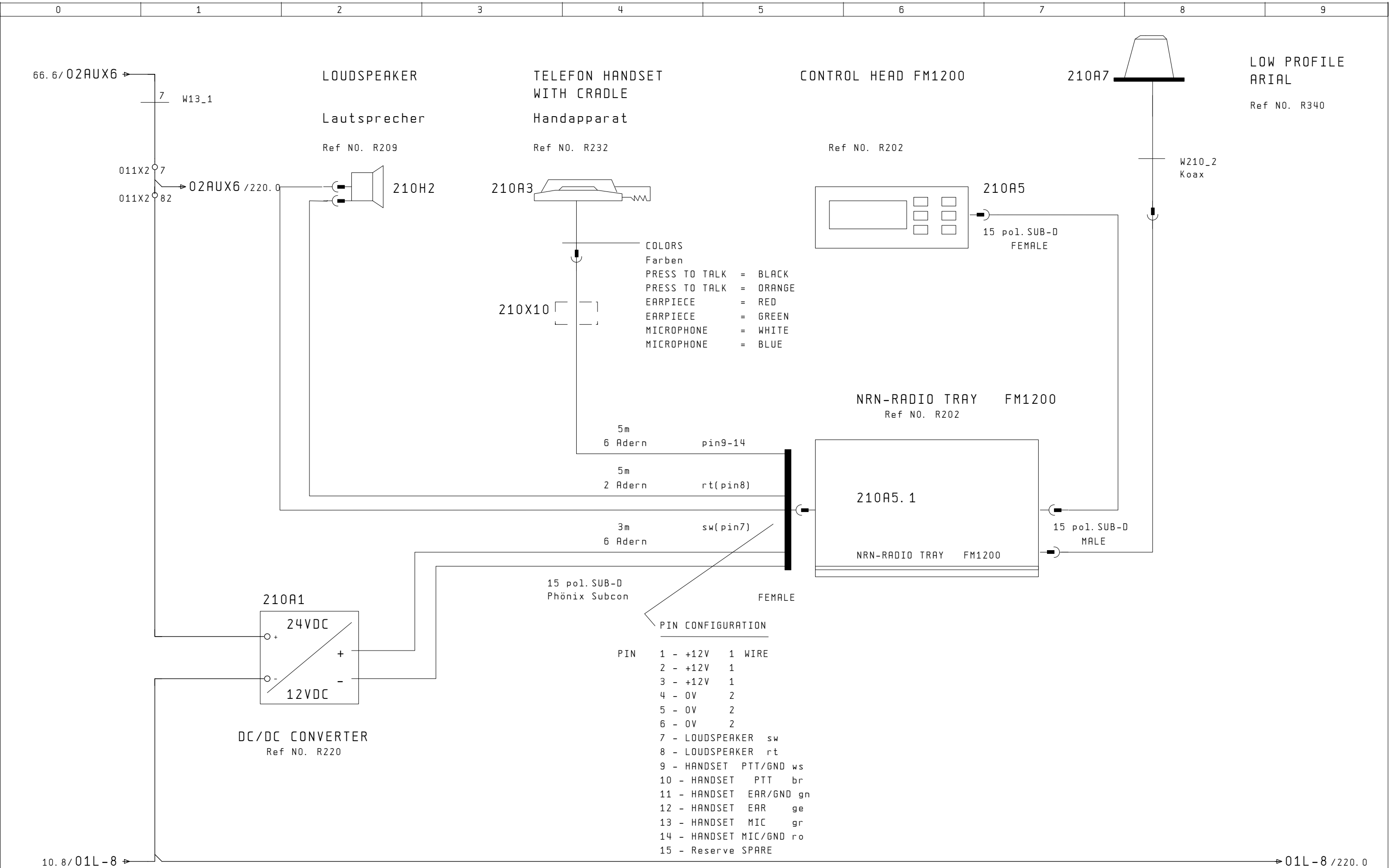
Pilotkontakte
Batterieladestecker

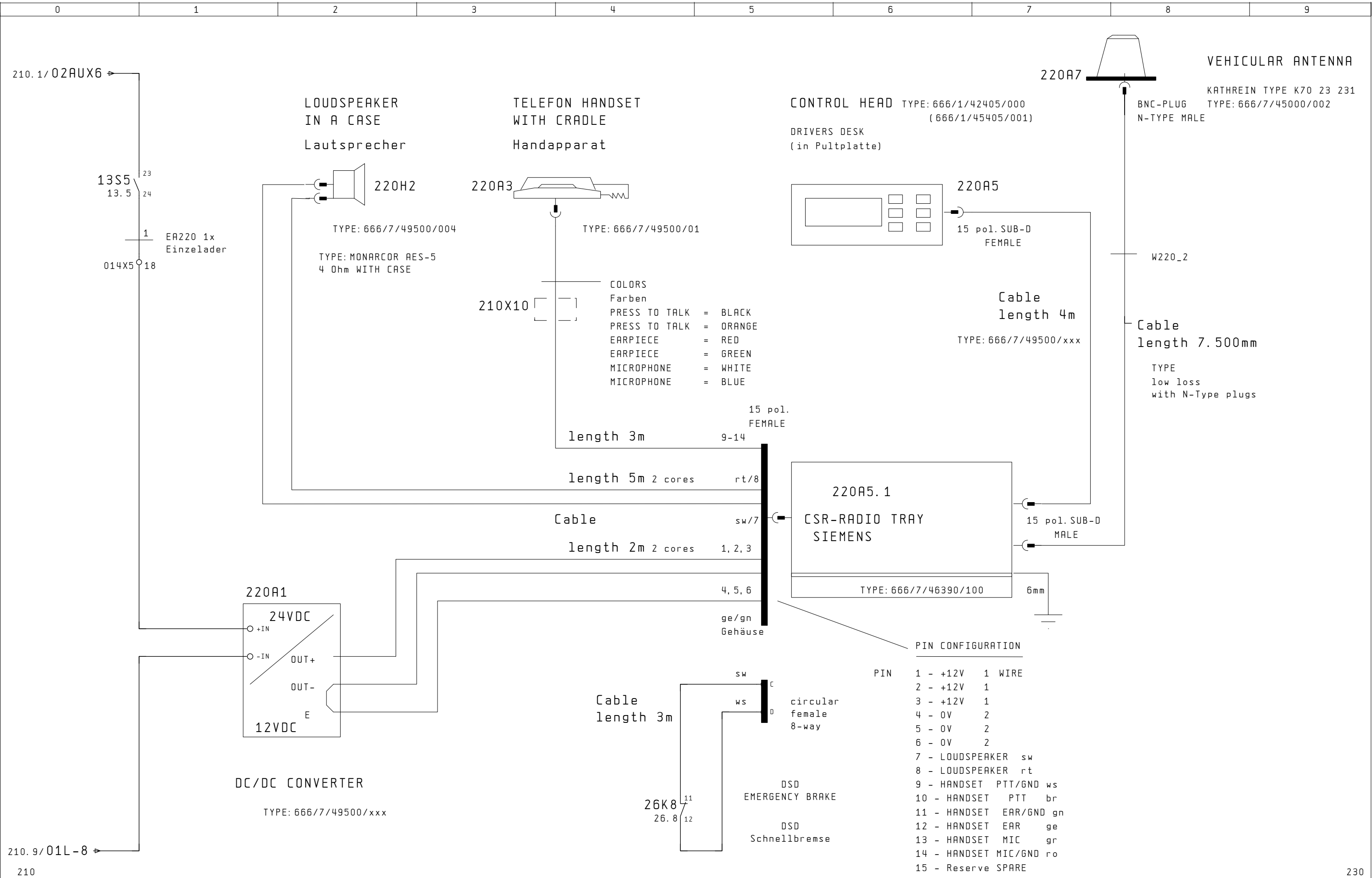
PILOT CONTACTS
BATTERY CHAGE PLUGS

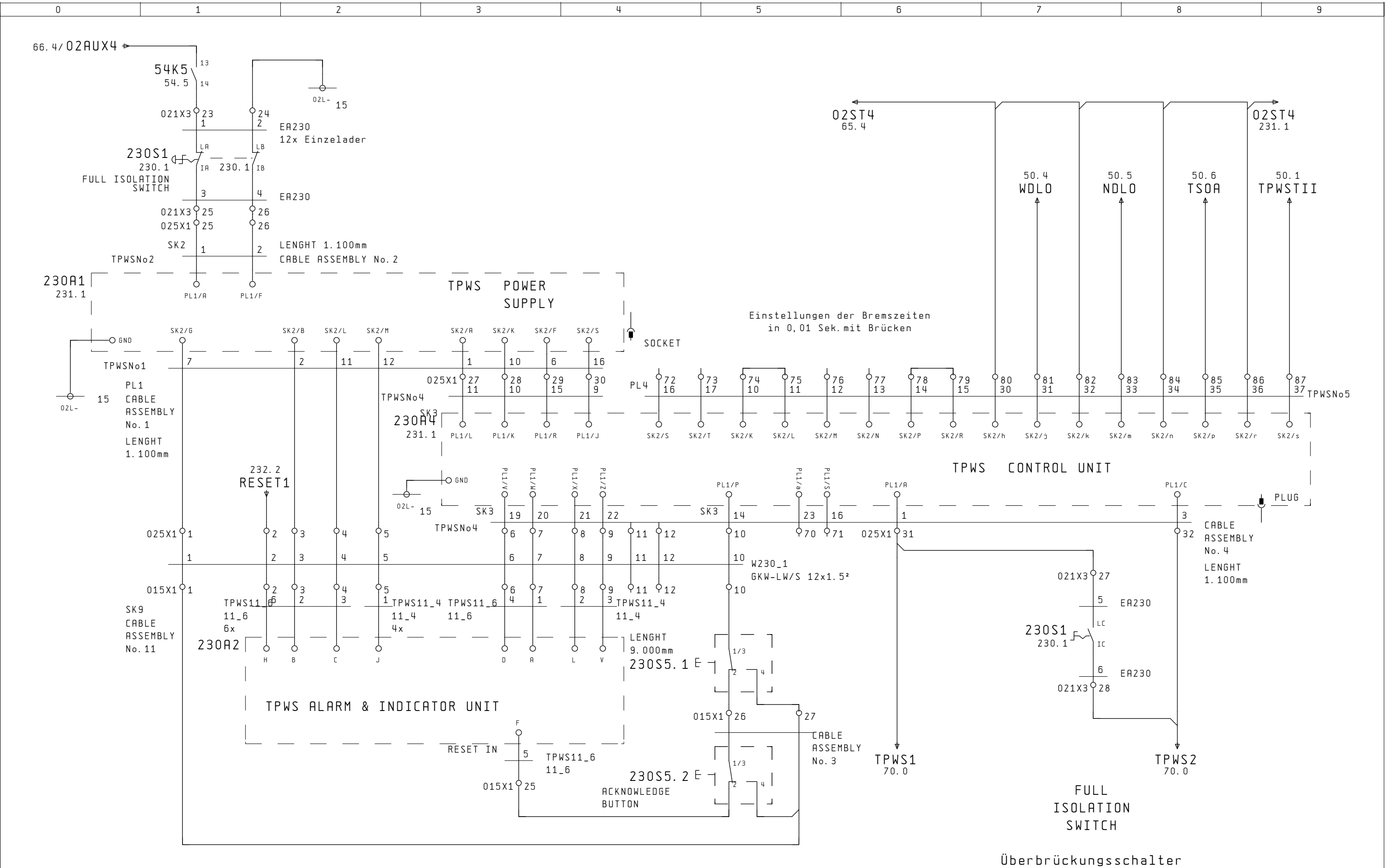


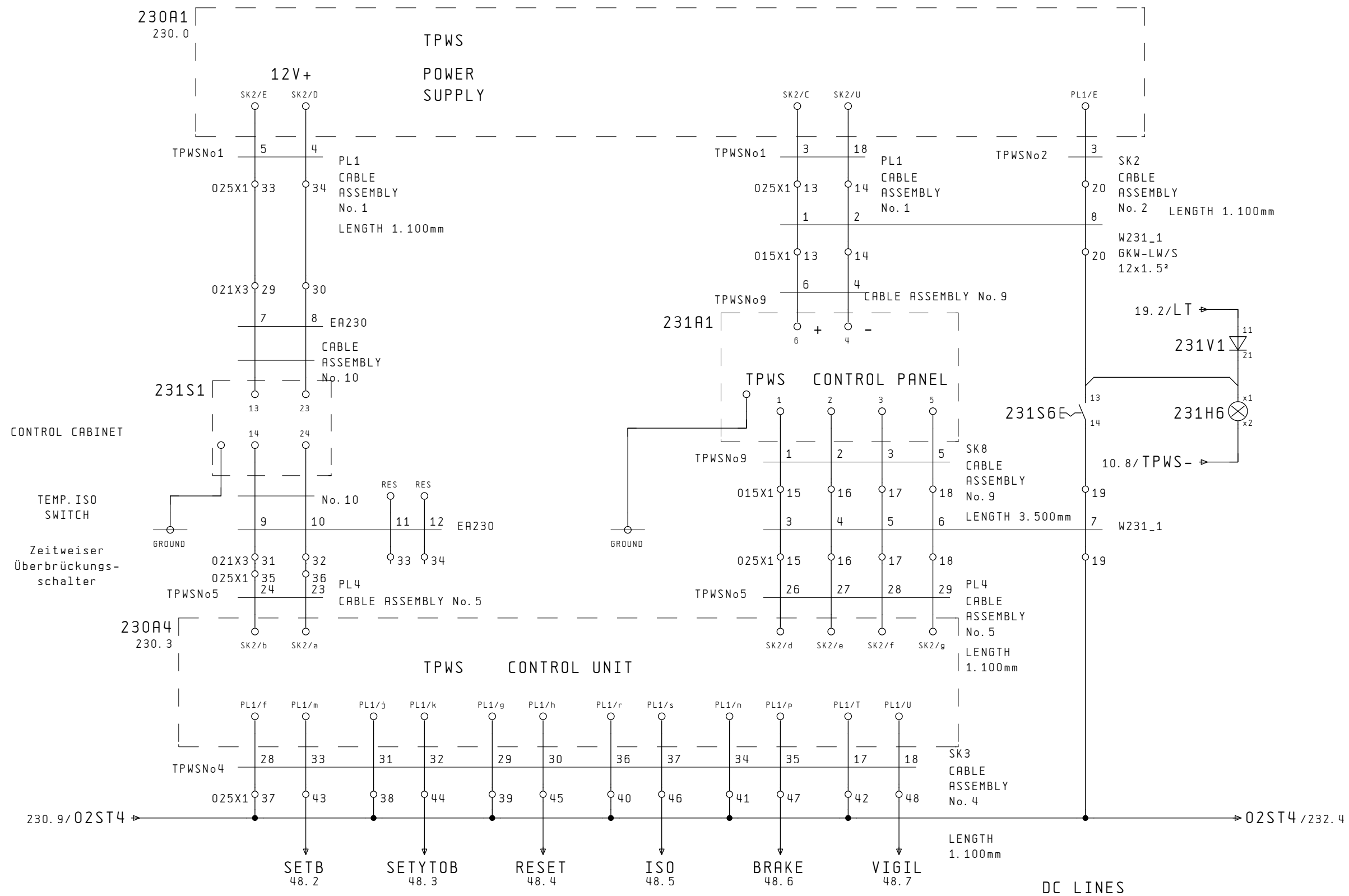


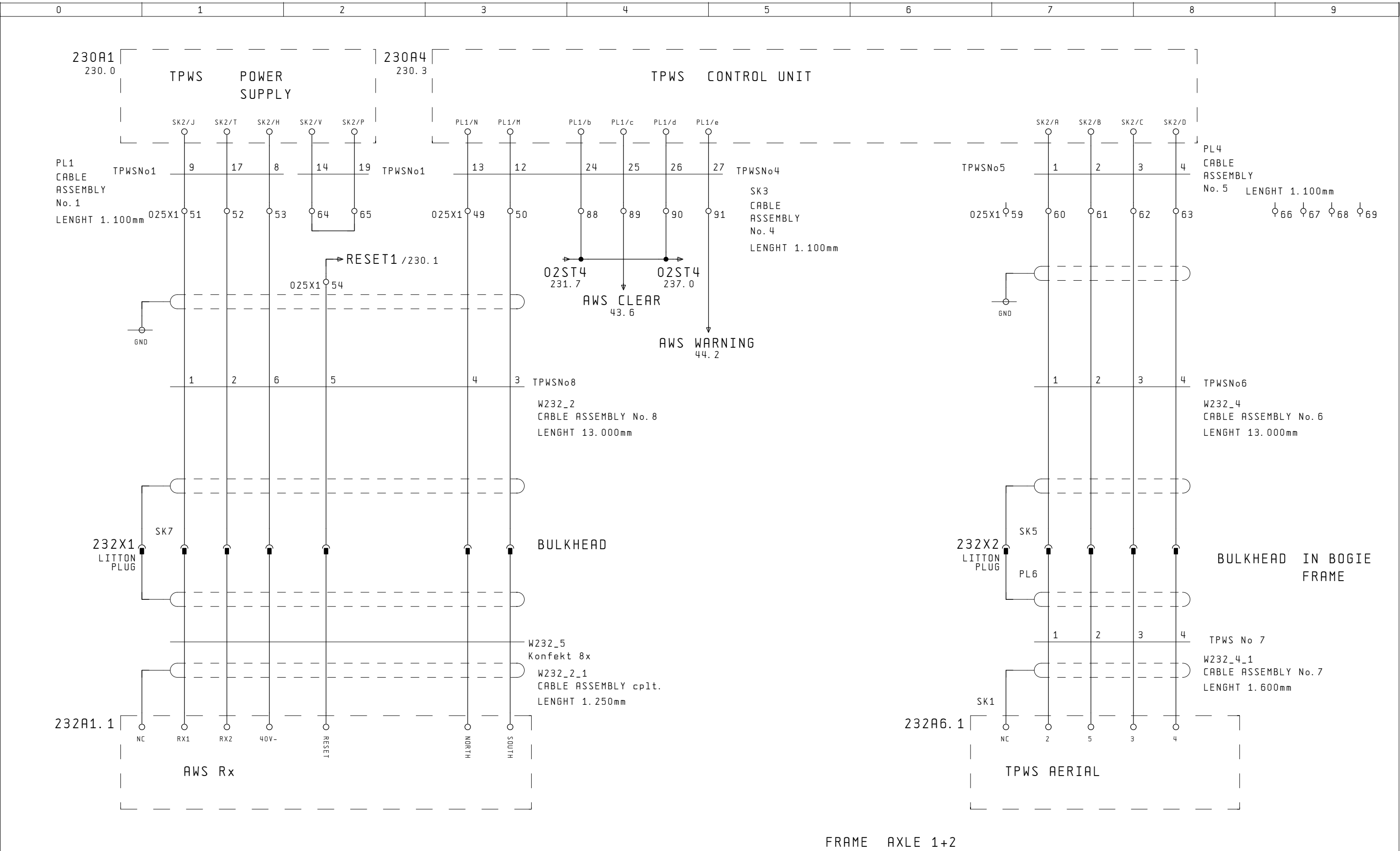


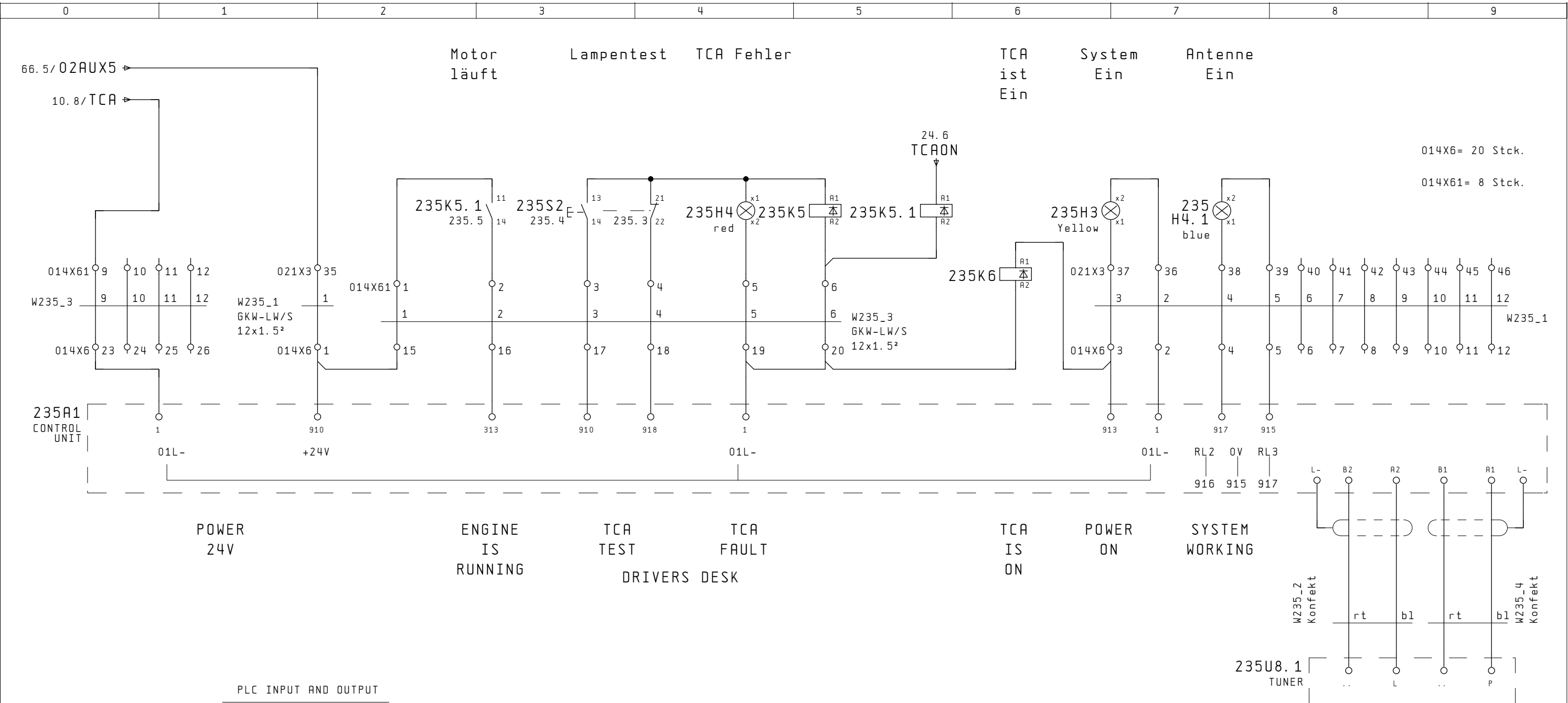






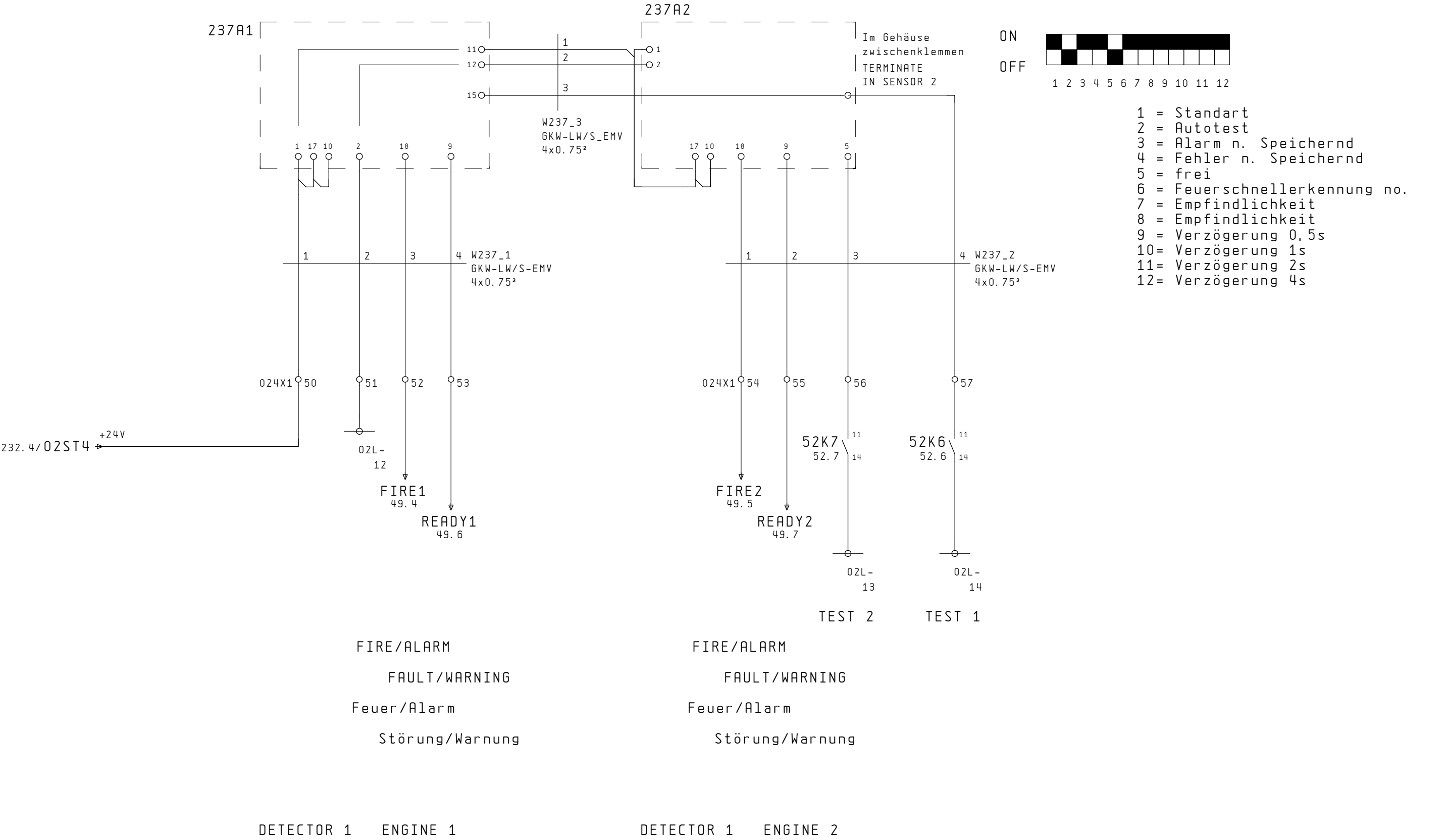


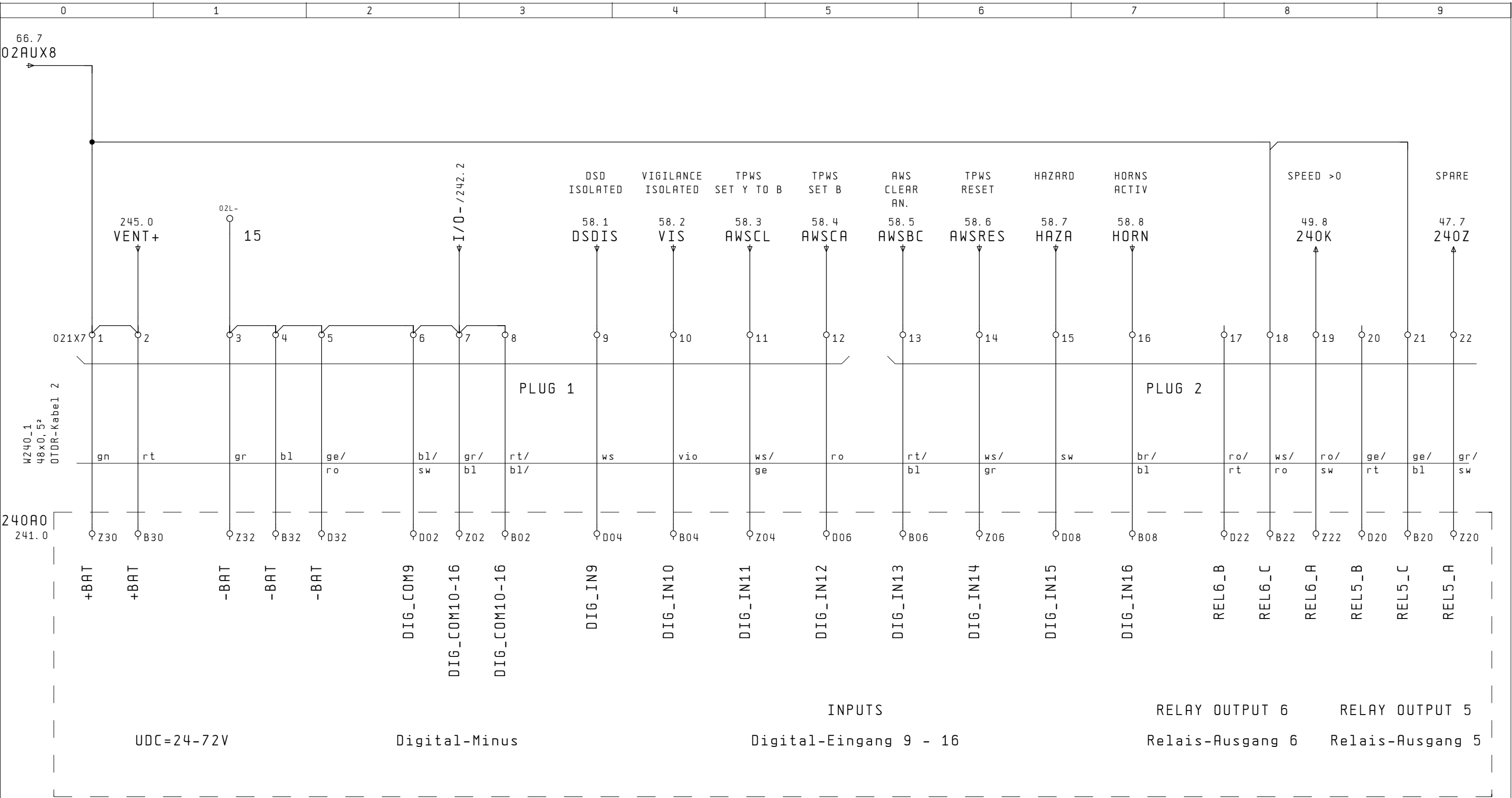




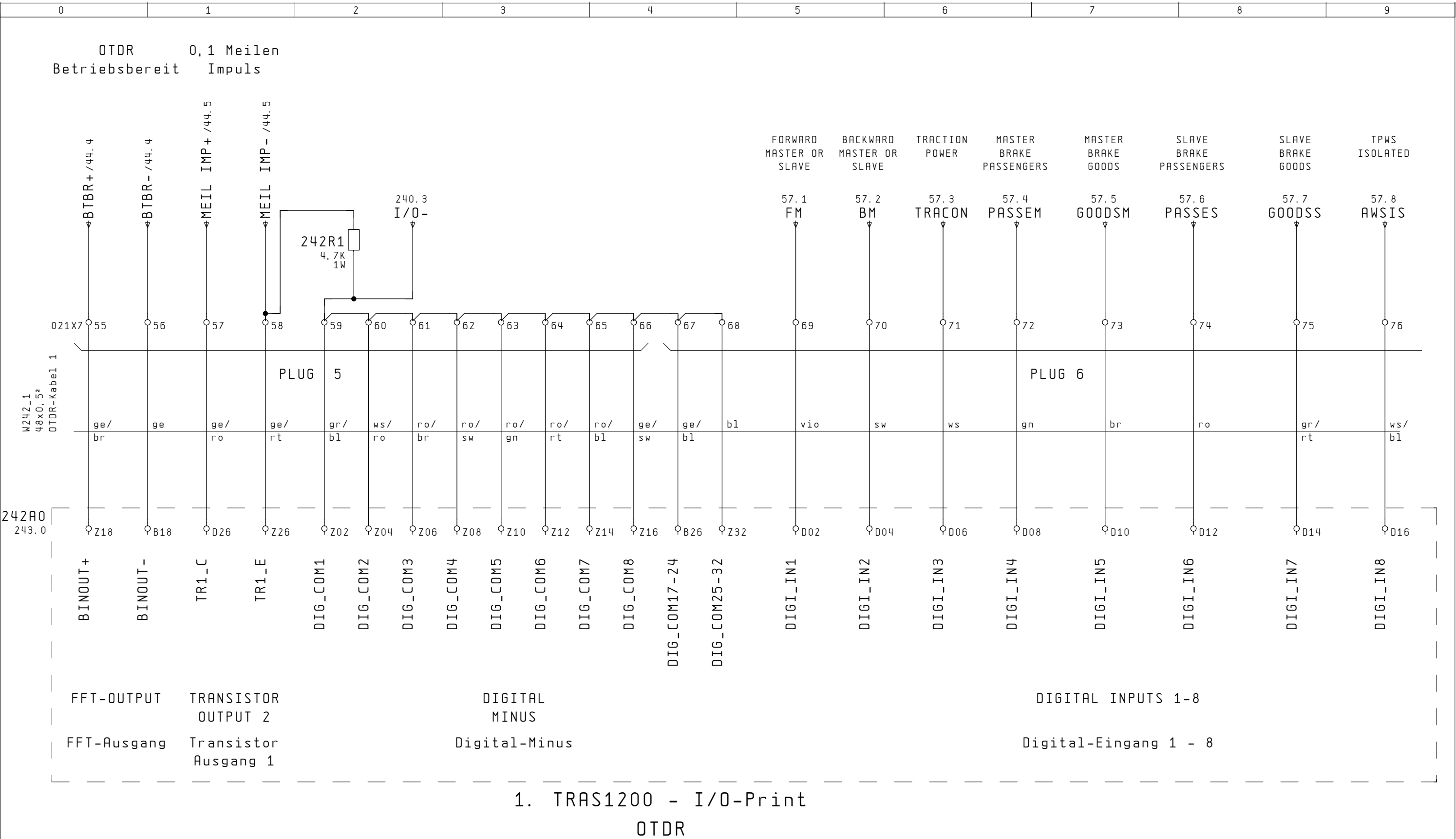
- PLC INPUT AND OUTPUT
- TCA FAULT-CONTACT AT PAGE 11 (11A0/06)
 - TCA ON-CONTACT AT PAGE 11 (11A0/07)
 - TCA MUTE-SWITCH AT PAGE 45 (45A0/E6) 45S5
 - TCA FAULT-LAMP AT PAGE 56 (45A0/3A1) 56H1
 - TCA BUZZER AT PAGE 24 (23A0/11) 24H3

11.6 11 14 235.3 11 14 11.7 11 14

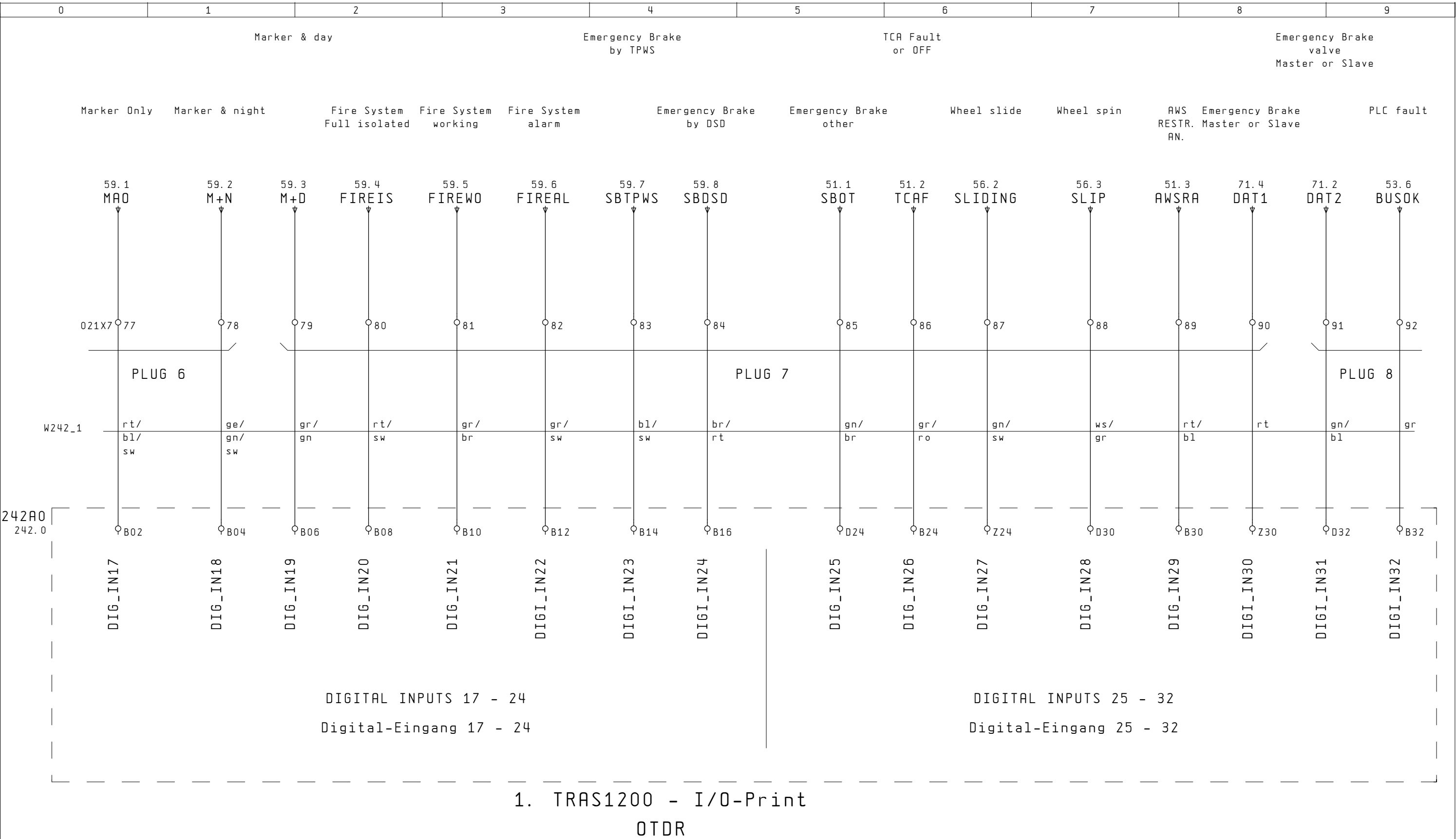


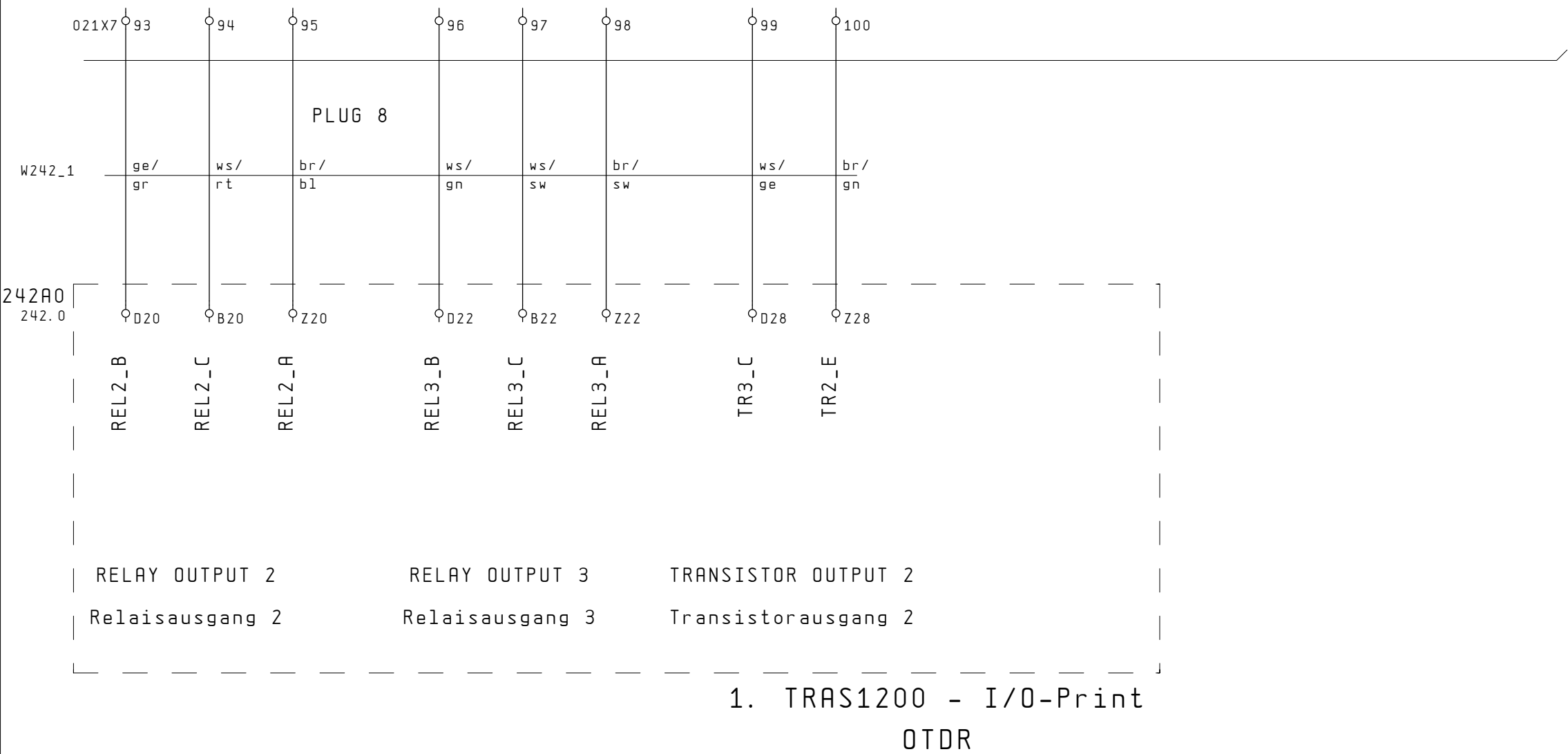


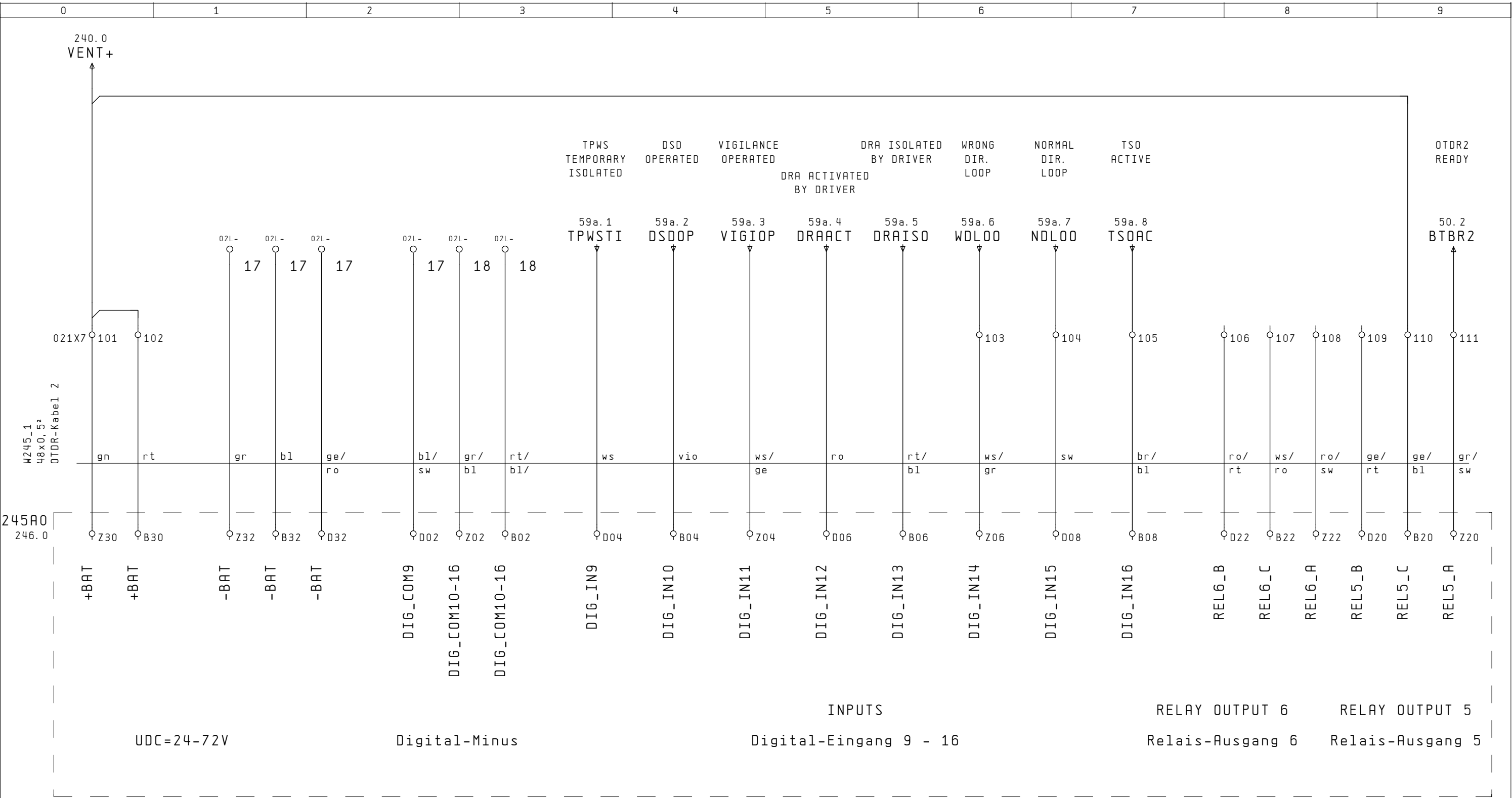
1. TRAS1200 - Basis-Print
OTDR



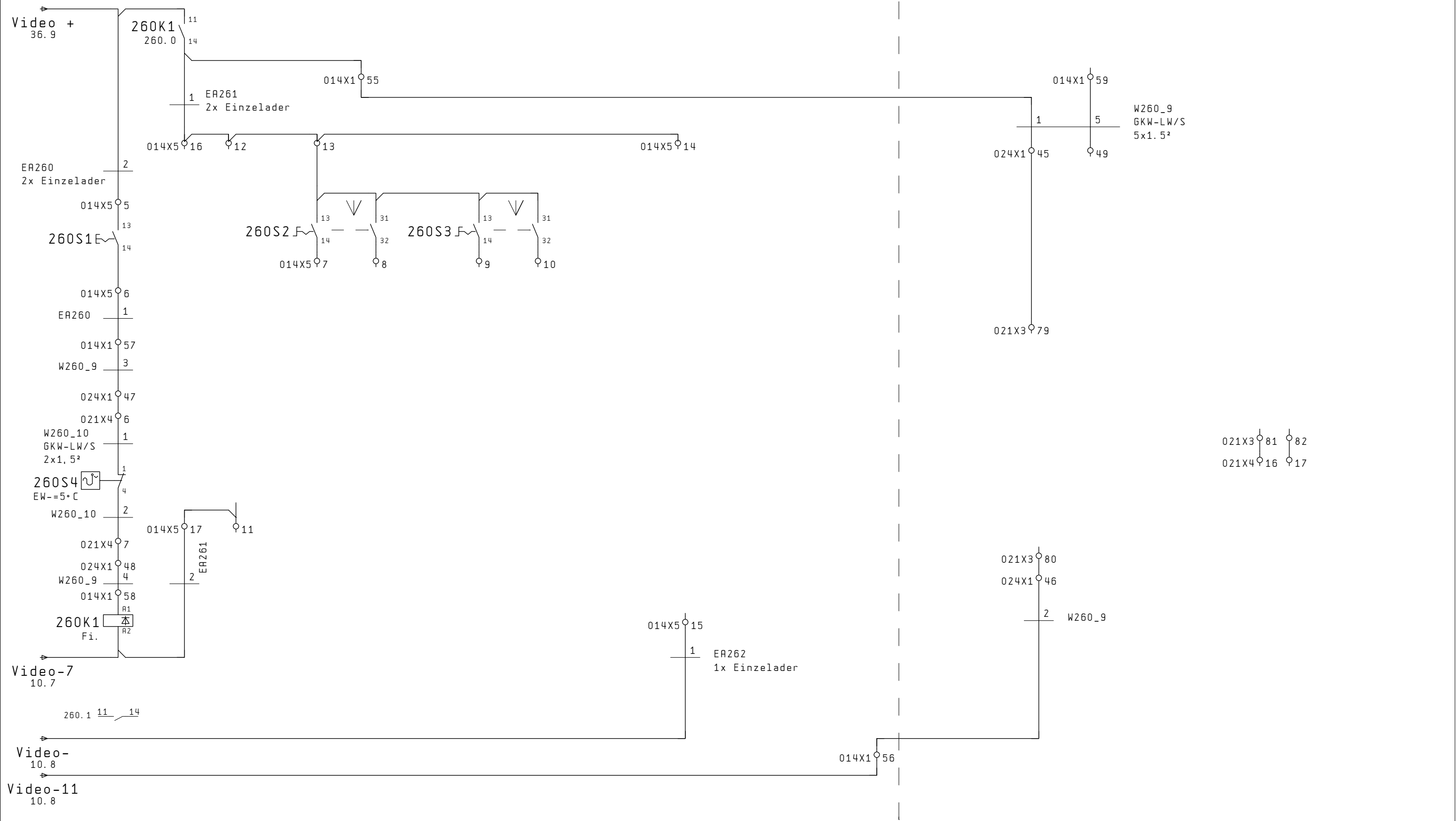
27.07.05 VK0







2. TRAS1200 - Basis-Print
OTDR



DRIVERS DESK

CONTROL CABINET