Equipment

0102H [GCs+HWJ {R.29}*]
0108A [Add+USB {R.26}]
0109A [Network customer RJ45 {R.25}]
0202H [AX5 X/Xa Safety OCT 2x6A {R.31}]
0302A [Exhausting, Remote control {R.29}]
0407E [2xCabinet W600H800D400+MP {R.29}]
0410A [ECO mounting bundle kit {R.26}]
0411A [Basic Parts TSc {R.31}]
0605C [Emergency cord {R.29}]
1102A [Main Cabi supply S+N switched {R.29}]
1201C [Additional Safe-Stop 2 {R.29}]
1501A [Cabinet cooling, Door, 75W {R.25}]
0202G [L1-AX5 Y OCT Safety 3A {R.31}]
0406A [L1-Plasma Interface Cabinet {R.29}]
0501B [L1-SL200 {R.29}]
0904I [L1-HYP XPR170core+SwBox {R.30}]
1001A [L1-Laser Pointer {R.25}]
1107A [L1-Transform 36V4x100VA {R.25}]
1110A [L1-EP PowerBox 4x4A {R.29}]
1301A [L1-Havarie, Torchholder, Magnetic {R.25}]
1301B [L1-Havarie tactil lift up {R.25}]

Messer Cutting Systems GmbH

shop floor: **EU**

Messer Cutting Systems GmbH

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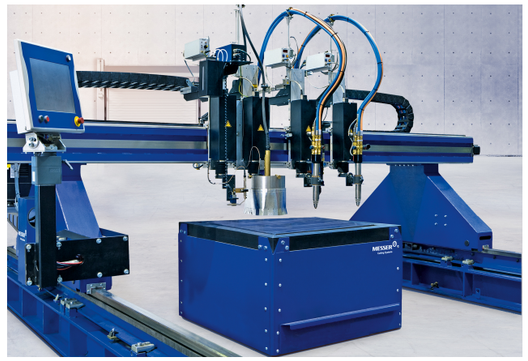
+49 6078 787 150
e-mail

Customer:
Blocotelha

projekt	289
machine	289 MultiTherm Eco
length / width	80 / 40
power	9 kVA
Toolbox	Toolbox_31
drawing No.	289001273_Blocotelha

editor	Thomas.Lehle
building year	2021
regulation	EN60204-1



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10713

$-Page
[3] 289

machines number: 289

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0	27.01.2021	marcel.gruber					This version was created by ABIGAIL
Doku	31.03.2021	Thomas.Lehle					Customer
Revision	Created on		reviewed		Approved		

directory to Modul Overview location aware

$-FOS-F06-3A

module		description	group box	page
= 1B	table of contents		Module Overview	2...4
= 4A	topology EtherCAT		Bus Kabel;SPS-Kartenübersicht	12...18
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= Z6B			connection plan	110...143
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= IB	interface box	Fieldbus star hub	power supply, EtherCat;rack overview	65;66
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= ELD	Not-Halt Reißleine	Reißleine hinten	safety circuit	62
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= OP	operation panel	Operation interface	EtherCAT;emergency stop, operating elements;operating elements;rack overview;supply, Akku	82...86
= PG1	plasma gas console	type core	cooling gas connection console;power supply gas;rack overview	90...92
= UTB	unit temperature	climatisation	backplane operation panel GCs	102
+ G (end truck right)				
= EA	emergency stop additions	emergency stop	connection	55
= MXa	motor Xa	AM8531 OCT Xa	connection motor encoder	77
+ HB (cabinet main)				
= 1A	cover sheet	cover sheet	Messer	1
= 3B	grounding cabinet		grounding points in cabinet	5
= 3BB	grounding cabinet		grounding points in cabinet	6
= 3D	grounding machine	grounding machine	overview	10
= AA	AC power supply cabinet	AC operating voltage	main switch, PE/N;potential distribution L1/L2/L3;protective conductor / neutral conductor	19...21

directory to Modul Overview location aware

$-FOS-F06-3A

module		description	group box	page
+ HB (cabinet main)				
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= AS	AC service socket	service socket	feed-in	30
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= PA1	plasma power switch box	XPR 170	power supply	87
+ HP1 (interface cabinet plasma)				
= 3BC	grounding cabinet		grounding points in cabinet	7
= AAB	AC power supply cabinet	feed-in	potential distribution PE;X0 , PE/N/1~	22;23
= ABB	AC distribution	AC operating voltage	line;neutral conductor	26;27
= BAB	DC power supply	operating voltage	fuse channel 1 / 2;fuse channel 3 / 4;power supply	35...37
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= ITB	interface terminal	bus coupler;coupler, 8 x DI, 8 x DO	EtherCAT, power supply	72;73
= PS1	plasma source		rack overview	93
= UE	unit exhaustion		rack overview	98

directory to Modul Overview location aware

$-FOS-F06-3A

module	description	group box	page
HP1 (interface cabinet plasma)			
= ZA5	switch cabinet enclosure arrangement	Interlock	146
L1 (Lifter)			
= 3E1	grounding elements	grounding Location	connection point	11
= DC1	detection collision	torch magnetic holder	sensor, input	51
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= DL1	detection limiting	limiting Y+	cabinet wiring	53
= DL1B	detection limiting	limit Y-	cabinet wiring	54
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= MY1	motor Y1	AM8531 OCT Y1	connection motor encoder	78
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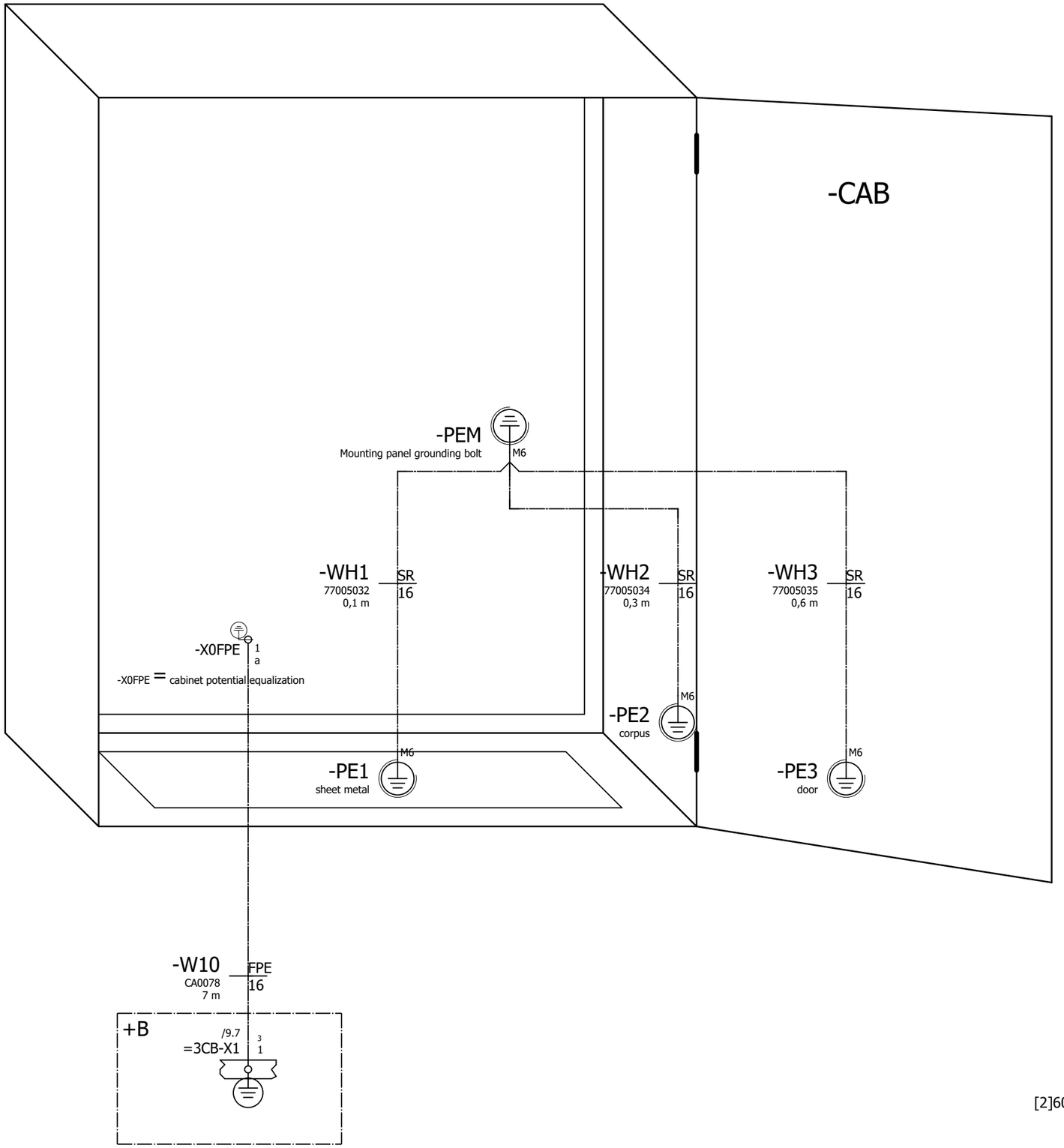
= PT1	plasma torch	type XPR 300 torch	supply torch	96
= UP1	unit pointer	laser diode	connection	100
P (periphery)			
= NC	network connectivity	network	customer	79
= PS1	plasma source	type XPR 170	EtherCAT, grounding;rack overview	94;95
= SP	sensor pressure	differential pressure monitor	exhaustion	97
= UE	unit exhaustion	external control	filter fan switch on	99
T (table)			
= 3C	grounding bar	grounding bar	connection points	8



-CAB

-CAB			
parts list // LN folder 72881342			
piece	article	ID	corpus, single door, 600 x 800 x 400, mounting plate
1	77071312	V	

+B
gantry

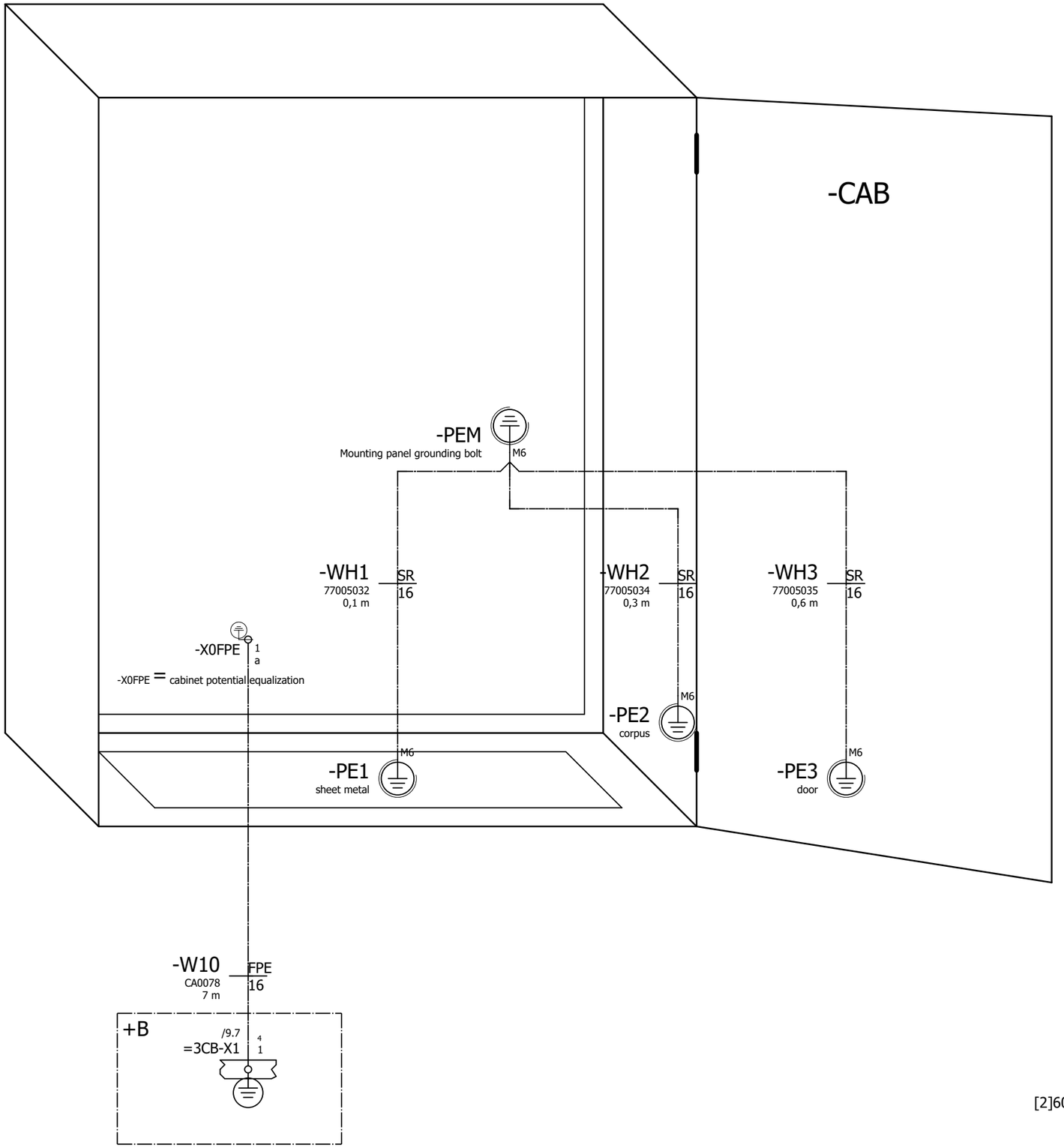
-A

+B-A			
parts list // LN folder 72881345			
piece	article	ID	mounting material
1	72161810	V	
piece	article	ID	Sticker, transport monitoring
1	77005344	V	

[2]600x800x400+MP

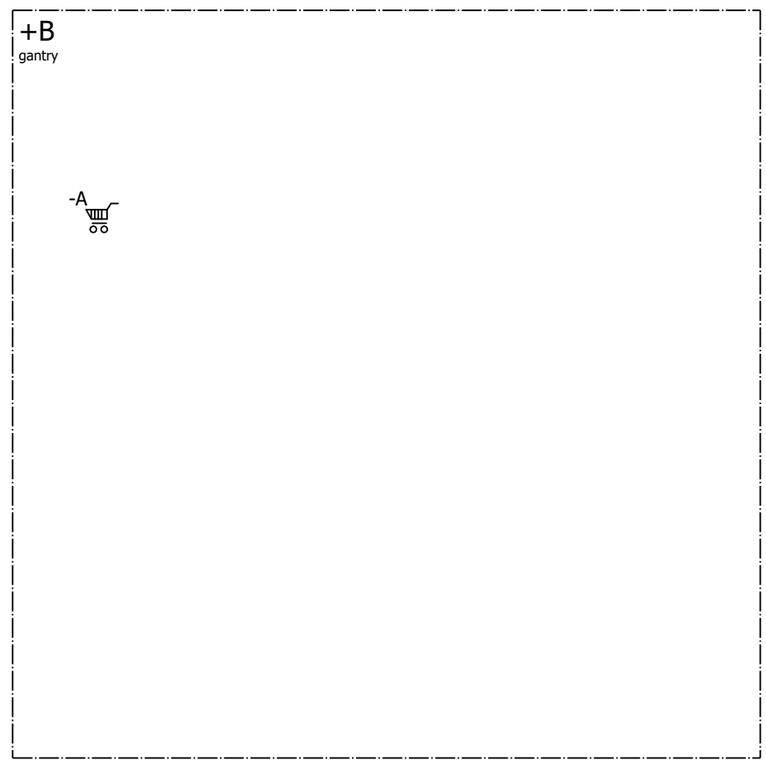
cabinet

			Toolbox_31	Option:	2xCabinet W600H800D400+MP {R.29}	MESSER		module	grounding cabinet
			Toolbox version	customer:	Blocotelha		grounding points in cabinet		Page
			3B2 - ABI - 29.29.01 - CC: EU	commission:	289001273			sector 1C2G location +HB	=3B 5
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



-CAB

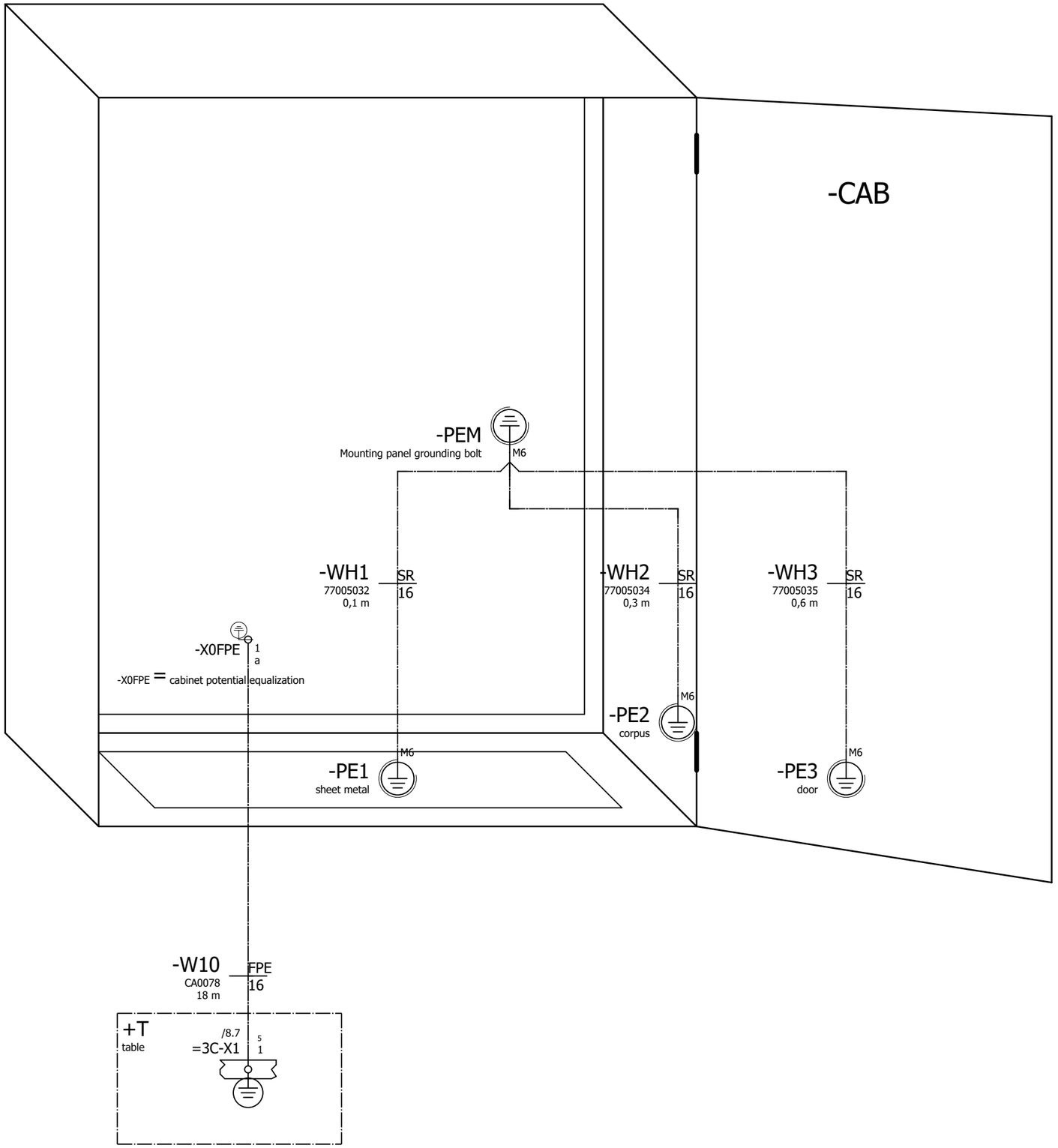
-CAB			
parts list // LN folder 72881342			
piece	article	ID	
1	77071312	V	corpus, single door, 600 x 800 x 400, mounting plate



[2]600x800x400+MP

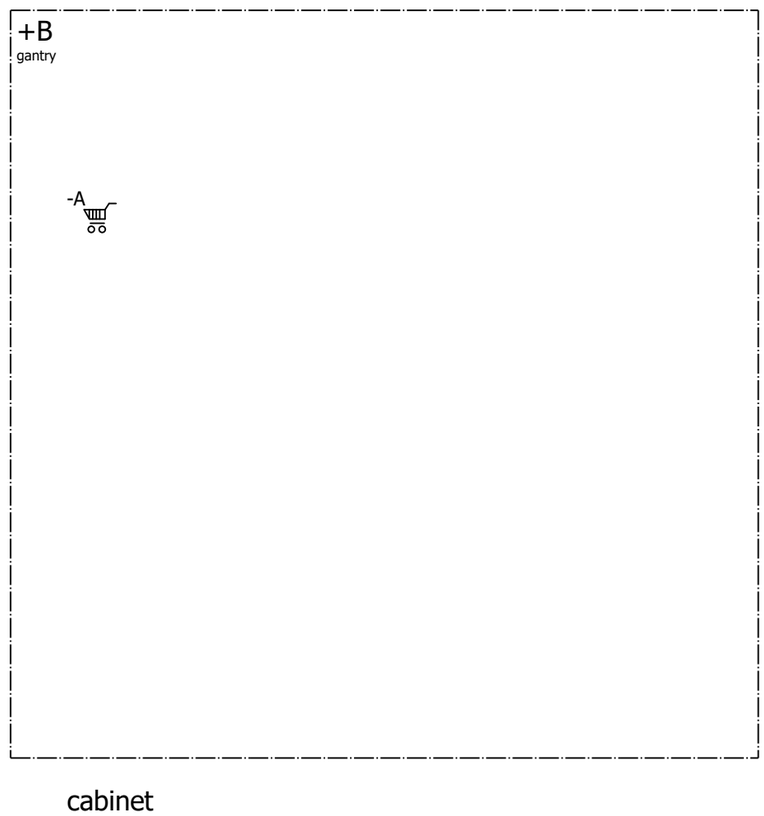
cabinet

			Toolbox_31	Option:	2xCabinet W600H800D400+MP {R.29}	MESSER	module	grounding cabinet
			Toolbox version	customer:	Blocotelha			Page
			3B2 - ABI - 29.29.01 - CC: EU	commission:	289001273	grounding points in cabinet	sector 1C2G location +HB	=3BB 6
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			

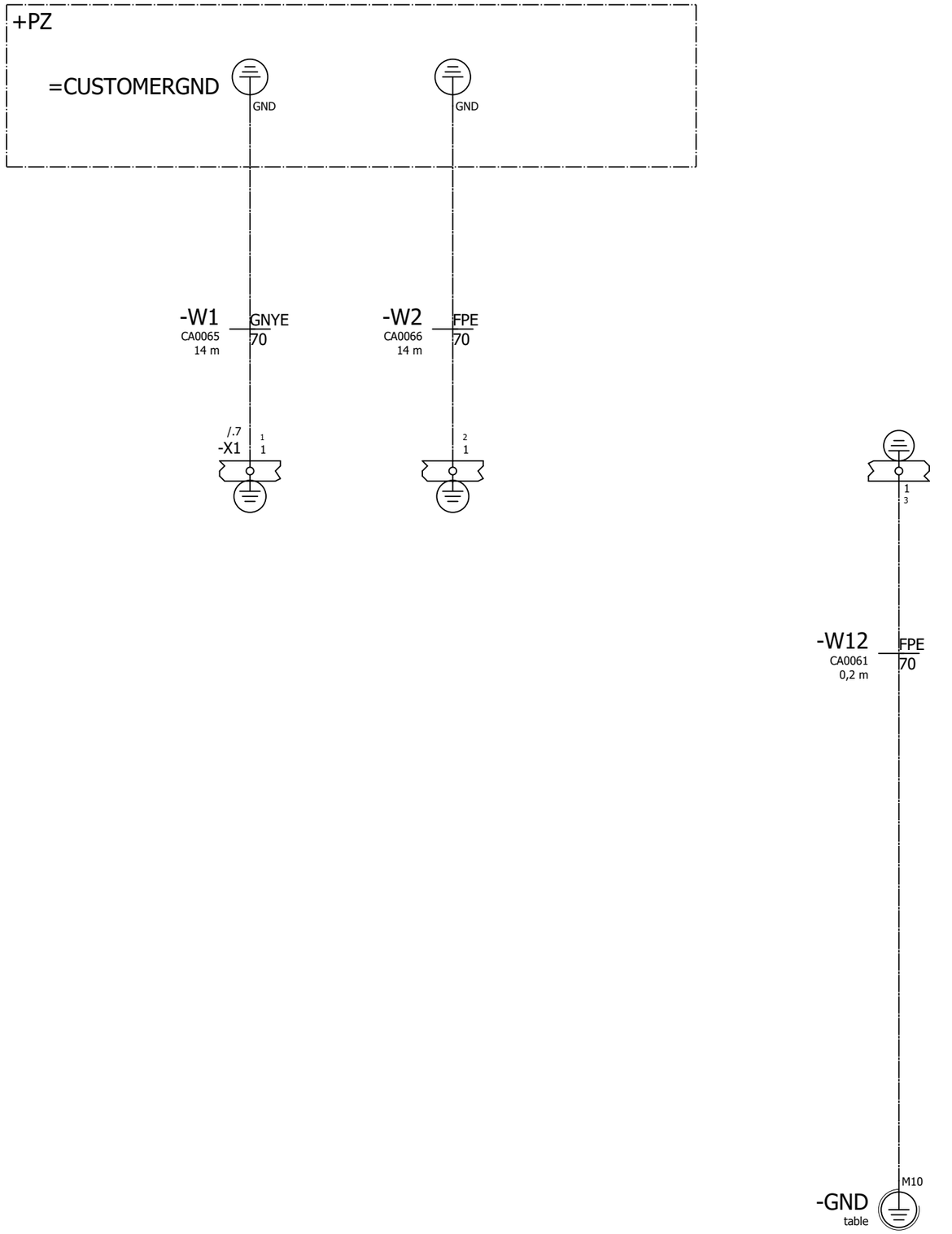


-CAB

-CAB			
parts list // LN folder 72881342			
piece	article	ID	corpus, single door, 500 x 500 x 210, Mounting panel
1	77005896	V	



			Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	grounding points in cabinet	module grounding cabinet	Page
			Toolbox version	customer:	Blocotelha				
			3B2 - ABI - 29.29.01 - CC: EU	commission:	289001273			sector 3E7P location +HP1 =3BC	7
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



grounding customer

functional grounding customer

grounding table

X1

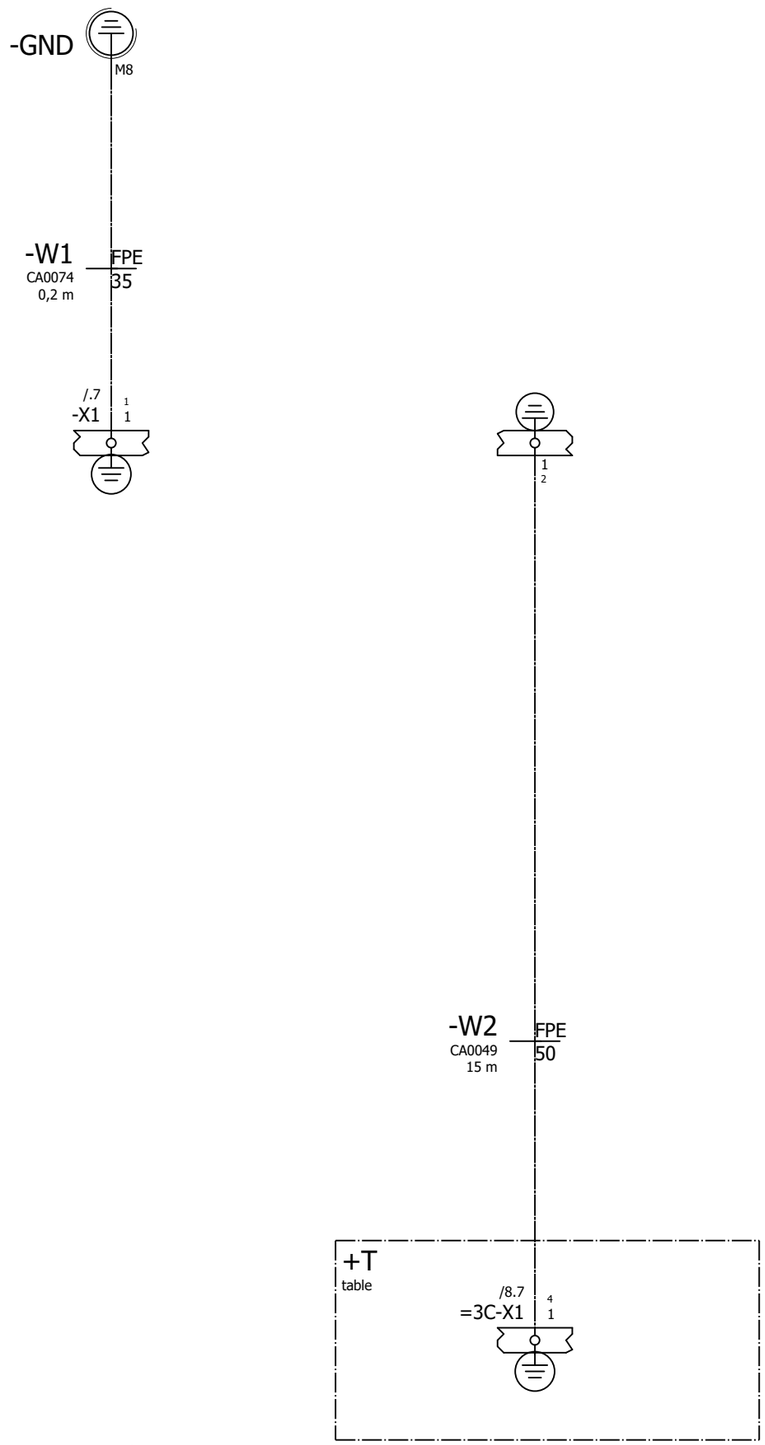
-X1 = potential equalization machine

jumper

•	1	- grounding customer / /8.1	G00000775
•	2	- functional grounding customer / /8.2	
•	3	- grounding table / /8.4	
•	4	- grounding table / =3CB+B/9.3	
•	5	- cabinet / =3BC+HP1/7.1	
•	6	- torch connection console grounding / =PB1+L1/89.9	
•	7	- plasma power source functional ground / =PS1+P/95.8	
•	8	- /	
•	9	- /	
•	10	- /	
•	11	- /	
•	12	- /	

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	grounding bar	module	grounding bar
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		connection points	sector 4A3T location +T	=3C
#01	15.03.2021	Thomas.Lehle	3C1 - ABI - 25.30.01 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

Page 8



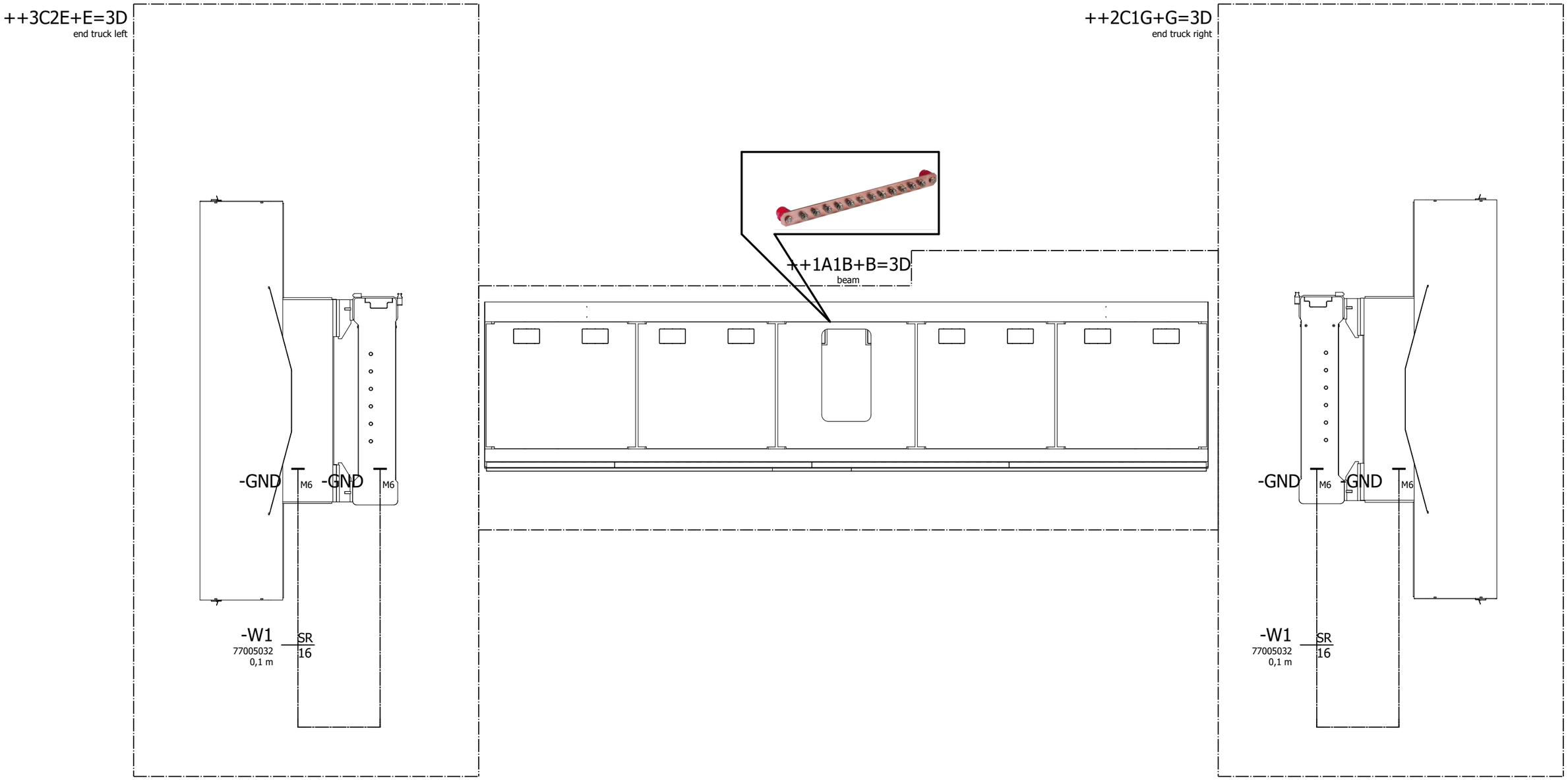
X1

-X1 = potential equalization machine

jumper

•	1	- grounding jumper / /9.1	G00000775
•	2	- grounding table / /9.3	
•	3	- cabinet / =3B+HB/5.1	
•	4	- cabinet / =3BB+HB/6.1	
•	5	- grounding carriage plate / =3E1+L1/11.1	
•	6	- panel grounding / =OP+E/84.9	
•	7	- gas console grounding / =PG1+E/91.9	
•	8	- /	
•	9	- /	
•	10	- /	
•	11	- /	
•	12	- /	

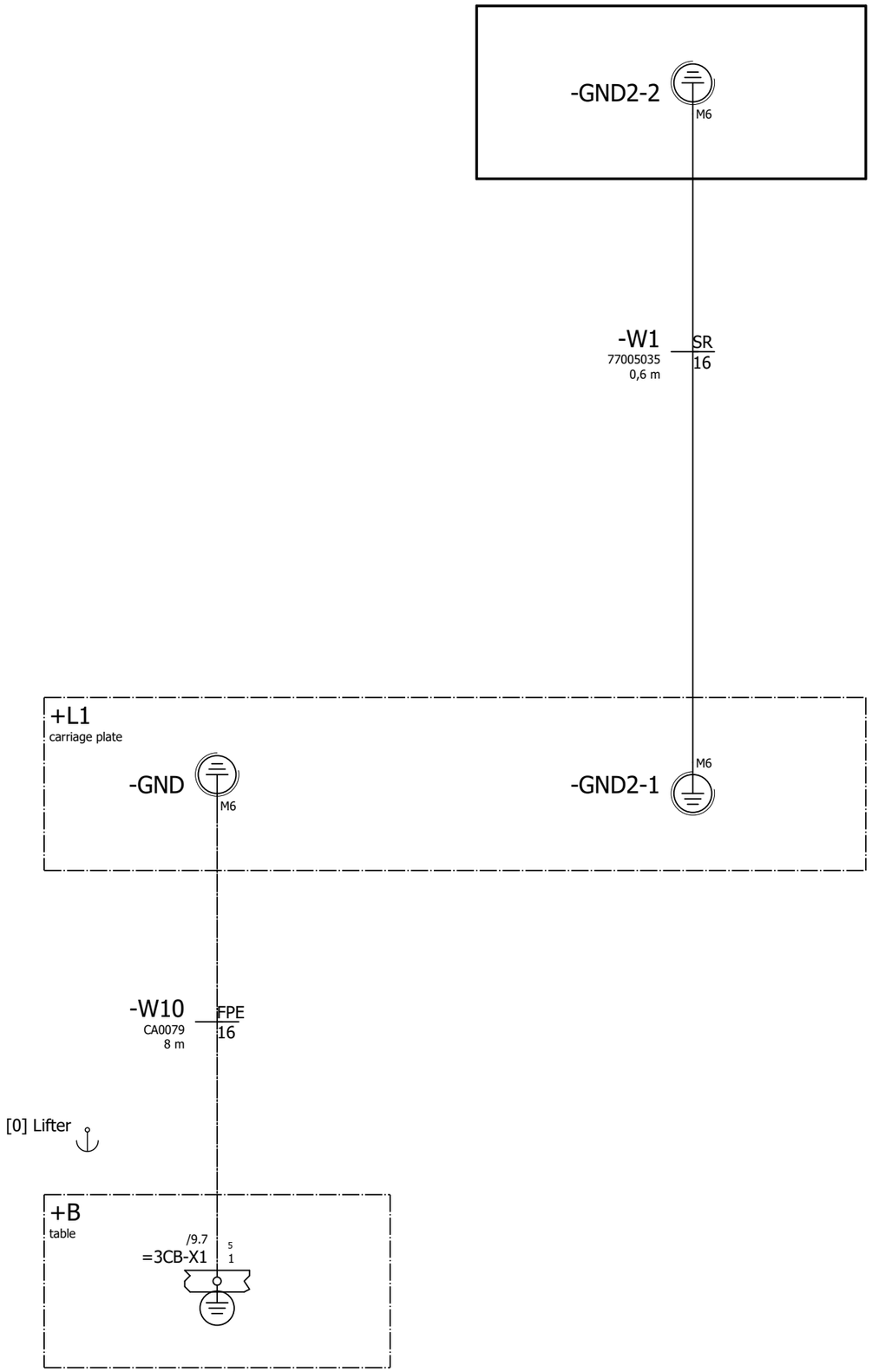
#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	connection points	module grounding bar
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha			sector 1A1B location +B =3CB
#01	15.03.2021	Thomas.Lehle	3C4 - ABI - 25.30.01 - CC: EU	commission:	289001273			Page 9
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			



potential connection

potential connection

			Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	grounding machine	module	grounding machine	Page
			Toolbox version	customer:	Blocotelha					10
			3D5 - ABI - 25.25.00 - CC: EU	commission:	289001273		overview	sector 1C2G location +HB	=3D	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



			Toolbox_31	Option:	L1-SL200 {R.29}	MESSER	grounding Location	module	grounding elements	Page	
			Toolbox version	customer:	Blocotelha		connection point	sector CA1L location	+L1 =3E1	11	
			3E2 - ABI - 25.30.00 - CC: EU	commission:	289001273						
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021						

EtherCAT -Topology

+E end truck left

=OP-P1

PC control panel

display 15", GCS, touch display, Win10, export

=OP+E/83.0

G10000760

BUS LAN 1

+E end truck left

=OB-S1

control panel accessory

Joystick, hand wheel extension

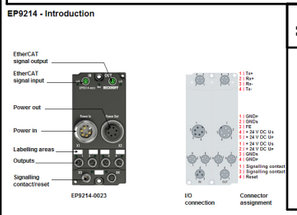
=OB+E/81.0

G10000038

BUS IN

BUS OUT

+B gantry



=BI-K1

distributor power

EtherCAT-box, power distribution, M8, 4 x 4A

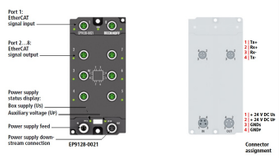
=BI+B/43.0

G10000103

IN Bus

OUT Bus

+B gantry



=IB-K1

distributor bus

EtherCAT, star hub, 8 ports

=IB+B/66.0

G10000666

IN Bus

OUT Bus

Thomas.Lehle
01.04.2021

			Toolbox_31	Option:		MESSER		module	topology EtherCAT
			Toolbox version	customer:	Blocotelha		Bus Kabel		Page
			automated	commission:	289001273			sector location +A	=4A 12
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

EtherCAT -Topologie

ECAT

+HB cabinet main

Safety address: Hex<c8> / Dez<200>

ON
1 2 3 4 5 6 7 8 9 10

=CXXA-K1

controller AX5206, 2 channel, AC 2x 6A, FW >=2.10

=CXXA+HB/46.0 G10001010

1-4 Bus-IN

1-4 Bus-OUT

+HB cabinet main

Safety address: Hex<64> / Dez<100>

ON
1 2 3 4 5 6 7 8 9 10

=CY1-K1

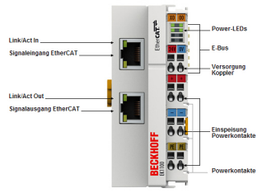
controller AX5103, 1 channel, AC 3A, FW >=2.10

=CY1+HB/49.0 G10001007

1-4 Bus-IN

1-4 Bus-OUT

+HB cabinet main



=IT-K1

bus terminal bus coupler

=IT+HB/67.1 77011135

BUS IN

BUS OUT

Thomas.Lehle
01.04.2021

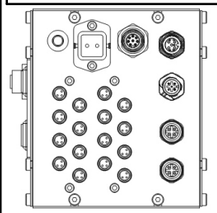
			Toolbox_31	Option:		MESSER		module	topology EtherCAT		Page
			Toolbox version	customer:	Blocotelha		Bus Kabel				13
			automated	commission:	289001273			sector	location +A	=4A	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021						

EtherCAT -Topologie

ECAT_2

+B=IB-K1:X2:2

+L1 Lifter



=LI1-K1

lifter

SmartLifter 200, 2 x 4 DI, 2 x 4 DO

=LI1+L1/75.1

72249810

Bus IN

Bus OUT

Thomas.Lehle
01.04.2021

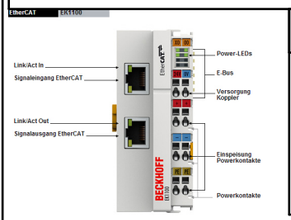
			Toolbox_31	Option:			module	topology EtherCAT	Page
			Toolbox version	customer:	Blocotelha				
			automated	commission:	289001273		Bus Kabel		14
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021		sector location +A	=4A	

EtherCAT -Topologie

ECAT

+HB=IT-K1:X2:BUS

+HP1 interface cabinet plasma



=ITB-K1

bus terminal bus coupler

=ITB+HP1/72.1 77011135

BUS IN

BUS OUT

Thomas.Lehle
01.04.2021

			Toolbox_31	Option:			module	topology EtherCAT	Page
			Toolbox version	customer:	Blocotelha	MESSER	Bus Kabel		15
			automated	commission:	289001273				
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021		sector location +A	=4A	

EtherCAT -Topologie

ECAT_PS1

+HP1=PS1-K3:X1:OUT

+P periphery

=PS1-E1

plasma power source HYP, XPR170, 400V, 35,7kVA

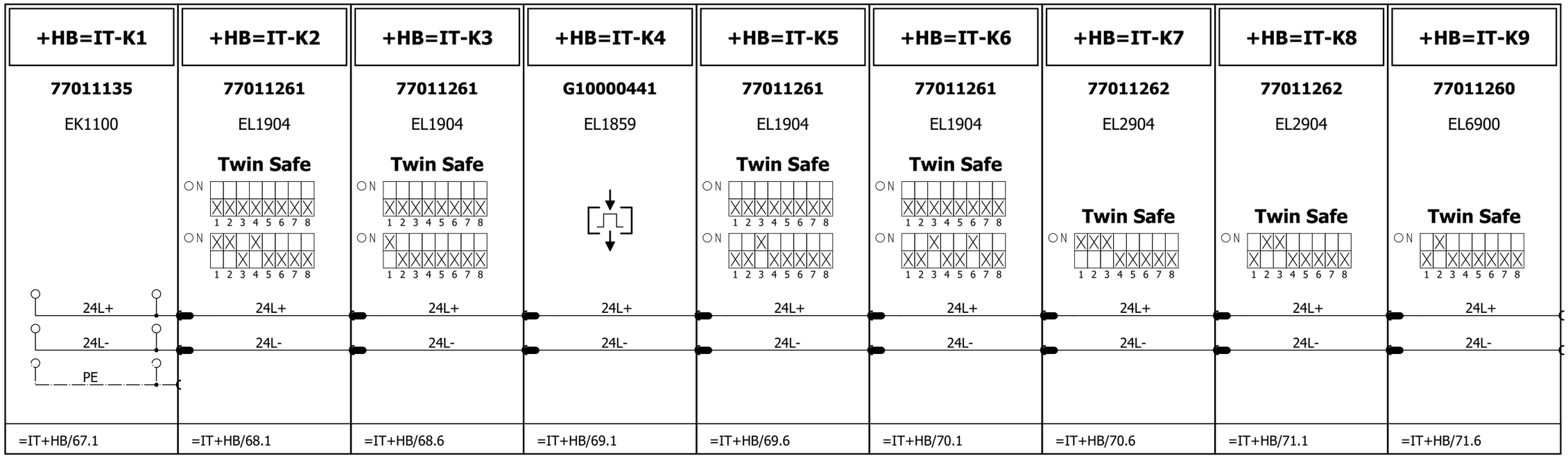
=PS1+P/95.0 72424700

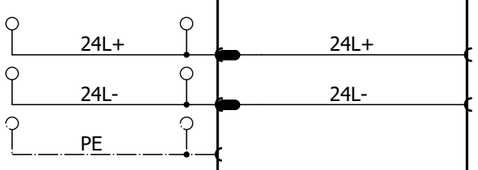
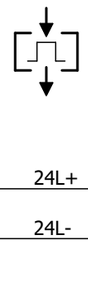
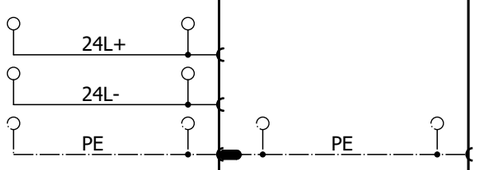
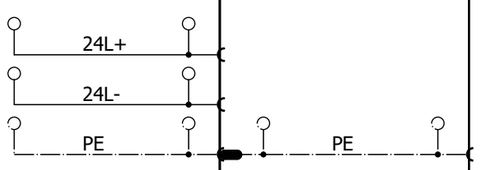
BUS IN

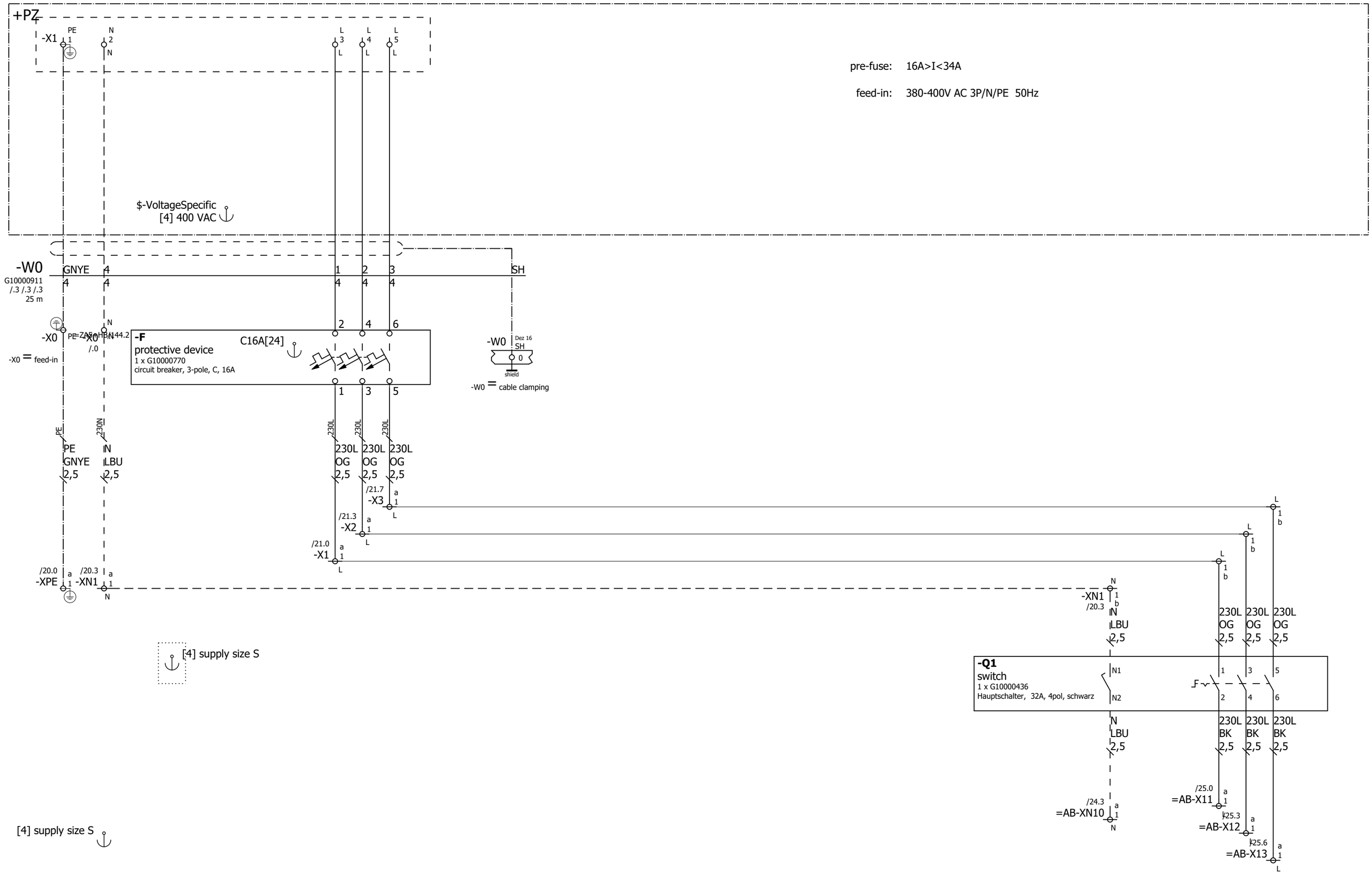
BUS OUT

Thomas.Lehle
01.04.2021

			Toolbox_31	Option:			module	topology EtherCAT		Page
			Toolbox version	customer:	Blocotelha					
			automated	commission:	289001273		Bus Kabel			16
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021		sector	location +A	=4A	

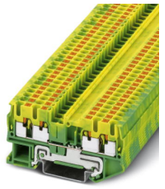

+HB=IT-K1
77011135
EK1100
+HB=IT-K2
77011261
EL1904
Twin Safe
+HB=IT-K3
77011261
EL1904
Twin Safe
+HB=IT-K4
G10000441
EL1859
+HB=IT-K5
77011261
EL1904
Twin Safe
+HB=IT-K6
77011261
EL1904
Twin Safe
+HB=IT-K7
77011262
EL2904
Twin Safe
+HB=IT-K8
77011262
EL2904
Twin Safe
+HB=IT-K9
77011260
EL6900
Twin Safe
ON
1 2 3 4 5 6 7 8
24L+
24L-
PE
=IT+HB/67.1
=IT+HB/68.1
=IT+HB/68.6
=IT+HB/69.1
=IT+HB/69.6
=IT+HB/70.1
=IT+HB/70.6
=IT+HB/71.1
=IT+HB/71.6
Safety address: Dez. <11>
Safety address: Dez. <1>
Safety address: Dez. <4>
Safety address: Dez. <36>
Safety address: Dez. <7>
Safety address: Dez. <6>
Safety address: Dez. <2>

+HP1=ITB-K1	+HP1=ITB-K2	+HP1=PS1-K1	+HP1=PS1-K2	+HP1=PS1-K3	+HP1=UE-K1	+HP1=UE-K2
77011135	**G10000441**	**77011215**	**77011138**	**G10000781**	**77011141**	**77011139**
EK1100	EL1859	EL9410	EL2622	EK1122	EL9100	EL2612
						
=ITB+HP1/72.1	=ITB+HP1/73.2	=PS1+P/95.1	=PS1+P/95.4	=PS1+P/95.7	=UE+P/99.7	=UE+P/99.5



#01	15.03.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	AC operating voltage	module AC power supply cabinet	Page
01	28.01.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha		main switch, PE/N		19
			AA2 - ABI - 29.29.07 - CC: EU	commission:	289001273			sector 1C2G location +HB =AA	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

XPE



-XPE = potential distribution protective conductor

jumper

•	1	77070158

a - service power socket /19.0
b - service power socket =AS/30.5

XN1

-XN1 = potential distribution neutral conductor

jumper

•	1	G10000679

a - control voltage /19.0
b - control voltage /19.8
c - service power socket =AS/30.3

[4] supply size S

potential distribution
protective conductor

potential distribution
neutral conductor

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	AC operating voltage	module	AC power supply cabinet	Page
			Toolbox version	customer:	Blocotelha		protective conductor / neutral			20
			AA2 - ABI - 29.29.07 - CC: EU	commission:	289001273			sector 1C2G location +HB	=AA	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

X1

-X1 = potential distribution L1

jumper

•	1	77070157

a - cabinet power supply /19.2
b - control voltage /19.8
c - service power socket =AS/30.3

•

X2

-X2 = potential distribution L2

jumper

•	1	77070157

a - cabinet power supply /19.2
b - control voltage /19.8

•

X3

-X3 = potential distribution L3

jumper

•	1	77070157

a - cabinet power supply /19.2
b - control voltage /19.8

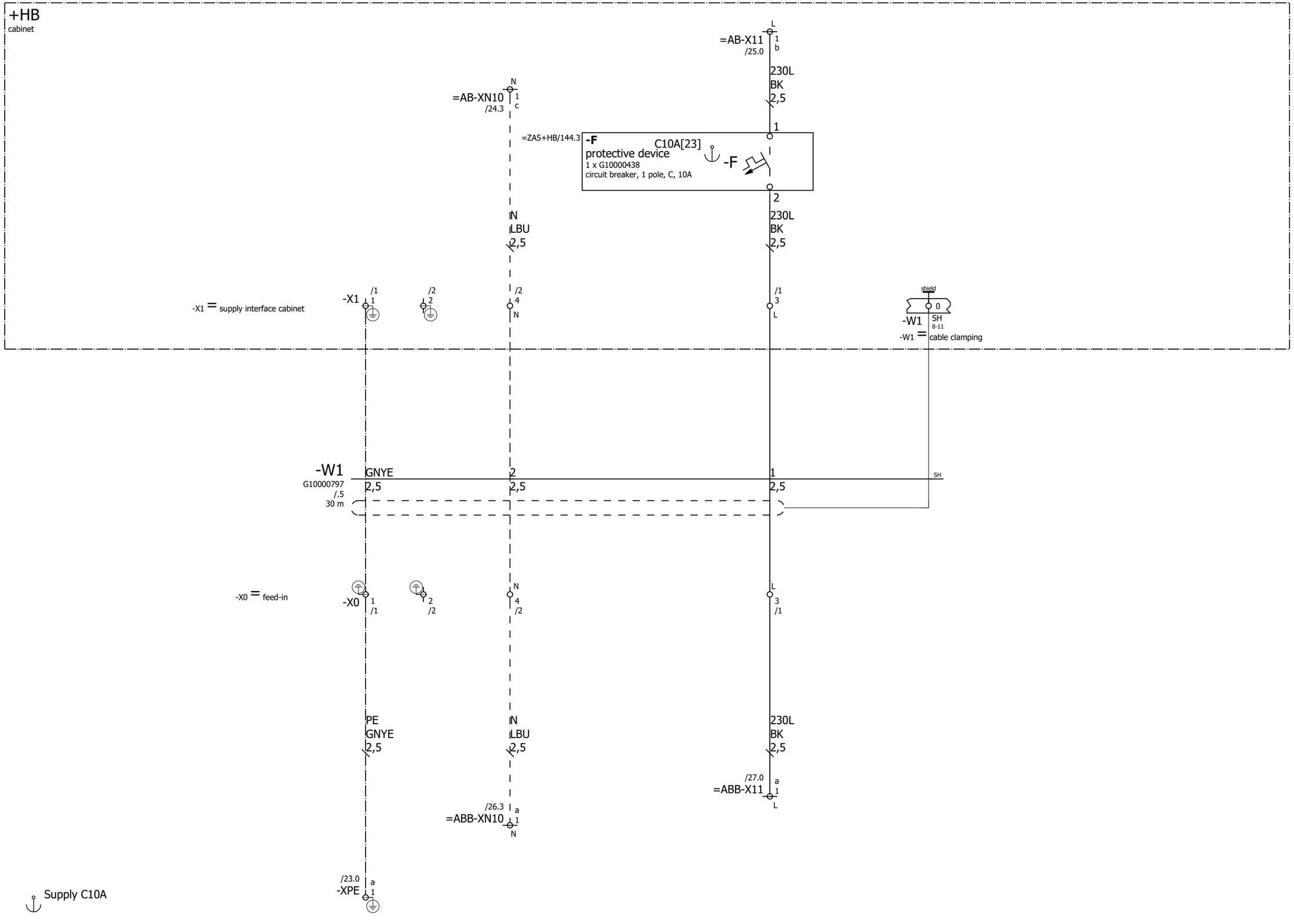
•

[4] supply size S

[4] supply size S

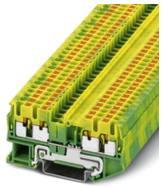
#	potential distribution phase L1	potential distribution phase L2	potential distribution phase L3

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	AC operating voltage	module	AC power supply cabinet
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		potential distribution L1/L2/L3	sector 1C2G location +HB	=AA
#01	15.03.2021	Thomas.Lehle	AA2 - ABI - 29.29.08 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



01	28.01.2021	Adeline.Wegang	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	feed-in	module AC power supply cabinet
			Toolbox version	customer:	Blocotelha		X0 , PE/N/1~	sector 3E7P location +HP1 =AAB
			AA5 - ABI - 29.29.01 - CC: EU	commission:	289001273			
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			Page 22

XPE



-XPE = potential distribution
protective conductor

jumper

•	1	77070158

a - interface cabinet supply /22.2
b - filter fan grounding / PE =UE+P/99.6

Supply 10A

potential distribution
protective conductor

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	feed-in	module	AC power supply cabinet	Page
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		potential distribution PE	sector 3E7P location +HP1	=AAB	23
#01	15.03.2021	Thomas.Lehle	AA5 - ABI - 29.29.01 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

XN10

-XN10 = potential distribution
operating voltage N

jumper

•	1	G10000679

a - control voltage =AA/19.8
b - 230N =BA/32.4
c - interface cabinet supply =AAB+HP1/22.3
d - transformer supply / =AL/29.1

[4] supply size S

operating voltage
neutral conductor

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	AC operating voltage	module	AC distribution
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		neutral conductor	sector 1C2G location +HB	=AB
#01	15.03.2021	Thomas.Lehle	AB1 - ABI - 29.29.08 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

X11

-X11 = potential distribution operating voltage L1

jumper

•	1	77070157

a - control voltage =AA/19.8
b - interface cabinet supply =AAB+HP1/22.5
c - controller power supply AC / L1 =CXXA/46.1
d - controller power supply AC / L1 =CY1/49.1

X12

-X12 = potential distribution operating voltage L2

jumper

•	1	77070157

a - control voltage =AA/19.8
b - transformer supply =AL/29.1
c - controller power supply AC / L2 =CXXA/46.2
d - controller power supply AC / L2 =CY1/49.2

X13

-X13 = potential distribution operating voltage L3

jumper

•	1	77070157

a - control voltage =AA/19.8
b - operating voltage power supply 24VDC =BA/32.6
c - controller power supply AC / L3 =CXXA/46.2
d - controller power supply AC / L3 =CY1/49.2

[4] supply size S

[4] supply size S

#

operating voltage line L1

operating voltage line L2

operating voltage line L3

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	AC operating voltage	module AC distribution
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		lines L1/L2/L3	sector 1C2G location +HB =AB
#01	15.03.2021	Thomas.Lehle	AB1 - ABI - 29.29.08 - CC: EU	commission:	289001273			
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			

XN10

-XN10 = potential distribution
operating voltage N

jumper

•	1	G10000679

a - interface cabinet supply =AAB/22.3
b - plasma power source switch-off =PA1+HJ1/87.8
c - 230N =BAB/35.4

Supply C10A

operating voltage
neutral conductor

X11

-X11 = potential distribution
operating voltage

jumper

•	1	77070157

a - interface cabinet supply =AAB/22.5
b - =BAB/35.6
c - =PA1+HJ1/87.6

Supply C10A

operating voltage
line

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	AC operating voltage	module AC distribution
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		line	sector 3E7P location +HP1 =ABB
#01	15.03.2021	Thomas.Lehle	AB3 - ABI - 29.29.00 - CC: EU	commission:	289001273			
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			

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77070862

transformer

-T1 1 phase, 4 x 100 VA, 230V/36V

X1

L	230	transformer supply	/29.1
N	0	=	/29.2
PE	ground	=	/29.2

X2.1

L	36	SmartLifter AC power supply	=LI1+L1/75.3
N	0	=	=LI1+L1/75.2

X2.2

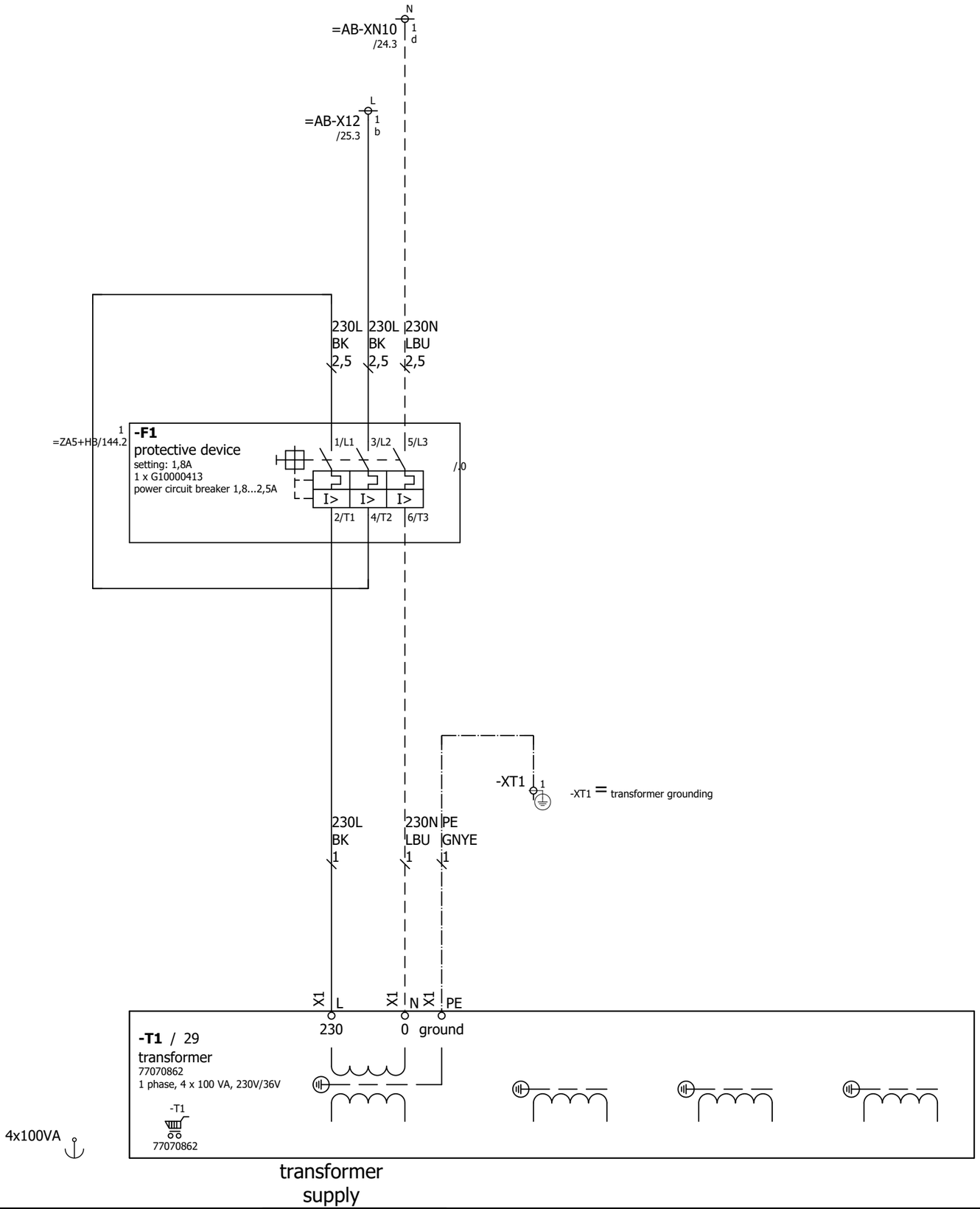
L	36
N	0

X2.3

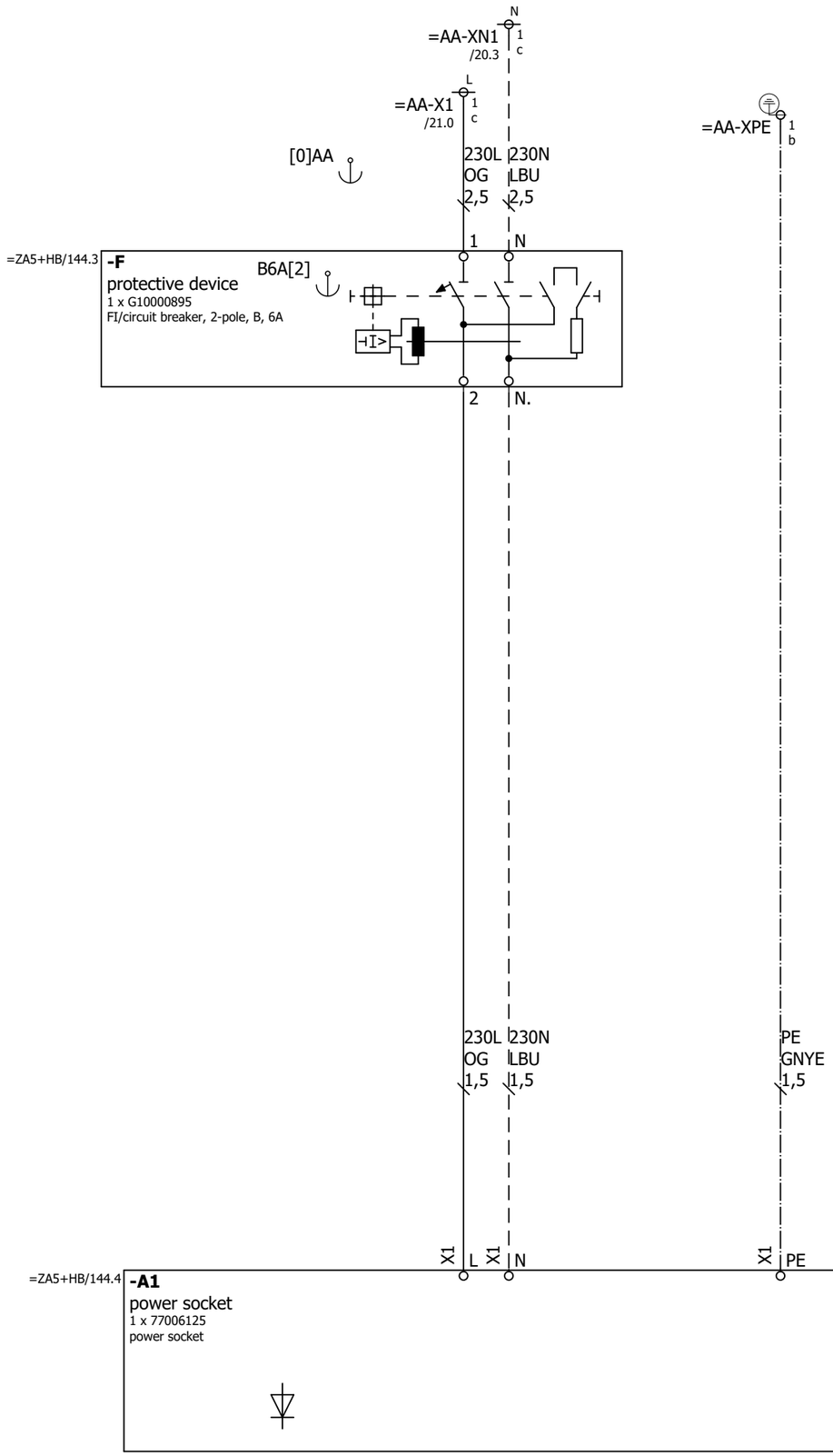
L	36
N	0

X2.4

L	36
N	0



			Toolbox_31	Option:	L1-Transform 36V4x100VA {R.25}	MESSER	transformer	module	AC levels
			Toolbox version	customer:	Blocotelha		supply		Page
			AL1 - ABI - 25.25.00 - CC: EU	commission:	289001273			sector 1C2G location +HB	=AL 29
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



service
power socket

			Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	service socket	module	AC service socket	Page
			Toolbox version	customer:	Blocotelha		feed-in	sector 1C2G location +HB	=AS	30
			AS1 - ABI - 29.29.03 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

G10000827

protective device

-F1 electronic circuit breaker 10A

Contact

13	NO	
14	NO	

IN+

1	24L+	operating voltage power supply 24V DC	/32.5
2	24L+		

IN-

1	24L-		/32.4
2	24L-		

OUT+

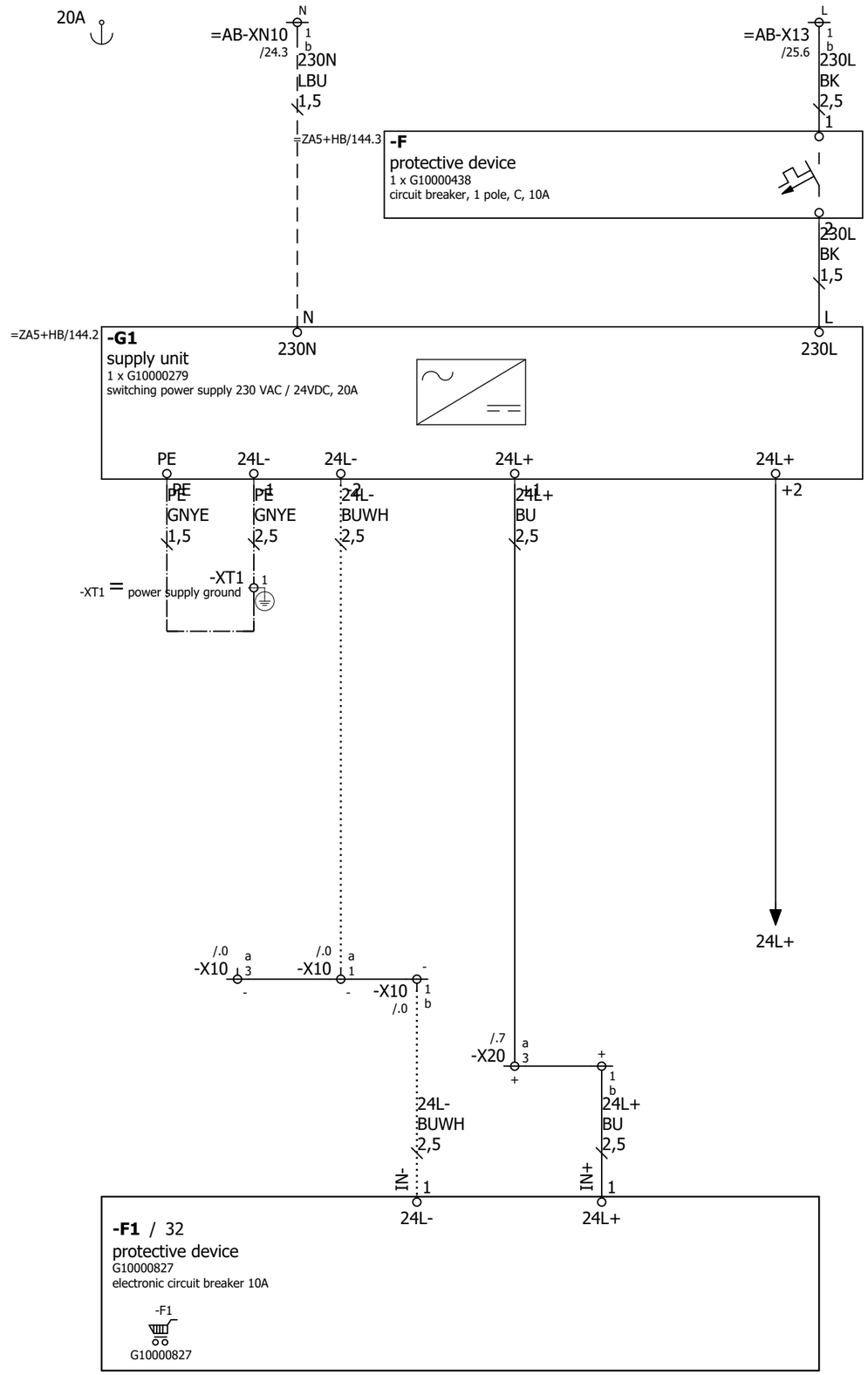
1	1-10A	operating voltage 24L+ channel 1	/33.4
2	1-10A	operating voltage 24L+ channel 2	/33.6
3	1-10A		/34.4
4	1-10A	operating voltage 24L+ channel 4	/34.6

X10

-X10 = potential distribution operating voltage 24L-

jumper

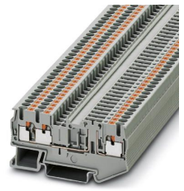
1	77070157
	a - operating voltage power supply 24VDC / 24L- /32.4
	b - 24L- /32.4
	c - distribution 24 VDC external =BI+B/43.1
	d - control voltage 24Lbuffered / 24L- =BU/44.4
3	77070157
	a - operating voltage power supply 24VDC
	d -
	control voltage active / =ER/64.8
2	77070157
	a - potential distribution limiting Y+ =DL1+L1/53.3
	b - sensor limit Y- =DL1B+L1/54.3
	c - Safety interface external =EI/58.1
4	77070157
	a - EtherCAT coupler operating supply / 24L- =IT/67.6
	b - EtherCAT coupler powerbus / - =IT/67.7
	c - SmartLifter DC operating voltage =LI1+L1/75.5
	d - operation panel supply / =OP+E/84.4
5	77070157
	a - operating voltage power supply 24VDC =UT/101.2
	b - cabinet cooling =UT/101.3
	c - operation panel cooling =UTB+E/102.2



operating voltage
24L-

operating voltage
power supply 24VDC

X20



-X20 = potential distribution operating voltage 24L+

jumper

1	G10000602;G10000459;541021
	a - operating voltage power supply 24VDC =UT/101.1
	b - operating voltage power supply 24VDC / 24L+ /32.5
2	G10000602;G10000459;65541022
	a - control voltage power distributors =BB/39.5
	b - SmartLifter DC operating voltage =LI1+L1/75.5
	c - SmartLifter DC control voltage =LI1+L1/75.7
3	G10000602;G10000506
	a - operating voltage power supply 24VDC / 24L+ /32.5
	b - distribution 24 VDC external =BI+B/43.3
	c - control voltage 24L+ buffered / 24L+ =BU/44.5
4	G10000602;G10000459;65541022
	a - control voltage 24L+ channel 2 =BB/40.6
5	G10000602;G10000459;65541022
	a - control voltage 24L+ channel 3 =BB/41.4
6	G10000602;G10000459;65541022
	a - control voltage 24L+ channel 4 =BB/41.6
7	G10000602;G10000459;541021
	a - cabinet cooling =UT/101.3
8	G10000602;G10000459;65541022
	a - control voltage 24L+ channel 1 =BB/40.4

operating voltage
24L+

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	operating voltage	module	DC power supply	Page
#03	31.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		power supply	sector 1C2G location +HB	=BA	32
#03	25.03.2021	Thomas.Lehle	BA1 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

X21

-X21 = operating voltage 24L+ channel 1

jumper

•	1	77070157

a - operating voltage 24L+ channel 1 / 1-10A /33.4
b - potential distribution limiting Y+ =DL1+L1/53.3
d -
EtherCAT coupler operating supply / 24L+ =IT/67.5

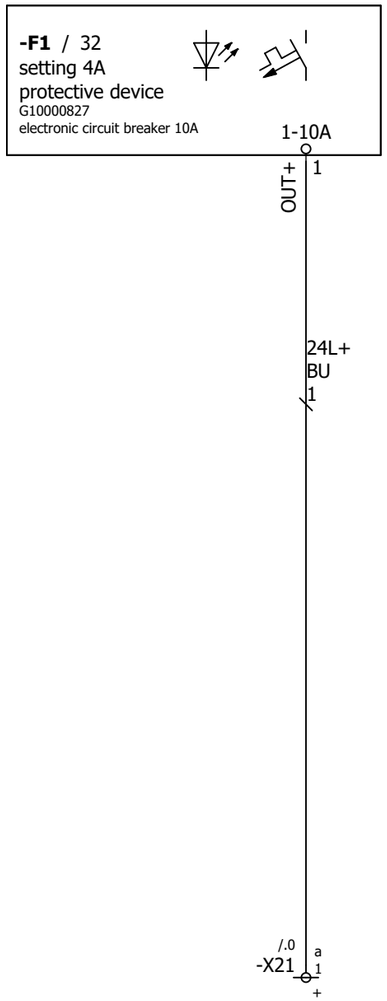
X22

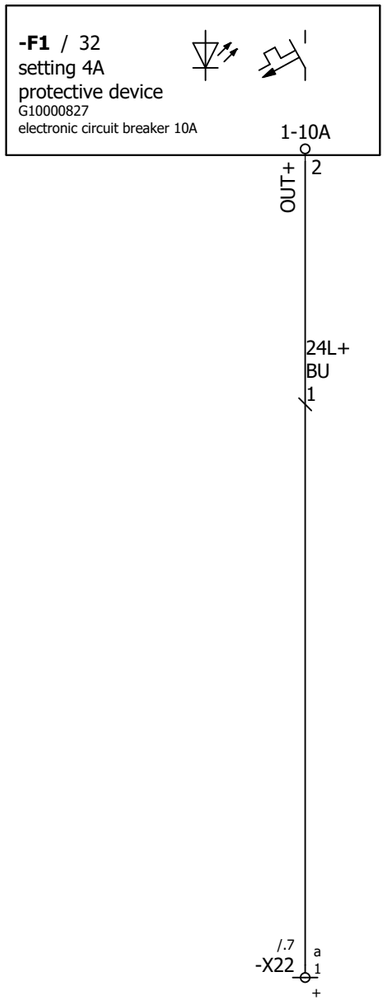
-X22 = operating voltage 24L+ channel 2

jumper

•	1	77070157

a - operating voltage 24L+ channel 2 / 1-10A /33.6
b - sensor limit Y- =DL1B+L1/54.3
d -
EtherCAT coupler powerbus / + =IT/67.6





20A

operating voltage 24L+
channel 1

operating voltage 24L+
channel 2

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	operating voltage	module	DC power supply	Page
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		electronical fuse channel 1 / 2	sector 1C2G location +HB	=BA	33
#01	15.03.2021	Thomas.Lehle	BA1 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

X23

-X23 = operating voltage 24L+ channel 3

jumper

•	1	77070157

a - Safety interface external / 1-10A /34.4
b - Safety interface external =EI/58.1
d -
operation panel supply / =OP+E/84.3

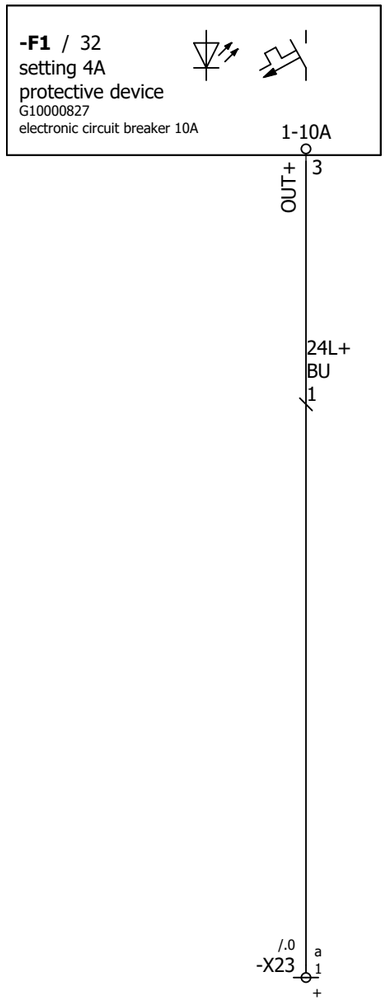
X24

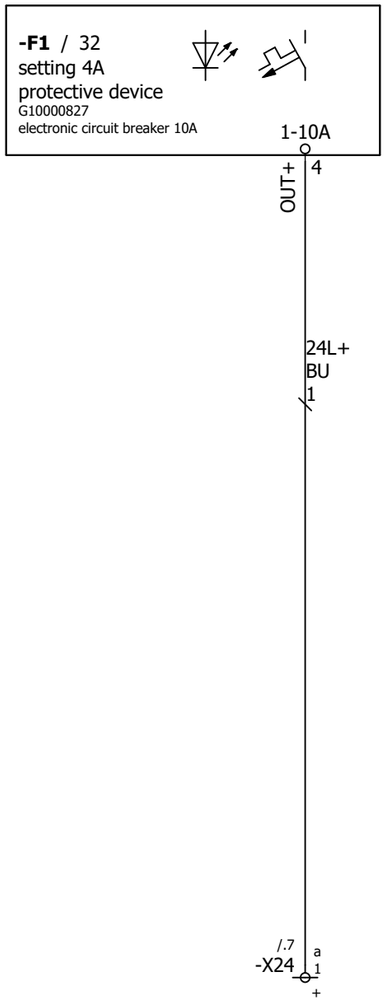
-X24 = operating voltage 24L+ channel 4

jumper

•	1	77070157

a - operating voltage 24L+ channel 4 / 1-10A /34.6
b -
c - control voltage active =ER/64.8





20A

operating voltage 24L+
channel 3

operating voltage 24L+
channel 4

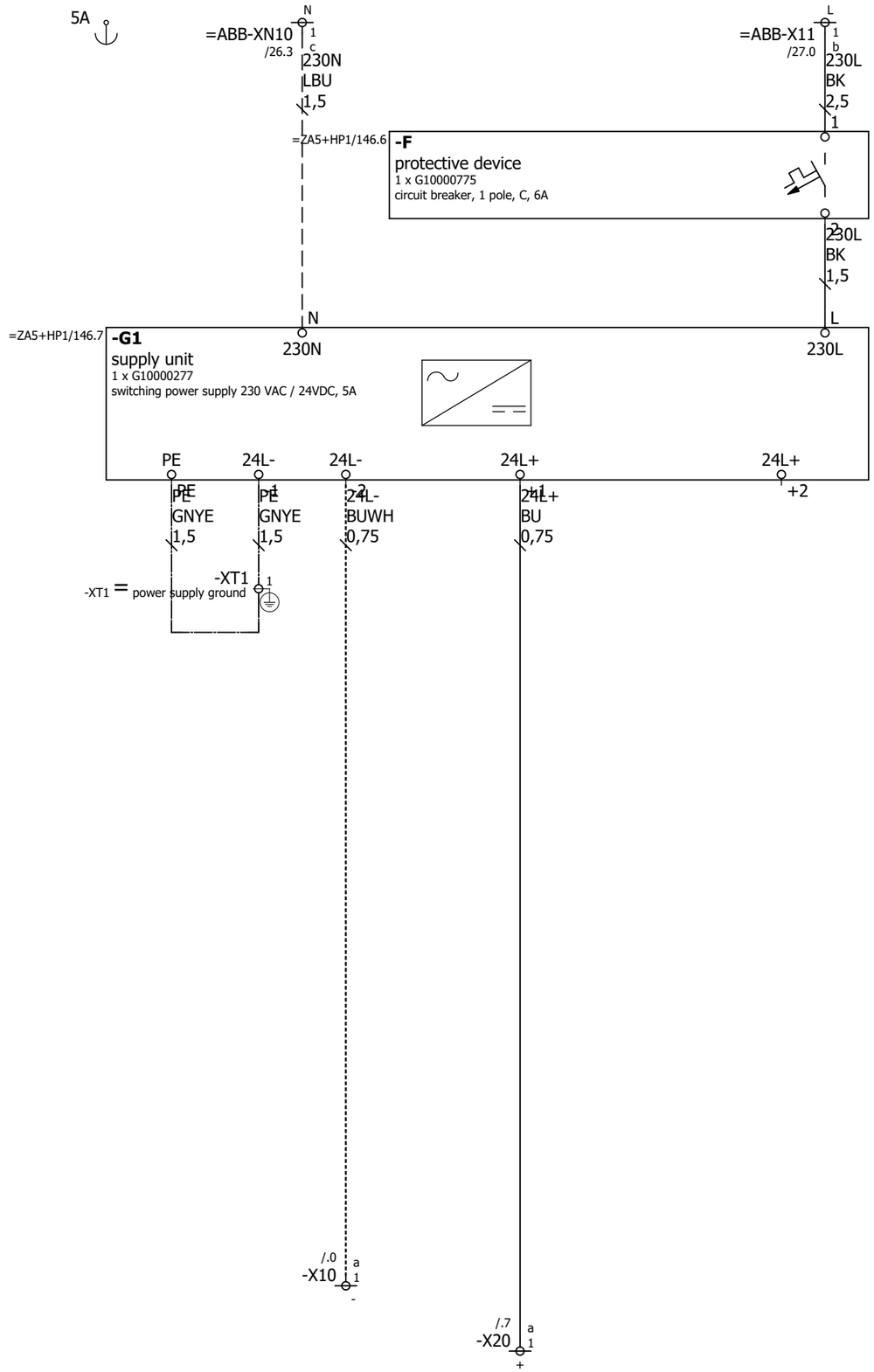
#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	operating voltage	module	DC power supply	Page
#03	31.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		electronical fuse channel 3 / 4	sector 1C2G location +HB	=BA	34
#03	25.03.2021	Thomas.Lehle	BA1 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

X10

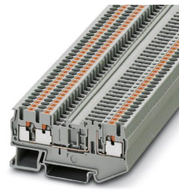
-X10 = operating voltage 24L-

jumper

1		77070157
	a - power supply 24 VDC operating voltage / 24L-	/35.4
	b - Safety interface external	=EIB/60.1
	c - EtherCAT coupler operating supply / 24L-	=ITB/72.6
	d - EtherCAT coupler powerbus / -	=ITB/72.7
2		77070157
	a - feed-in / 24L-	=PS1+P/95.2



X20



-X20 = operating voltage 24L+

jumper

1		G10000602;G10000506
	a - power supply 24 VDC operating voltage / 24L+	/35.5
2		G10000602;G10000459;0510267
	a - operating voltage 24L+ channel 1	/36.4
3		G10000602;G10000459;0510267
	a - operating voltage 24L+ channel 2	/36.6
4		G10000602;G10000459;0510267
	a - operating voltage 24L+ channel 3	/37.4
5		G10000602;G10000459;0510267
	a - operating voltage 24L+ channel 4	/37.6

5A[0]

operating voltage
24L-

power supply 24 VDC
operating voltage

operating voltage
24L+

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	operating voltage	module	DC power supply
#03	31.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		power supply	sector 3E7P location +HP1	=BAB
#03	25.03.2021	Thomas.Lehle	BA2 - ABI - 29.29.00 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

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X21

-X21 = operating voltage 24L+ channel 1

jumper

•	1	77070157

a - operating voltage 24L+ channel 1 /36.4
b - Safety interface external =EIB/60.2

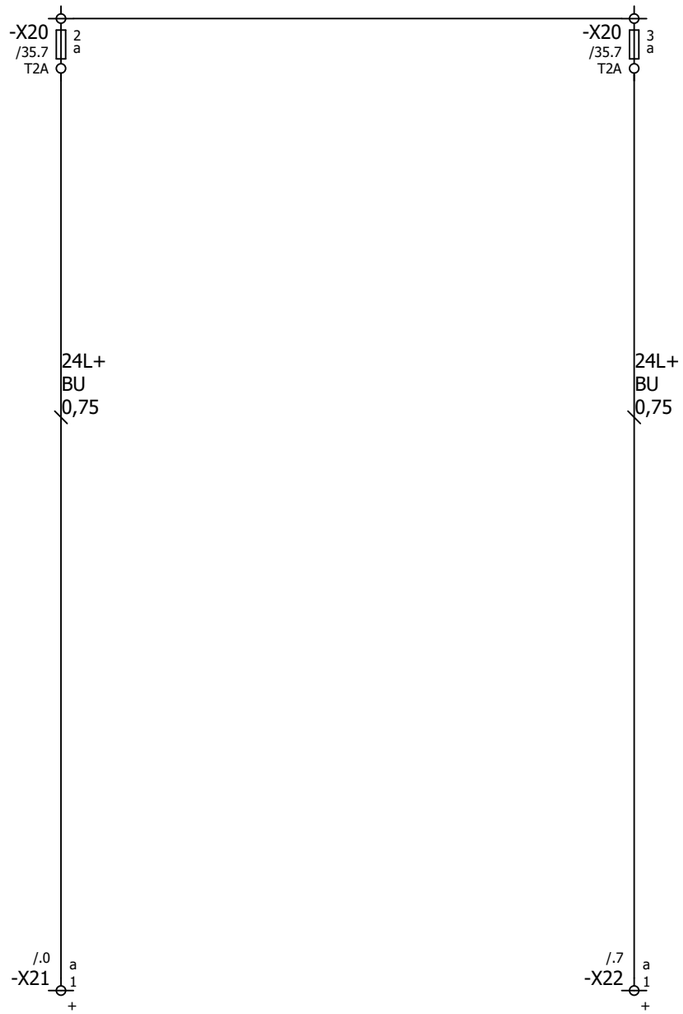
X22

-X22 = operating voltage 24L+ channel 2

jumper

•	1	77070157

a - operating voltage 24L+ channel 2 /36.6
b - EtherCAT coupler operating supply / 24L+ =ITB/72.5
c - exhaustion active =SP+P/97.5



5A

operating voltage 24L+
channel 1

operating voltage 24L+
channel 2

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	operating voltage	module	DC power supply	Page
#02	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		fuse channel 1 / 2	sector 3E7P location +HP1	=BAB	36
#01	15.03.2021	Thomas.Lehle	BA2 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

X23

-X23 = operating voltage 24L+ channel 3

jumper

•	1	77070157

a - operating voltage 24L+ channel 3 /37.4
b - EtherCAT coupler powerbus / + =ITB/72.6

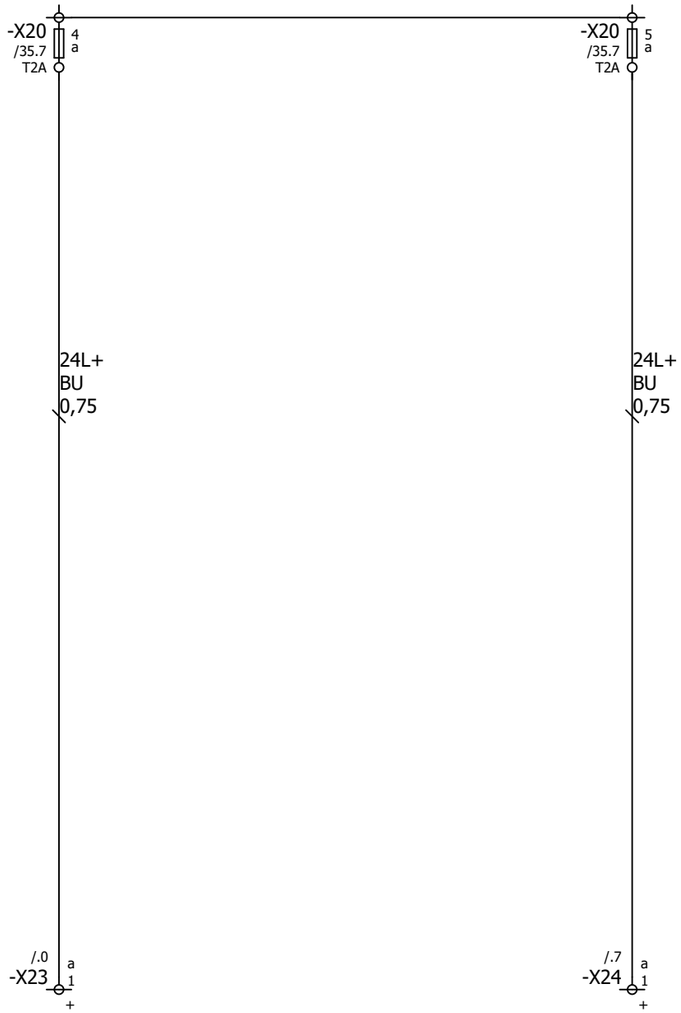
X24

-X24 = operating voltage 24L+ channel 4

jumper

•	1	77070157

a - operating voltage 24L+ channel 4 /37.6
b - plasma power source supply 24VDC / 24L+ =PS1+P/95.



5A

operating voltage 24L+
channel 3

operating voltage 24L+
channel 4

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	operating voltage	module	DC power supply	Page
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		fuse channel 3 / 4	sector 3E7P location +HP1	=BAB	37
#01	15.03.2021	Thomas.Lehle	BA2 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

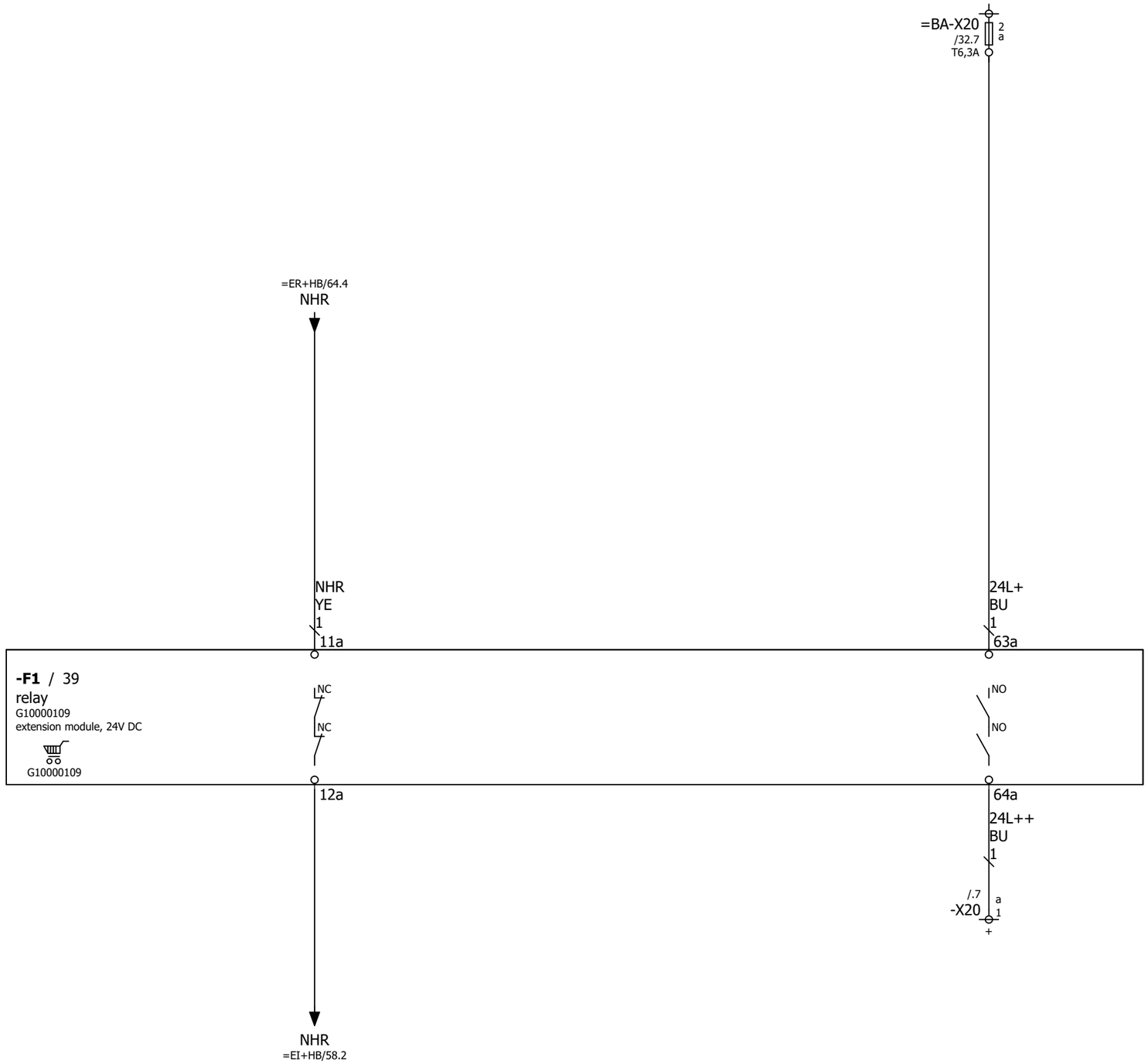
72a		
72b		
A1a		
A1b	control voltage active	=ER/64.8
A2a		
A2b	control voltage active	=ER/64.8

G10000109

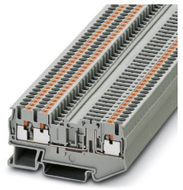
relay

-F1 extension module, 24V DC

	Logic	
11a	control voltage return	/39.1
11b		
12a	control voltage return	/39.1
12b		
23a	control voltage 24L+ channel 1	/40.4
23b		
24a	control voltage 24L+ channel 1	/40.4
24b		
33a	control voltage 24L+ channel 2	/40.6
33b		
34a	control voltage 24L+ channel 2	/40.6
34b		
43a	control voltage 24L+ channel 3	/41.4
43b		
44a	control voltage 24L+ channel 3	/41.4
44b		
53a	control voltage 24L+ channel 4	/41.6
53b		
54a	control voltage 24L+ channel 4	/41.6
54b		
63a	control voltage power distributors	/39.5
63b		
64a	control voltage power distributors	/39.5
64b		
71a		
71b		



X20



-X20 = potential distribution control voltage 24L+

jumper

•	1	G10000602;G10000506

a - control voltage power distributors /39.5

control voltage return

control voltage power distributors

control voltage 24L+

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	control voltage	module DC power supply switched
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		Safety relay	
#01	15.03.2021	Thomas.Lehle	BB2 - ABI - 29.29.01 - CC: EU	commission:	289001273			sector 1C2G location +HB =BB
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			

Page 39

X21

-X21 = control voltage 24L+ channel 1

jumper

•	1	77070157

a - control voltage 24L+ channel 1 /40.4

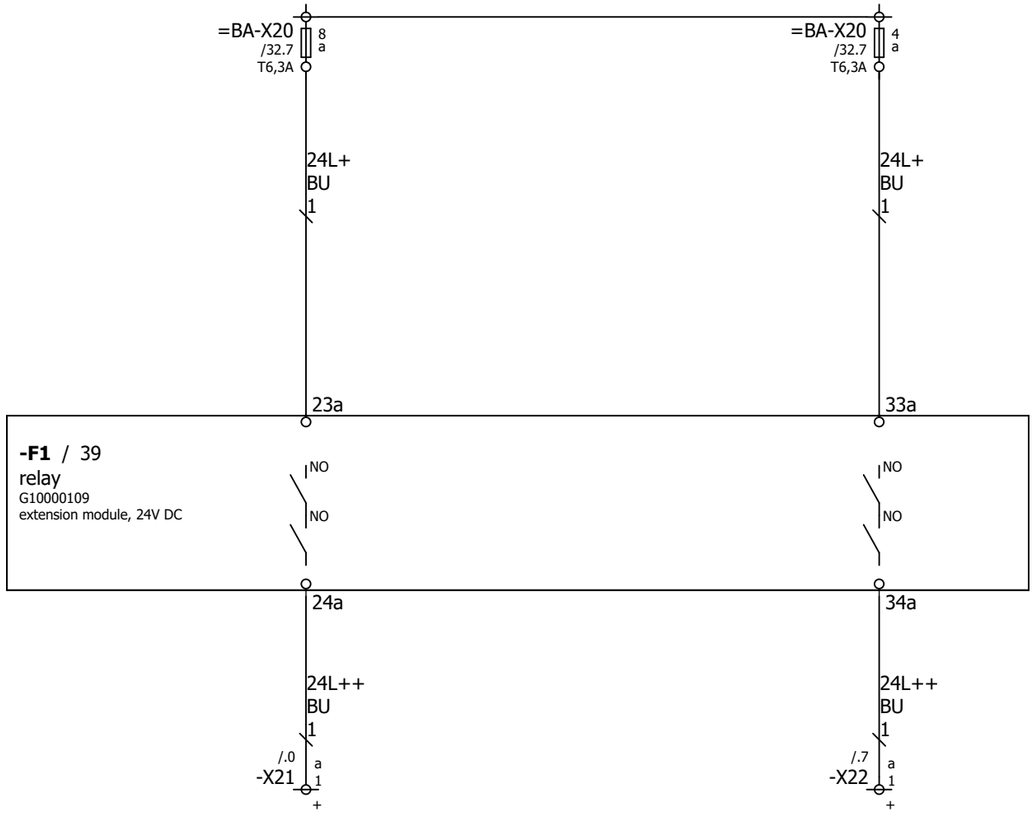
X22

-X22 = control voltage 24L+ channel 2

jumper

•	1	77070157

a - control voltage 24L+ channel 2 /40.6



control voltage 24L+
channel 1

control voltage 24L+
channel 2

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	control voltage	module	DC power supply switched	Page
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		potential distribution X21-22	sector 1C2G location +HB	=BB	40
#01	15.03.2021	Thomas.Lehle	BB2 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

X23

-X23 = control voltage 24L+ channel 3

jumper

•	1	77070157

a - control voltage 24L+ channel 3 /41.4

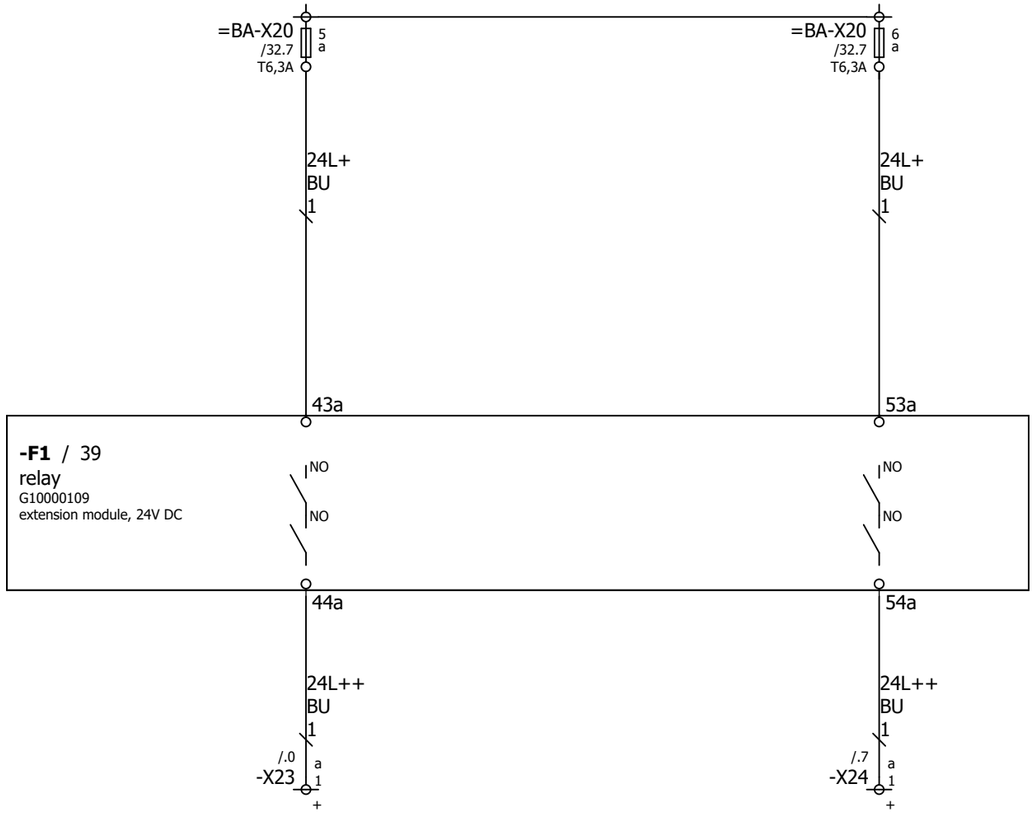
X24

-X24 = control voltage 24L+ channel 4

jumper

•	1	77070157

a - control voltage 24L+ channel 4 /41.6

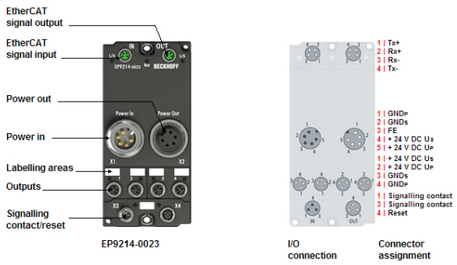


control voltage 24L+
channel 3

control voltage 24L+
channel 4

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Main Cabi supply S+N switched {R.29}	MESSER	control voltage	module	DC power supply switched	Page
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		potential distribution X23-24	sector 1C2G location +HB	=BB	41
#01	15.03.2021	Thomas.Lehle	BB2 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					

EP9214 - Introduction



G10000103

distributor power

-K1

EtherCAT-box, power distribution, M8, 4 x 4A

1

OUT 1

1	24L+s		=IB/66.1
2	24L+p	EP module supply	=IB/66.2
3	24L-s	=	=IB/66.3
4	24L-p	=	=IB/66.3

2

OUT 2

1	24L+s
2	24L+p
3	24L-s
4	24L-p

3

OUT 3

1	24L+s
2	24L+p
3	24L-s
4	24L-p

4

OUT 4

1	24L+s
2	24L+p
3	24L-s
4	24L-p

L/A

Bus

IN	Bus	EtherCAT	/43.8
OUT	Bus	=	/43.8

X1

Power IN

1	24L-s	distribution 24 VDC external	/43.1
2	24L-p	=	/43.2
3	PE	=	/43.3
4	24L+s	=	/43.3
5	24L+p	=	/43.4

X2

Power OUT

1	24L-s
2	24L-p
3	PE
4	24L+s
5	24L+p

X3

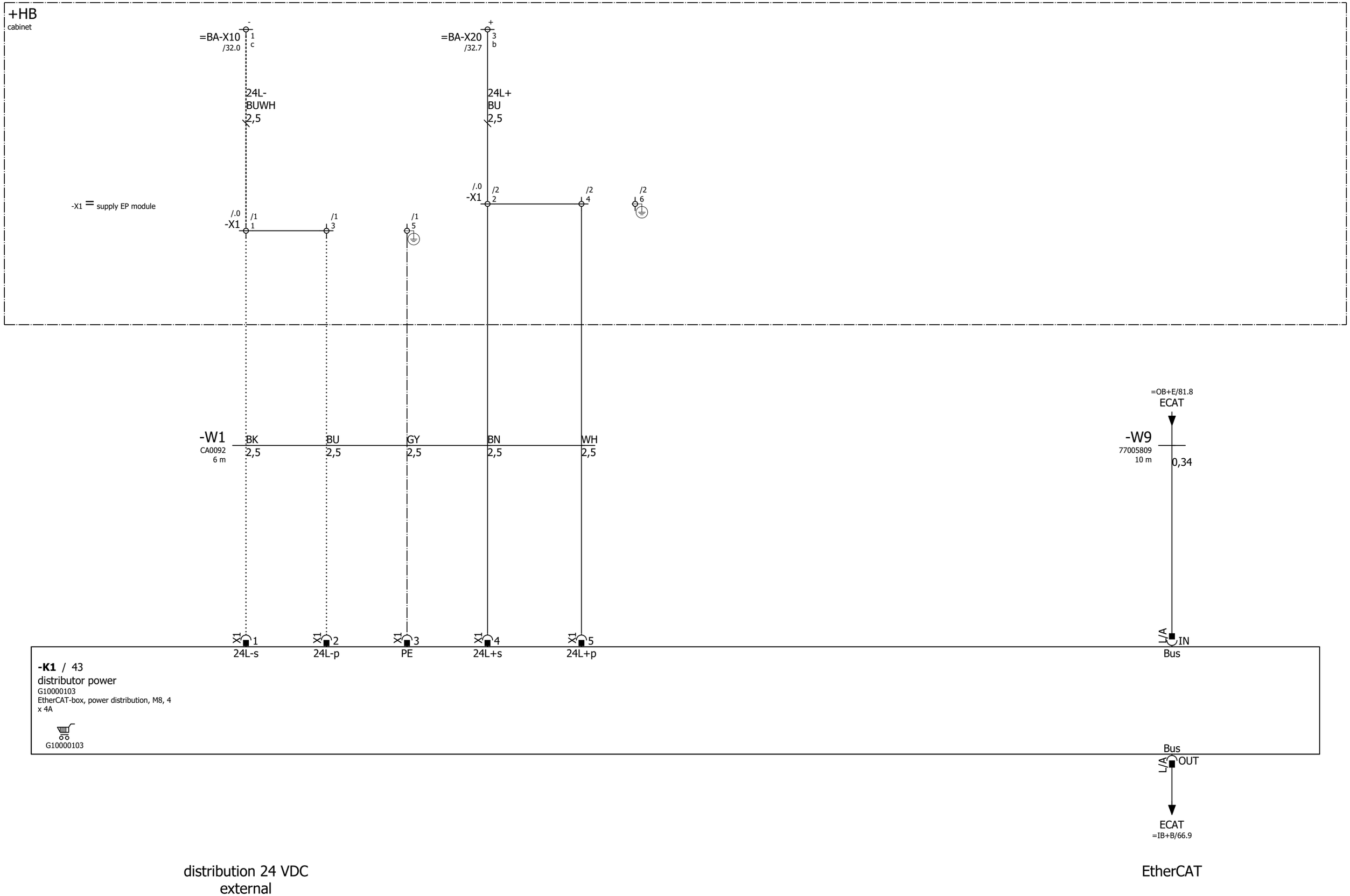
diagnosis IN

1	NO
3	COM
4	reset

X4

diagnosis OUT

1	NO
3	COM
4	reset



			Toolbox_31	Option:	L1-EP PowerBox 4x4A {R.29}	MESSER	EP power - distributor	module DC power supply interface	Page
			Toolbox version	customer:	Blocotelha		24VDC, EtherCat		43
			BI1 - ABI - 29.30.00 - CC: EU	commission:	289001273			sector 1B1B location +B	=BI
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

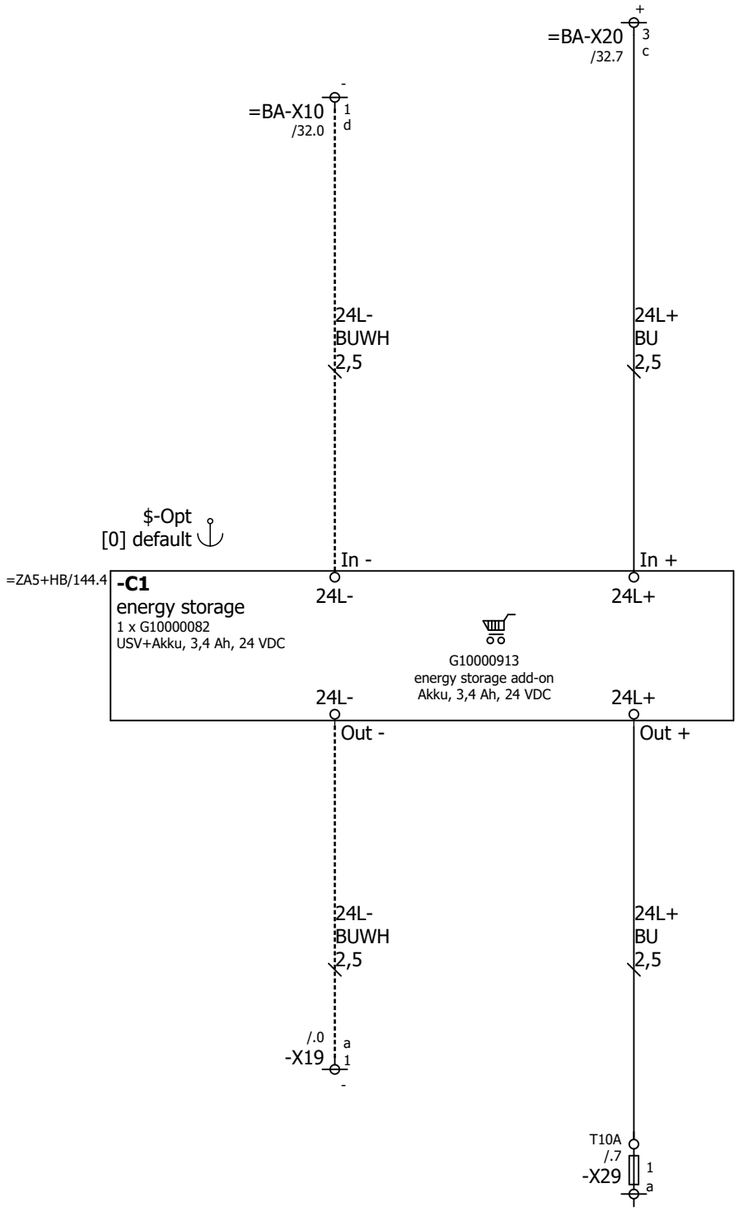
X19

-X19 = control voltage 24L- buffered

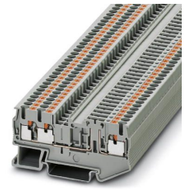
jumper

•	1	77070157

a - control voltage 24Lbuffered / 24L- /44.4
b - controller power supply DC / GND =CXXA/46.4
c - controller power supply DC / GND =CY1/49.4



X29



-X29 = control voltage 24L+ buffered

jumper

•	1	G10000602;G10000459;0583943
•	2	G10000602;G10000459;65541022

a - control voltage 24L+ buffered / 24L+ /44.5
b - controller supply DC / Us+ =CXXA/46.4
c - controller supply DC / Us+ =CY1/49.4

a - potential Brake activate =ED/56.6

control voltage 24L- buffered

control voltage 24L+ buffered

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	control voltage buffered	module	DC USV
#03	31.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		feed-in	sector 1C2G location +HB	=BU
#03	25.03.2021	Thomas.Lehle	BU2 - ABI - 31.31.00 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

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G10001010

controller

-K1

AX5206, 2 channel, AC 2x 6A, FW >=2.10

GND

grounding

M6	ground

Safety

PCI

PCI	Bus

X01

supply grid

1	L1
2	L2
3	L3
PE	GND

X02

DC Link

1	DC+
2	DC-

X03

supply DC

1	Up+
2	Us+
3	GND

X04

Bus

1-4	Bus-IN

X05

1-4	Bus-OUT

X06

digital I/O's

0	input
0V	24L-
1	input
2	input
3	input
4	input
5	input
6	input
7	in/out
24	24L+

X11

Hiperface

1	SIN+
2	GND-9V
3	COS+
4	n.c.
5	Data+
6	Us-9V
7	n.c.
8	n.c.
9	REFSIN
10	n.c.
11	REF COS
12	n.c.
13	Data-
14	n.c.
15	n.c.
SH	shield

X12

Resolver

1	Temp.
2	AGND
3	COS-
4	SIN-
5	REF-
6	n.c.
7	n.c.
8	n.c.
9	Temp.GND
10	COS+

X12

11	SIN+
12	REF+
13	n.c.
14	n.c.
15	n.c.
SH	shield

X13

Motor

PE	GND
U	Motor
V	Motor
W	Motor

X13/X14

SH	shield

X14

Temp./brake

B+	brake +
B-	brake GND
PE	shield
T+	Temp.+
T-	Temp.-

X21

Hiperface

1	SIN+
2	GND-9V
3	COS+
4	n.c.
5	Data+
6	Us-9V
7	n.c.
8	n.c.
9	REFSIN
10	n.c.
11	REF COS
12	n.c.
13	Data-
14	n.c.
15	n.c.
SH	shield

X22

Resolver

1	Temp.
2	AGND
3	COS-
4	SIN-
5	REF-
6	n.c.
7	n.c.
8	n.c.
9	Temp.GND
10	COS+
11	SIN+
12	REF+
13	n.c.
14	n.c.
15	n.c.
SH	shield

X23

Motor

PE	GND
U	Motor
V	Motor
W	Motor

X23/X24

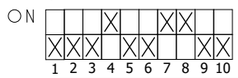
SH	shield

X24

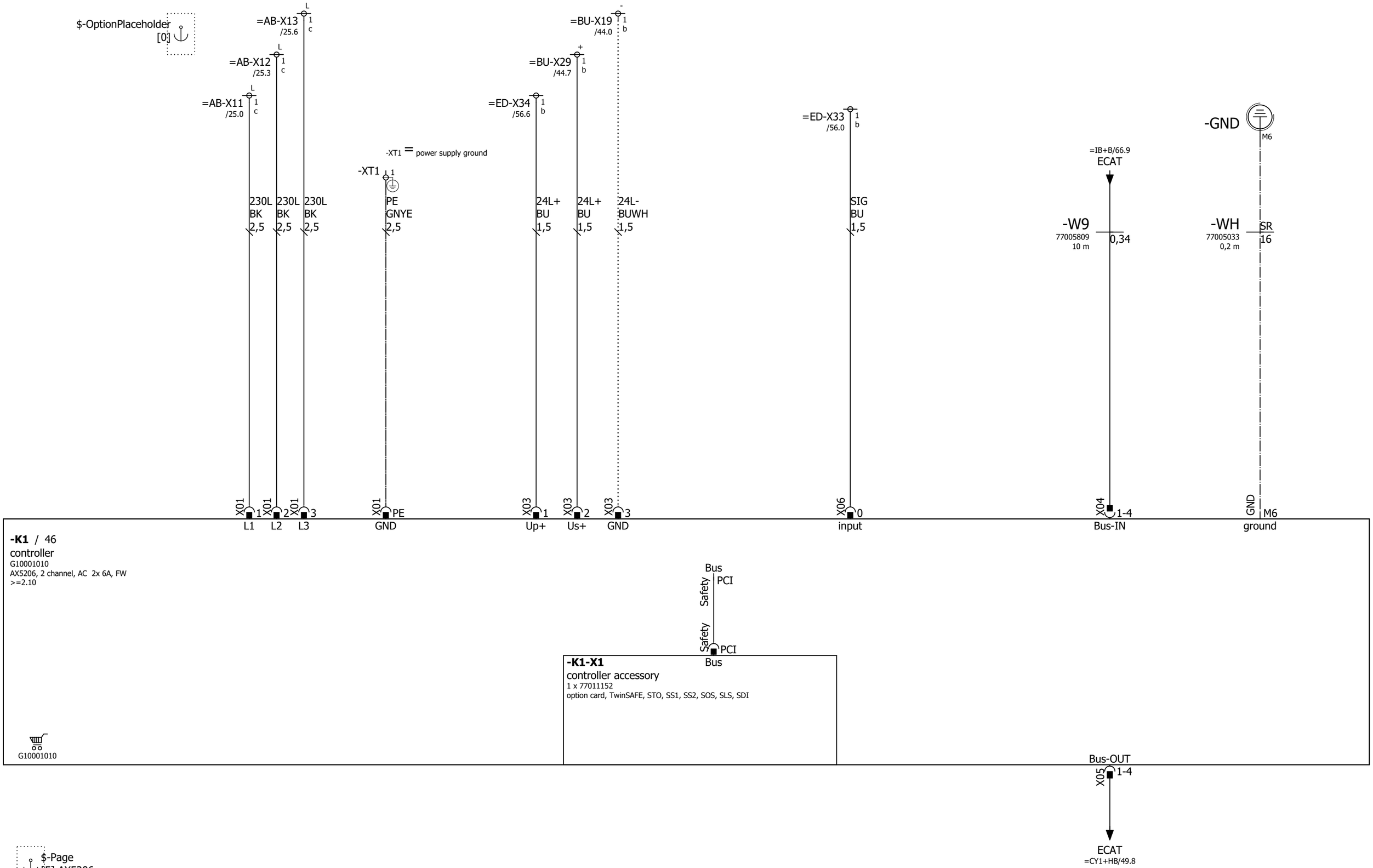
Temp./brake

B+	brake +
B-	brake GND
PE	shield
T+	Temp.+
T-	Temp.-

Safety adress: HEX -<c8> / Dez: <200>



			Toolbox_31	Option:			module	controller X,Xa
			Toolbox version	customer:	Blocotelha	MESSER	rack overview	Page
			automated	commission:	289001273			45
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021		sector location +HB	=CXXA



#01	15.03.2021	Thomas.Lehle	Toolbox_31	Option:	AX5 X/Xa Safety OCT 2x6A {R.31}	MESSER	AX5206 <axis>	module	controller X,Xa
01	01.02.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha		power supply 400 VAC	sector 1C2G location +HB	=CXXA
			CDA9 - ABI - 31.31.00 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

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-K1

GND

grounding

M6	ground	controller grounding	=CXXA/46.9

Safety

PCI

PCI	Bus	controller Safety Card	=CXXA/46.5

X01

supply grid

1	L1	controller power supply AC	=CXXA/46.1
2	L2	=	=CXXA/46.2
3	L3	=	=CXXA/46.2
PE	GND	controller ground	=CXXA/46.2

X03

supply DC

1	Up+	controller power supply DC	=CXXA/46.3
2	Us+	controller supply DC	=CXXA/46.4
3	GND	controller power supply DC	=CXXA/46.4

X04

Bus

1-4	Bus-IN	controller EtherCAT	=CXXA/46.8

X05

1-4	Bus-OUT	controller EtherCAT	=CXXA/46.8

X06

digital I/O's

0	input	controller enable signal	=CXXA/46.6

X13

Motor

PE	GND	motor coil	=MX+E/76.2
U	Motor	=	=MX+E/76.1
V	Motor	=	=MX+E/76.1
W	Motor	=	=MX+E/76.2

X13/X14

SH	shield	connection shield	=MX+E/76.5

X14

Temp./brake

B+	brake +	connection #	=MX+E/76.3
B-	brake GND	=	=MX+E/76.3
T+	Temp.+	connection encoder	=MX+E/76.4
T-	Temp.-	=	=MX+E/76.5

X23

Motor

PE	GND	motor coil	=MXa+G/77.2
U	Motor	=	=MXa+G/77.1
V	Motor	=	=MXa+G/77.1
W	Motor	=	=MXa+G/77.2

X23/X24

SH	shield	connection shield	=MXa+G/77.5

X24

Temp./brake

B+	brake +	connection #	=MXa+G/77.3
B-	brake GND	=	=MXa+G/77.3
T+	Temp.+	connection encoder	=MXa+G/77.4
T-	Temp.-	=	=MXa+G/77.5

G10001007

controller

-K1

AX5103, 1 channel, AC 3A, FW >=2.10

GND

grounding

M6	ground	controller grounding	/49.9

Safety

PCI

PCI	Bus	controller Safety Card	/49.5

X01

supply grid

1	L1	controller power supply AC	/49.1
2	L2	=	/49.2
3	L3	=	/49.2
PE	GND	controller ground	/49.2

X02

DC Link

1	DC+		
2	DC-		

X03

supply DC

1	Up+	controller power supply DC	/49.3
2	Us+	controller supply DC	/49.4
3	GND	controller power supply DC	/49.4

X04

Bus

1-4	Bus-IN	controller EtherCAT	/49.8

X05

1-4	Bus-OUT	controller EtherCAT	/49.8

X06

digital I/O's

0	input	controller enable signal	/49.6
0V	24L-		
1	input	working area beam Y +	/50.2
2	input	working area beam Y -	/50.3
3	input		
4	input		
5	input		
6	input		
7	in/out		
24	24L+		

X11

Hiperface

1	SIN+
2	GND-9V
3	COS+
4	n.c.
5	Data+
6	Us-9V
7	n.c.
8	n.c.
9	REFSIN
10	n.c.
11	REF COS
12	n.c.
13	Data-
14	n.c.
15	n.c.
SH	shield

X12

Resolver

1	Temp.
2	AGND
3	COS-
4	SIN-
5	REF-
6	n.c.
7	n.c.
8	n.c.
9	Temp.GND
10	COS+

X12

11	SIN+		
12	REF+		
13	n.c.		
14	n.c.		
15	n.c.		
SH	shield		

X13

Motor

PE	GND	motor coil	=MY1+L1/78.2
U	Motor	=	=MY1+L1/78.1
V	Motor	=	=MY1+L1/78.1
W	Motor	=	=MY1+L1/78.2

X13/X14

SH	shield	connection shield	=MY1+L1/78.5

X14

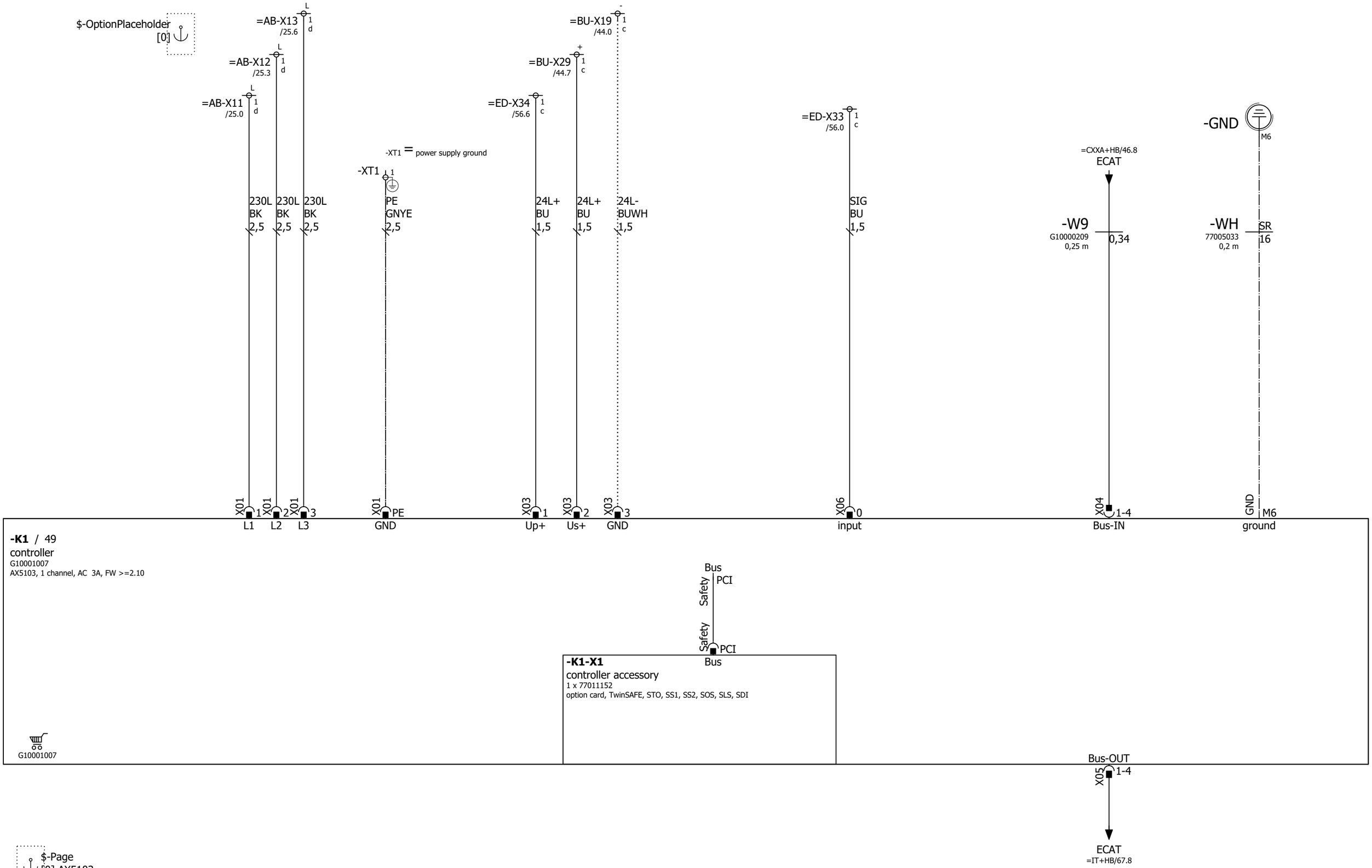
Temp./brake

B+	brake +	connection #	=MY1+L1/78.3
B-	brake GND	=	=MY1+L1/78.3
PE	shield		
T+	Temp.+	connection encoder	=MY1+L1/78.4
T-	Temp.-	=	=MY1+L1/78.5

Safety adress: HEX -<64> / Dez: <100>

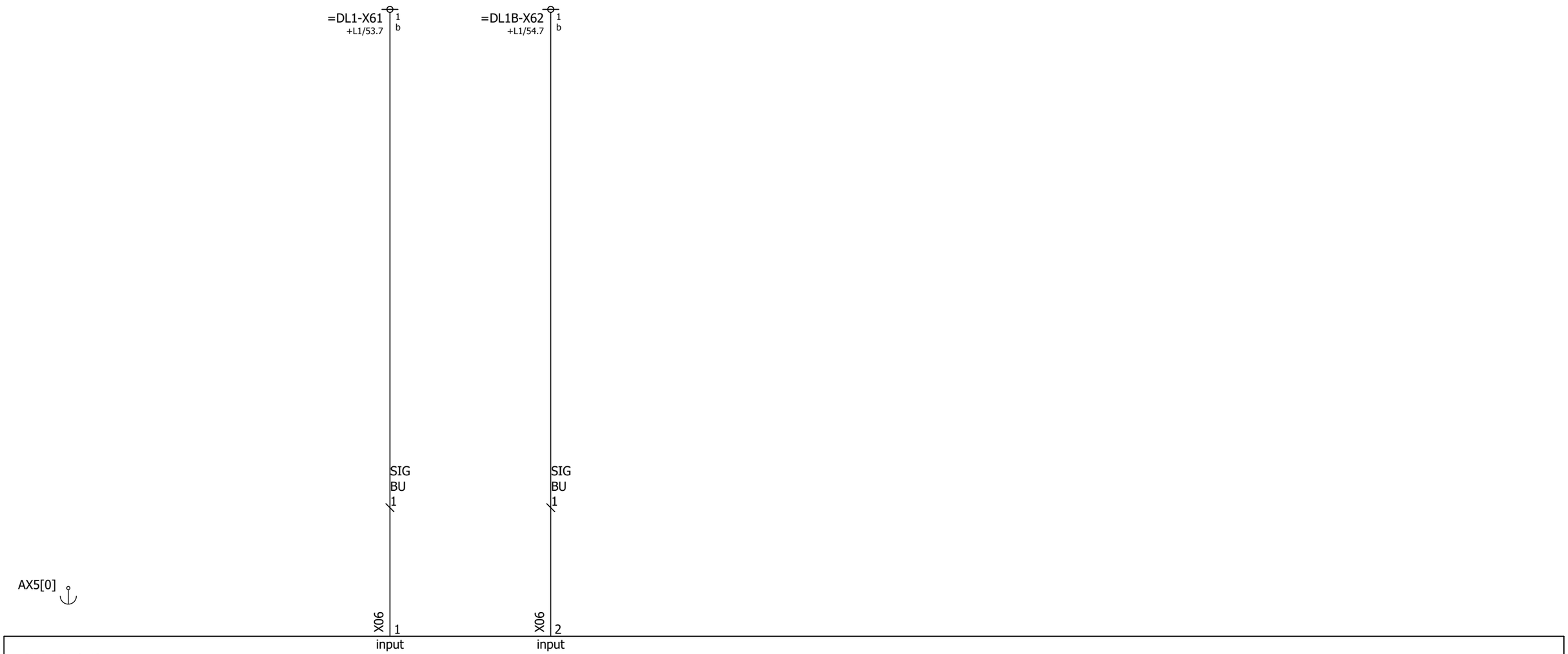
ON

1	2	3	4	5	6	7	8	9	10
		X			X	X			
X	X		X	X			X	X	X



controller power supply AC | controller ground | controller supply DC | controller Safety Card | controller enable signal | controller EtherCAT | controller grounding

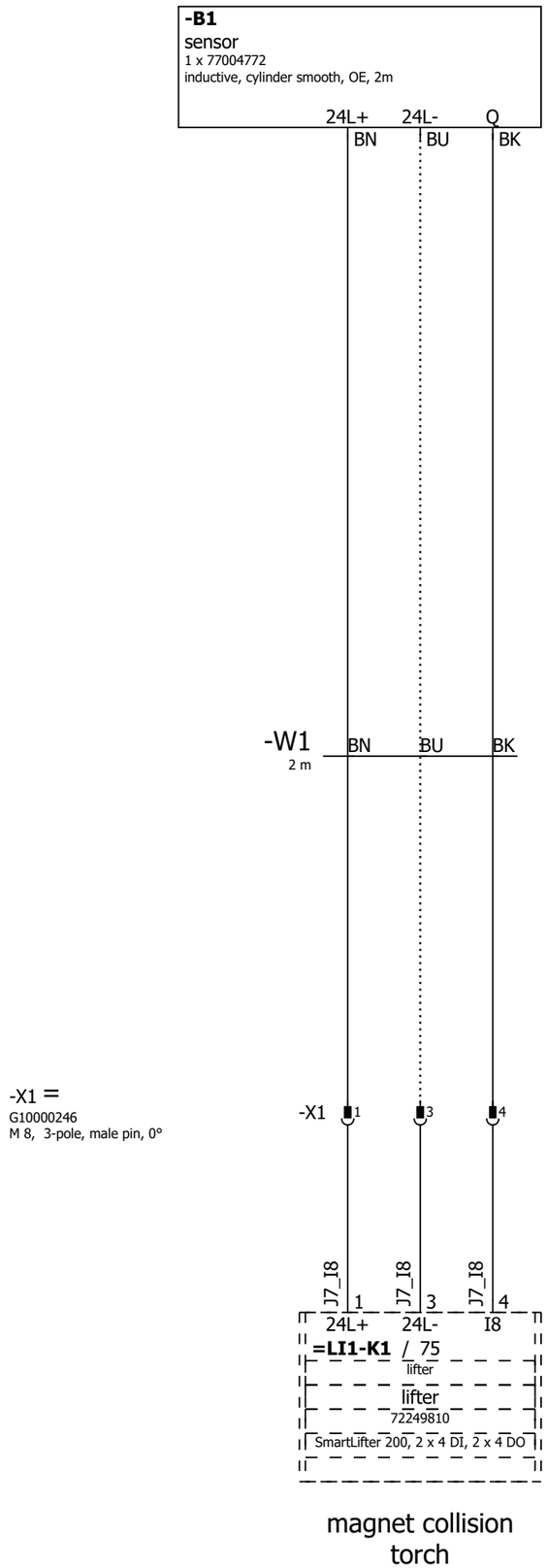
			Toolbox_31	Option:	L1-AX5 Y OCT Safety 3A {R.31}	MESSER	AX5103 <axis>	module / controller Y1
			Toolbox version	customer:	Blocotelha		power supply 400 VAC	Page 49
			CDA9 - ABI - 31.31.00 - CC: EU	commission:	289001273			sector 1C2G location +HB =CY1
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			



working area beam Y +

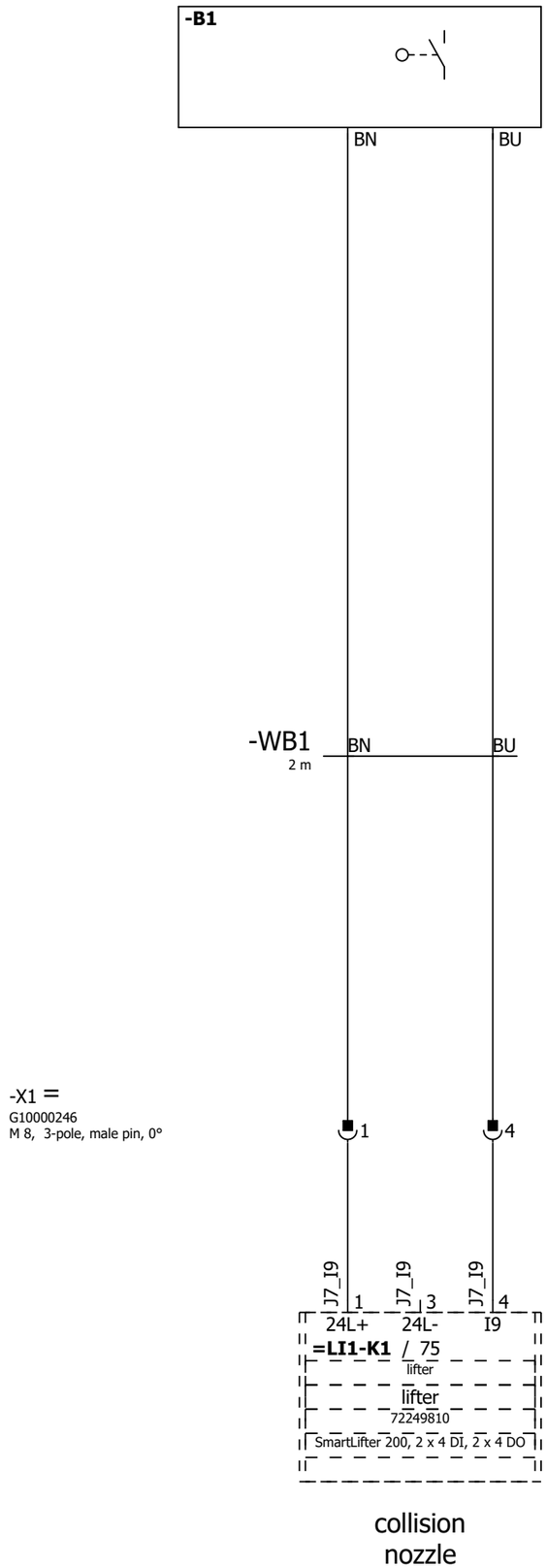
working area beam Y -

01	01.02.2021	Adeline.Wegang	Toolbox_31	Option:	L1-AX5 Y OCT Safety 3A {R.31}	MESSER	AX5103 <axis>	module	controller Y1
			Toolbox version	customer:	Blocotelha				Page
			CX2* - ABI - 25.25.00 - CC: EU	commission:	289001273		entrances	sector 1C2G location +HB	=CY1 50
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

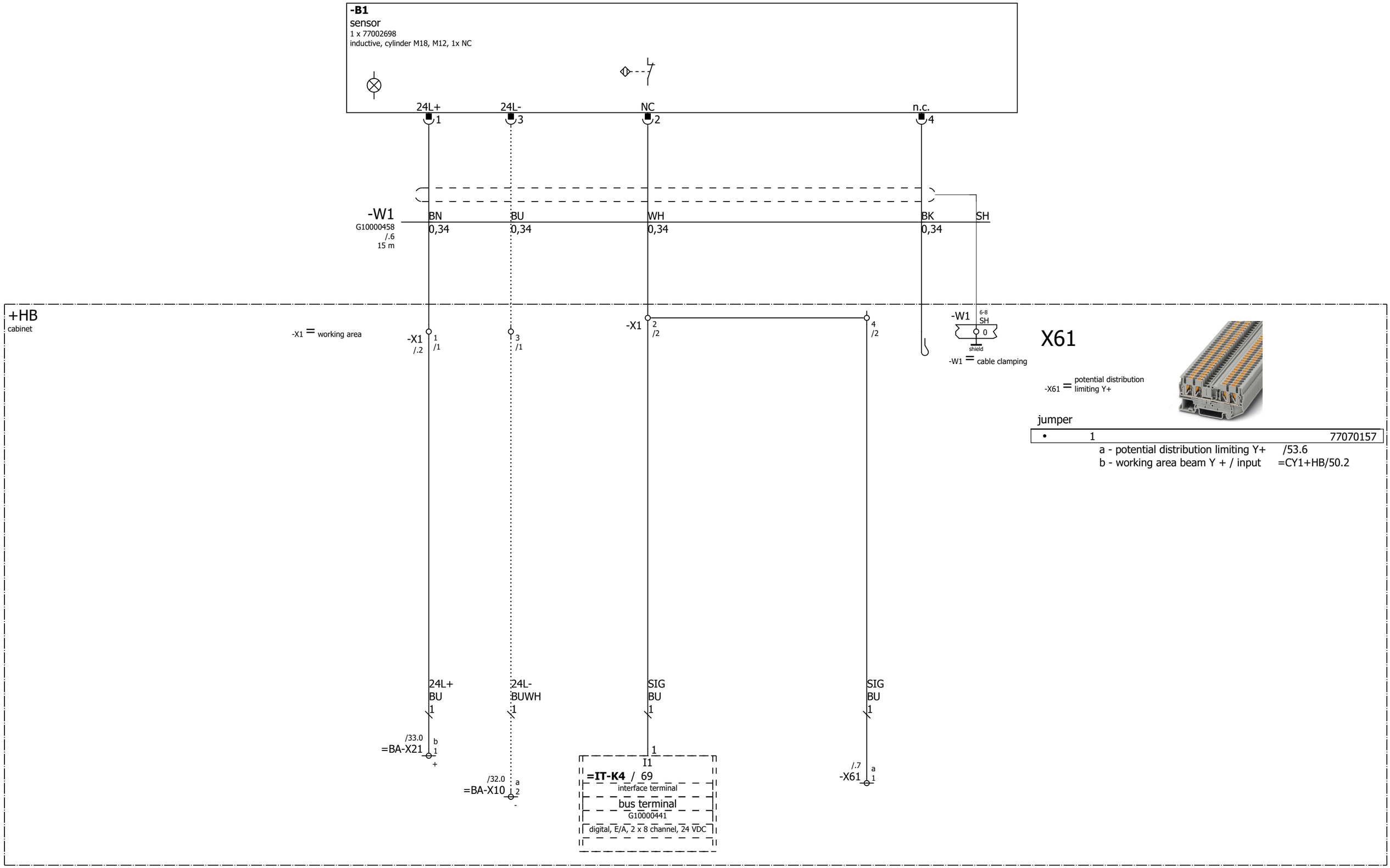


magnet collision
torch

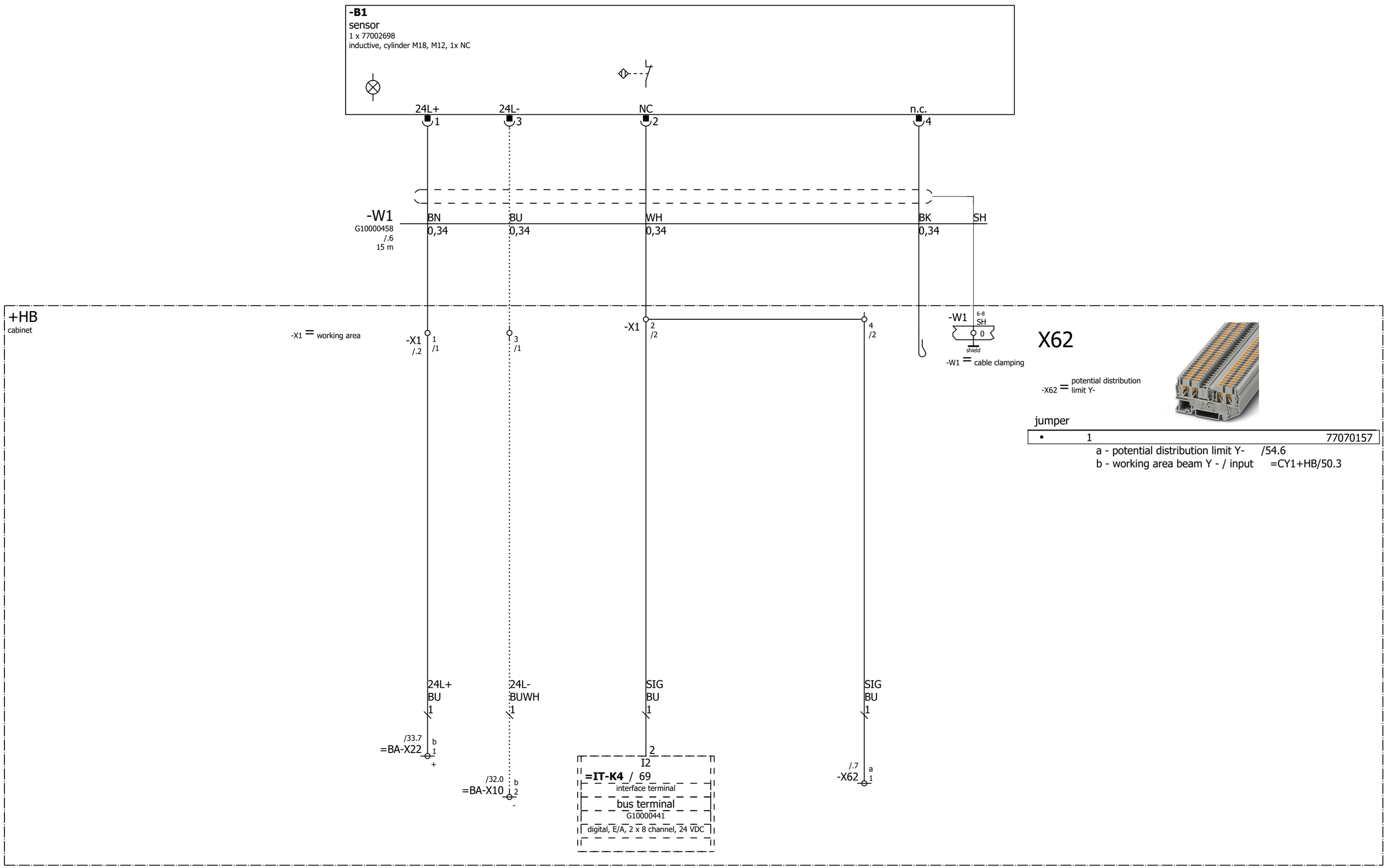
#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Havarie, Torchholder, Magnetic {R.25}	MESSER	torch magnetic holder	module	detection collision	Page
			Toolbox version	customer:	Blocotelha					51
			DC1 - ABI - 25.25.00 - CC: EU	commission:	289001273		sensor, input	sector CA2L location +L1	=DC1	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



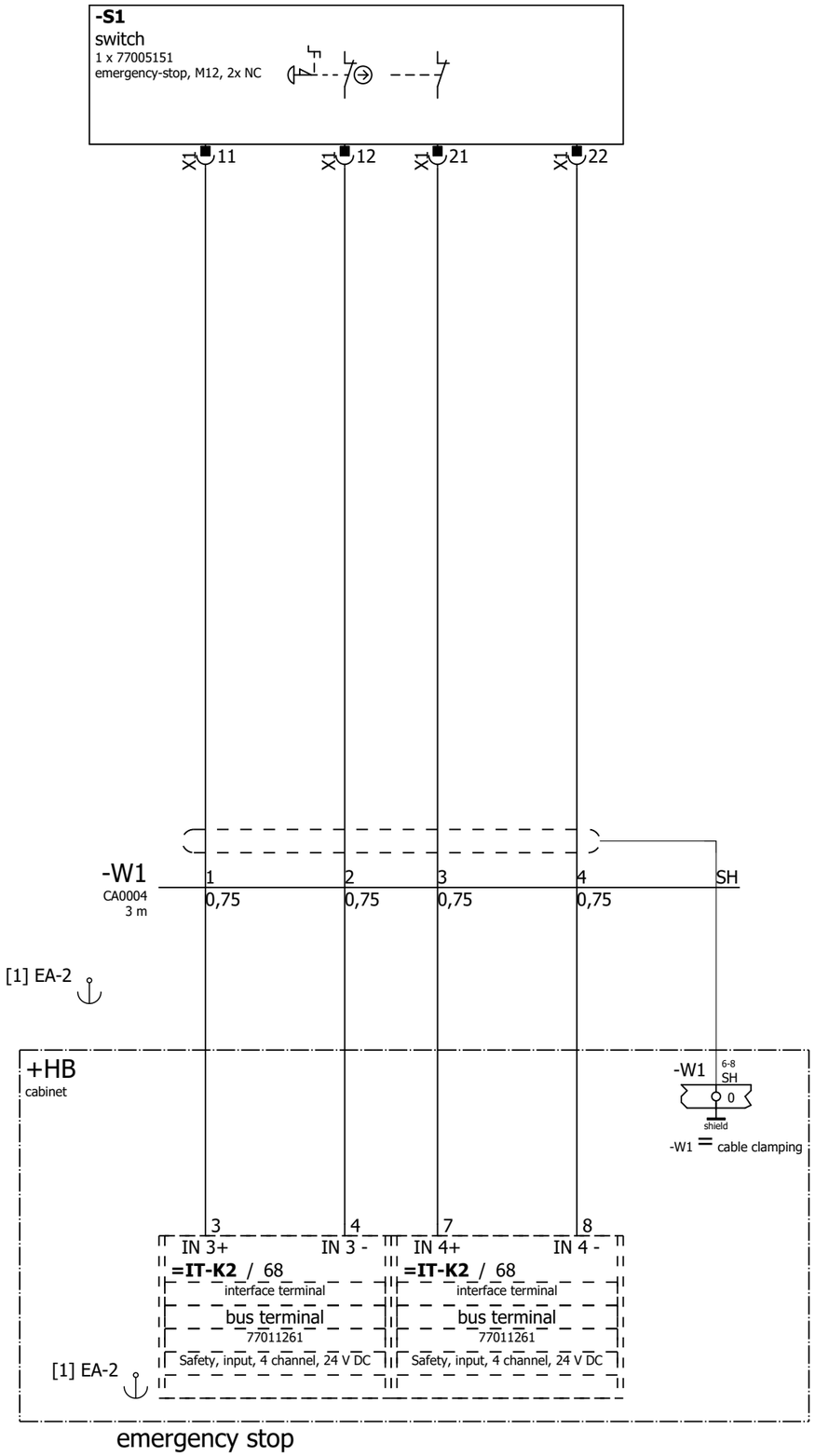
			Toolbox_31	Option:	L1-Havarie tactil lift up {R.25}	MESSER	torch dig switch tactile	module	detection collision	Page
			Toolbox version	customer:	Blocotelha					52
			DC2 - ABI - 25.25.00 - CC: EU	commission:	289001273		sensor, input	sector CA2L location +L1	=DC1B	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	limiting Y+	module	detection limiting
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		cabinet wiring	sector CA2L location +L1	=DL1
#01	15.03.2021	Thomas.Lehle	DL12 - ABI - 29.29.00 - CC: EU	commission:	289001273				Page 53
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	limit Y-	module	detection limiting	Page
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		cabinet wiring	sector CA2L location +L1	=DL1B	54
#01	15.03.2021	Thomas.Lehle	DL12 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



			Toolbox_31	Option:	Additional Safe-Stop 2 {R.29}	MESSER	emergency stop	module emergency stop additions	Page
			Toolbox version	customer:	Blocotelha		connection		55
			EA1 - ABI - 29.29.09 - CC: EU	commission:	289001273			sector 2C1G location +G	=EA
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

X33

-X33 = potential controller enable

jumper

•	1	77070157

a - potential Drive enable / 1/24L+ /56.3
b - controller enable signal / input =CXXA/46.6
c - controller enable signal / input =CY1/49.6

=IT-K7 / 70
interface terminal
bus terminal
77011262
Safety, output, 4 channel, 24 V DC
1/24L+ 1'

=IT-K7 / 70
interface terminal
bus terminal
77011262
Safety, output, 4 channel, 24 V DC
2/24L+ 3' 2/24L- 4'

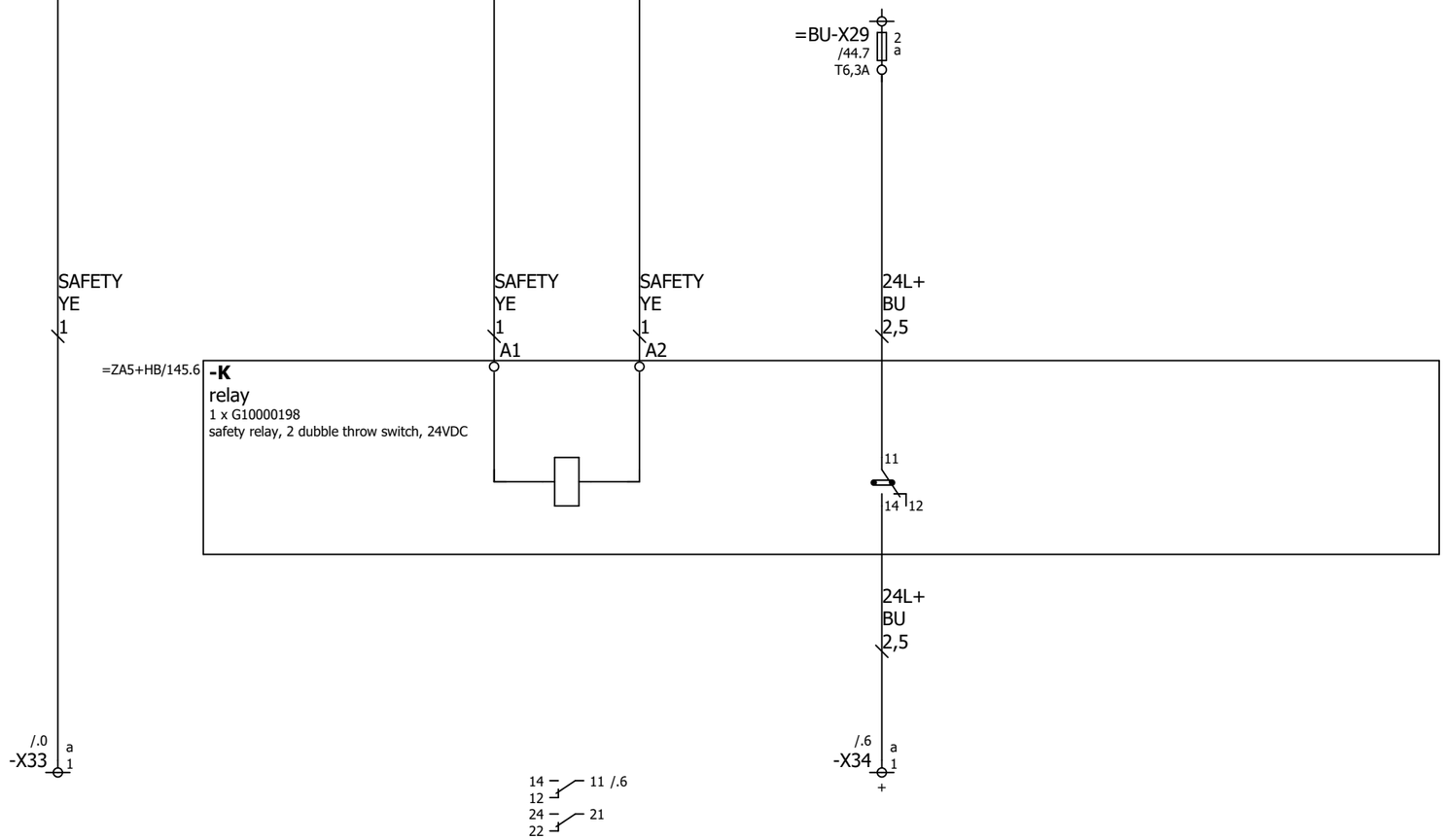
X34

-X34 = potential Brake activate

jumper

•	1	77070157

a - potential Brake activate /56.6
b - controller power supply DC / Up+ =CXXA/46.3
c - controller power supply DC / Up+ =CY1/49.3



potential
Drive enable

potential
Brake activate

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	Drive control	module	security unit controller
#03	31.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha				Page
#03	25.03.2021	Thomas.Lehle	ED2 - ABI - 31.31.00 - CC: EU	commission:	289001273			sector 1C2G location +HB	=ED 56
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

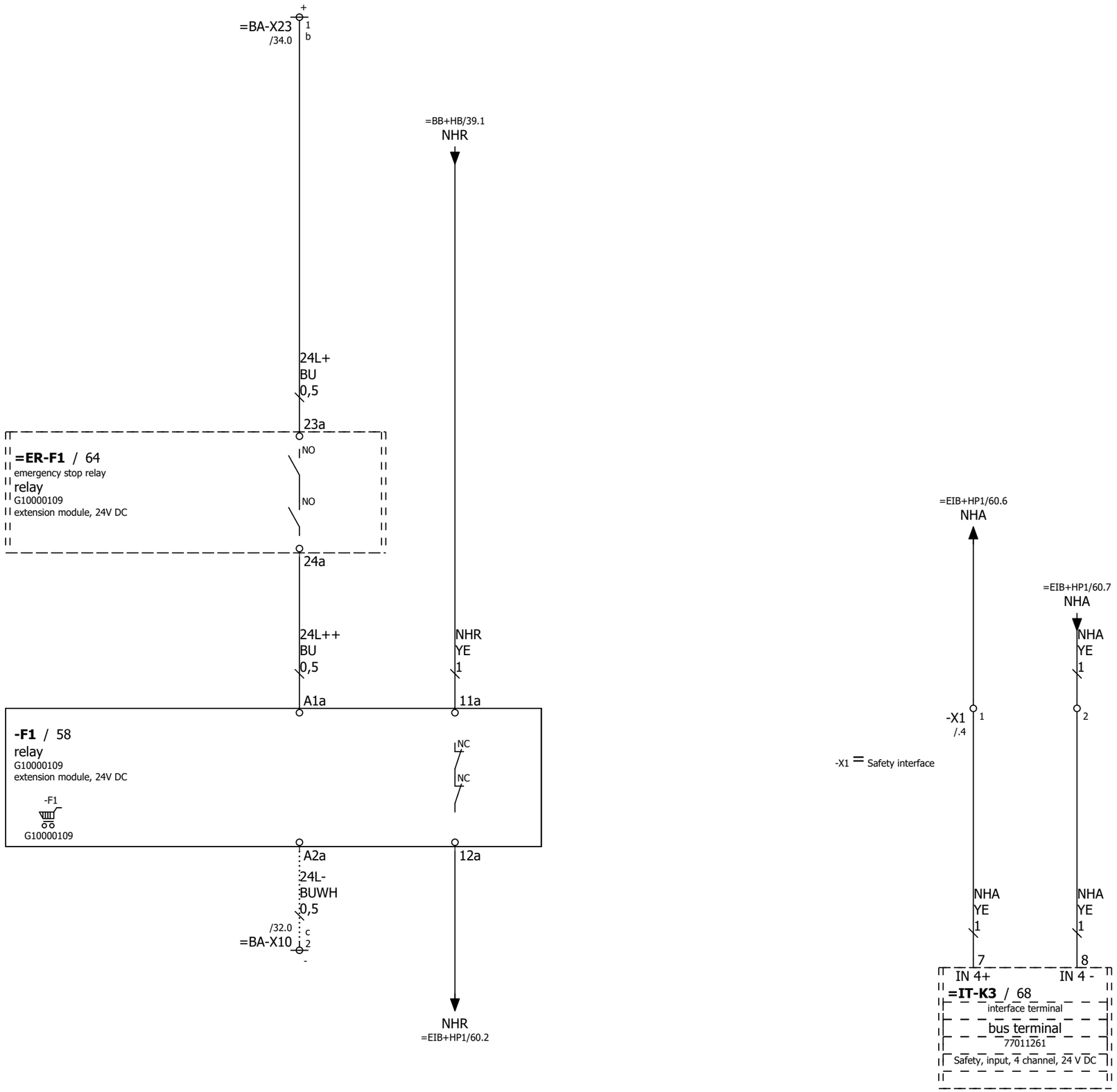
72a		
72b		
A1a	Safety interface external	/58.1
A1b		
A2a	Safety interface external	/58.1
A2b		

G10000109

relay

-F1 extension module, 24V DC

	Logic	
11a	Safety interface return	/58.2
11b		
12a	Safety interface return	/58.2
12b		
23a		
23b		
24a		
24b		
33a		
33b		
34a		
34b		
43a		
43b		
44a		
44b		
53a		
53b		
54a		
54b		
63a		
63b		
64a		
64b		
71a		
71b		



Safety interface external

Safety interface return

Safety interface internal

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	emergency interface	module emergency stop interface	Page
			Toolbox version	customer:	Blocotelha		Safety circuit interface		58
			EI2 - ABI - 29.29.00 - CC: EU	commission:	289001273			sector 1C2G location +HB	=EI
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

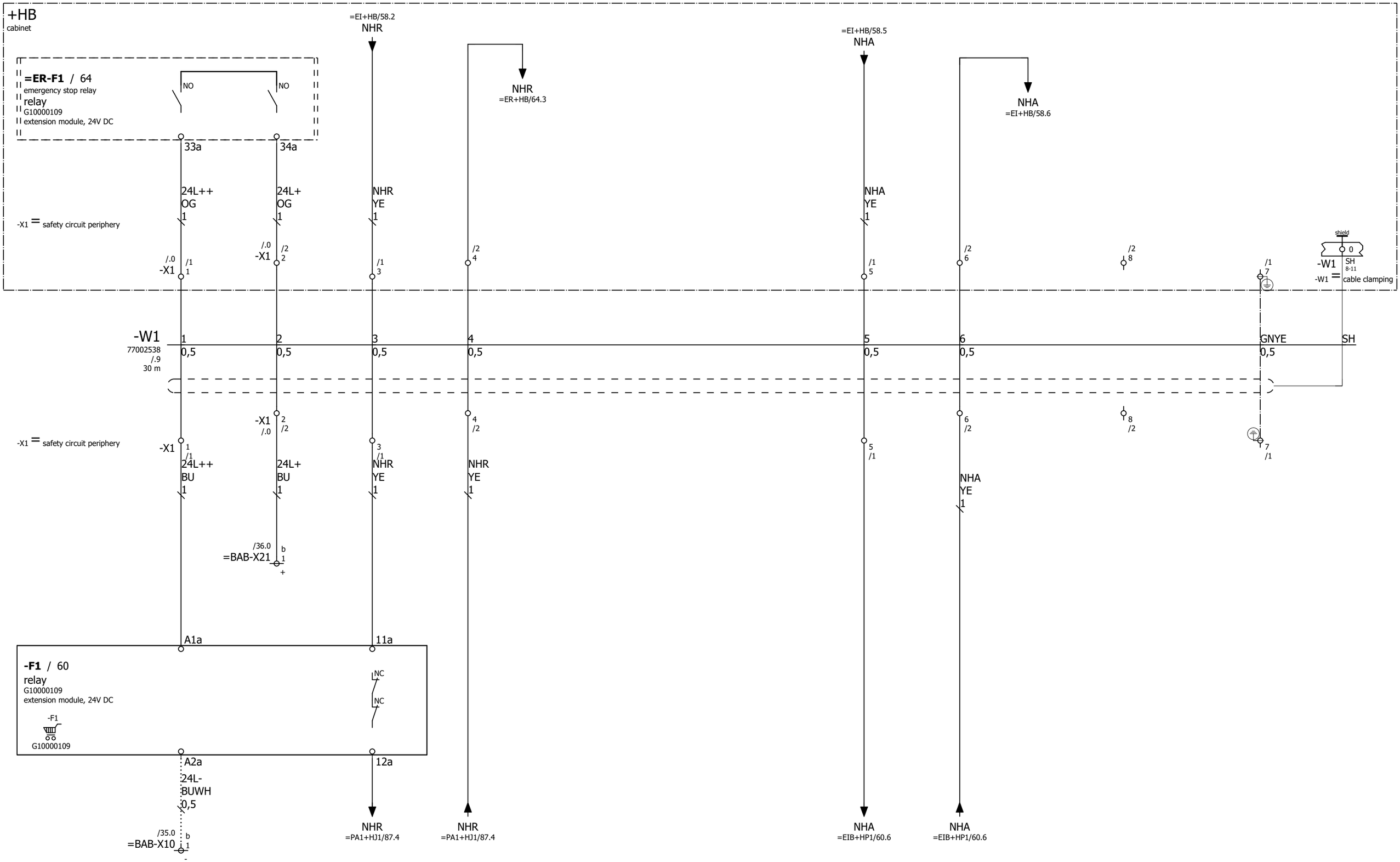
72a		
72b		
A1a	Safety interface external	/60.1
A1b		
A2a	Safety interface external	/60.1
A2b		

G10000109

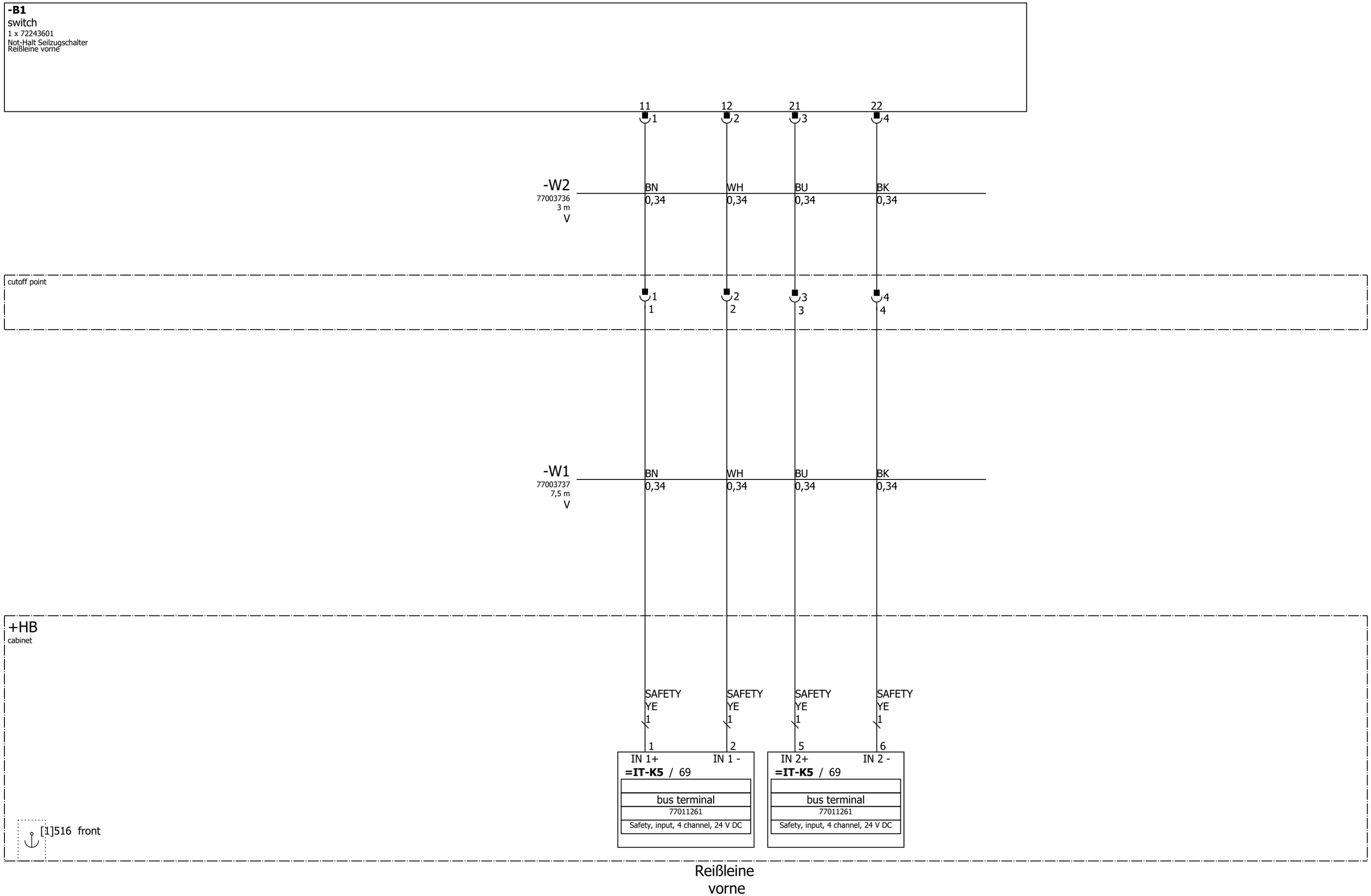
relay

-F1 extension module, 24V DC

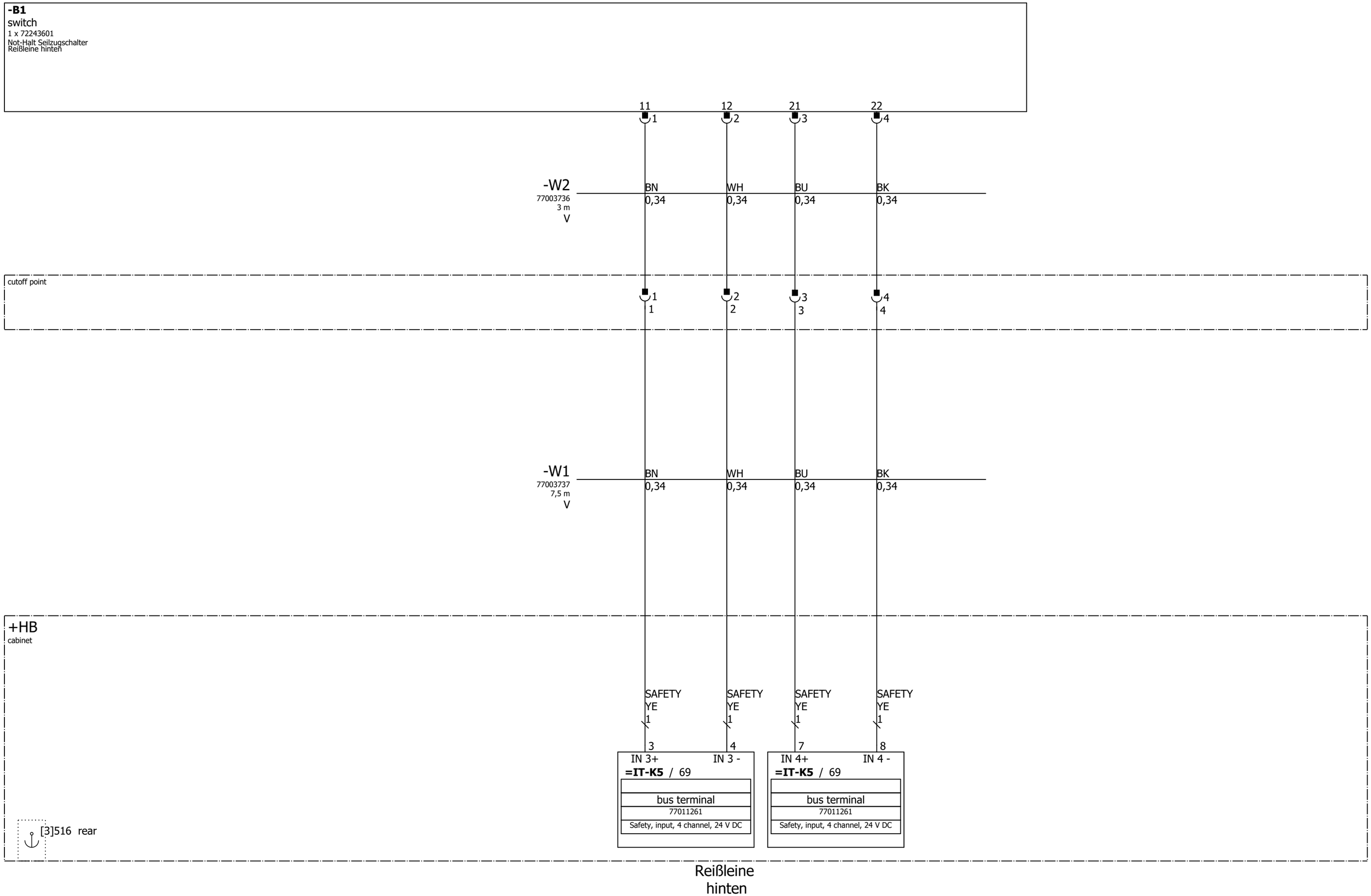
	Logic	
11a	Safety interface return	/60.2
11b		
12a	Safety interface return	/60.2
12b		
23a	plasma power source switch-off	=PA1+HJ1/87.8
23b		
24a	plasma power source switch-off	=PA1+HJ1/87.8
24b		
33a		
33b		
34a		
34b		
43a		
43b		
44a		
44b		
53a		
53b		
54a		
54b		
63a		
63b		
64a		
64b		
71a		
71b		



01	28.01.2021	Adeline.Wegang	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	cabinet external	module emergency stop interface
			Toolbox version	customer:	Blocotelha		control voltage, safety circuit	sector 3E7P location +HP1 =EIB
			EI5 - ABI - 29.29.00 - CC: EU	commission:	289001273			Page 60
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			



#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	Emergency cord {R.29}	MESSER	Reißleine vorne	module	Not-Halt Reißleine
02	15.03.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha		Safety circuit	sector 3B5E location +E	=ELC
01	01.02.2021	Adeline.Wegang	EL16 - ABI - 29.29.02 - CC: EU	commission:	289001273				Page 61
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	Emergency cord {R.29}	MESSER	Reißleine hinten	module	Not-Halt Reißleine
02	15.03.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha		safety circuit	sector 4B5E location +E	=ELD
01	01.02.2021	Adeline.Wegang	EL17 - ABI - 29.29.02 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

72a		
72b		
A1a	safety-related control voltage	/64.0
A1b		
A2a	safety-related control voltage	/64.1
A2b		

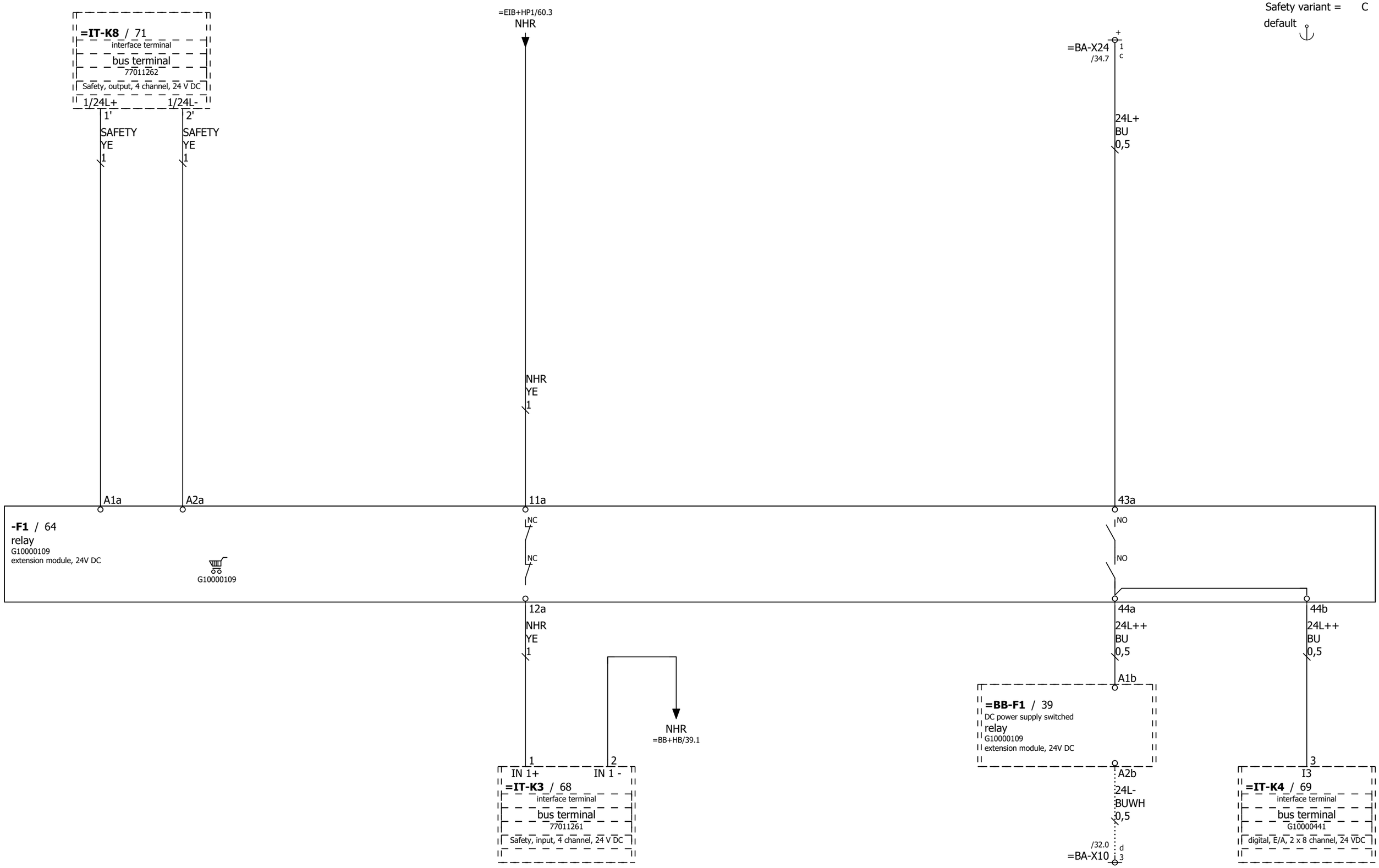
G10000109

relay

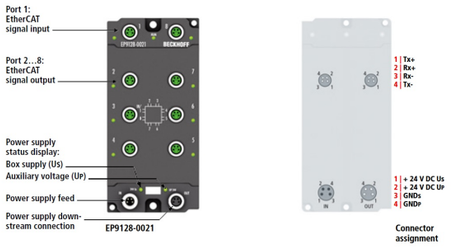
-F1 extension module, 24V DC

	Logic	
11a	safety relay feedback	/64.3
11b		
12a	safety relay feedback	/64.3
12b		
23a	Safety interface external	=EI/58.1
23b		
24a	Safety interface external	=EI/58.1
24b		
33a	Safety interface external	=EIB+HP1/60.1
33b		
34a	Safety interface external	=EIB+HP1/60.2
34b		
43a	control voltage active	/64.8
43b		
44a	control voltage active	/64.8
44b	control voltage active report	/64.9
53a		
53b		
54a		
54b		
63a		
63b		
64a		
64b		
71a		
71b		

Safety variant = C
default



			Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	contact extension	module	emergency stop relay	Page
			Toolbox version	customer:	Blocotelha		Safety relais			64
			ER4 - ABI - 25.30.01 - CC: EU	commission:	289001273			sector 1C2G	location +HB	=ER
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



G10000666

distributor bus

-K1 EtherCAT, star hub, 8 ports

24V IN

Power IN

1	24L+s		/66.1
2	24L+p	EP module supply	/66.2
3	24L-s	=	/66.3
4	24L-p	=	/66.3

24V OUT

Power OUT

1	24L+s
2	24L+p
3	24L-s
4	24L-p

L/A

Bus

IN	Bus	EtherCAT	/66.9
OUT	Bus	=	/66.9

X2

2	Bus	EtherCAT distribution	/66.4

X3

3	Bus	EtherCAT distribution	/66.5

X4

4	Bus	EtherCAT distribution	/66.6

X5

5	Bus	EtherCAT distribution	/66.7

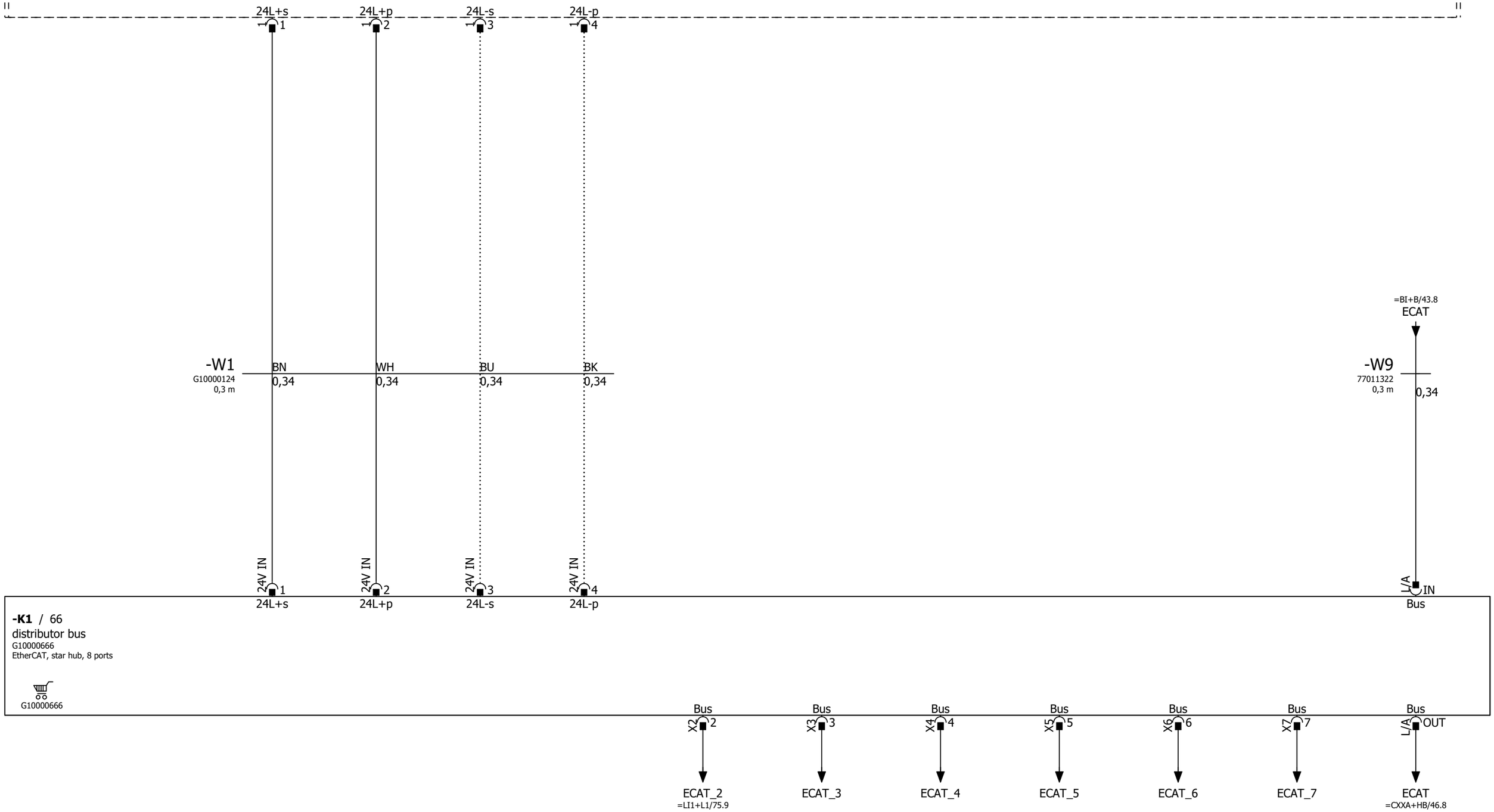
X6

6	Bus	EtherCAT distribution	/66.7

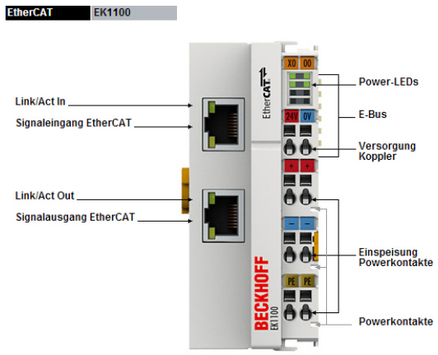
X7

7	Bus	EtherCAT distribution	/66.8

=BI-K1 / 43
DC power supply interface
distributor power
G10000103
EtherCAT-box, power distribution, M8, 4 x 4A



			Toolbox_31	Option:	Basic Parts TSc {R.31}	MESSER	Fieldbus star hub	module interface box
			Toolbox version	customer:	Blocotelha		power supply, EtherCat	sector 1B1B location +B =IB
			IB3 - ABI - 25.25.01 - CC: EU	commission:	289001273			
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			Page 66

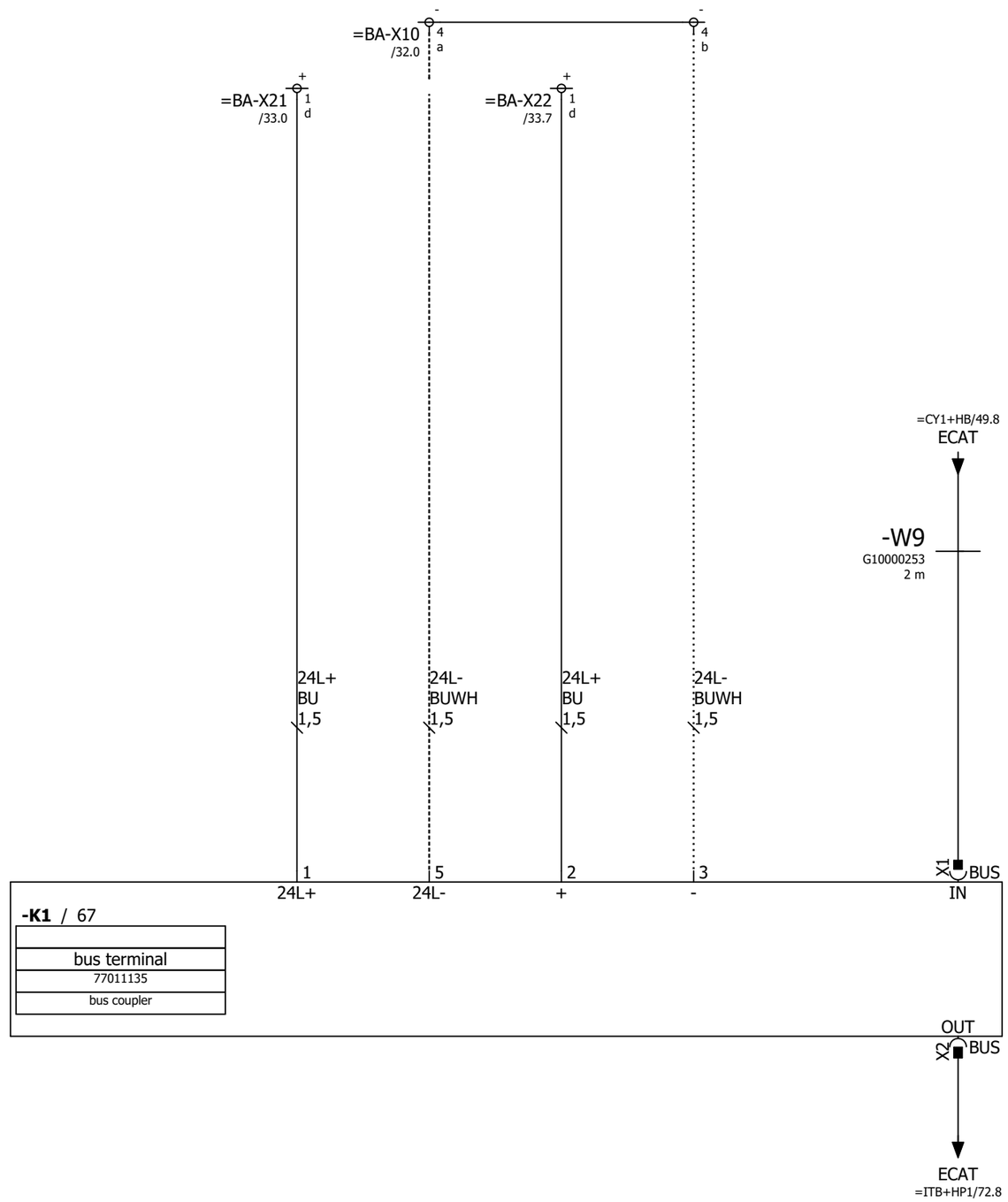


77011135

bus terminal

-K1 bus coupler

	supply		
1	24L+	EtherCAT coupler operating supply	/67.5
	power contacts		
2	+	EtherCAT coupler powerbus	/67.6
3	-	=	/67.7
4	PE		
	supply		
5	24L-	EtherCAT coupler operating supply	/67.6
	power contacts		
6	+		
7	-		
8	PE		
X1			
	Bus		
BUS	IN	EtherCAT coupler Bus	/67.8
X2			
BUS	OUT	EtherCAT coupler Bus	/67.8



EtherCAT coupler -K1 77011135

EtherCAT coupler operating supply

EtherCAT coupler powerbus

EtherCAT coupler Bus

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	Basic Parts TSc {R.31}		
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		
#01	15.03.2021	Thomas.Lehle	IT1 - ABI - 25.27.00 - CC: EU	commission:	289001273		
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle	01.04.2021	

MESSER

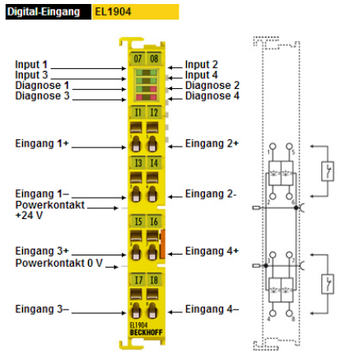
bus coupler

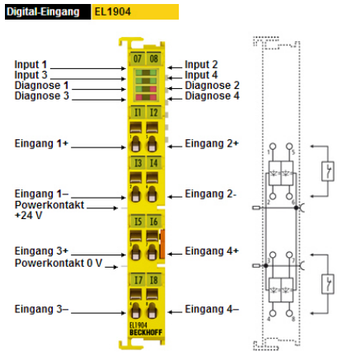
EtherCAT, power supply

module interface terminal

sector 1C2G location +HB =IT

Page 67





77011261

bus terminal

-K2

Safety, input, 4 channel, 24 V DC

	IN 01		
1	IN 1+		
2	IN 1 -		
	IN 03		
3	IN 3+	emergency stop	=EA+G/55.0
4	IN 3 -	=	=EA+G/55.1
	IN 02		
5	IN 2+		
6	IN 2 -		
	IN 04		
7	IN 4+	emergency stop	=EA+G/55.1
8	IN 4 -	=	=EA+G/55.2

ON

1	2	3	4	5	6	7	8
X	X		X				
		X		X	X	X	X

77011261

bus terminal

-K3

Safety, input, 4 channel, 24 V DC

	IN 01		
1	IN 1+	safety relay feedback	=ER/64.3
2	IN 1 -	=	=ER/64.4
	IN 03		
3	IN 3+		
4	IN 3 -		
	IN 02		
5	IN 2+		
6	IN 2 -		
	IN 04		
7	IN 4+	Safety interface internal	=EI/58.5
8	IN 4 -	=	=EI/58.6

ON

1	2	3	4	5	6	7	8
X							
	X	X	X	X	X	X	X

[18]EL1904 -K2 77011261

[18]EL1904 -K3 77011261

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	GCs+HWJ {R.29}	
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha	
#01	15.03.2021	Thomas.Lehle	IT4 - ABI - 29.30.00 - CC: EU	commission:	289001273	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle	01.04.2021

MESSER

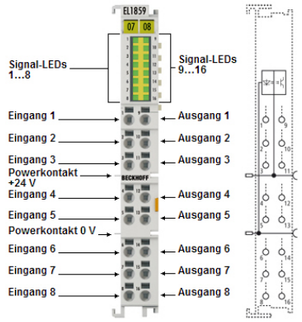
coupler, 8 x DI, 8 x DO

EtherCAT, power supply

module interface terminal

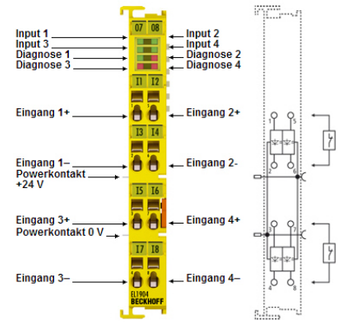
sector 1C2G location +HB =IT

Digital-Eingang EL1859



	O5	
13	O5	
	O6	
14	O6	
	O7	
15	O7	
	O8	
16	O8	

Digital-Eingang EL1904



G10000441

bus terminal

-K4

digital, E/A, 2 x 8 channel, 24 VDC

	I1		
1	I1	potential distribution limiting Y+	=DL1+L1/53.4
	I2		
2	I2	sensor limit Y-	=DL1B+L1/54.4
	I3		
3	I3	control voltage active report	=ER/64.9
	I4		
4	I4	control voltage turn on	=OP+E/85.6
	I5		
5	I5	machine start	=OP+E/85.7
	I6		
6	I6	machine Stop	=OP+E/85.8
	I7		
7	I7		
	I8		
8	I8		
	O1		
9	O1	machine in start	=OP+E/86.3
	O2		
10	O2	machine in Stop	=OP+E/86.2
	O3		
11	O3		=OP+E/86.1
	O4		
12	O4		

77011261

bus terminal

-K5

Safety, input, 4 channel, 24 V DC

	IN 01		
1	IN 1+	Reißleine vorne	=ELC+E/61.4
2	IN 1 -	=	=ELC+E/61.5
	IN 03		
3	IN 3+	Reißleine hinten	=ELD+E/62.4
4	IN 3 -	=	=ELD+E/62.5
	IN 02		
5	IN 2+	Reißleine vorne	=ELC+E/61.5
6	IN 2 -	=	=ELC+E/61.6
	IN 04		
7	IN 4+	Reißleine hinten	=ELD+E/62.5
8	IN 4 -	=	=ELD+E/62.6

ON

1	2	3	4	5	6	7	8
		X					
X	X		X	X	X	X	X

[3]EL1859 -K4 G10000441

[18]EL1904 -K5 77011261

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	GCs+HWJ {R.29}	
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha	
#01	15.03.2021	Thomas.Lehle	IT4 - ABI - 29.30.00 - CC: EU	commission:	289001273	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle	01.04.2021

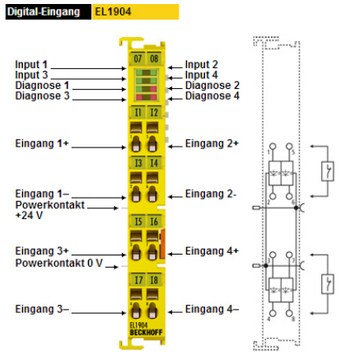
MESSER

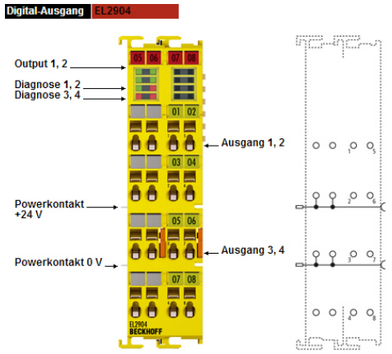
coupler, 8 x DI, 8 x DO

EtherCAT, power supply

module interface terminal

sector 1C2G location +HB =IT





8'	4/24L-

ON

1	2	3	4	5	6	7	8
X	X	X					
			X	X	X	X	X

77011261

bus terminal

-K6

Safety, input, 4 channel, 24 V DC

	IN 01		
1	IN 1+	machine reset	=OP+E/85.3
2	IN 1 -		=OP+E/85.4
	IN 03		
3	IN 3+	panel Safety channel	=OP+E/85.2
4	IN 3 -	=	=OP+E/85.2
	IN 02		
5	IN 2+	panel Safety channel	=OP+E/85.1
6	IN 2 -	=	=OP+E/85.1
	IN 04		
7	IN 4+		
8	IN 4 -		

ON

1	2	3	4	5	6	7	8
		X			X		
X	X		X	X		X	X

77011262

bus terminal

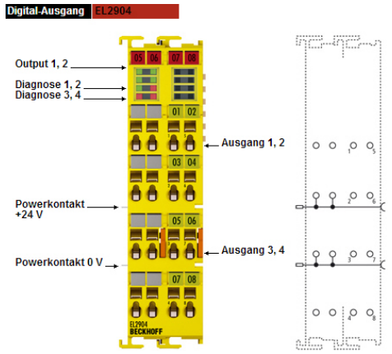
-K7

Safety, output, 4 channel, 24 V DC

	Out 01		
1'	1/24L+	potential Drive enable	=ED/56.3
	Power		
2	24L+		
	Out 01		
2'	1/24L-		
	Power		
3	24L-		
	Out 02		
3'	2/24L+	potential Brake activate	=ED/56.5
	Out 02		
4'	2/24L-	potential Brake activate	=ED/56.5
	Out 03		
5'	3/24L+		
	Power		
6	24L+		
	Out 03		
6'	3/24L-		
	Power		
7	24L-		
	Out 04		
7'	4/24L+		

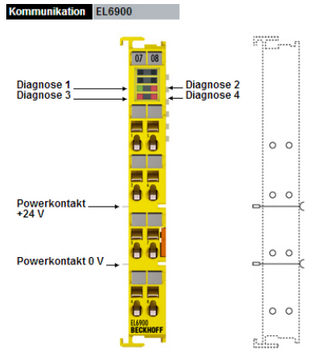
[18]EL1904 -K6 77011261

[19]EL2904 -K7 77011262



8'	4/24L-

ON
1 2 3 4 5 6 7 8



77011262

bus terminal

-K8

Safety, output, 4 channel, 24 V DC

	Out 01		
1'	1/24L+	safety-related control voltage	=ER/64.0
	Power		
2	24L+		
	Out 01		
2'	1/24L-	safety-related control voltage	=ER/64.1
	Power		
3	24L-		
	Out 02		
3'	2/24L+		
4'	2/24L-		
	Out 03		
5'	3/24L+		
	Power		
6	24L+		
	Out 03		
6'	3/24L-		
	Power		
7	24L-		
	Out 04		
7'	4/24L+		

77011260

bus terminal

-K9

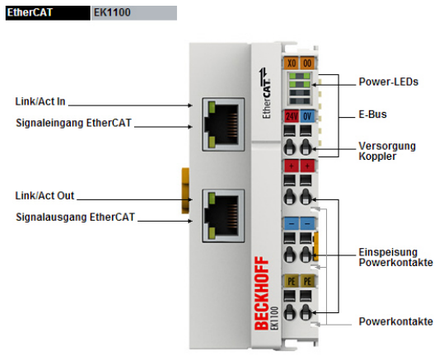
Safety, TwinSAFE-logic-terminal

1	n.c.
2	n.c.
3	n.c.
4	n.c.
5	n.c.
6	n.c.
7	n.c.
8	n.c.

ON
1 2 3 4 5 6 7 8

[19]EL2904 -K8 77011262

[20]EL6900 -K9 77011260

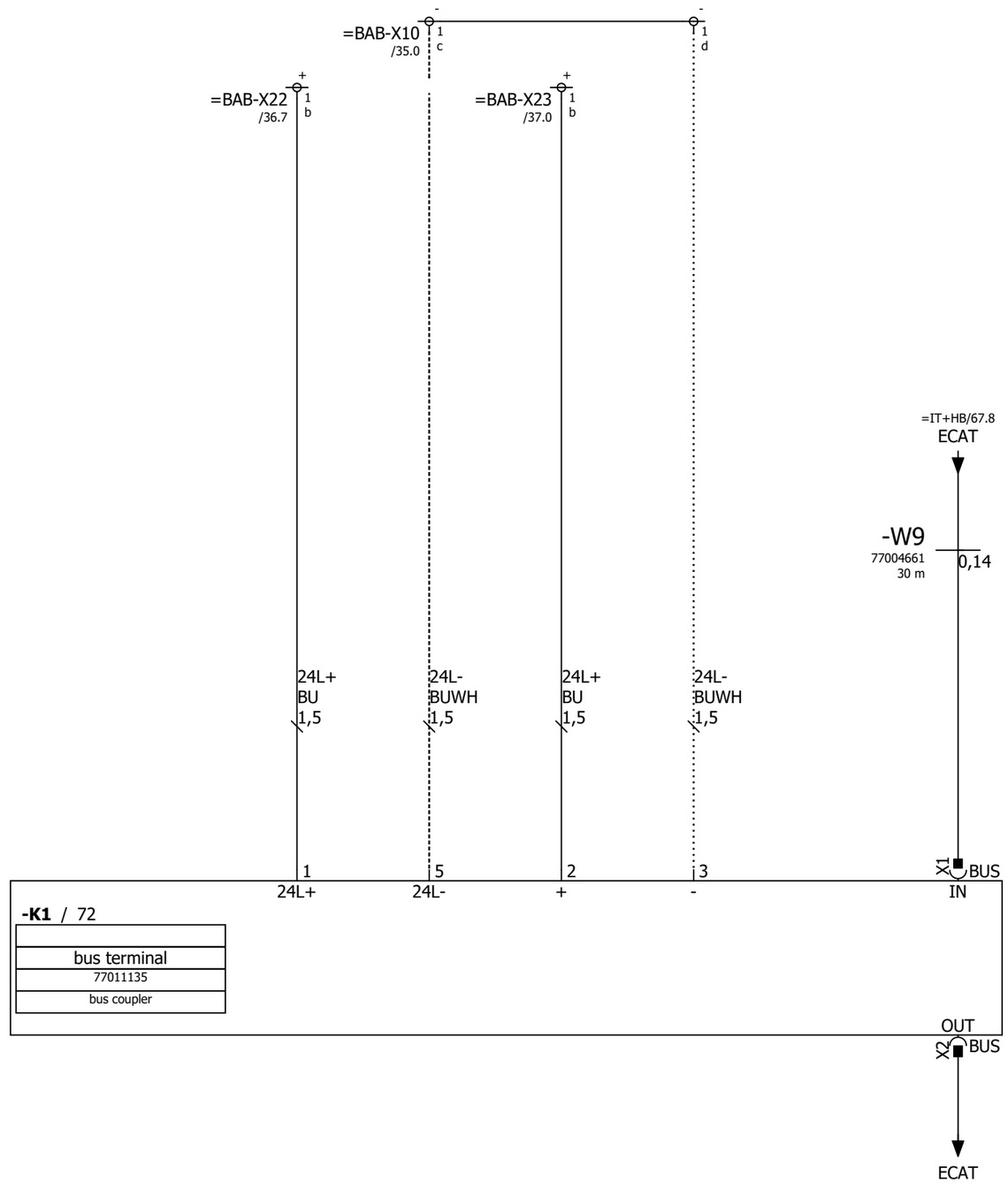


77011135

bus terminal

-K1 bus coupler

	supply		
1	24L+	EtherCAT coupler operating supply	/72.5
	power contacts		
2	+	EtherCAT coupler powerbus	/72.6
3	-	=	/72.7
4	PE		
	supply		
5	24L-	EtherCAT coupler operating supply	/72.6
	power contacts		
6	+		
7	-		
8	PE		
X1			
	Bus		
BUS	IN	EtherCAT coupler Bus	/72.8
X2			
BUS	OUT	EtherCAT coupler Bus	/72.8



EtherCAT coupler -K1 77011135

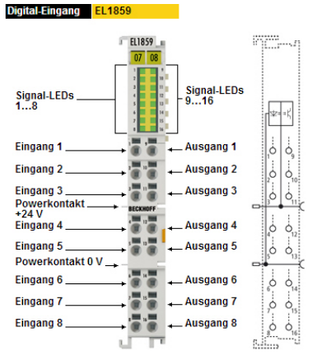
EtherCAT coupler operating supply

EtherCAT coupler powerbus

EtherCAT coupler Bus

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	bus coupler	module	interface terminal
#03	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		EtherCAT, power supply	sector 3E7P location +HP1	=ITB
#01	15.03.2021	Thomas.Lehle	IT1 - ABI - 25.27.00 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

Page 72



G10000441

bus terminal

-K2

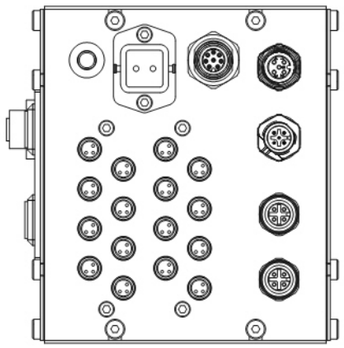
digital, E/A, 2 x 8 channel, 24 VDC

	I1		
1	I1	exhaustion active	=SP+P/97.3
	I2		
2	I2		
	I3		
3	I3		
	I4		
4	I4		
	I5		
5	I5		
	I6		
6	I6		
	I7		
7	I7		
	I8		
8	I8		
	O1		
9	O1		
	O2		
10	O2		
	O3		
11	O3		
	O4		
12	O4		
	O5		
13	O5		
	O6		
14	O6		
	O7		
15	O7		
	O8		
16	O8		

[3]EL1859

-K2
G10000441

#05	01.04.2021	Thomas.Lehle	Toolbox_31	Option:	L1-Plasma Interface Cabinet {R.29}	MESSER	coupler, 8 x DI, 8 x DO	module	interface terminal	Page
#02	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		EtherCAT, power supply	sector 3E7P location +HP1	=ITB	73
	25.03.2021	Thomas.Lehle	IT4 - ABI - 29.29.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



72249810

lifter

-K1

SmartLifter 200, 2 x 4 DI, 2 x 4 DO

J1

	EtherCAT		
Bus	IN	SmartLifter EtherCAT	/75.9

J2

Bus	OUT	SmartLifter EtherCAT	/75.9

J3

	PwrDC		
1	Us	SmartLifter DC operating voltage	/75.5
2	Up	SmartLifter DC control voltage	/75.7
3	GND	SmartLifter DC operating voltage	/75.5
4	n.c	=	/75.6
5	n.c		/75.6
SH			/75.8

J4

	PwrALFA
1	24L
2	nc
3	24N
4	nc
5	nc
SH	

J5

	PwrDrive		
1	36Lp	SmartLifter AC power supply	/75.3
2	36N	=	/75.2
3	36Ls		/75.3

J5

4	PE	SmartLifter AC supply	/75.1
SH		SmartLifter periphery	/75.3

J7_I8

	I8		
1	24L+	magnet collision torch	=DC1/51.2
3	24L-	=	=DC1/51.2
4	I8	=	=DC1/51.2

J7_I9

	I9		
1	24L+	collision nozzle	=DC1B/52.2
3	24L-	=	=DC1B/52.2
4	I9	=	=DC1B/52.2

J7_I10

	I10
1	24L+
3	24L-
4	I10

J7_I11

	I11
1	24L+
3	24L-
4	I11

J7_I12

	I12
1	24L+
3	24L-
4	I12

J7_I13

	I13
1	24L+
3	24L-
4	I13

J7_I14

	I14
1	24L+
3	24L-
4	I14

J7_I15

	I15
1	24L+
3	24L-
4	I15

J7_O8

	O8		
1	24L+		=UP1/100.2
3	24L-	laser diode	=UP1/100.2
4	O8	=	=UP1/100.2

J7_O9

	O9
1	24L+
3	24L-
4	O9

J7_O10

	O10
1	24L+
3	24L-
4	O10

J7_O11

	O11
1	24L+
3	24L-
4	O11

J7_O12

	O12
1	24L+
3	24L-
4	O12

J7_O13

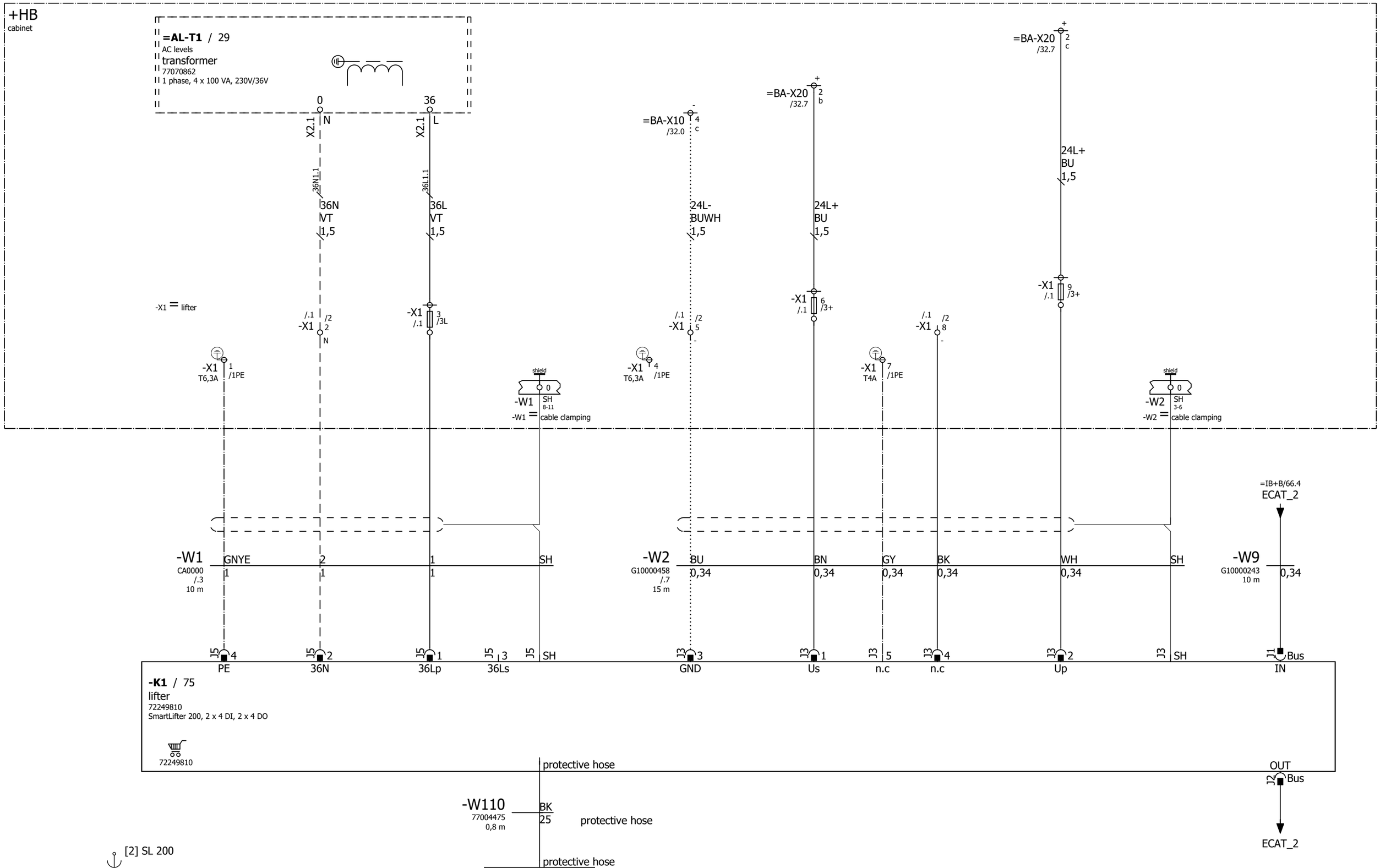
	O13
1	24L+
3	24L-
4	O13

J7_O14

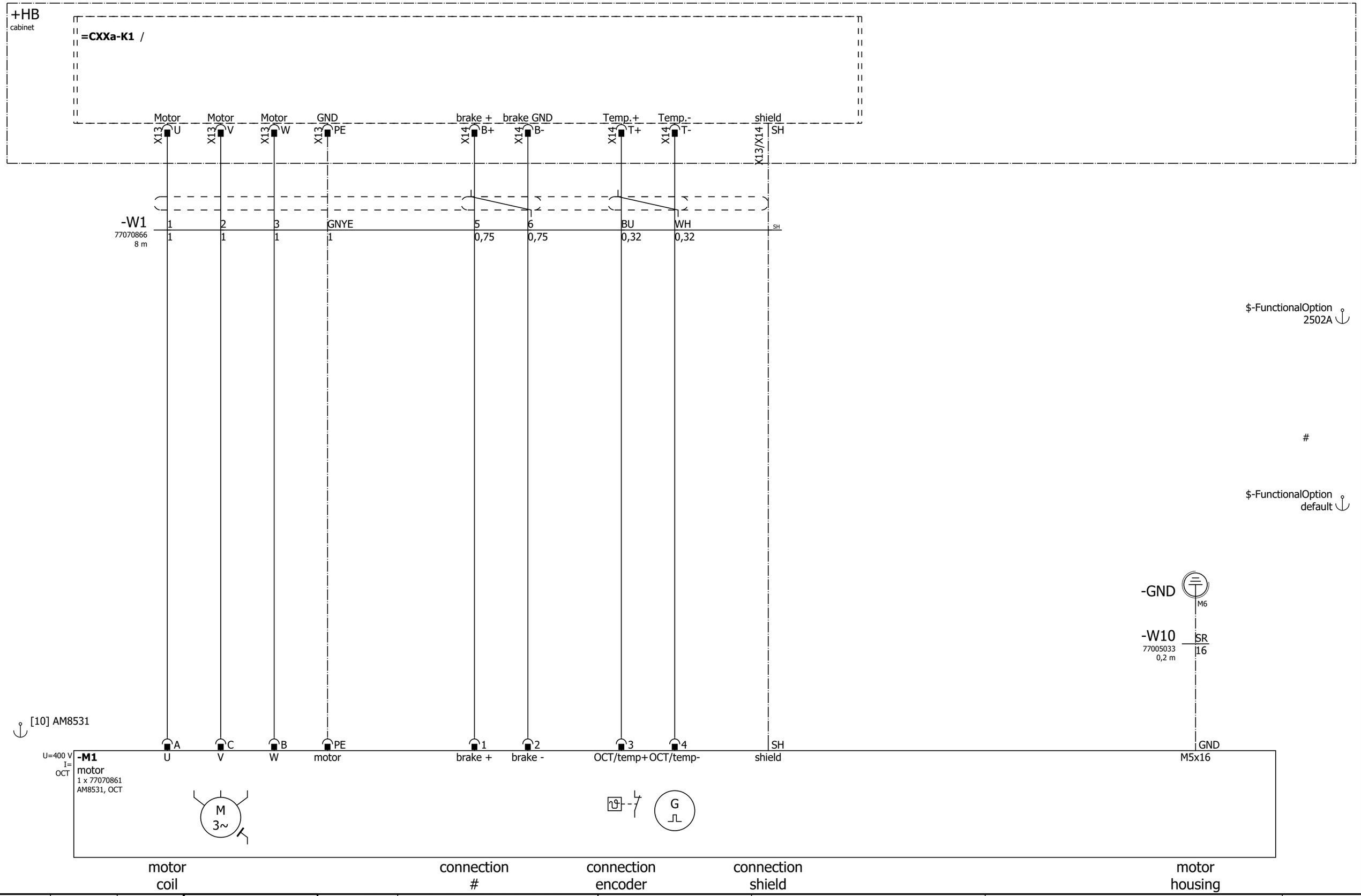
	O14
1	24L+
3	24L-
4	O14

J7_O15

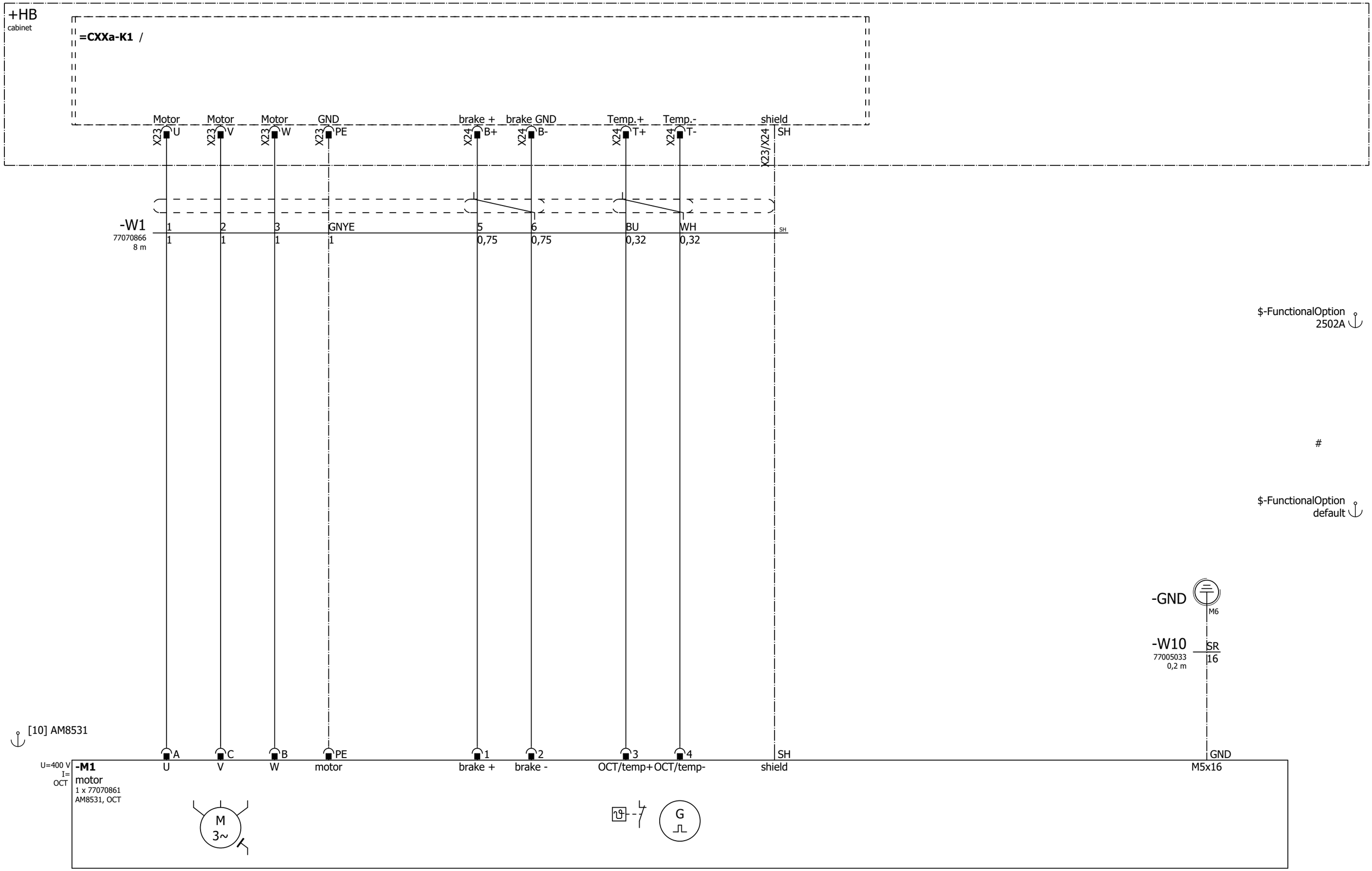
	O15
1	24L+
3	24L-
4	O15



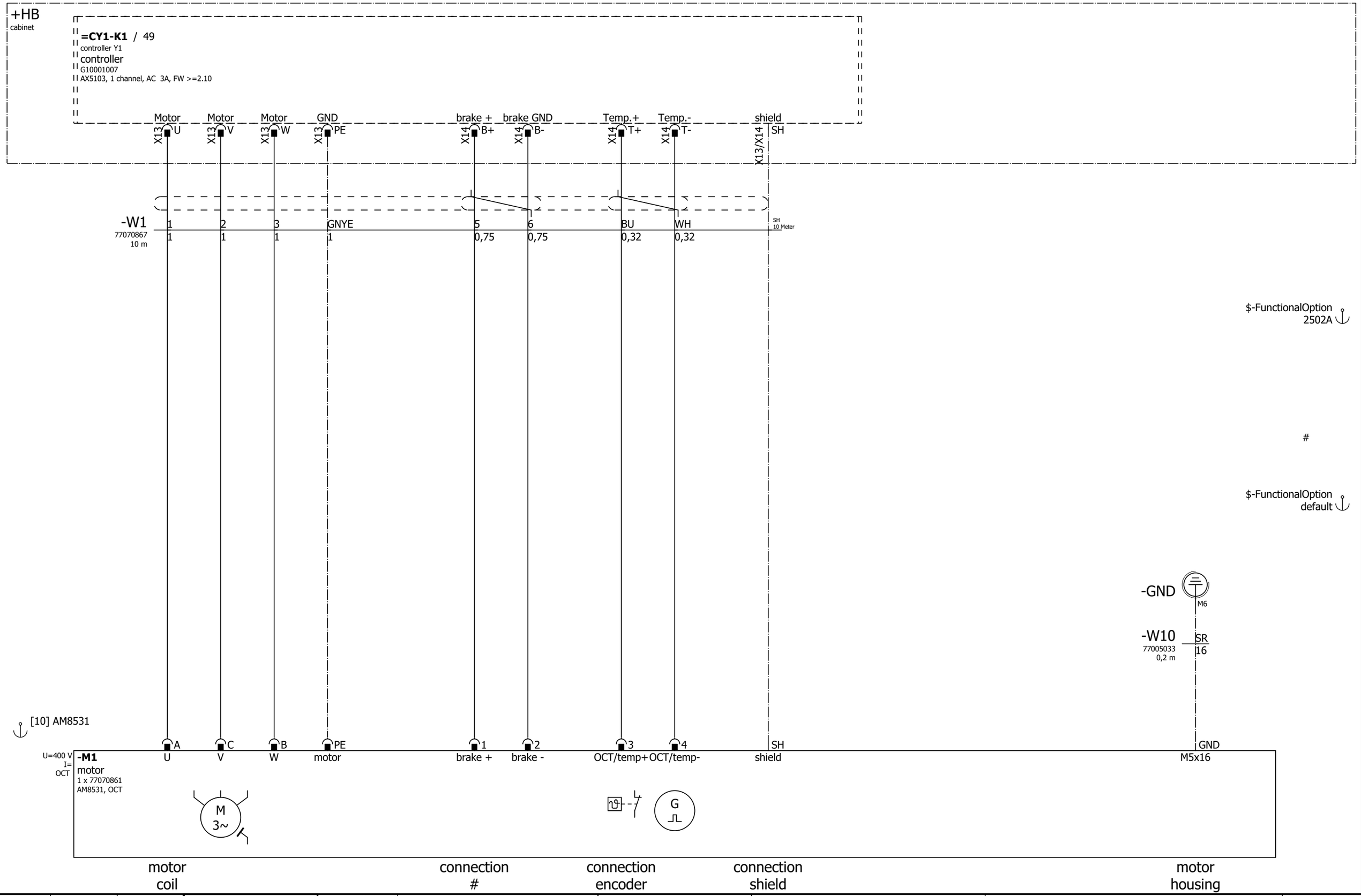
			Toolbox_31	Option:	L1-SL200 {R.29}	MESSER	SL 200	module	lifter	Page
			Toolbox version	customer:	Blocotelha		AC/DC power supply			75
			LI1 - ABI - 29.30.02 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			sector CA1L location +L1	=LI1	



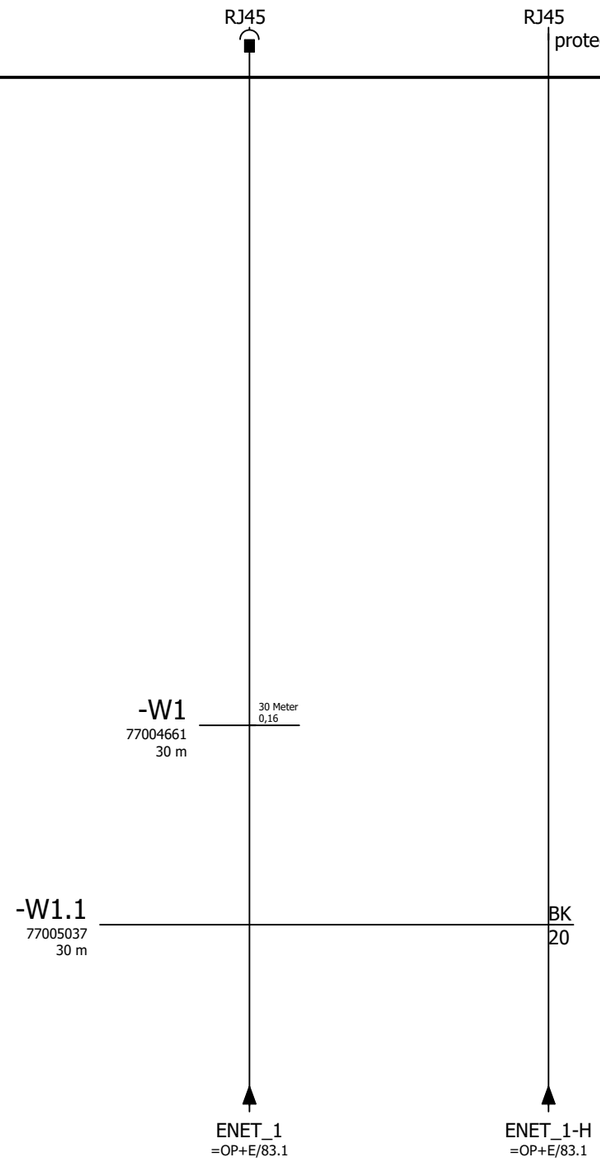
			Toolbox_31	Option:	AX5 X/Xa Safety OCT 2x6A {R.31}	MESSER	AM8531 OCT X	module	motor X
			Toolbox version	customer:	Blocotelha		connection motor encoder		Page
			MX4 - ABI - 29.29.02 - CC: EU	commission:	289001273				76
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			sector 3B1E location +E	=MX



			Toolbox_31	Option:	AX5 X/Xa Safety OCT 2x6A {R.31}	MESSER	AM8531 OCT Xa	module	motor Xa
			Toolbox version	customer:	Blocotelha		connection motor encoder		Page
			MX4 - ABI - 29.29.02 - CC: EU	commission:	289001273				77
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			sector 2B1G location +G	=MXa



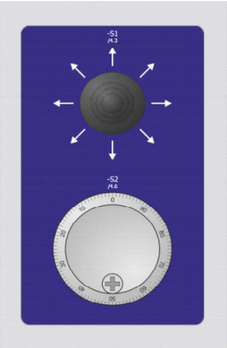
			Toolbox_31	Option:	L1-AX5 Y OCT Safety 3A {R.31}	MESSER	AM8531 OCT Y1	module	motor Y1
			Toolbox version	customer:	Blocotelha		connection motor encoder		Page 78
			MX4 - ABI - 29.29.02 - CC: EU	commission:	289001273			sector CA1L location +L1	=MY1
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



customer
EtherNET

customer
protective hose

			Toolbox_31	Option:	Network customer RJ45 {R.25}	MESSER	network	module	network connectivity
			Toolbox version	customer:	Blocotelha		customer		Page
			NC1 - ABI - 25.30.00 - CC: EU	commission:	289001273			sector 3D4P location +P	=NC 79
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



G10000038

control panel accessory

-S1

Joystick, hand wheel extension

400

Versorgung

1	+24V_In	
2	GND_In	

401

1	+24V_Out	hand wheel Joystick	/81.0
2	GND_Out		/81.1

K-Bus/Out

K-Bus

902	CON	K-bus	/81.7

PE

grounding

M6	grounding	hand wheel, Joystick grounding	/81.9

S2

Encoder

1	+5V	hand wheel	/81.4
5	A		/81.5
6	A-		/81.5
7	B		/81.5
8	B-		/81.6
10	0V		/81.5

X01

Verteiler

1	+24V
2	+24V
3	PE

X01

4	GND	
5	GND	

X3

Joystick

5	NO1		/81.2
7	NO2		/81.3
8	NO3		/81.3
9	NO4		/81.3
10	COM	Joystick	/81.2

X4

Encoder

1	+5V	hand wheel	/81.4
5	A		/81.5
6	A-		/81.5
7	B		/81.5
8	B-		/81.6
10	0V		/81.5

X5

K-Bus

403	CON	K-bus	/81.7

X7

Versorgung

1	+24V_In	hand wheel Joystick	/81.0
2	GND_In		/81.1

X101

Bus

BUS	IN	hand wheel, Joystick EtherCAT	/81.8

X102

BUS	OUT	hand wheel, Joystick EtherCAT	/81.8

X103

Interface-in

1		panel Safety channel	=OP/85.1
2		=	=OP/85.1
3		=	=OP/85.2
4		=	=OP/85.2
5			=OP/85.4
6	GND	operation panel supply	=OP/84.4
7			=OP/86.1
8		operation panel battery pack	=OP/84.1

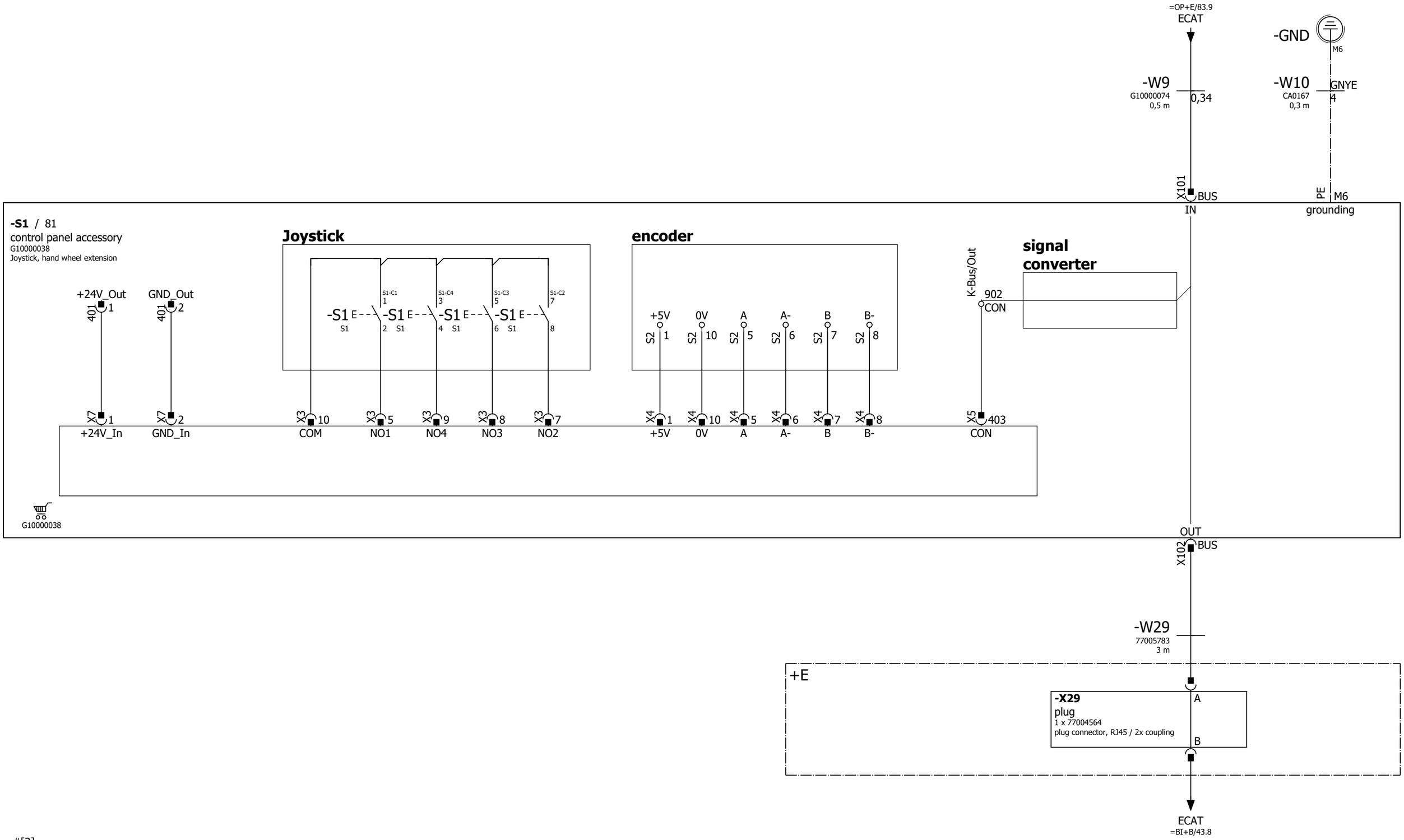
X103

9		machine in Stop	=OP/86.2
10		machine in start	=OP/86.3
11		operation panel battery pack	=OP/84.1
12	PE	operation panel supply	=OP/84.3
13			=OP/84.6
14			=OP/84.7
15		machine reset	=OP/85.3
16		machine start	=OP/85.7
17		machine Stop	=OP/85.8
18		control voltage turn on	=OP/85.6
19	+24V	operation panel supply	=OP/84.3
Shield			=OP/84.8

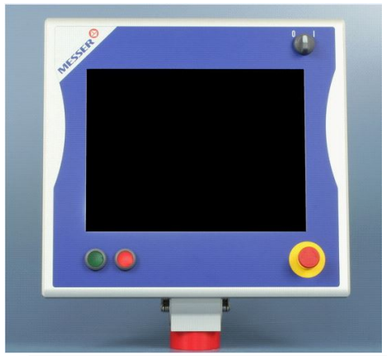
X104

Interface-out

1		panel Safety channel	=OP/85.1
2		=	=OP/85.1
3		=	=OP/85.2
4		=	=OP/85.2
5			=OP/85.4
6	GND	operation panel supply	=OP/84.4
7			=OP/86.1
8		operation panel battery pack	=OP/84.1
9		machine in Stop	=OP/86.2
10		machine in start	=OP/86.3
11		operation panel battery pack	=OP/84.1
12	PE		=OP/84.3
13			=OP/84.6
14			=OP/84.7
15		machine reset	=OP/85.3
16		machine start	=OP/85.7
17		machine Stop	=OP/85.8
18		control voltage turn on	=OP/85.6
19	+24V	operation panel supply	=OP/84.3
Shield			=OP/84.8



			Toolbox_31	Option:	GCs+HWJ {R.29}	MESSER	hand wheel - Joystick	module operation panel Keyboard	Page
			Toolbox version	customer:	Blocotelha		EtherCAT		81
			OB4 - ABI - 25.25.00 - CC: EU	commission:	289001273			sector 3C2E location +E	=OB
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



G10000760

PC control panel

-P1

display 15", GCS, touch display, Win10, export

XS01

Interface

SH	shield		/84.8

shield

	SH		

401

supply

1	24L+	operation panel supply	/84.3
2	24L-	=	/84.4
3	24L+Akku	operation panel battery pack	/84.1
4	24L-Akku	=	/84.1

PE

grounding

M6	grounding	panel grounding	/84.9

supply

5	PE	operation panel supply	/84.3

S1_A

ON/OFF

1	XA		/86.1
2	XA		/86.1
3	XA		/85.4
4	XA		/85.4
5	XA		/85.6
6	XA	control voltage turn on	/85.6

S1_B

1	XB		/85.1

S1_B

2	XB	panel Safety channel	/85.1
3	XB		/85.2
4	XB	panel Safety channel	/85.2
5	XB		/85.5
6	XB		/85.5

S2

Stop

1	E1	machine in Stop	/86.2
2	E1	=	/86.2
3	C1	#	/85.9
4	C1	=	/85.9
5	C2	machine Stop	/85.8
6	C2	=	/85.8

S3

Start

1	E1	machine in start	/86.3
2	E1	=	/86.3
3	C1	machine start	/85.7
4	C1	=	/85.7
5	C2		/86.4
6	C2		/86.4

S4

Emergency Stop

3	C1		/85.1
4	C1		/85.1
5	C2		/85.2
6	C2		/85.2

X104

Bus

BUS	LAN 1	panel EtherCAT	/83.9

X105

BUS	LAN 2	panel EtherNET	/83.3

X106

BUS	LAN 3	panel EtherNET	/83.1

XS01

Interface

1		panel Safety channel	/85.1
2		=	/85.1
3		=	/85.2

XS01

4		panel Safety channel	/85.2
5			/85.4
6		operation panel supply	/84.4
7			/86.1
8		operation panel battery pack	/84.1
9		machine in Stop	/86.2
10		machine in start	/86.3
11		operation panel battery pack	/84.1
12		operation panel supply	/84.3
13			/84.6
14			/84.7
15		machine reset	/85.3
16		machine start	/85.7
17		machine Stop	/85.8
18		control voltage turn on	/85.6
19		operation panel supply	/84.3

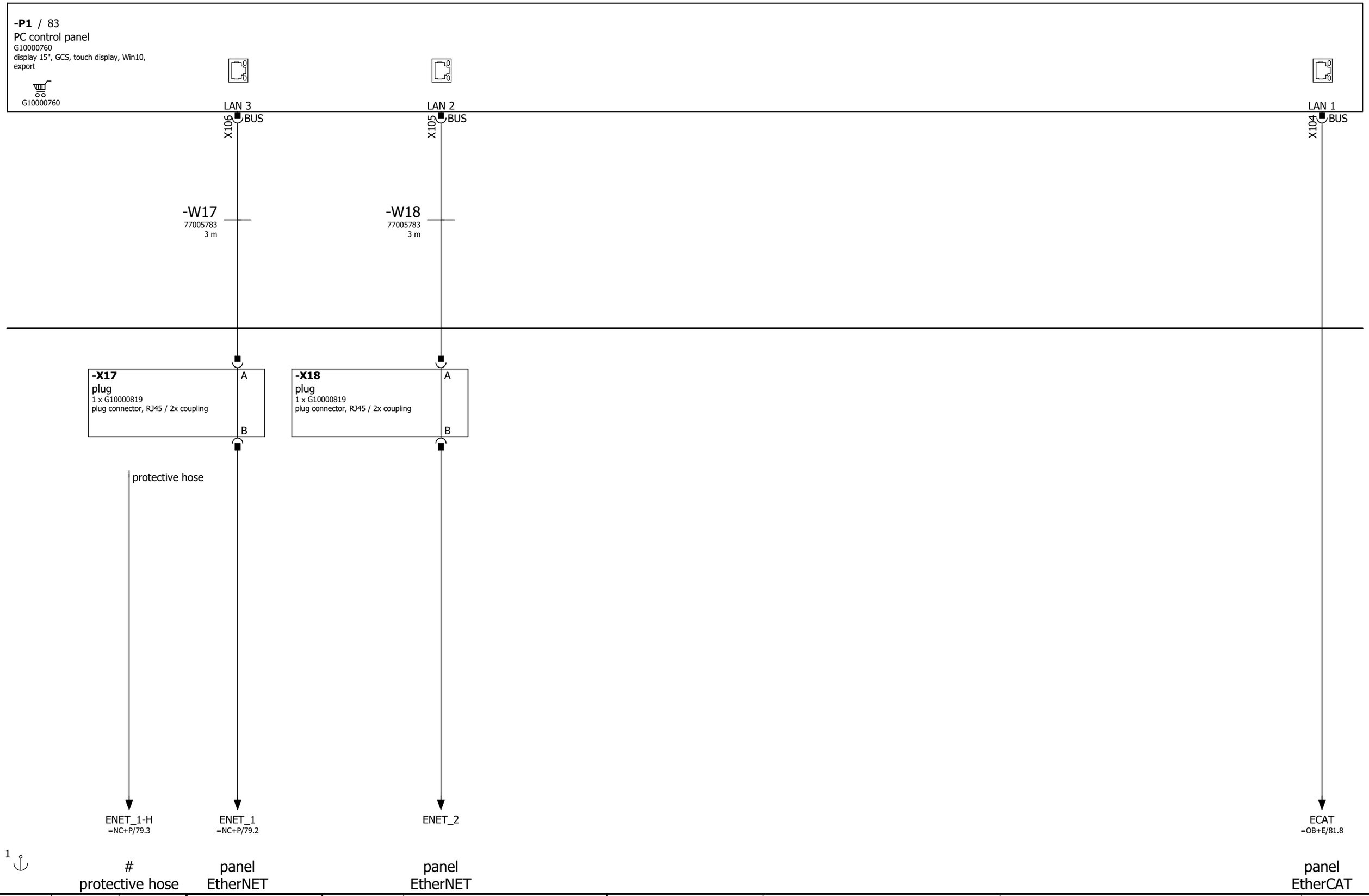
i24L+

supply intern

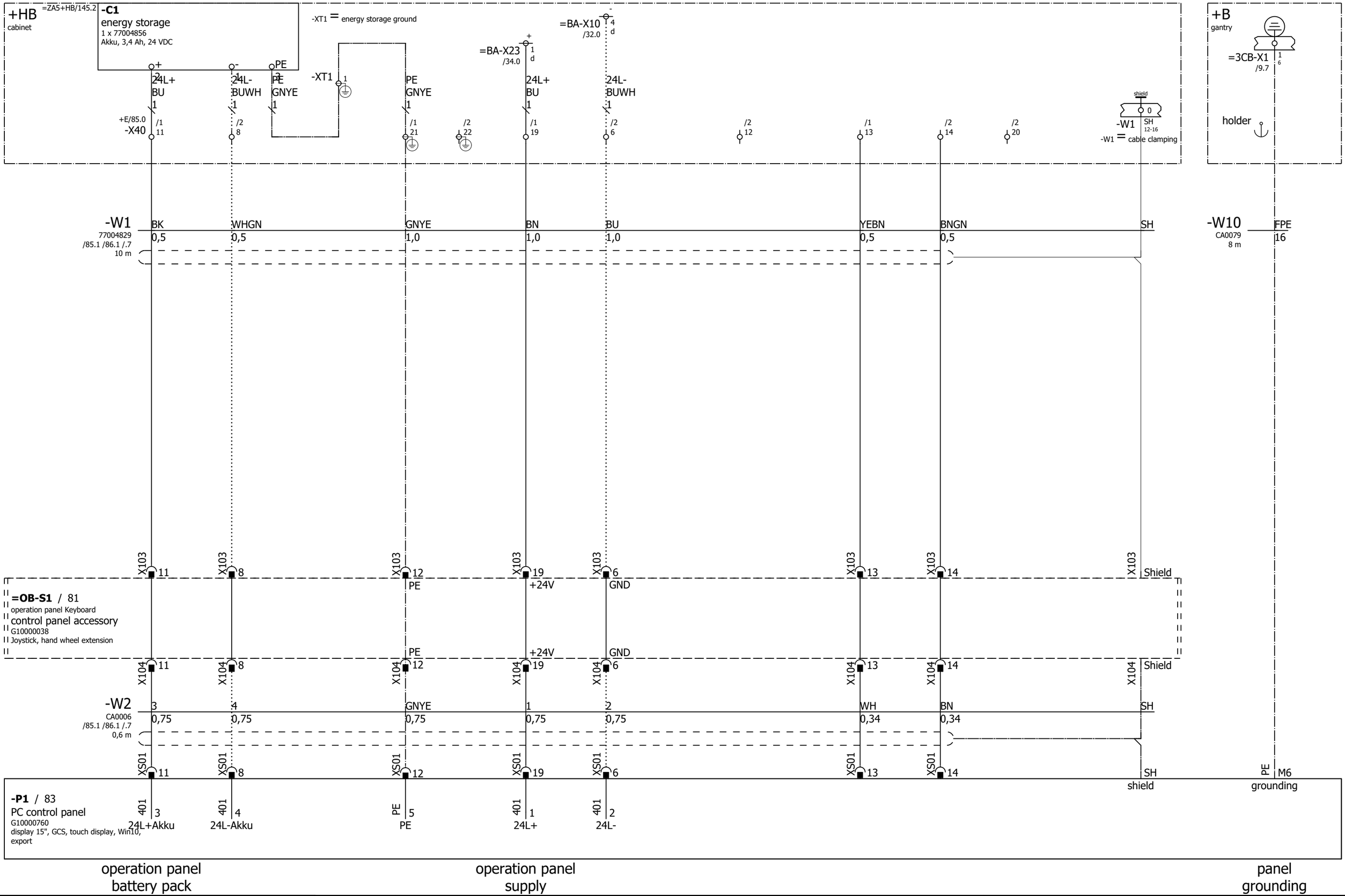
1	i24L+		/85.5
2	i24L+		/85.6
3	i24L+	machine start	/85.7
4	i24L+	#	/85.9

i24L-

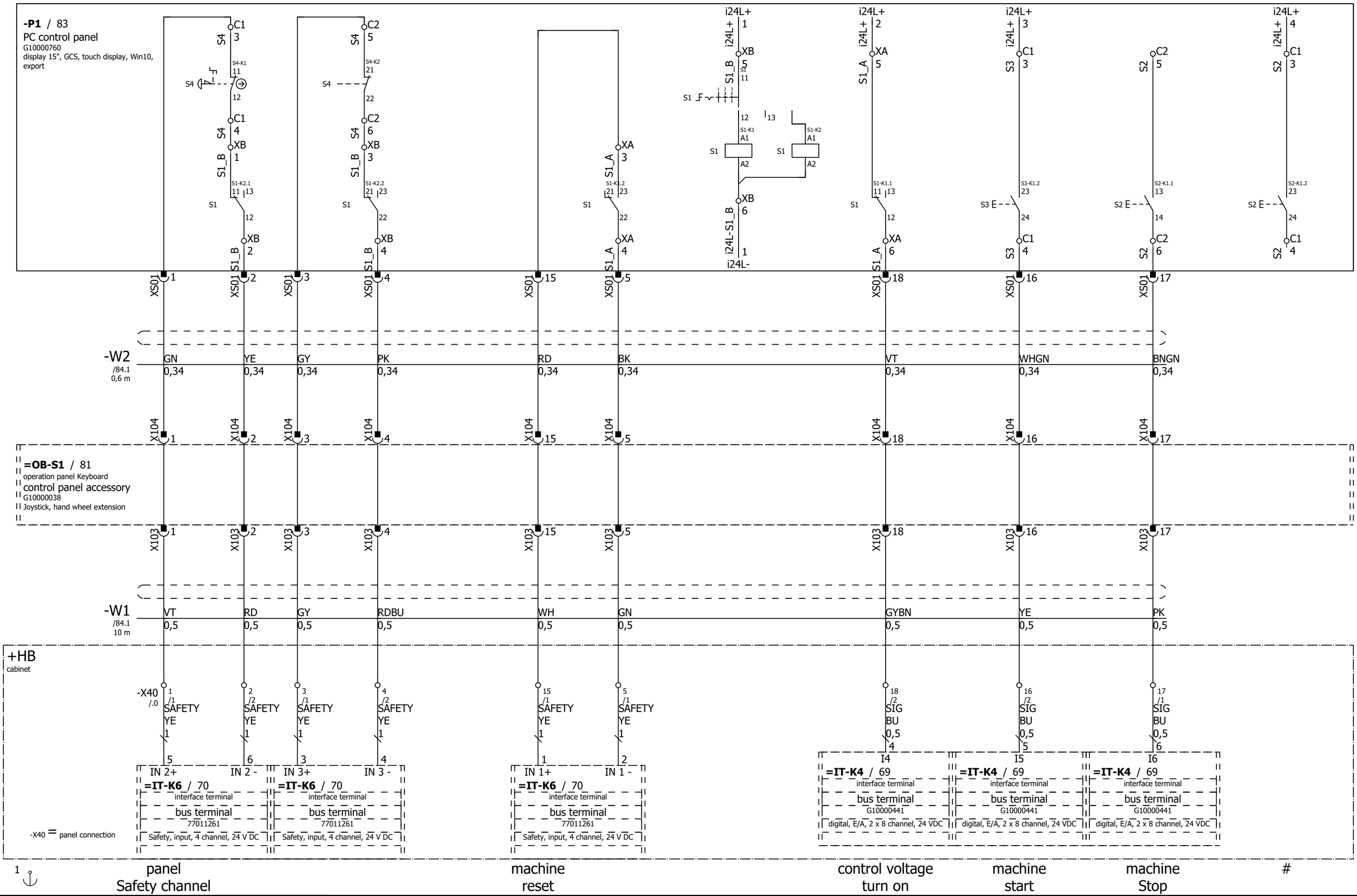
1	i24L-		/85.5
2	i24L-		/86.1
3	i24L-	machine in start	/86.3
4	i24L-	machine in Stop	/86.2
5	i24L-		



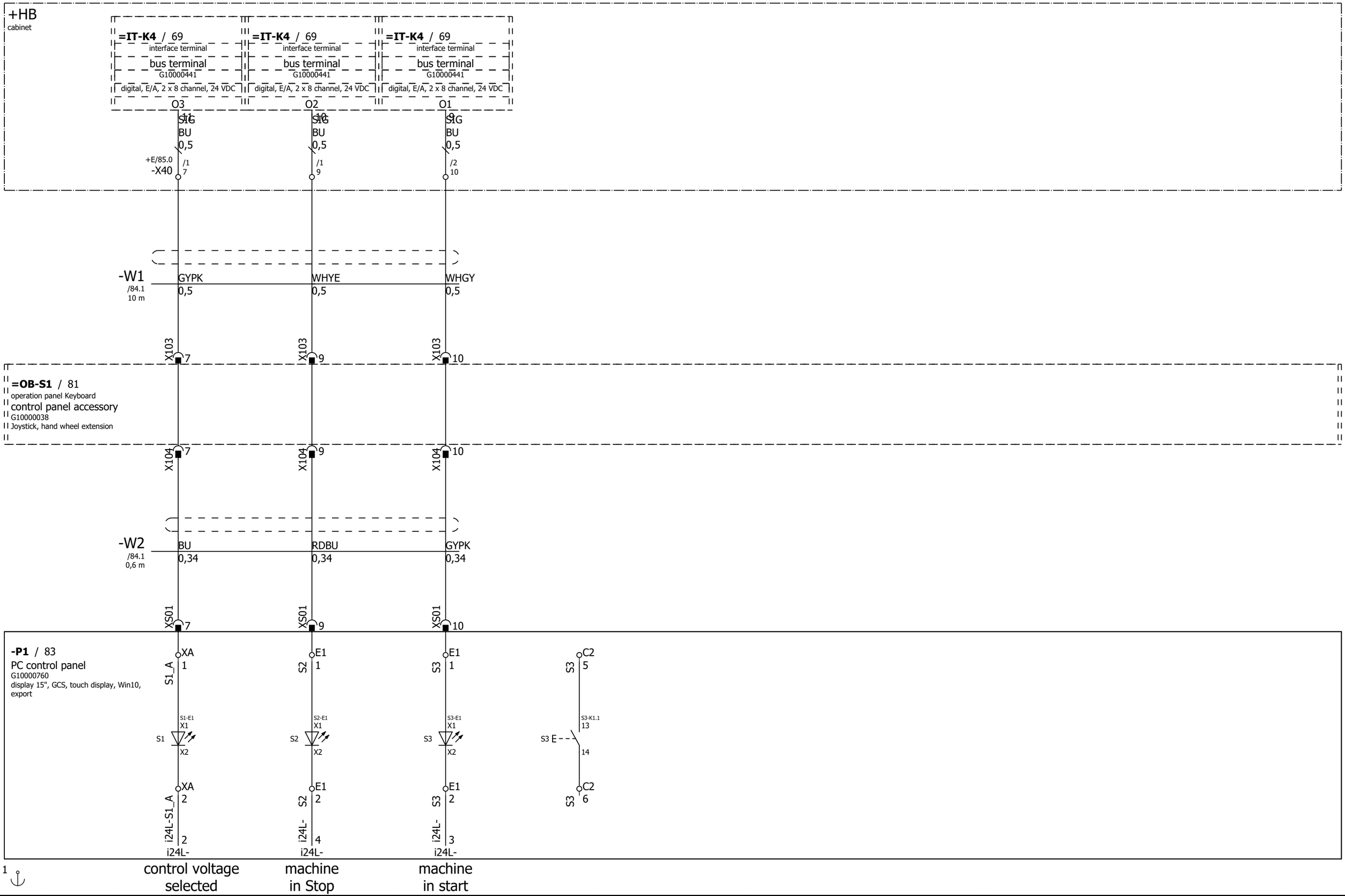
			Toolbox_31	Option:	GCs+HWJ {R.29}	MESSER	Operation interface	module	operation panel	Page
			Toolbox version	customer:	Blocotelha		EtherCAT	sector 3C2E location +E	=OP	83
			OP6 - ABI - 25.30.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



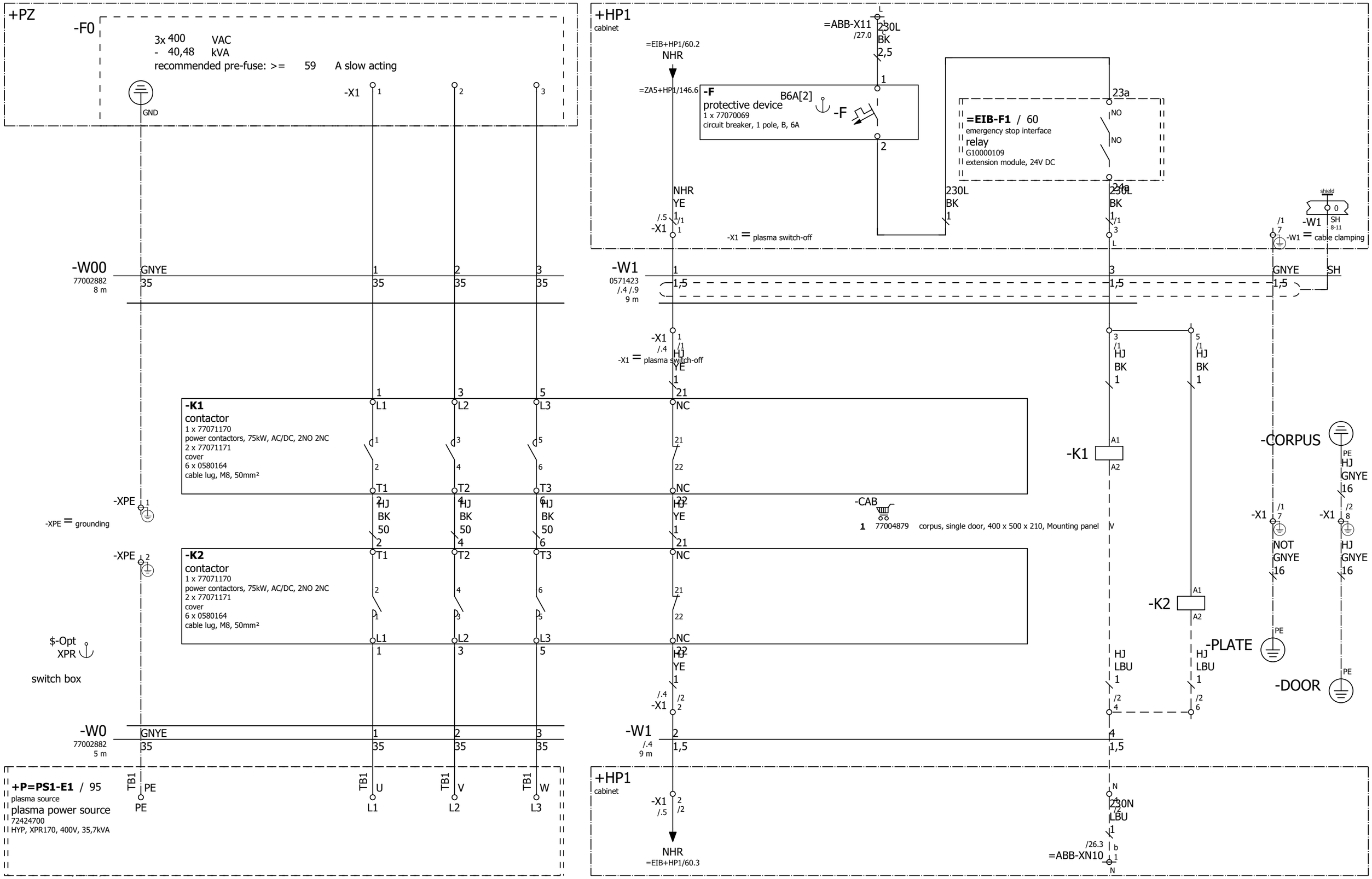
			Toolbox_31	Option:	GCs+HWJ {R.29}	MESSER	Operation interface	module	operation panel
			Toolbox version	customer:	Blocotelha		supply, Akku	sector 3C2E location +E	=OP
			OP6 - ABI - 25.30.00 - CC: EU	commission:	289001273				Page 84
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



			Toolbox_31	Option:	GCs+HWJ {R.29}	MESSER	Operation interface	module operation panel
			Toolbox version	customer:	Blocotelha		emergency stop, operating	Page
			OP6 - ABI - 25.30.00 - CC: EU	commission:	289001273			85
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021		sector 3C2E location +E	=OP



			Toolbox_31	Option:	GCs+HWJ {R.29}	MESSER	Operation interface	module	operation panel	Page
			Toolbox version	customer:	Blocotelha		operating elements	sector 3C2E location +E	=OP	86
			OP6 - ABI - 25.30.00 - CC: EU	commission:	289001273					
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021					



#01	15.03.2021	Thomas.Lehle	Toolbox_31	Option:	L1-HYP XPR170core+SwBox {R.30}	MESSER	XPR 170	module plasma power switch box	Page
			Toolbox version	customer:	Blocotelha		power supply		87
			PA3 - ABI - 27.30.00 - CC: EU	commission:	289001273			sector 3D6P location +HJ1	=PA1
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

72424271

plasma connection unit torch -E1

HYP, XPR300, EasyConnect

CAN

gas console (lead 1) [Core]

1-5	CAN cable	CAN bus	/89.1

gas console (lead 1) [VWI/Opti

1-5	CAN cable

Coupler

Torch

BK	plasmagas A	plasma gas 1	=PT1/96.1
BU	shield gas	gas secondary	=PT1/96.3
GN	coolant outlet	flow of coolant	=PT1/96.4
RD	coolant inlet	return coolant	=PT1/96.5
YE	plasmagas B	plasma gas 2	=PT1/96.2
YE	pilot arc lead	pilot arc	=PT1/96.6
YE	ohmic lead	line resistor	=PT1/96.7

GND

grounding

M6	ground	torch connection console grounding	/89.9

IN

gas console (lead 2) [Core]

GN	coolant inlet	flow of coolant	/89.6

gas console (lead 2) [VWI/Opti

GN	coolant inlet

Inlet Air

gas console (lead 1) [Core]

G1/8"NPT	Air	gas air	/89.2

Inlet Air

gas console (lead 1) [VWI/Opti

G1/8"NPT	Air

Inlet Gas

gas console (lead 1) [Core]

G1/4"NPT.RHB'F	N2	gas N2	/89.3
G1/8"NPT.RH'A'	O2	gas O2	/89.4

gas console (lead 1) [VWI/Opti

G1/4"NPT	AR
G1/4"NPT.RHB'F	N2
G1/8"NPT.RH'A'	O2
G1/8"NPTLH'A'	H2 MIX

Inlet Water

gas console (lead 2) [VWI/Opti

.	shield water

J1

gas console (lead 1) [Core]

1-3	power cable	/89.0

gas console (lead 1) [VWI/Opti

1-3	power cable

J2

Torch

1-4	plasma valve cable	plasma valve control system	=PT1/96.0

OUT

gas console (lead 2) [Core]

RD	coolant outlet	return coolant	/89.7

gas console (lead 2) [VWI/Opti

RD	coolant outlet

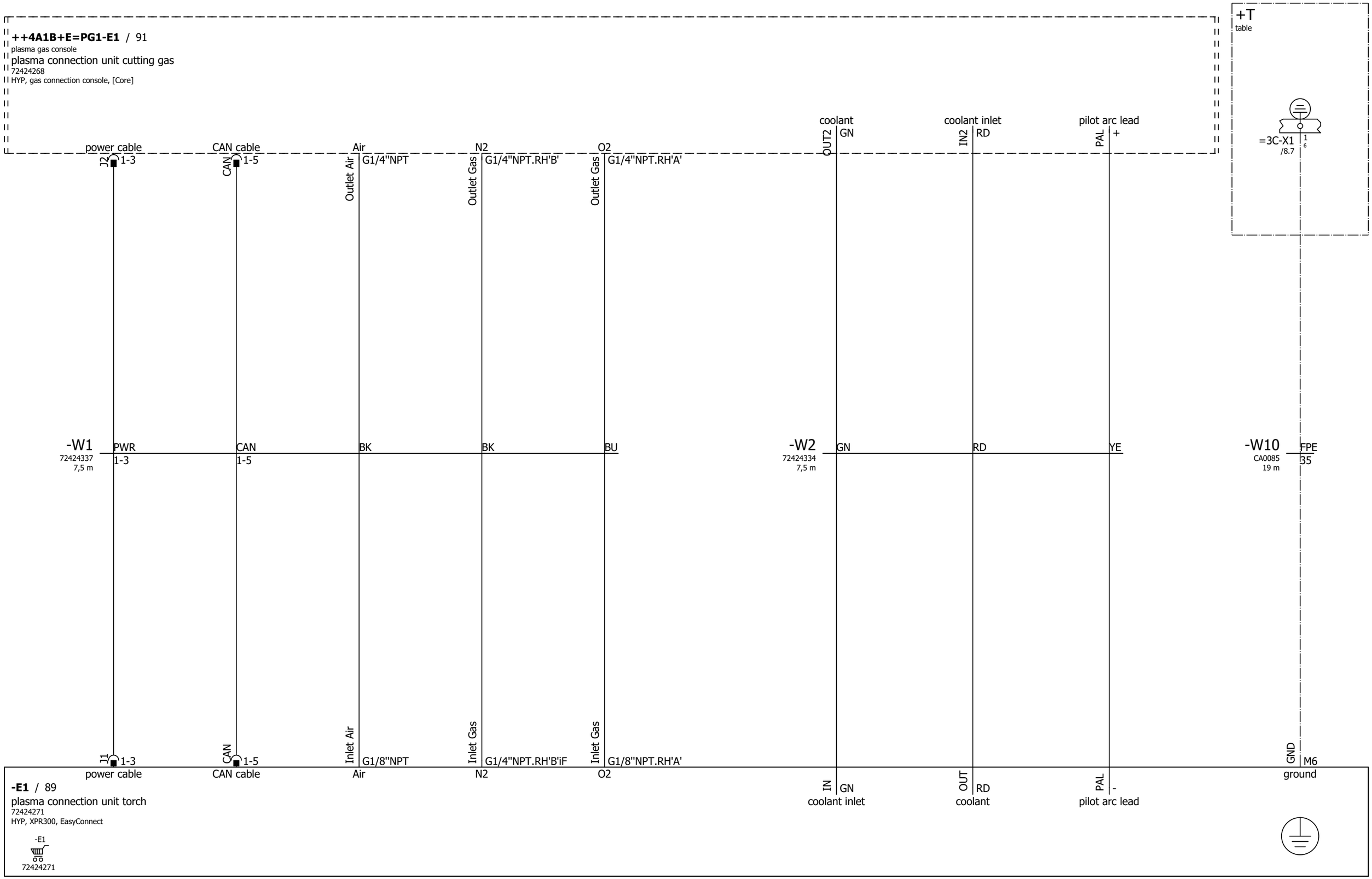
PAL

gas console (lead 2) [Core]

-	pilot arc lead	pilot arc	/89.8

gas console (lead 2) [VWI/Opti

-	pilot arc lead



#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	L1-HYP XPR170core+SwBox {R.30}	MESSER	type EasyConnect	module plasma torch connection unit	Page
			Toolbox version	customer:	Blocotelha		power/gas supply		89
			PB5 - ABI - 25.28.00 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			sector CA1L location +L1 =PB1	

72424268

plasma connection unit cutting gas

-E1

HYP, gas connection console, [Core]

Air Fitting

Air Supply

G9/16"	Air	gas air	/91.7

CAN

Power Source

1-5	CAN cable	CAN bus	/91.2

torch console (lead 1)

1-5	CAN cable	CAN bus	=PB1+L1/89.1

GND

grounding

M6	ground	gas console grounding	/91.9

Gas Fitting

Gas Supply

G5/8"	N2	gas N2	/91.5
G9/16"	O2	gas O2	/91.3

IN1

Power Source

GN	coolant inlet	flow of coolant	/92.0

IN2

torch console (lead 2)

RD	coolant inlet	return coolant	=PB1+L1/89.7

J1

Power Source

1-3	power cable	gas console supply	/91.0

J2

torch console (lead 1)

1-3	power cable		=PB1+L1/89.0

NL

Power Source

-	negative lead		/92.4

OUT1

RD	coolant outlet	return coolant	/92.2

OUT2

torch console (lead 2)

GN	coolant outlet	flow of coolant	=PB1+L1/89.6

Outlet Air

torch console (lead 1)

G1/4"NPT	Air	gas air	=PB1+L1/89.2

Outlet Gas

G1/4"NPT.RH'A'	O2	gas O2	=PB1+L1/89.4
G1/4"NPT.RH'B'	N2	gas N2	=PB1+L1/89.3

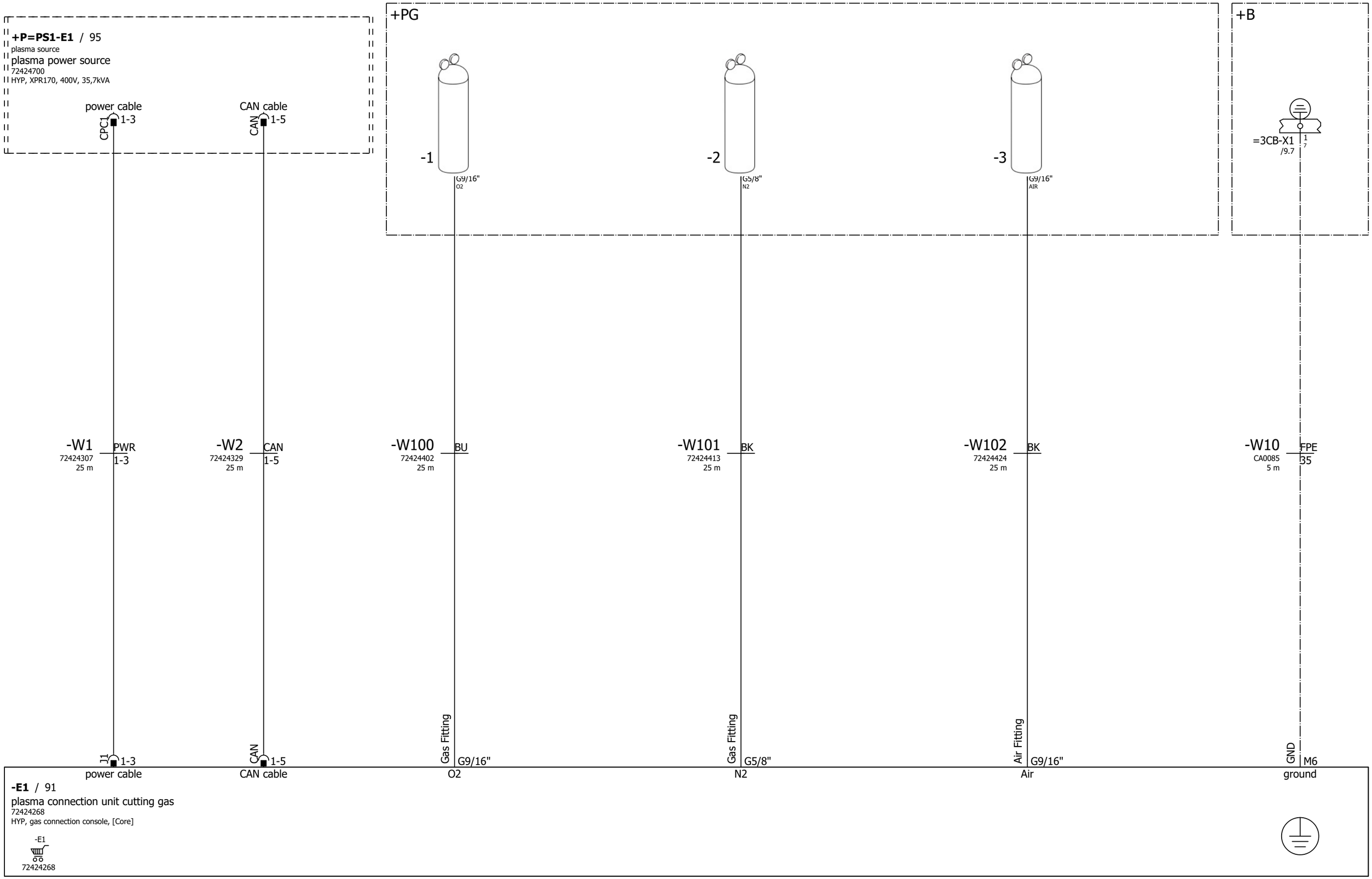
PAL

Power Source

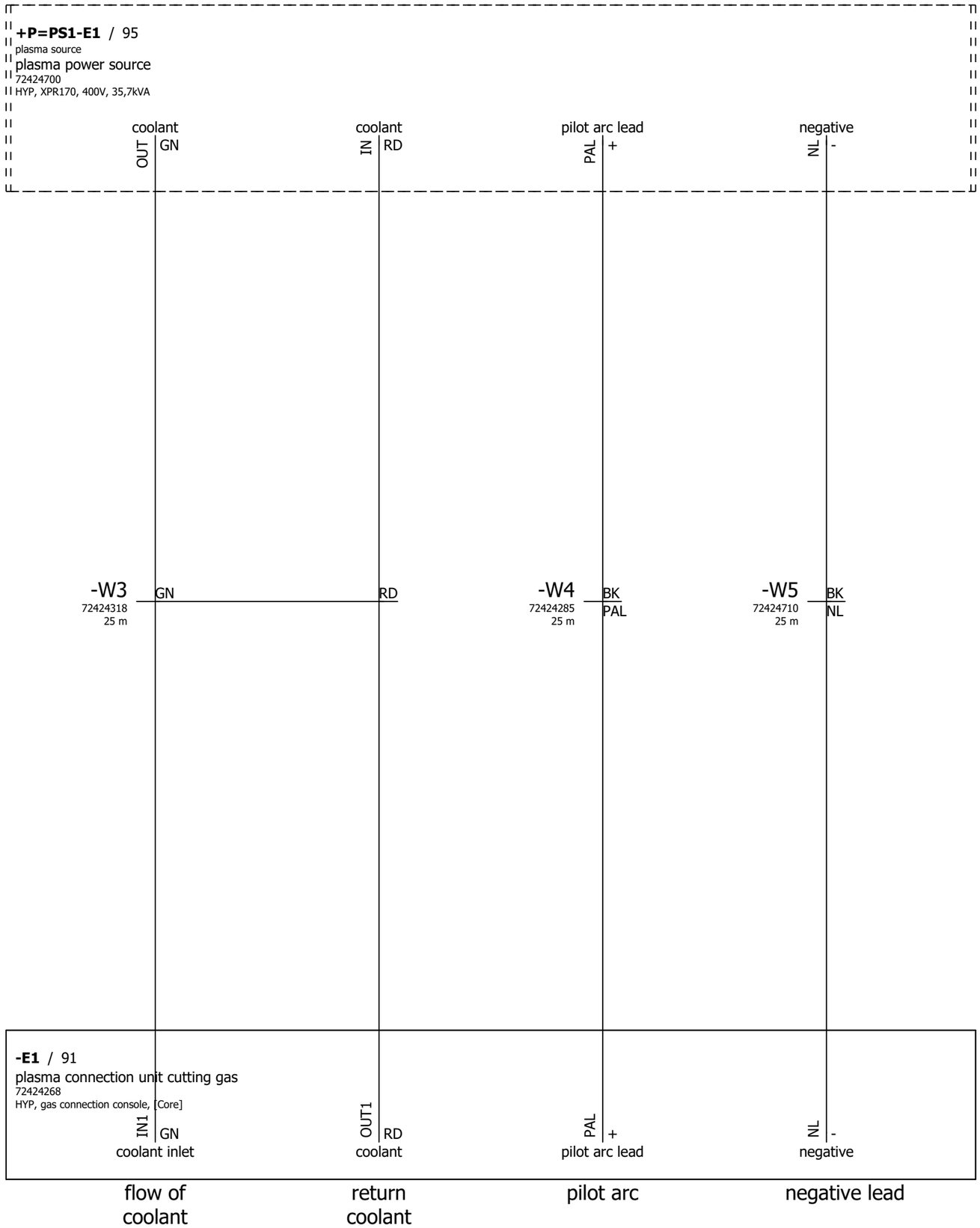
+	pilot arc lead	pilot arc	/92.3

torch console (lead 2)

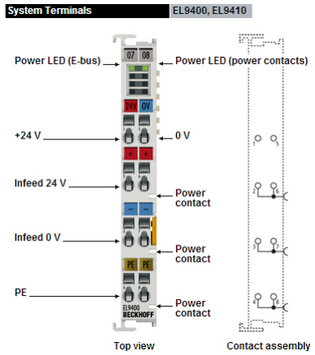
+	pilot arc lead	pilot arc	=PB1+L1/89.8

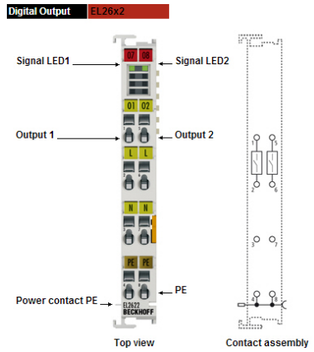


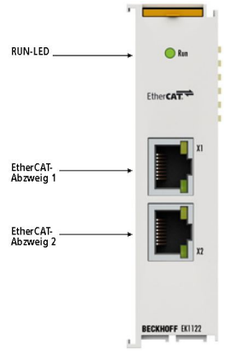
#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	L1-HYP XPR170core+SwBox {R.30}	MESSER	type core	module	plasma gas console
02	12.03.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha		power supply gas	sector 4A1B location +E	=PG1
01	12.03.2021	Adeline.Wegang	PG5 - ABI - 25.28.00 - CC: EU	commission:	289001273				Page 91
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	L1-HYP XPR170core+SwBox {R.30}	MESSER	type core	module	plasma gas console
02	12.03.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha				Page
01	28.01.2021	Adeline.Wegang	PG5 - ABI - 25.25.00 - CC: EU	commission:	289001273		cooling	sector 4A1B location +E	=PG1 92
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				







77011215

bus terminal

-K1

potential supply terminal, E-bus refreshment

	power contacts		
2	24L+	plasma power source supply 24VDC	+P/95.1
3	24L-	=	+P/95.2
4	PE		
6	24L+	plasma power source supply 24VDC	+P/95.1
7	24L-	=	+P/95.2
8	PE		
	supply		
1	24L+	plasma power source supply 24VDC	+P/95.1
5	24L-	=	+P/95.2

77011138

bus terminal

-K2

digital, relay, 2x NO , 230 V AC/30 V DC

	#		
3	nc		
	K1		
1	NO	plasma power source turn on	+P/95.3
2	COM	=	+P/95.4
	K2		
5	NO		
6	COM		
	PE		
4	PE		
8	PE		
	nc		
7	nc		

G10000781

bus terminal

-K3

EtherCAT port junction module, 2x RJ45, 100MBit/s

X1			
	Bus		
OUT	Bus	plasma power source EtherCAT	+P/95.6
X2			
OUT	Bus		

72424700

plasma power source

-E1 HYP, XPR170, 400V, 35,7kVA

CAN

Gas Connect Console

1-5	CAN cable	CAN bus	=PG1+E/91.2

CPC1

1-3	power cable	gas console supply	=PG1+E/91.0

GND

Table

M6	ground	plasma power source functional ground	/95.8

IN

Gas Connect Console

RD	coolant return	return coolant	=PG1+E/92.2

J2.1

Table

M10	work lead	grounding workpiece	/95.9

J12

RS422

2	Tx-
3	Rx-
4	Tx+
5	GND
7	Rx+

J14

Plasma start

3	plasma start +
4	plasma start -

J14

Remote ON

1	remote ON/OFF +	plasma power source turn on	/95.3
2	remote ON/OFF -	=	/95.4

hold

7	hold +
8	hold -

motion

5	motion +
6	motion -

shield pierce gas

9	shield pierce gas +
10	shield pierce gas -

supply CNC

11	F +24V CNC
12	F PWRNGND

J19

Error

1	error +
2	error -

Shield OHMIC

7	shield ohmic contact +
8	shield ohmic contact -

auto pierce detect

5	auto pierce detect +
6	auto pierce detect -

ready to start

3	not ready for start +
4	not ready for start -

NL

Gas Connect Console

-	negative lead		=PG1+E/92.4

OUT

GN	coolant supply	flow of coolant	=PG1+E/92.0

PAL

+	pilot arc lead	pilot arc	=PG1+E/92.3

TB1

mains

PE	PE	plasma power source power supply	=PA1+HJ1/87.1
U	L1	=	=PA1+HJ1/87.2
V	L2	=	=PA1+HJ1/87.3

TB1

W	L3	plasma power source power supply	=PA1+HJ1/87.3

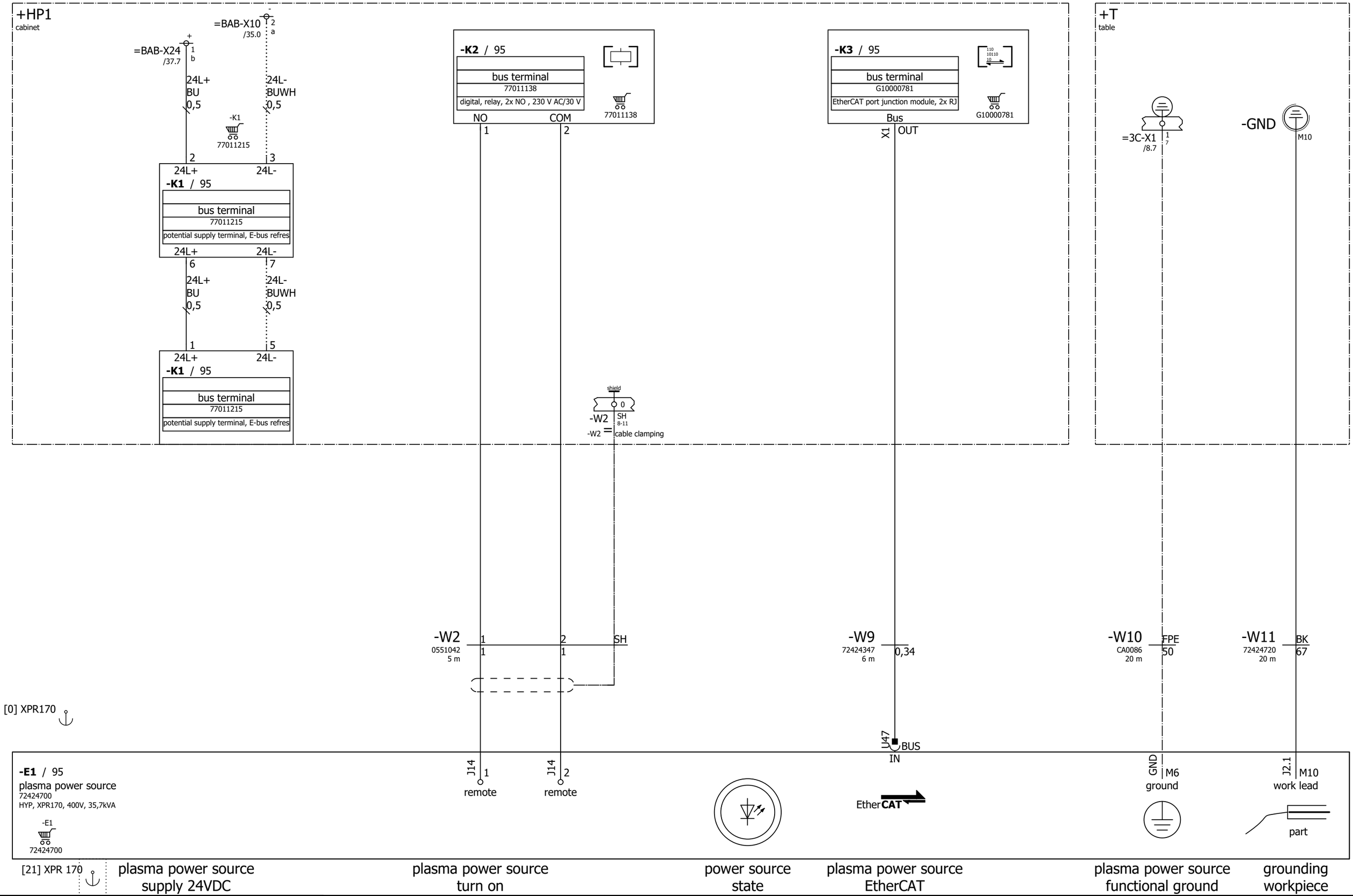
U47

Bus

BUS	IN	plasma power source EtherCAT	/95.6

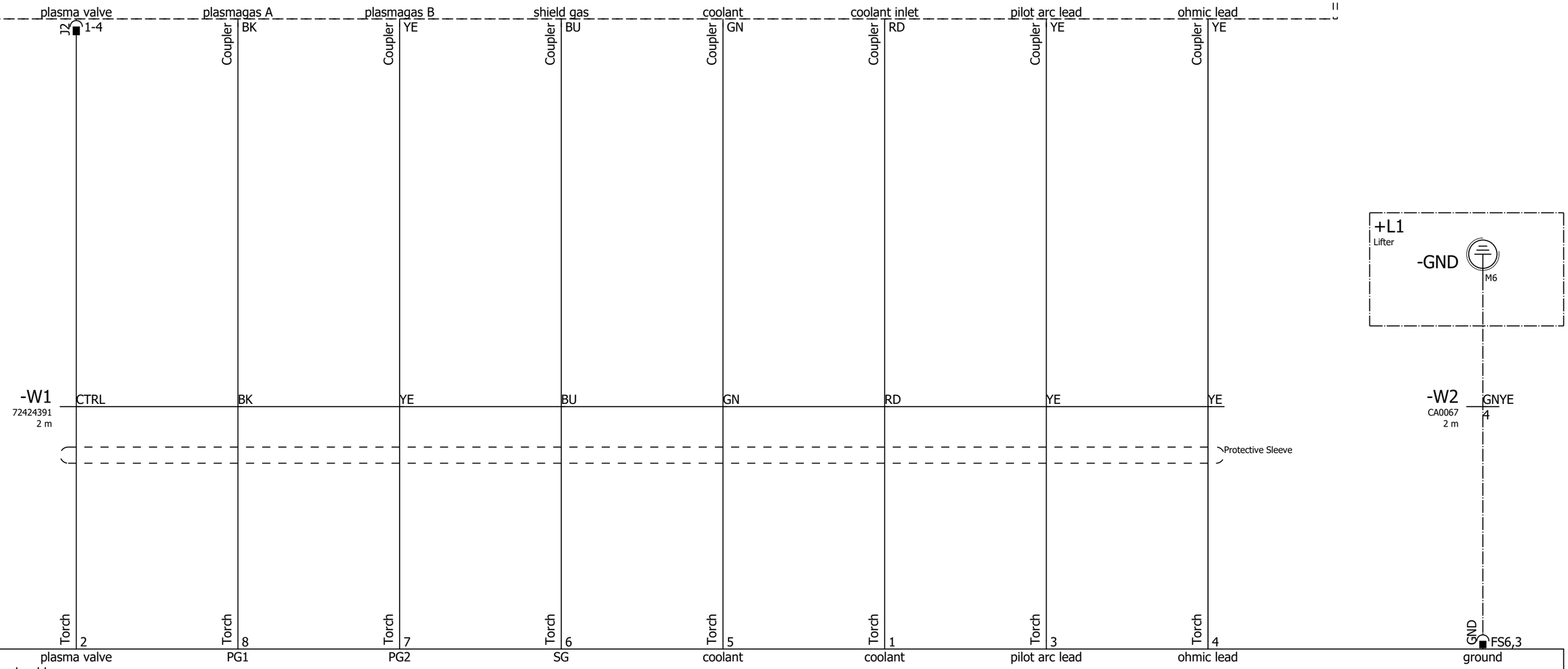
U49

BUS	OUT

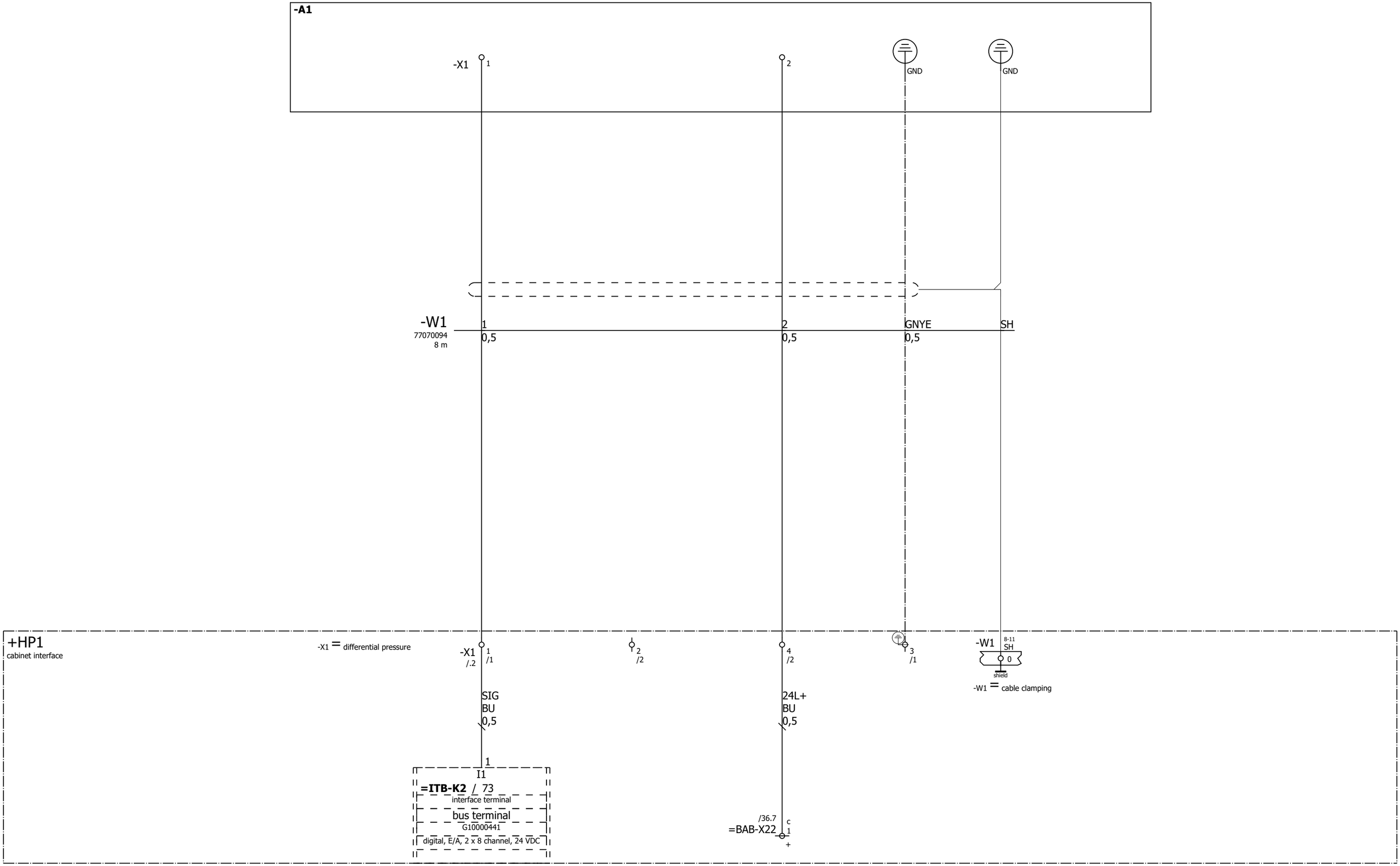


#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	L1-HYP XPR170core+SwBox {R.30}	MESSER	type XPR 170	module	plasma source
02	28.01.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha		EtherCAT, grounding		
01	28.01.2021	Adeline.Wegang	PS19 - ABI - 30.30.00 - CC: EU	commission:	289001273			sector 3D7P location +P	=PS1
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

=PB1-E1 / 89
plasma torch connection unit
plasma connection unit torch
72424271
HYP, XPR300, EasyConnect

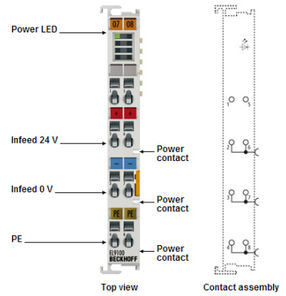


			Toolbox_31	Option:	L1-HYP XPR170core+SwBox {R.30}	MESSER	type XPR 300 torch	module	plasma torch
			Toolbox version	customer:	Blocotelha		supply torch		Page
			PT10 - ABI - 25.28.00 - CC: EU	commission:	289001273			sector CA2L location +L1	=PT1 96
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



#02	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	Differential Pressure Switch {R.29}	MESSER	differential pressure monitor	module sensor pressure
	25.03.2021	Thomas.Lehle	Toolbox version	customer:	Blocotelha		exhaustion	Page
			SP1 - ABI - 29.29.00 - CC: EU	commission:	289001273			sector 3D5P location +P =SP 97
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			

System Terminals EL9100



EL9100 | Potential supply terminal, 24 V DC

77011141

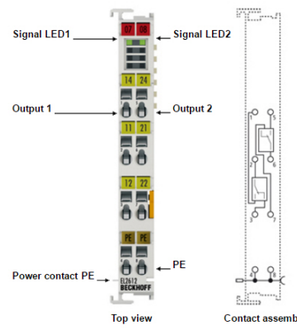
bus terminal

-K1

potential supply terminal, 24 V DC

	PE		
4	PE	filter fan grounding	+P/99.6
8	PE	=	+P/99.6
	n.c.		
1	n.c		
5	n.c		
	power contacts		
2	24L+		
3	24L-		
	supply 24L+		
6	24L+		
	supply 24L-		
7	24L-		

Digital output EL2612



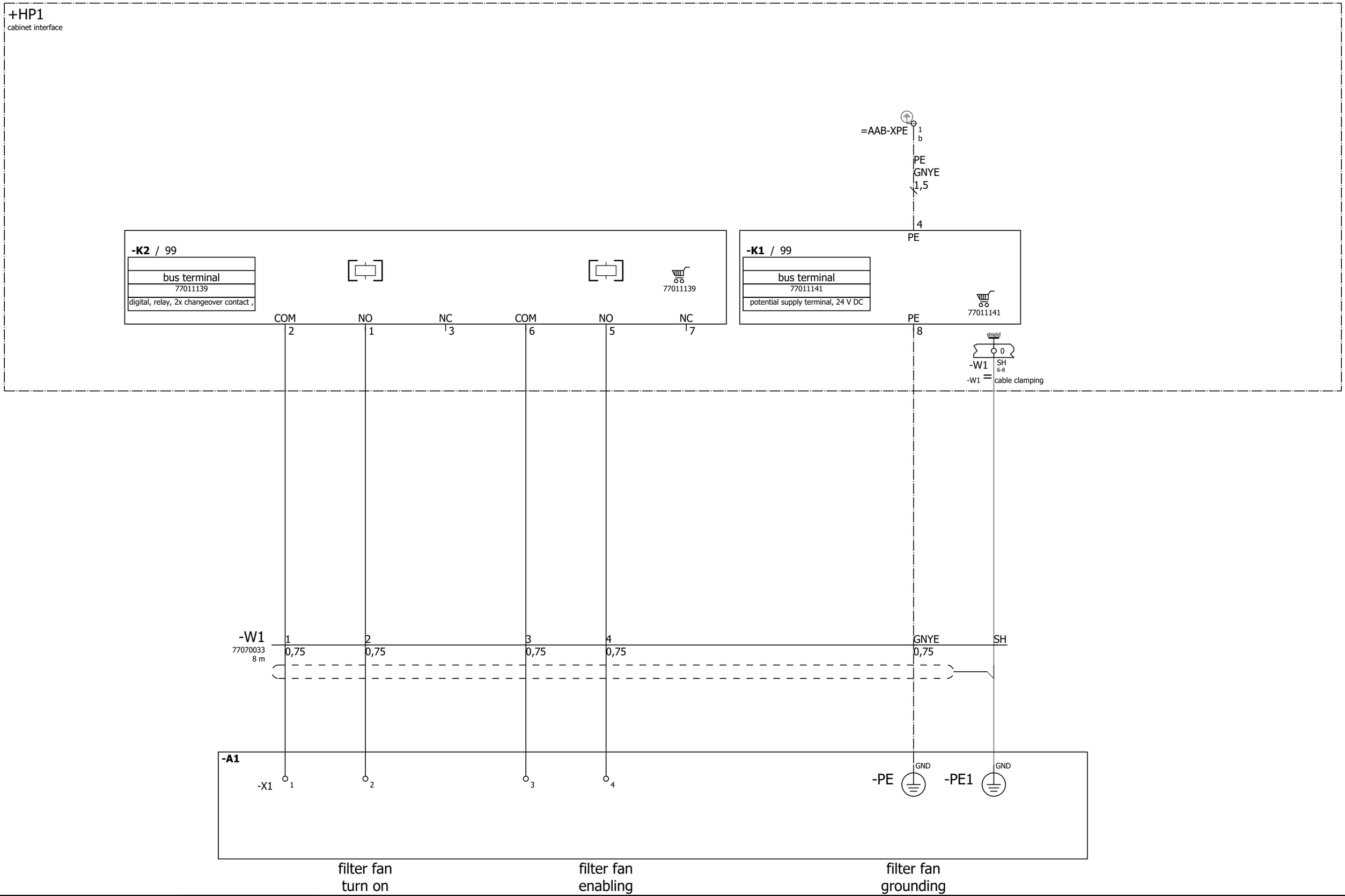
77011139

bus terminal

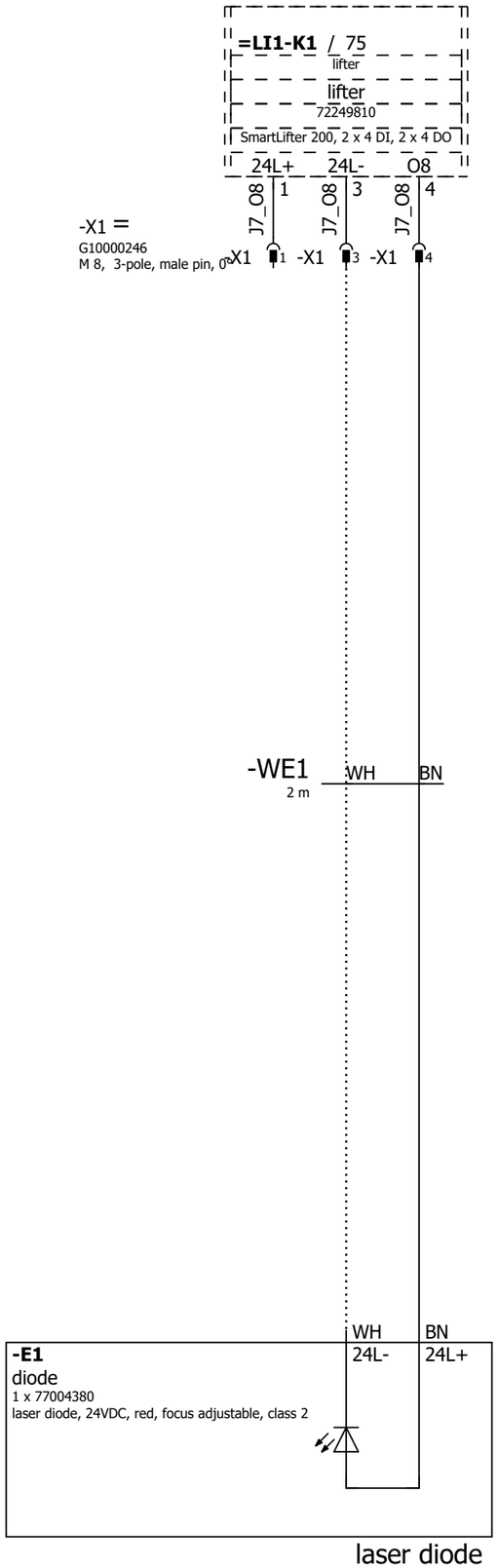
-K2

digital, relay, 2x changeover contact , 125 V AC 2A

	K1		
2	COM	filter fan turn on	+P/99.2
7	NC	filter fan enabling	+P/99.5
	K1		
1	NO	filter fan turn on	+P/99.2
3	NC	=	+P/99.3
	K2		
5	NO	filter fan enabling	+P/99.4
6	COM	=	+P/99.3
	PE		
4	PE		
8	PE		

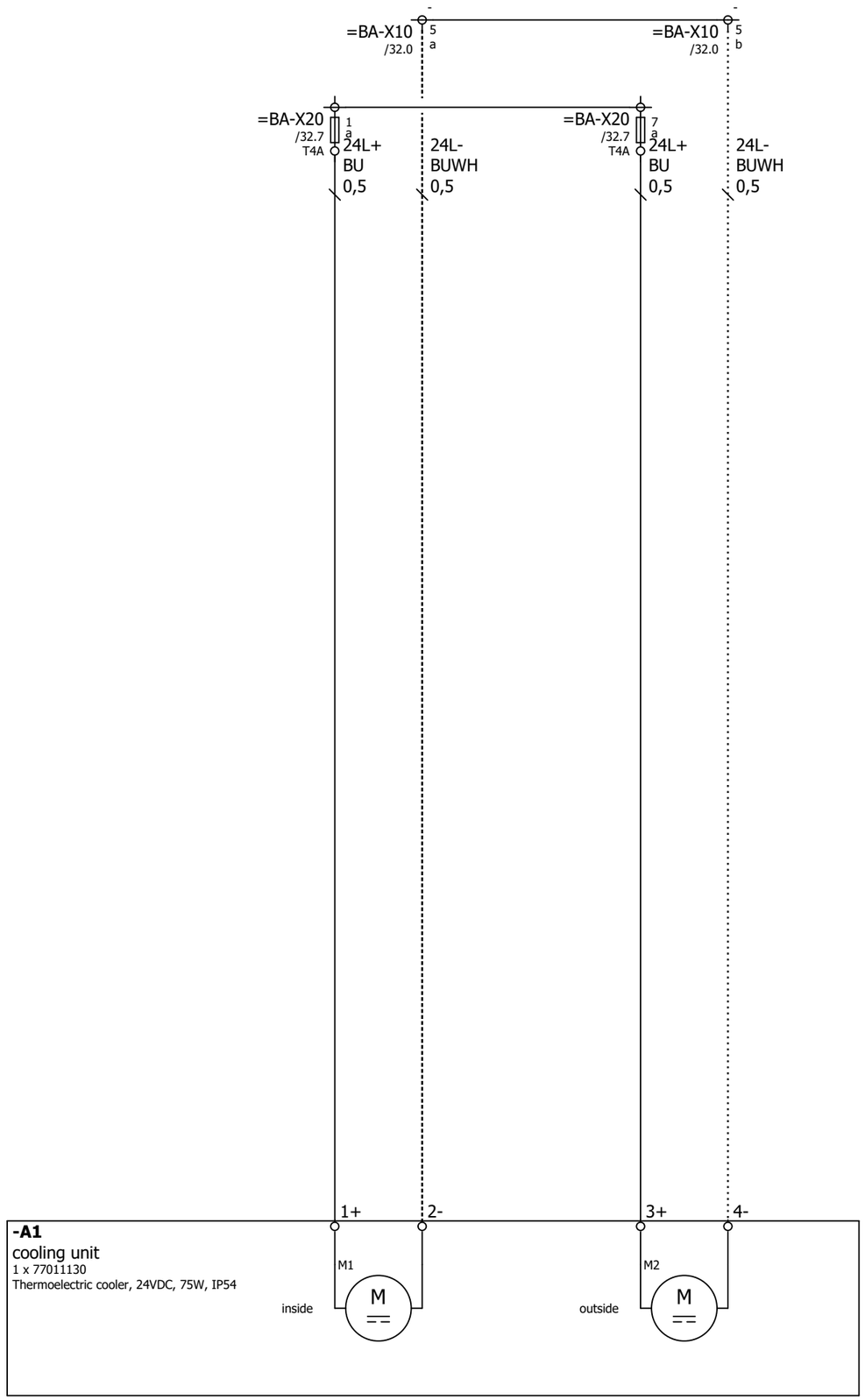


#03	25.03.2021	Thomas.Lehle	Toolbox_31	Option:	Exhausting, Remote control {R.29}	MESSER	external control	module	unit exhaustion
			Toolbox version	customer:	Blocotelha		filter fan switch on		Page
			UE2 - ABI - 29.29.03 - CC: EU	commission:	289001273			sector 3D5P location +P	=UE 99
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				



			Toolbox_31	Option:	L1-Laser Pointer {R.25}	MESSER	laser diode	module	unit pointer
			Toolbox version	customer:	Blocotelha		connection	sector CA2L location +L1	=UP1
			UP1 - ABI - 25.25.00 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

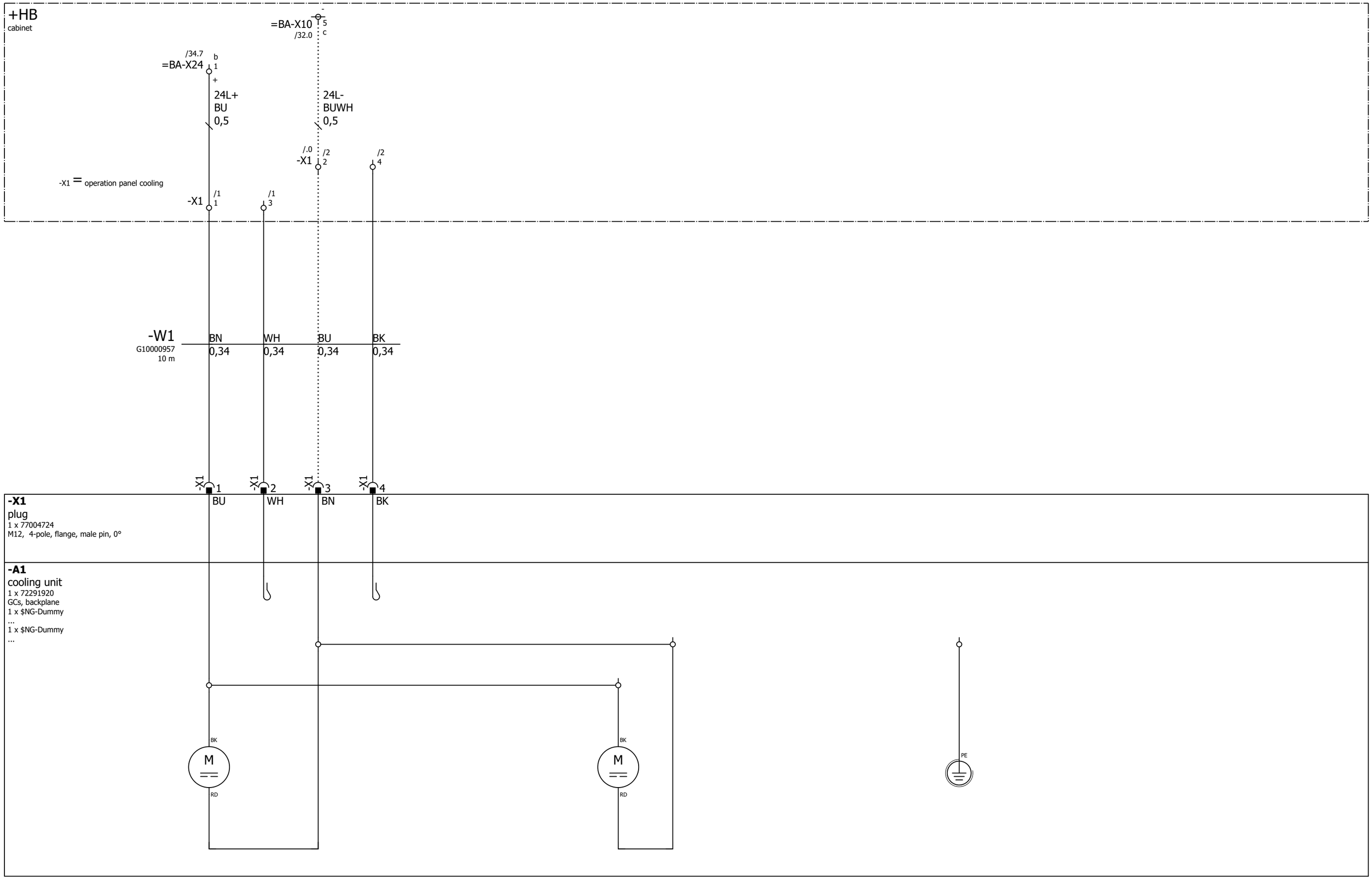
Page 100



operating voltage
power supply 24VDC

			Toolbox_31	Option:	Cabinet cooling, Door, 75W {R.25}	MESSER	cooling cabinet	module	unit temperature
			Toolbox version	customer:	Blocotelha				
			UT1 - ABI - 25.26.00 - CC: EU	commission:	289001273		supply	sector 1C2G location +HB	=UT
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

Page 101



#03	31.03.2021	Thomas.Lehle	Toolbox_31	Option:	GCs fan cooling box {R.31}	MESSER	climatisation	module	unit temperature
01	26.03.2021	Adeline.Wegang	Toolbox version	customer:	Blocotelha		backplane operation panel GCs	sector 3B4E location +E	=UTB
	26.03.2021	Adeline.Wegang	UT5 - ABI - 31.32.00 - CC: EU	commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				

Page 102

CA0078
+HB=3B-W10

MCS* Cable Production

7 m - 16 mm²

M10 - female
+B=3CB-X1
c

Page: 5
cable // FPE, ring, OE-M10, 16mm²

OE -
+HB=3B-X0FPE
a

grounding cabinet //

Cable Plan Formular: =Z6B++111+A/110

77005032
+HB=3B-WH1

0,1 m - 16 mm²

M6 - female
+HB=3B-PE1

Page: 5
ground strap // M6-M6, 0,1 m

M6 - female
+HB=3B-PEM

grounding cabinet //

77005034
+HB=3B-WH2

0,3 m - 16 mm²

M6 - female
+HB=3B-PE2

Page: 5
ground strap // M6-M6, 0,3 m

M6 - female
+HB=3B-PEM

grounding cabinet //

77005035
+HB=3B-WH3

0,6 m - 16 mm²

M6 - female
+HB=3B-PE3

Page: 5
ground strap // M6-M6, 0,6 m

M6 - female
+HB=3B-PEM

grounding cabinet //

CA0078
+HB=3BB-W10

MCS* Cable Production

7 m - 16 mm²

M10 - female
+B=3CB-X1
d

Page: 6
cable // FPE, ring, OE-M10, 16mm²

OE -
+HB=3BB-X0FPE
a

grounding cabinet //

Cable Plan Formular: =Z6B++111+A/111

77005032
+HB=3BB-WH1

0,1 m - 16 mm²

M6 - female
+HB=3BB-PE1

Page: 6
ground strap // M6-M6, 0,1 m

M6 - female
+HB=3BB-PEM

grounding cabinet //

77005034
+HB=3BB-WH2

0,3 m - 16 mm²

M6 - female
+HB=3BB-PE2

Page: 6
ground strap // M6-M6, 0,3 m

M6 - female
+HB=3BB-PEM

grounding cabinet //

77005035
+HB=3BB-WH3

0,6 m - 16 mm²

M6 - female
+HB=3BB-PE3

Page: 6
ground strap // M6-M6, 0,6 m

M6 - female
+HB=3BB-PEM

grounding cabinet //

CA0078
+HP1=3BC-W10

MCS* Cable Production

18 m - 16 mm²

OE -
+HP1=3BC-X0FPE
a

Page: 7
cable // FPE, ring, OE-M10, 16mm²

M10 - female
+T=3C-X1
e

grounding cabinet //

Cable Plan Formular: =Z6B++111+A/112

77005032
+HP1=3BC-WH1

0,1 m - 16 mm²

M6 - female
+HP1=3BC-PE1

Page: 7
ground strap // M6-M6, 0,1 m

M6 - female
+HP1=3BC-PEM

grounding cabinet //

77005034
+HP1=3BC-WH2

0,3 m - 16 mm²

M6 - female
+HP1=3BC-PE2

Page: 7
ground strap // M6-M6, 0,3 m

M6 - female
+HP1=3BC-PEM

grounding cabinet //

77005035
+HP1=3BC-WH3

0,6 m - 16 mm²

M6 - female
+HP1=3BC-PE3

Page: 7
ground strap // M6-M6, 0,6 m

M6 - female
+HP1=3BC-PEM

grounding cabinet //

CA0065
+T=3C-W1

MCS* Cable Production — 14 m - 70 mm²

M10 - female, +T=3C-X1, a — Page: 8 — OE - +PZ=CUSTOMERGND

cable // grounding, PE, ring, OE-M10, 70mm²

grounding bar // grounding bar

Cable Plan Formular: =Z6B++111+A/113

CA0066
+T=3C-W2

MCS* Cable Production — 14 m - 70 mm²

M10 - female, +T=3C-X1, b — Page: 8 — OE - +PZ=CUSTOMERGND

cable // FPE, ring, OE-M10, 70mm²

grounding bar // grounding bar

Cable Plan Formular: =Z6B++111+A/114

CA0061
+T=3C-W12

MCS* Cable Production — 0,2 m - 70 mm²

M10 - female, +T=3C-X1, c — Page: 8 — M10 - female +T=3C-GND

cable // FPE,, ring, M10-M10, 70mm²

grounding bar // grounding bar

Cable Plan Formular: =Z6B++111+A/115

CA0074
+B=3CB-W1

MCS* Cable Production — 0,2 m - 35 mm²

M10 - female, +B=3CB-X1, a — Page: 9 — M8 - female +B=3CB-GND

cable // FPE, ring, M8-M10, 35mm²

grounding bar //

Cable Plan Formular: =Z6B++111+A/116

CA0049
+B=3CB-W2

MCS* Cable Production — 15 m - 50 mm²

M10 - female, +B=3CB-X1, b — Page: 9 — M10 - female +T=3C-X1, d

cable // FPE, ring, M10-M10, 50mm²

grounding bar //

Cable Plan Formular: =Z6B++111+A/117

77005032
+E=3D-W1

0,1 m - 16 mm²

M6 - female, +E=3D-GND — Page: 10 — M6 - female +E=3D-GND

ground strap // M6-M6, 0,1 m

grounding machine // grounding machine

77005032
+G=3D-W1

0,1 m - 16 mm²

M6 - female, +G=3D-GND — Page: 10 — M6 - female +G=3D-GND

ground strap // M6-M6, 0,1 m

grounding machine // grounding machine

77005035
+L1=3E1-W1

0,6 m - 16 mm²

M6 - female, +L1=3E1-GND2-1 — Page: 11 — M6 - female +L1=3E1-GND2-2

ground strap // M6-M6, 0,6 m

grounding elements // grounding Location

CA0079
+L1=3E1-W10

MCS* Cable Production — 8 m - 16 mm²

M10 - female, +B=3CB-X1, e — Page: 11 — M6 - female +L1=3E1-GND

cable // FPE, ring, M6-M10, 16mm²

grounding elements // grounding Location

Cable Plan Formular: =Z6B++111+A/118

G10000911
+HB=AA-W0

25 m - 4 mm²

OE - +HB=AA-X0 — Page: 19 — OE - +PZ=AA-X1 PE

cable sold by meter // PVC, 5x 4, PE, CY

AC power supply cabinet // AC operating voltage

Cable Plan Formular: =Z6B++111+A/119

G10000797
+HP1=AAB-W1

30 m - 2 mm²

G10000423 // shield clamp, strain relief, DIN rail, 8-11

OE - +HB=AAB-W1 — Page: 22 — OE - +HP1=AAB-X0

cable sold by meter // PVC, 3x 2,5, PE, CY

AC power supply cabinet // feed-in

Cable Plan Formular: =Z6B++111+A/120

CA0092
+B=BI-W1

MCS* Cable Production — 6 m - 2 mm²

OE - +HB=BI-X1 — Page: 43 — 7/8 - female +B=BI-K1 X1

cable // power line 7/8", 5-core

DC power supply interface // EP power - distributor

Cable Plan Formular: =Z6B++111+A/121

77005809
+B=BI-W9

10 m - 0 mm²

RJ45 - male	Page: 43	M8 - male
+E=OB-X29	cable network // EtherCAT, M8-RJ45, 10m	+B=BI-K1 L/A

DC power supply interface // EP power - distributor

77005809
+HB=CXXA-W9

10 m - 0 mm²

	Page: 46	
	cable network // EtherCAT, M8-RJ45, 10m	

controller X,Xa // AX5206 <axis>

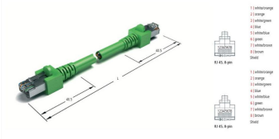
77005033
+HB=CXXA-WH

0,2 m - 16 mm²

	Page: 46	
	ground strap // M6-M6, 0,2 m	

controller X,Xa // AX5206 <axis>

G10000209
+HB=CY1-W9



0,25 m - 0 mm²

RJ45 - male	Page: 49	RJ45 - male
+HB=CY1-K1 X04	cable network // EtherCAT, RJ45-RJ45, 0,25m	+HB=CXXa-K1 X05

controller Y1 // AX5103 <axis>

77005033
+HB=CY1-WH

0,2 m - 16 mm²

M6 - female	Page: 49	M6 - female
+HB=CY1-GND	ground strap // M6-M6, 0,2 m	+HB=CY1-K1 GND

controller Y1 // AX5103 <axis>

+L1=DC1-W1

2 m

	Page: 51	
	potted line end	

detection collision // torch magnetic holder

+L1=DC1B-WB1

2 m

+L1=DC1B-B1	Page: 52	+L1=DC1B-X1
	potted line end	

detection collision // torch dig switch tactile

Cable Plan Formular: =Z6B++111+A/122

G10000458
+L1=DL1-W1

15 m - 0 mm²

OE -	Page: 53	M12 - female
+HB=DL1-W1	cable // OE-M12, 5-pole, socket, 15m	+L1=DL1-B1

detection limiting // limiting Y+

Cable Plan Formular: =Z6B++111+A/123

G10000458
+L1=DL1B-W1

15 m - 0 mm²

OE -	Page: 54	M12 - female
+HB=DL1B-W1	cable // OE-M12, 5-pole, socket, 15m	+L1=DL1B-B1

detection limiting // limit Y-

Cable Plan Formular: =Z6B++111+A/124

CA0004
+G=EA-W1

MCS* Cable Production

3 m - 0 mm²

OE -	Page: 55	M12 - female
+HB=EA-W1	cable // OE-M12, 5-core	+HB=IT-K2

emergency stop additions // emergency stop

Cable Plan Formular: =Z6B++111+A/125

77002538
+HP1=EIB-W1

30 m - 0 mm²

OE -	Page: 60	OE -
+HB=EIB-W1	cable sold by meter // PVC, 7x 0,5,PE, CY	+HP1=EIB-X1

emergency stop interface // cabinet external

Cable Plan Formular: =Z6B++111+A/126

77003737
+E=ELC-W1

7,5 m - 0,34 mm²

M12 - female	Page: 61	
+E=ELC-X1	cable // M12-M12, 4-pole, 7,5m	+HB=IT-K5

Not-Halt Reißleine // Reißleine vorne

77003736
+E=ELC-W2

3 m - 0,34 mm²

M12 - female		M12 - male
+E=ELC-B1	Page: 61 cable //	+E=ELC-X2

Not-Halt Reißleine // Reißleine vorne

77003737
+E=ELD-W1

7,5 m - 0,34 mm²

M12 - female		
+E=ELD-X1	Page: 62 cable // M12-M12, 4-pole, 7,5m	+HB=IT-K5

Not-Halt Reißleine // Reißleine hinten

77003736
+E=ELD-W2

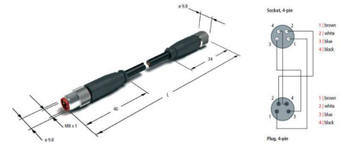
3 m - 0,34 mm²

M12 - female		M12 - male
+E=ELD-B1	Page: 62 cable //	+E=ELD-X2

Not-Halt Reißleine // Reißleine hinten

G10000124
+B=IB-W1

0,3 m - 0 mm²



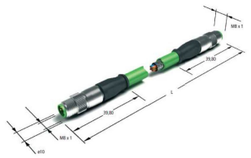
Power cable | **M8 plug, straight, 4-pin – M8 socket, straight , 4-pin**

M8 - male		M8 - female
+B=BI-K1 1	Page: 66 cable // power line, M8-M8, 0,3m	+B=IB-K1 24V IN

interface box // Fieldbus star hub

77011322
+B=IB-W9

0,3 m - 0 mm²

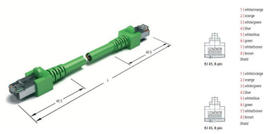


M8 - male		M8 - male
+B=IB-K1 L/A	Page: 66 cable network // EtherCAT, M8-M8, 0,3m	+B=BI-K1 L/A

interface box // Fieldbus star hub

G10000253
+HB=IT-W9

2 m - 0 mm²



Industrial Ethernet/EtherCAt patch cable

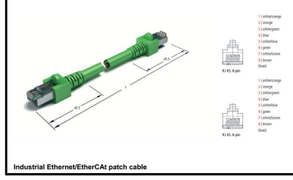
RJ45 - male		RJ45 - male
+HB=IT-K1 X1	Page: 67 cable network // EtherCAT, RJ45-RJ45, 2m	+HB=CY1-K1 X05

interface terminal // bus coupler

77004661
+HP1=ITB-W9

30 m - 0 mm²

77005037 // cable protection conduit M20 divisible



Industrial Ethernet/EtherCAt patch cable

RJ45 - male		RJ45 - male
+HP1=ITB-K1 X1	Page: 72 cable network // EtherCAT, RJ45-RJ45, 30 m	+HB=IT-K1 X2

interface terminal // bus coupler

CA0000
+L1=LI1-W1

MCS® Cable Production

10 m - 1 mm²

OE -		M22 - female
+HB=LI1-W1	Page: 75 cable // OE-M22, 4-core	+L1=LI1-K1 J5

lifter // SL 200

Cable Plan Formular: =Z6B++111+A/127

G10000458
+L1=LI1-W2

15 m - 0 mm²

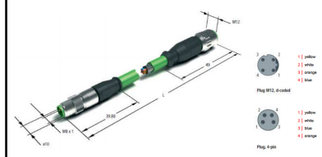
OE -		M12 - female
+HB=LI1-W2	Page: 75 cable // OE-M12, 5-pole, socket, 15m	+L1=LI1-K1 J3

lifter // SL 200

Cable Plan Formular: =Z6B++111+A/128

G10000243
+L1=LI1-W9

10 m - 0 mm²



EtherCAT cable | **M8 plug, straight, 4-pin – M12 plug, straight, 4-pin**

M8 - male		M12 - male
+B=IB-K1 X2	Page: 75 cable network // EtherCAT, M8-M12, 10m	+L1=LI1-K1 J1

lifter // SL 200

77070866
+E=MX-W1

8 m - 1 mm²

M23 - female		X13+X14 - female
+E=MX-M1	Page: 76 cable motor // motor, AMxxxx, OCT, 1,0+0,75+0,32, 8m	+HB=CXXa-K1 X13

motor X // AM8531 OCT X

77005033
+E=MX-W10

0,2 m - 16 mm²

M6 - female		M6 - female
+E=MX-GND	Page: 76 ground strap // M6-M6, 0,2 m	+E=MX-M1

motor X // AM8531 OCT X

77070866
+G=MXa-W1

8 m - 1 mm²

M23 - female		X13+X14 - female
+G=MXa-M1	Page: 77 cable motor // motor, AMxxxx, OCT, 1,0+0,75+0,32, 8m	+HB=CXXa-K1 X23

motor Xa // AM8531 OCT Xa

77005033
+G=MXa-W10

0,2 m - 16 mm²

M6 - female		M6 - female
+G=MXa-GND	Page: 77 ground strap // M6-M6, 0,2 m	+G=MXa-M1

motor Xa // AM8531 OCT Xa

77070867
+L1=MY1-W1

10 m - 1 mm²

X13+X14 - female		M23 - female
+HB=CY1-K1 X13	Page: 78 cable motor // motor, AMxxxx, OCT, 1,0+0,75+0,32, 10m	+L1=MY1-M1

motor Y1 // AM8531 OCT Y1

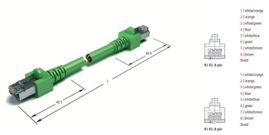
77005033
+L1=MY1-W10

0,2 m - 16 mm²

M6 - female		M6 - female
+L1=MY1-GND	Page: 78 ground strap // M6-M6, 0,2 m	+L1=MY1-M1

motor Y1 // AM8531 OCT Y1

77004661
+P=NC-W1



30 m - 0 mm²

RJ45 - male		RJ45 - male
+E=OP-X17	Page: 79 cable network // EtherCAT, RJ45-RJ45, 30 m	+P=NC-A1

network connectivity // network

77005037
+P=NC-W1.1

30 m - 20 mm²

HM20 - female		HM20 - female
+E=OP-1	Page: 79 cable accessory // cable protection conduit M20 divisible	+P=NC-1

network connectivity // network

G10000074
+E=OB-W9

0,5 m - 0 mm²

RJPP - male		RJPP - male
+E=OP-P1 X104	Page: 81 cable network // EtherCAT, RJPP-RJPP, 0,5m	+E=OB-S1 X101

operation panel Keyboard // hand wheel - Joystick

CA0167
+E=OB-W10

MCS* Cable Production

0,3 m - 4 mm²

M6 - female		M6 - female
+E=OB-GND	Page: 81 cable // grounding, PE, ring, M6- M6, 4mm²	+E=OB-S1 PE

operation panel Keyboard // hand wheel - Joystick

Cable Plan Formular: =Z6B++111+A/129

77005783
+E=OB-W29

3 m - 0 mm²

RJ45 - male		RJPP - male
+E=OB-X29	Page: 81 cable network // EtherCAT, RJPP-RJ45, 3m	+E=OB-S1 X102

operation panel Keyboard // hand wheel - Joystick

77004829
+E=OP-W1

10 m - 0 mm²

M23 - female		OE -
+HB=OP-W1	Page: 84 cable // OE-M23, 19-pole, socket (plug female), 10m	+E=OB-S1 X103

operation panel // Operation interface

Cable Plan Formular: =Z6B++111+A/130

CA0006
+E=OP-W2

MCS* Cable Production

0,6 m - 0 mm²

M23 - male		M23 - female
+E=OB-S1 X104	Page: 84 cable // M23-M23, 16+5-core	+E=OP-P1 XS01

operation panel // Operation interface

Cable Plan Formular: =Z6B++111+A/131

CA0079
+E=OP-W10

MCS* Cable Production

8 m - 16 mm²

M10 - female		M6 - female
+B=3CB-X1 f	Page: 84 cable // FPE, ring, M6-M10, 16mm²	+E=OP-P1 PE

operation panel // Operation interface

Cable Plan Formular: =Z6B++111+A/132

77005783
+E=OP-W17

3 m - 0 mm²

RJ45 - male		RJPP - male
+E=OP-X17	Page: 83 cable network // EtherCAT, RJPP-RJ45, 3m	+E=OP-P1 X106

operation panel // Operation interface

77005783
+E=OP-W18

3 m - 0 mm²

RJ45 - male		RJPP - male
+E=OP-X18	Page: 83 cable network // EtherCAT, RJPP-RJ45, 3m	+E=OP-P1 X105

operation panel // Operation interface

77002882
+HJ1=PA1-W0

5 m - 35 mm²

OE -		OE -
+HJ1=PA1-XPE	Page: 87 cable sold by meter // PVC, 4x35, PE, CY	+P=PS1-E1 TB1

plasma power switch box // XPR 170

Cable Plan Formular: =Z6B++111+A/133

77002882
+HJ1=PA1-W00

8 m - 35 mm²

OE -		OE -
+HJ1=PA1-XPE	Page: 87 cable sold by meter // PVC, 4x35, PE, CY	+PZ=PA1-F0

plasma power switch box // XPR 170

Cable Plan Formular: =Z6B++111+A/134

0571423
+HJ1=PA1-W1

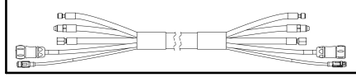
9 m - 1 mm²

OE -		OE -
+HJ1=PA1-X1	Page: 87 cable sold by meter // PVC, 5x 1,5, PE, CY	+HP1=PA1-X1

plasma power switch box // XPR 170

Cable Plan Formular: =Z6B++111+A/135

72424337
+L1=PB1-W1

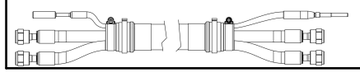


7,5 m - 0 mm²

$XPR300SGB - female		$XPR300SGB - female
+E=PG1-E1 J2	Page: 89 plasma connection // HYP, Set gas console[Core], 3x connection, 7,5m	+L1=PB1-E1 J1

plasma torch connection unit // type EasyConnect

72424334
+L1=PB1-W2



7,5 m - 0 mm²

$XPR300SGB - female		$XPR300SGB - female
+E=PG1-E1 OUT2	Page: 89 plasma connection // HYP, Set gas console[Core], 3x connection, 7,5m	+L1=PB1-E1 IN

plasma torch connection unit // type EasyConnect

CA0085
+L1=PB1-W10

MCS* Cable Production

19 m - 35 mm²

M10 - female +T=3C-X1 f		M6 - female
	Page: 89 cable // FPE, ring, M6-M10, 35mm²	+L1=PB1-E1 GND

plasma torch connection unit // type EasyConnect

72424307
+E=PG1-W1

25 m - 0 mm²

	Page: 91 plasma connection // HYP, power cord, gas console, 25m	

plasma gas console // type core

72424329
+E=PG1-W2

25 m - 0 mm²

	Page: 91 plasma connection // HYP, control cable, D-Sub, 25m	

plasma gas console // type core

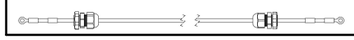
72424318
+E=PG1-W3

25 m - 0 mm²

	Page: 92 hose gas // hose, Set, coolant, 25m	

plasma gas console // type core

72424285
+E=PG1-W4



25 m - 0 mm²

	Page: 92 plasma connection // HYP, pilot arc line, 25m	

plasma gas console // type core

72424710
+E=PG1-W5

25 m - 50 mm²

Page: 92
plasma connection // HYP, negative lead, strain relief, 10m

plasma gas console // type core

CA0085
+E=PG1-W10

MCS* Cable Production

5 m - 35 mm²

M10 - female
+B=3CB-X1
g

Page: 91
cable // FPE, ring, M6-M10, 35mm²

M6 - female
+E=PG1-E1 GND

plasma gas console // type core

0551042
+P=PS1-W2

5 m - 1 mm²

OE -
+HP1=PS1-W2

Page: 95
cable sold by meter // PVC, 3x 1, PE, CY

OE -
+P=PS1-E1 J14

plasma source // type XPR 170

Cable Plan Formular: =Z6B++111+A/136

72424347
+P=PS1-W9

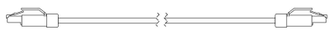
6 m - 0 mm²

RJ45 - male
+HP1=PS1-K3 X1

Page: 95
plasma connection // HYP, EtherCAT, RJ45-RJ45, 6m

RJ45 - male
+P=PS1-E1 U47

plasma source // type XPR 170



CA0086
+P=PS1-W10

MCS* Cable Production

20 m - 50 mm²

M10 - female
+T=3C-X1
g

Page: 95
cable // FPE, ring, M6-M10, 50mm²

M6 - female
+P=PS1-E1 GND

plasma source // type XPR 170

Cable Plan Formular: =Z6B++111+A/137

72424720
+P=PS1-W11

20 m - 50 mm²

XPR170WL - female
+P=PS1-E1 J2.1

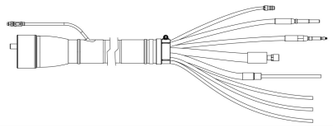
Page: 95
plasma // workpiece cable, 50mm², 15m

M10 - female
+T=PS1-GND

plasma source // type XPR 170

72424391
+L1=PT1-W1

2 m - 0 mm²



$XPR300TL - female
+L1=PB1-E1 J2

Page: 96
plasma torch // HYP, machine torch, hose package, 2m

$XPR300TL - female
+L1=PT1-E1 Torch

plasma torch // type XPR 300 torch

CA0067
+L1=PT1-W2

MCS* Cable Production

2 m - 4 mm²

FS6,3 - female
+L1=PT1-E1 GND

Page: 96
cable // M6-POC, 1-core, ring-socket

M6 - female
+L1=PT1-GND

plasma torch // type XPR 300 torch

Cable Plan Formular: =Z6B++111+A/138

77070094
+P=SP-W1

8 m - 0 mm²

OE -
+HP1=SP-W1

Page: 97
cable sold by meter // PVC, 3x 0,5, PE, CY

OE -
+P=SP-X1

sensor pressure // differential pressure monitor

Cable Plan Formular: =Z6B++111+A/139

77070033
+P=UE-W1

8 m - 0 mm²

OE -
+HP1=UE-W1

Page: 99
cable sold by meter // PVC, 5x 0,75, PE, CY

OE -
+P=UE-PE1

unit exhaustion // external control

Cable Plan Formular: =Z6B++111+A/140

+L1=UP1-WE1

2 m

+L1=UP1-X1
J7_O8:3

Page: 100
potted line end

+L1=UP1-E1

unit pointer // laser diode

Cable Plan Formular: =Z6B++111+A/141

G10000957
+E=UTB-W1

10 m - 0 mm²

OE -
+HB=UTB-X1

Page: 102
cable // OE-M12, 5-polig, Buchse, 10m

M12 - female
+E=UTB-X1 -X1

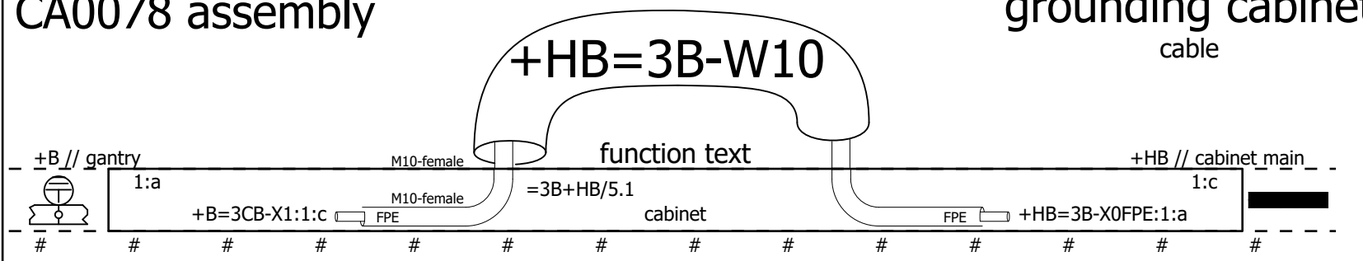
unit temperature // climatisation

Cable Plan Formular: =Z6B++111+A/142

CA0078 assembly

grounding cabinet

cable



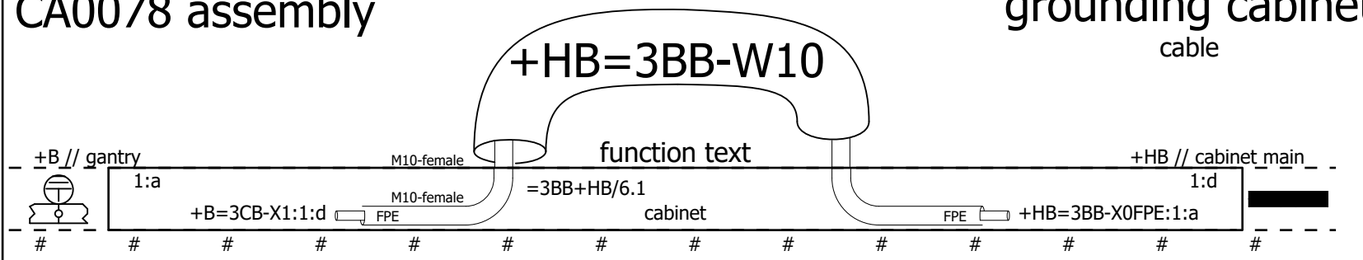
description: FPE, ring, OE-M10, 16mm²
number of cores:
cross section 16 mm²
length: 7 m

Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x16	77070130	A
1	cable accessory cable lug, M10, 16mm²	556027	

CA0078 assembly

grounding cabinet

cable



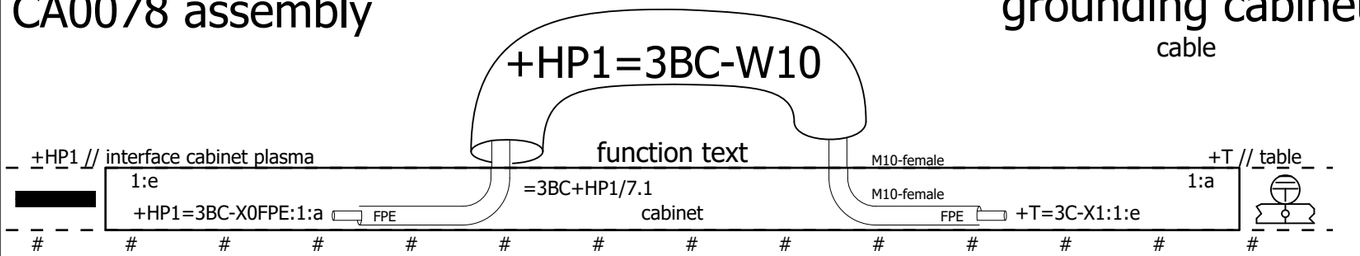
description: FPE, ring, OE-M10, 16mm²
number of cores:
cross section 16 mm²
length: 7 m

Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x16	77070130	A
1	cable accessory cable lug, M10, 16mm²	556027	

CA0078 assembly

grounding cabinet

cable



description: FPE, ring, OE-M10, 16mm²
number of cores:
cross section 16 mm²
length: 18 m

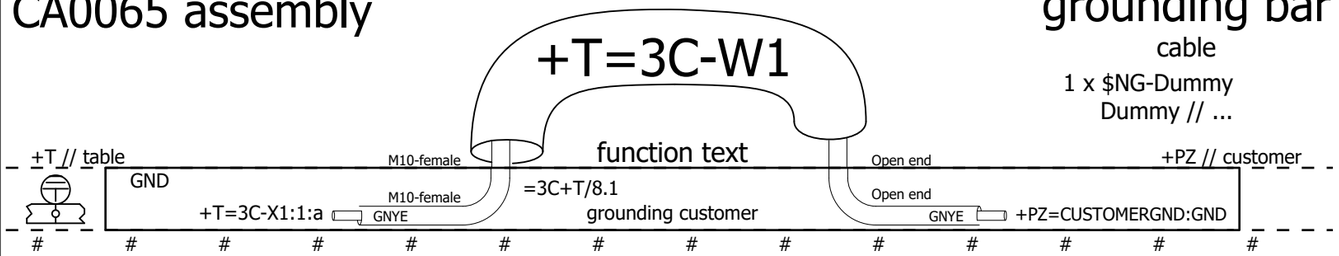
Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x16	77070130	A
1	cable accessory cable lug, M10, 16mm²	556027	

CA0065 assembly

grounding bar

cable

1 x $NG-Dummy
Dummy // ...



description: grounding, PE, ring, OE-M10, 70mm²
number of cores:
cross section 70 mm²
length: 14 m

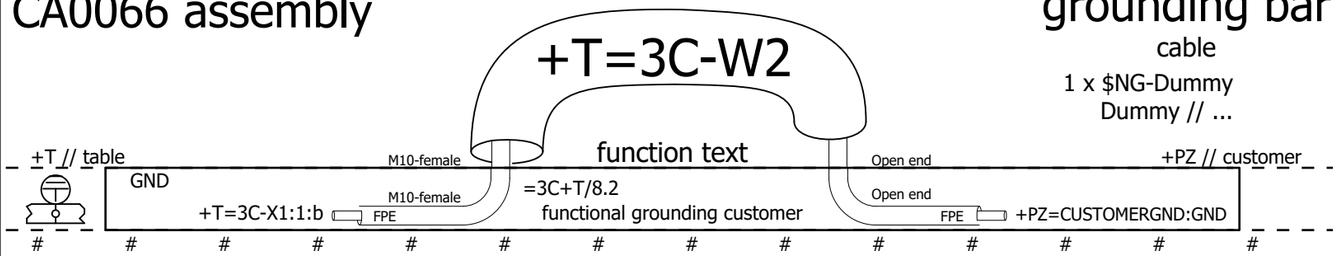
Quantity	Designation	Part number	
	cable sold by meter PVC, 1x70, PE	0551080 grounding customer	A
1	cable accessory cable lug, M10, 70mm²	556084 =	

CA0066 assembly

grounding bar

cable

1 x $NG-Dummy
Dummy // ...



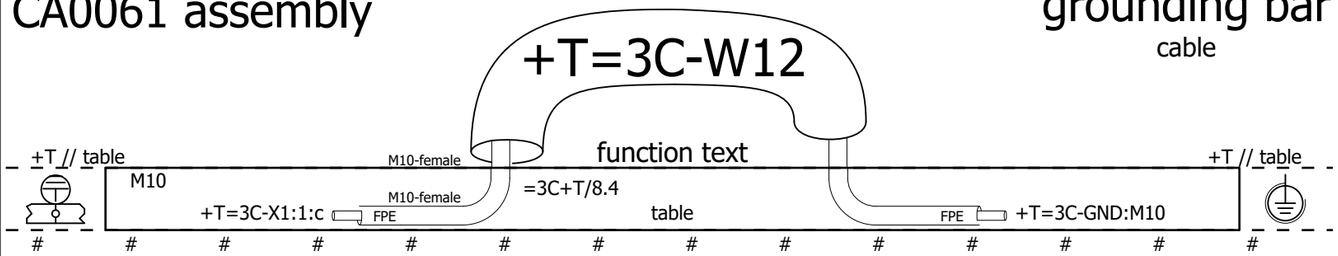
description: FPE, ring, OE-M10, 70mm²
number of cores:
cross section 70 mm²
length: 14 m

Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x70	77005939 functional grounding customer	A
1	cable accessory cable lug, M10, 70mm²	556084 =	

CA0061 assembly

grounding bar

cable



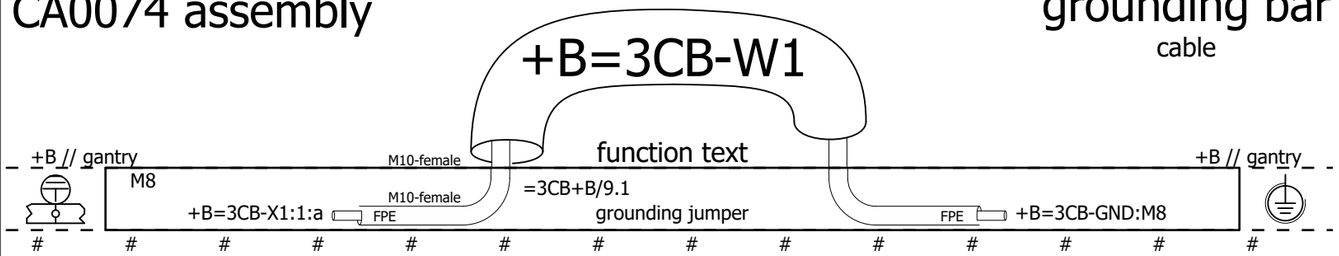
description: FPE,, ring, M10-M10, 70mm²
number of cores:
cross section 70 mm²
length: 0,2 m

Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x70	77005939 grounding table	A – – – – – – B
1	cable accessory cable lug, M10, 70mm²	556084 =	
1	cable accessory cable lug, M10, 70mm²	556084 =	

CA0074 assembly

grounding bar

cable



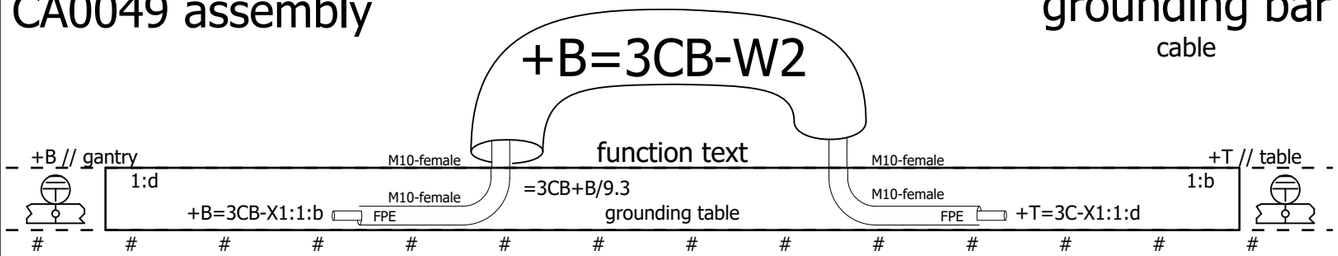
description: FPE, ring, M8-M10, 35mm²
number of cores:
cross section 35 mm²
length: 0,2 m

Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x35	77005938 grounding jumper	A B
Stück 1	cable accessory cable lug, M8, 35mm²	556080 =	
Stück 1	cable accessory cable lug, M10, 35mm²	G10000648 =	

CA0049 assembly

grounding bar

cable



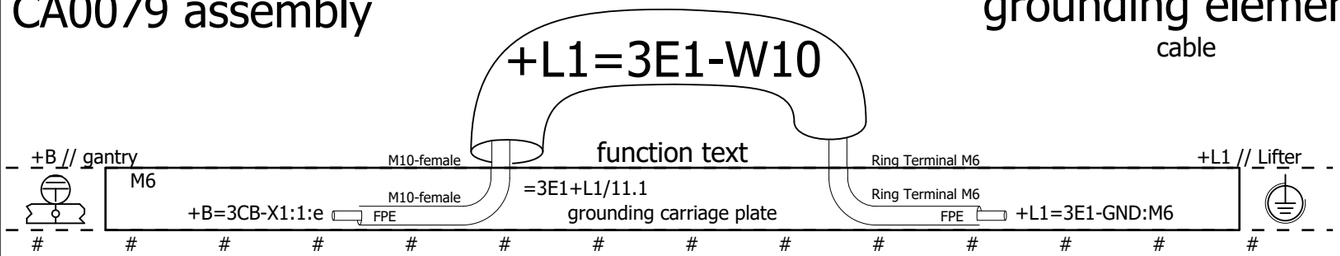
description: FPE, ring, M10-M10, 50mm²
number of cores:
cross section 50 mm²
length: 15 m

Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x50	G10000792 grounding table	A B
1	cable accessory cable lug, M10, 50mm²	556083 =	
1	cable accessory cable lug, M10, 50mm²	556083 =	

CA0079 assembly

grounding elements

cable



description: FPE, ring, M6-M10, 16mm²
number of cores:
cross section 16 mm²
length: 8 m

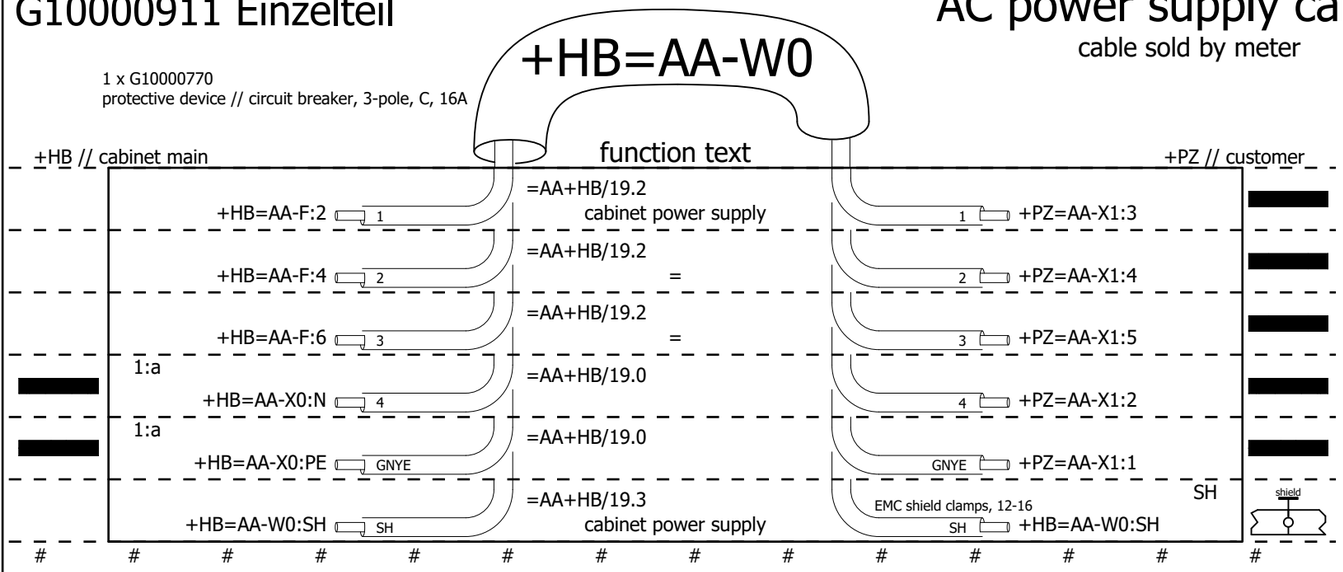
Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x16	77070130 grounding carriage plate	A B
1	cable accessory cable lug, M6, 16mm²	556018 =	
1	cable accessory cable lug, M10, 16mm²	556027 =	

G10000911 Einzelteil

AC power supply cabinet

cable sold by meter

description: PVC, 5x 4, PE, CY
number of cores: 5
cross section 4 mm²
length: 25 m

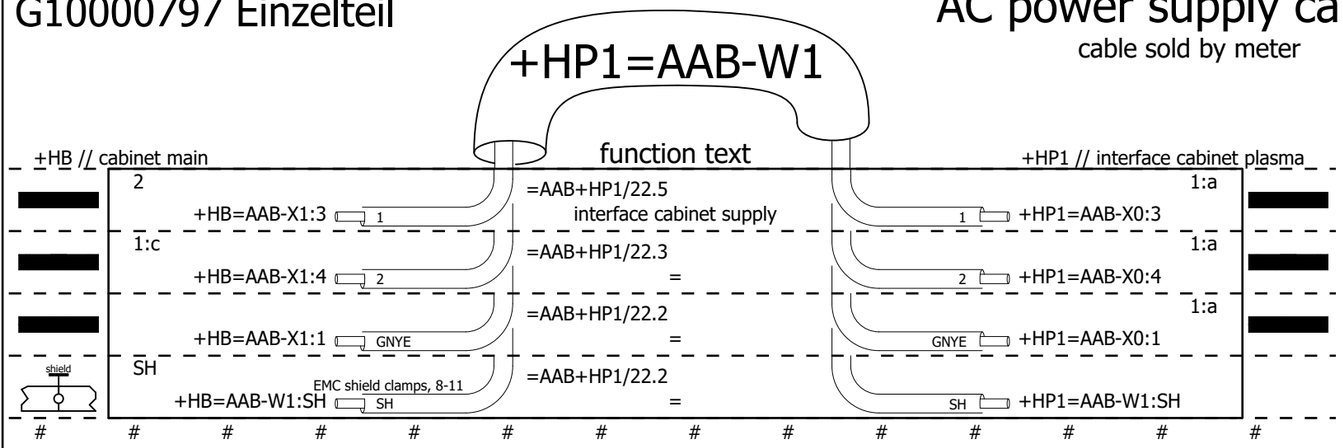


			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			119
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

G10000797 Einzelteil

AC power supply cabinet

cable sold by meter



description: PVC, 3x 2,5, PE, CY
number of cores: 3
cross section 2 mm²
length: 30 m

Add-on: cable accessory: G10000423
Schirmklammer, Zugentlastung, Hutschienen, 8-11

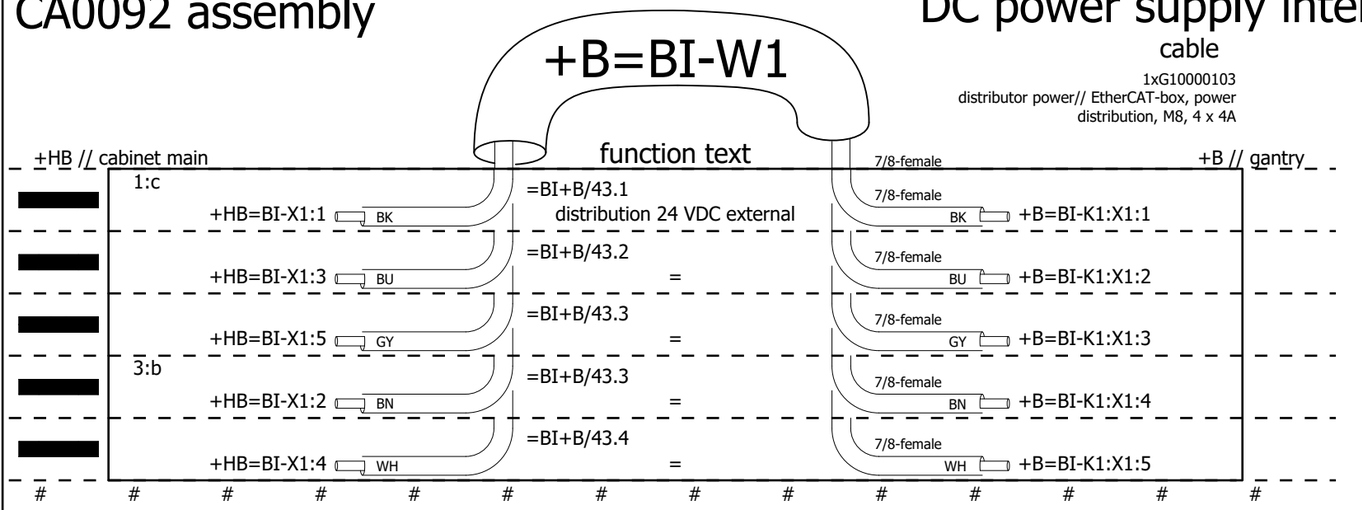
CA0092 assembly

DC power supply interface

cable

1xG10000103
distributor power// EtherCAT-box, power distribution, M8, 4 x 4A

description: power line 7/8", 5-core
number of cores:
cross section 2 mm²
length: 6 m

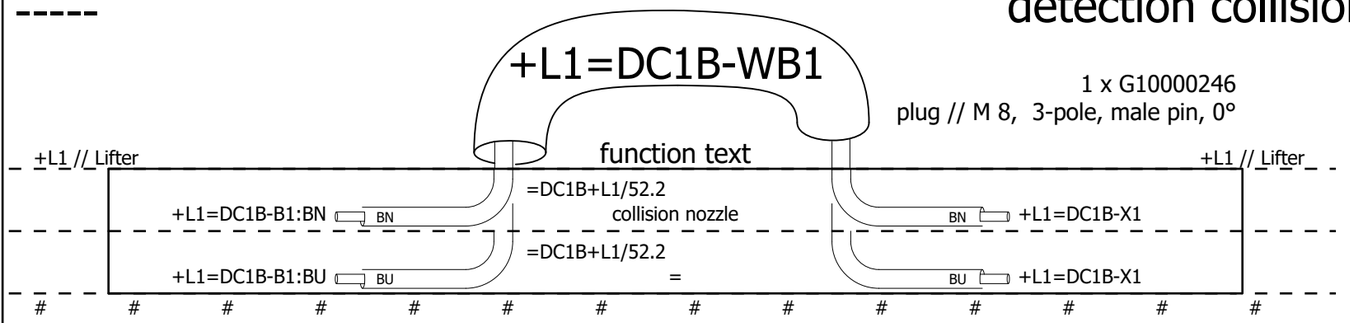


Quantity	Designation	Part number	
1	cable OE-7/8", socket, 5 x 2,5, 10m	77011391 distribution 24 VDC external	

---

detection collision

description:
number of cores:
cross section
length: 2 m



G10000458 Einzelteil

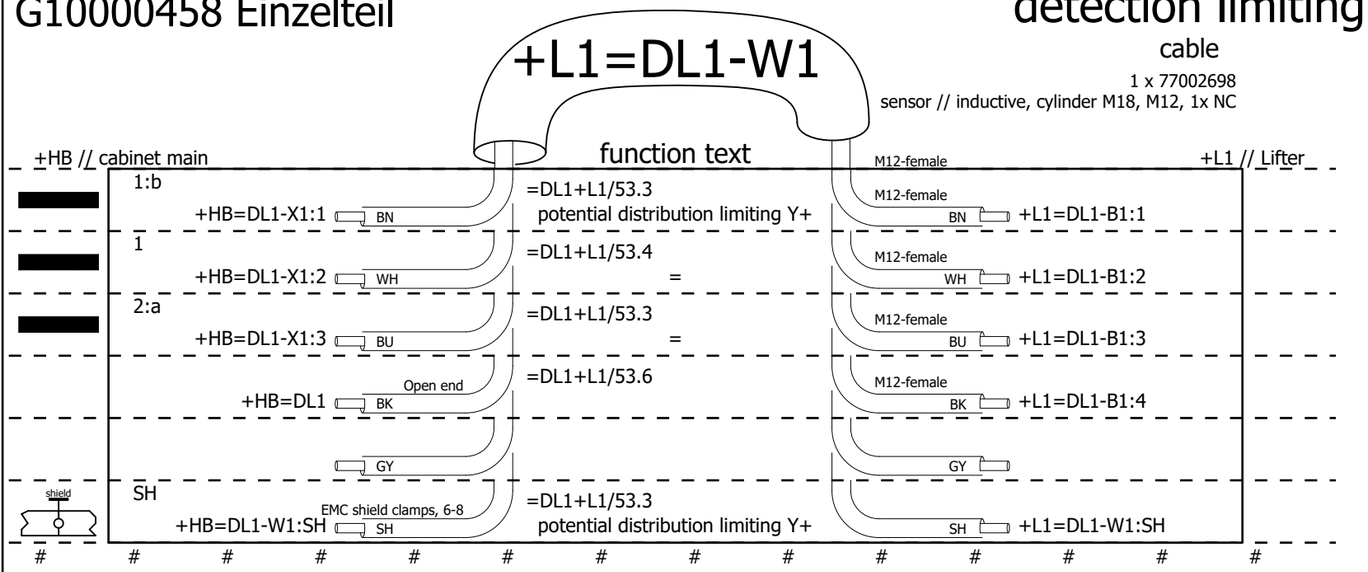
detection limiting

cable

1 x 77002698

sensor // inductive, cylinder M18, M12, 1x NC

description: OE-M12, 5-pole, socket, 15m
number of cores: 5
cross section 0 mm²
length: 15 m



			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			123
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

G10000458 Einzelteil

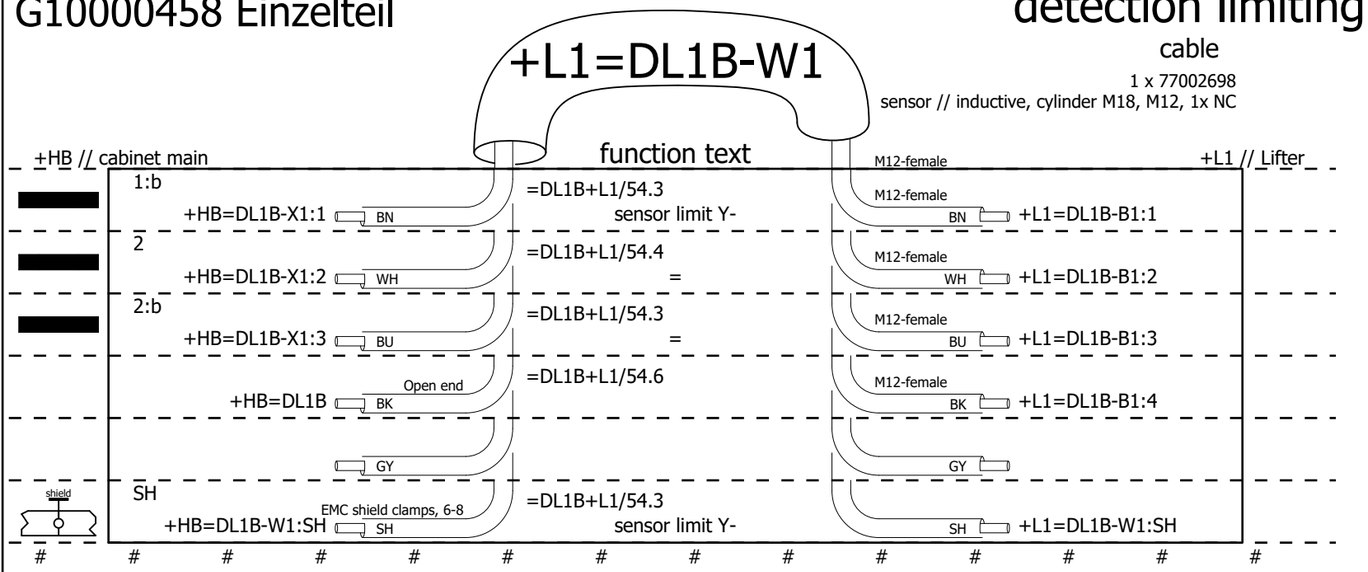
detection limiting

cable

1 x 77002698

sensor // inductive, cylinder M18, M12, 1x NC

description: OE-M12, 5-pole, socket, 15m
number of cores: 5
cross section 0 mm²
length: 15 m



			Toolbox_31	Option:			module	Page
			Toolbox version	customer:	Blocotelha	connection plan		124
			automated	commission:	289001273		sector 111 location +A =Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021			

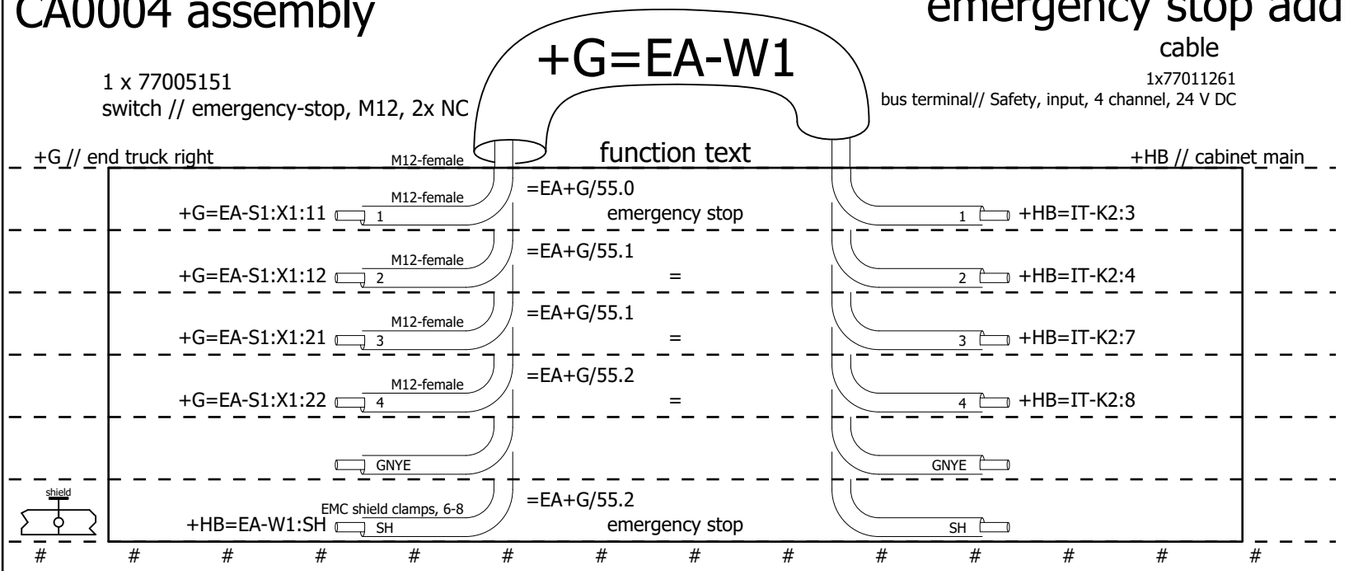
CA0004 assembly

emergency stop additions

cable

1x77011261
bus terminal// Safety, input, 4 channel, 24 V DC

1 x 77005151
switch // emergency-stop, M12, 2x NC



description: OE-M12, 5-core
number of cores:
cross section 0 mm²
length: 3 m

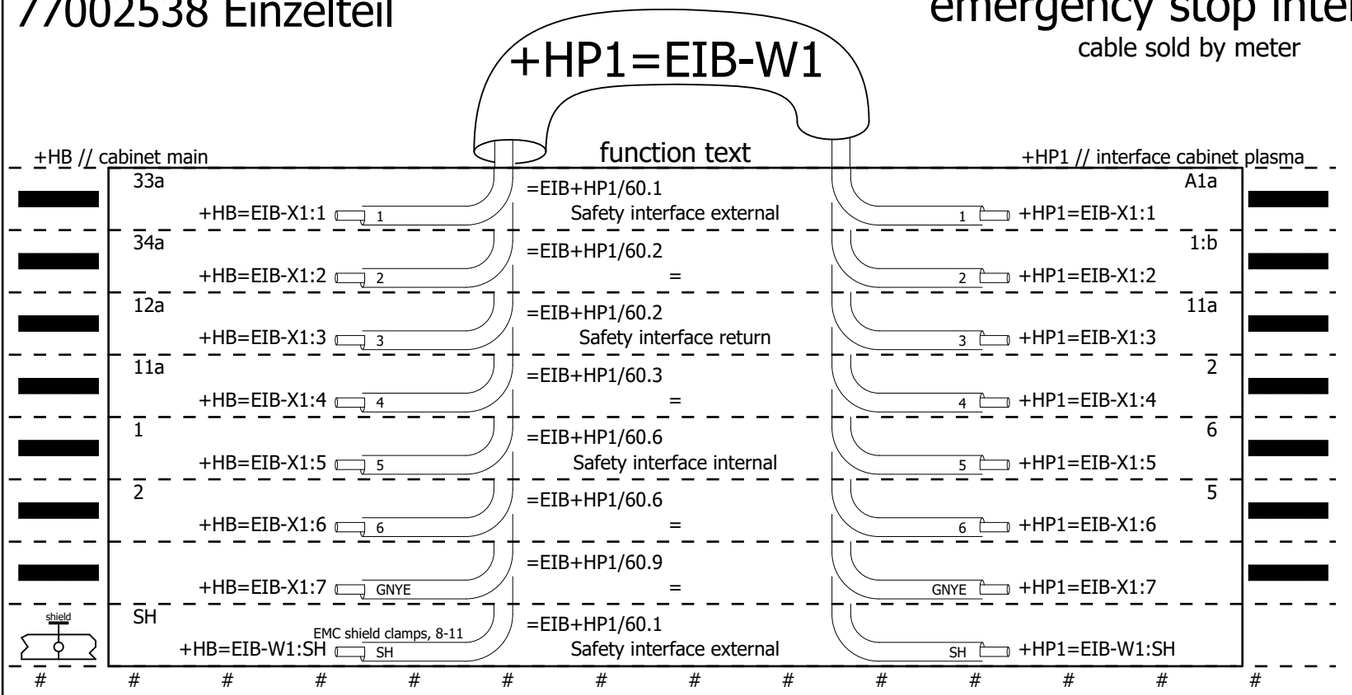
Quantity	Designation	Part number	
	cable sold by meter PVC, 5x 0,75, PE, CY	77070033 emergency stop	A
Stück 1	plug M12, 5-pole, socket, 90°	77005997 =	

77002538 Einzelteil

emergency stop interface

cable sold by meter

description: PVC, 7x 0,5,PE, CY
number of cores: 7
cross section 0 mm²
length: 30 m



			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			126
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

CA0000 assembly

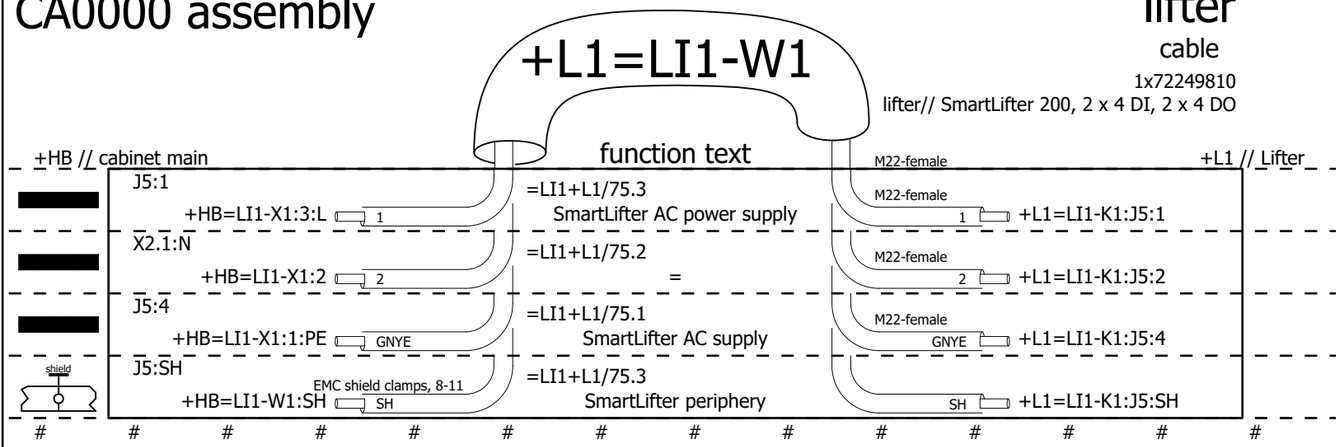
lifter

cable

1x72249810

lifter// SmartLifter 200, 2 x 4 DI, 2 x 4 DO

description: OE-M22, 4-core
number of cores:
cross section 1 mm²
length: 10 m



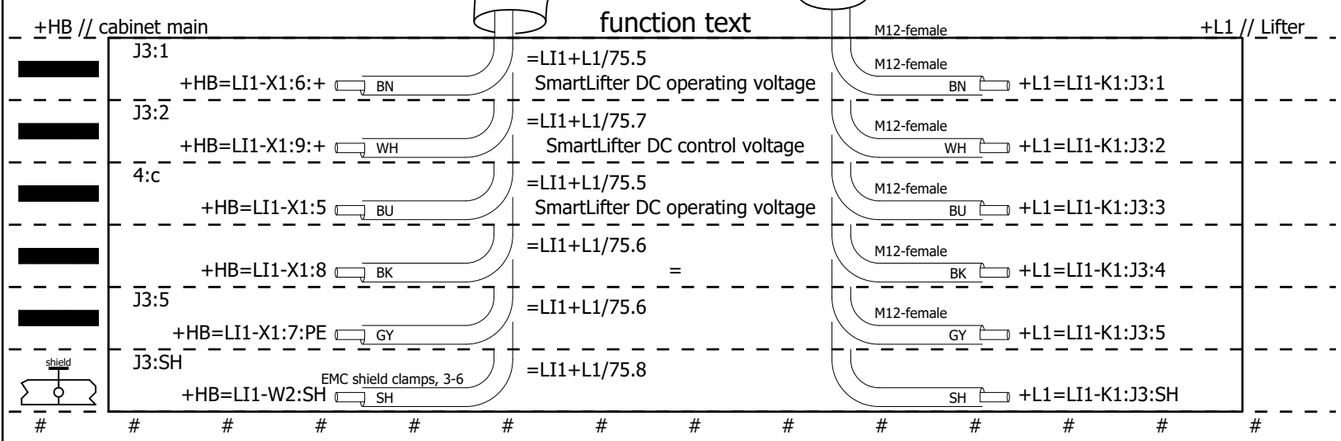
Quantity	Designation	Part number	
	cable sold by meter PVC, 3x 1, PE, CY	0551042 SmartLifter AC supply	A
Stück 1	plug M22, 4-pole, socket, 0°	77070191 =	

G10000458 Einzelteil

+L1=LI1-W2

lifter
cable
1x72249810
lifter// SmartLifter 200, 2 x 4 DI, 2 x 4 DO

description: OE-M12, 5-pole, socket, 15m
number of cores: 5
cross section 0 mm²
length: 15 m



			Toolbox_31	Option:			module	Page
			Toolbox version	customer:	Blocotelha	connection plan		128
			automated	commission:	289001273		sector 111 location +A =Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021			

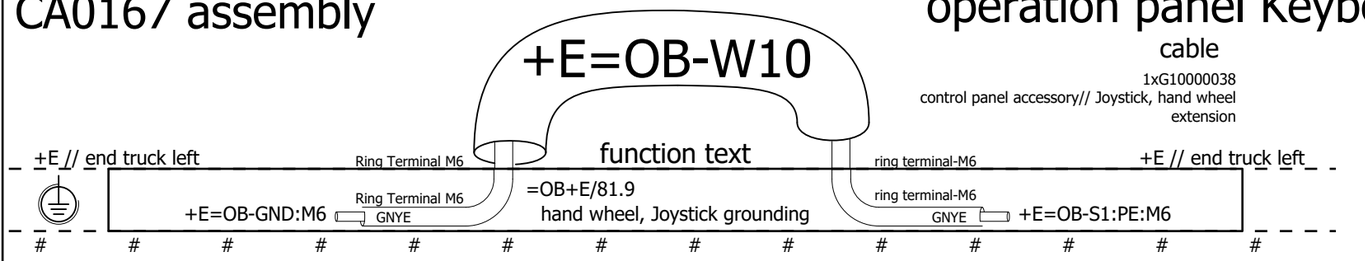
CA0167 assembly

operation panel Keyboard

cable

1xG10000038
control panel accessory// Joystick, hand wheel extension

description: grounding, PE, ring, M6- M6, 4mm²
number of cores:
cross section 4 mm²
length: 0,3 m



Quantity	Designation	Part number	
	cable sold by meter PVC, 1x 4	570130 hand wheel, Joystick grounding	A B
1	cable accessory cable lug, M6, 16mm²	556018 =	
1	cable accessory cable lug, M6, 16mm²	556018 =	

77004829 Einzelteil

operation panel

cable

1xG10000038
control panel accessory// Joystick, hand wheel extension

description: OE-M23, 19-pole, socket (plug female), 10m
number of cores: 16+3
cross section 0 mm²
length: 10 m

+E=OP-W1

+HB // cabinet main			function text	M23-female		+E // end truck left
5	+HB=OP-X40:1	VT	=OP+E/85.1 panel Safety channel	M23-female VT		+E=OB-S1:X103:1
6	+HB=OP-X40:2	RD	=OP+E/85.1 =	M23-female RD		+E=OB-S1:X103:2
3	+HB=OP-X40:3	GY	=OP+E/85.2 =	M23-female GY		+E=OB-S1:X103:3
4	+HB=OP-X40:4	RDBU	=OP+E/85.2 =	M23-female RDBU		+E=OB-S1:X103:4
2	+HB=OP-X40:5	GN	=OP+E/85.4	M23-female GN		+E=OB-S1:X103:5
4:d	+HB=OP-X40:6	BU	=OP+E/84.4 operation panel supply	M23-female BU		+E=OB-S1:X103:6
11	+HB=OP-X40:7	GYPK	=OP+E/86.1	M23-female GYPK		+E=OB-S1:X103:7
1	+HB=OP-X40:8	WHGN	=OP+E/84.1 operation panel battery pack	M23-female WHGN		+E=OB-S1:X103:8
10	+HB=OP-X40:9	WHYE	=OP+E/86.2 machine in Stop	M23-female WHYE		+E=OB-S1:X103:9
9	+HB=OP-X40:10	WHGY	=OP+E/86.3 machine in start	M23-female WHGY		+E=OB-S1:X103:10
2	+HB=OP-X40:11	BK	=OP+E/84.1 operation panel battery pack	M23-female BK		+E=OB-S1:X103:11
1	+HB=OP-X40:21	GNYE	=OP+E/84.3 operation panel supply	M23-female GNYE		+E=OB-S1:X103:12
	+HB=OP-X40:13	YEBN	=OP+E/84.6	M23-female YEBN		+E=OB-S1:X103:13
	+HB=OP-X40:14	BNGN	=OP+E/84.7	M23-female BNGN		+E=OB-S1:X103:14
1	+HB=OP-X40:15	WH	=OP+E/85.3 machine reset	M23-female WH		+E=OB-S1:X103:15
5	+HB=OP-X40:16	YE	=OP+E/85.7 machine start	M23-female YE		+E=OB-S1:X103:16
6	+HB=OP-X40:17	PK	=OP+E/85.8 machine Stop	M23-female PK		+E=OB-S1:X103:17
4	+HB=OP-X40:18	GYBN	=OP+E/85.6 control voltage turn on	M23-female GYBN		+E=OB-S1:X103:18
1:d	+HB=OP-X40:19	BN	=OP+E/84.3 operation panel supply	M23-female BN		+E=OB-S1:X103:19
X103:Shield	+HB=OP-W1:SH	SH	=OP+E/84.8	M23-female SH		+E=OB-S1:X103:Shield

EMC shield clamps, 12-16

shield

# # # # # # # # # # # # # #

			Toolbox_31	Option:		MESSER		module
			Toolbox version	customer:	Blocotelha		connection plan	sector 111 location +A =Z6B
			automated	commission:	289001273			
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021			Page 130

CA0006 assembly

+E=OP-W2

operation panel

cable

1xG10000038
control panel accessory// Joystick, hand wheel extension

1xG10000760
PC control panel// display 15", GCS, touch display, Win10, export

description: M23-M23, 16+5-core
number of cores:
cross section 0 mm²
length: 0,6 m

+E // end truck left	M23-male	function text	M23-female	+E // end truck left
+E=OB-S1:X104:19	M23-male 1	=OP+E/84.3 operation panel supply	M23-female 1	+E=OP-P1:XS01:19
+E=OB-S1:X104:6	M23-male 2	=OP+E/84.4 =	M23-female 2	+E=OP-P1:XS01:6
+E=OB-S1:X104:11	M23-male 3	=OP+E/84.1 operation panel battery pack	M23-female 3	+E=OP-P1:XS01:11
+E=OB-S1:X104:8	M23-male 4	=OP+E/84.1 =	M23-female 4	+E=OP-P1:XS01:8
+E=OB-S1:X104:13	M23-male WH	=OP+E/84.6	M23-female WH	+E=OP-P1:XS01:13
+E=OB-S1:X104:14	M23-male BN	=OP+E/84.7	M23-female BN	+E=OP-P1:XS01:14
+E=OB-S1:X104:1	M23-male GN	=OP+E/85.1 panel Safety channel	M23-female GN	+E=OP-P1:XS01:1
+E=OB-S1:X104:2	M23-male YE	=OP+E/85.1 =	M23-female YE	+E=OP-P1:XS01:2
+E=OB-S1:X104:3	M23-male GY	=OP+E/85.2 =	M23-female GY	+E=OP-P1:XS01:3
+E=OB-S1:X104:4	M23-male PK	=OP+E/85.2 =	M23-female PK	+E=OP-P1:XS01:4
+E=OB-S1:X104:7	M23-male BU	=OP+E/86.1	M23-female BU	+E=OP-P1:XS01:7
+E=OB-S1:X104:15	M23-male RD	=OP+E/85.3 machine reset	M23-female RD	+E=OP-P1:XS01:15
+E=OB-S1:X104:5	M23-male BK	=OP+E/85.4	M23-female BK	+E=OP-P1:XS01:5
+E=OB-S1:X104:18	M23-male VT	=OP+E/85.6 control voltage turn on	M23-female VT	+E=OP-P1:XS01:18
+E=OB-S1:X104:10	M23-male GYPK	=OP+E/86.3 machine in start	M23-female GYPK	+E=OP-P1:XS01:10
+E=OB-S1:X104:9	M23-male RDBU	=OP+E/86.2 machine in Stop	M23-female RDBU	+E=OP-P1:XS01:9
+E=OB-S1:X104:16	M23-male WHGN	=OP+E/85.7 machine start	M23-female WHGN	+E=OP-P1:XS01:16
+E=OB-S1:X104:17	M23-male BNGN	=OP+E/85.8 machine Stop	M23-female BNGN	+E=OP-P1:XS01:17
	WHYE		WHYE	
	YEBN		YEBN	
+E=OB-S1:X103	GNYE	=OP+E/84.3 operation panel supply	M23-female GNYE	+E=OP-P1:XS01:12
+E=OB-S1:X104:Shield	M23-male SH	=OP+E/84.8	M23-female SH	+E=OP-P1:XS01:SH

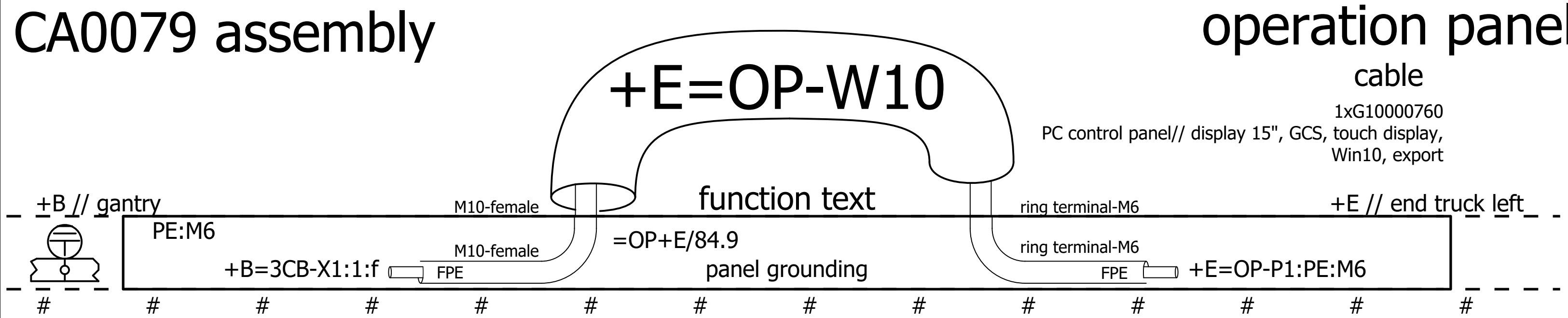
Quantity	Designation	Part number	
	cable sold by meter PVC, 16x0,34+5G0,75, PE, CY	77004655 operation panel battery pack	A A A B BS
Stück 1	plug accessory M23, 16+3-pole, plug, 0°	77002794 =	
Stück 1	cable accessory cable gland, PG13,5, EMV	0546050 =	
Stück 1	plug accessory M23, 16+3-pole, socket, 90°	77070966 =	
Stück 1	cable accessory cable gland, PG13,5, EMV	0546050 =	

CA0079 assembly

operation panel

cable

1xG10000760
PC control panel// display 15", GCS, touch display, Win10, export



description: FPE, ring, M6-M10, 16mm²
number of cores:
cross section 16 mm²
length: 8 m

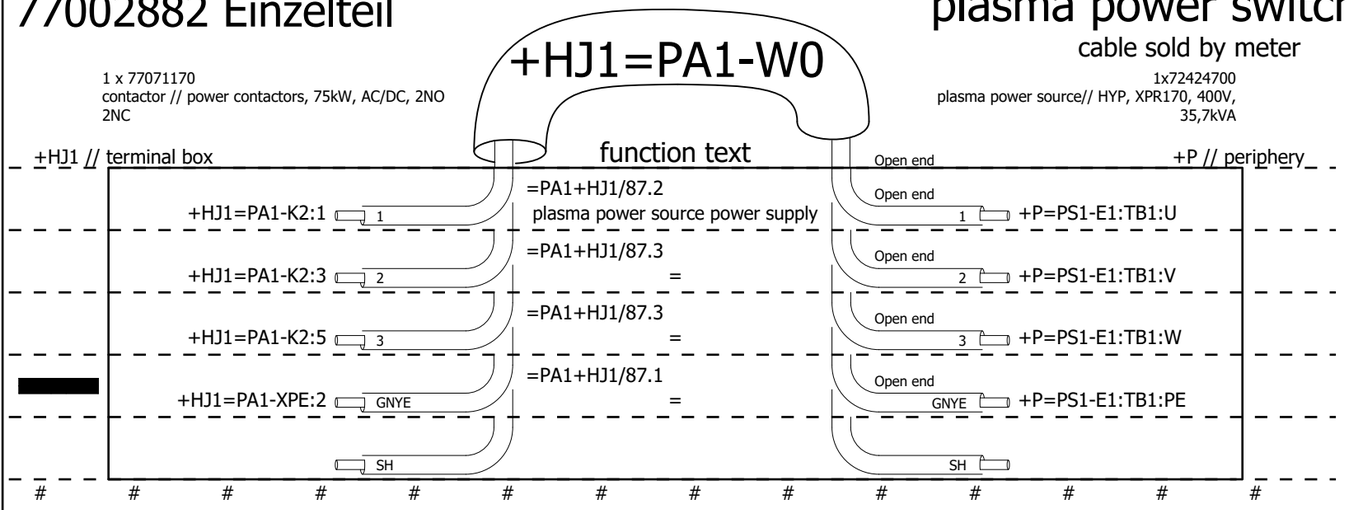
Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x16	77070130 panel grounding	A
1	cable accessory cable lug, M6, 16mm²	556018 =	
1	cable accessory cable lug, M10, 16mm²	556027 =	B

77002882 Einzelteil

plasma power switch box

cable sold by meter

description: PVC, 4x35, PE, CY
number of cores: 4
cross section 35 mm²
length: 5 m



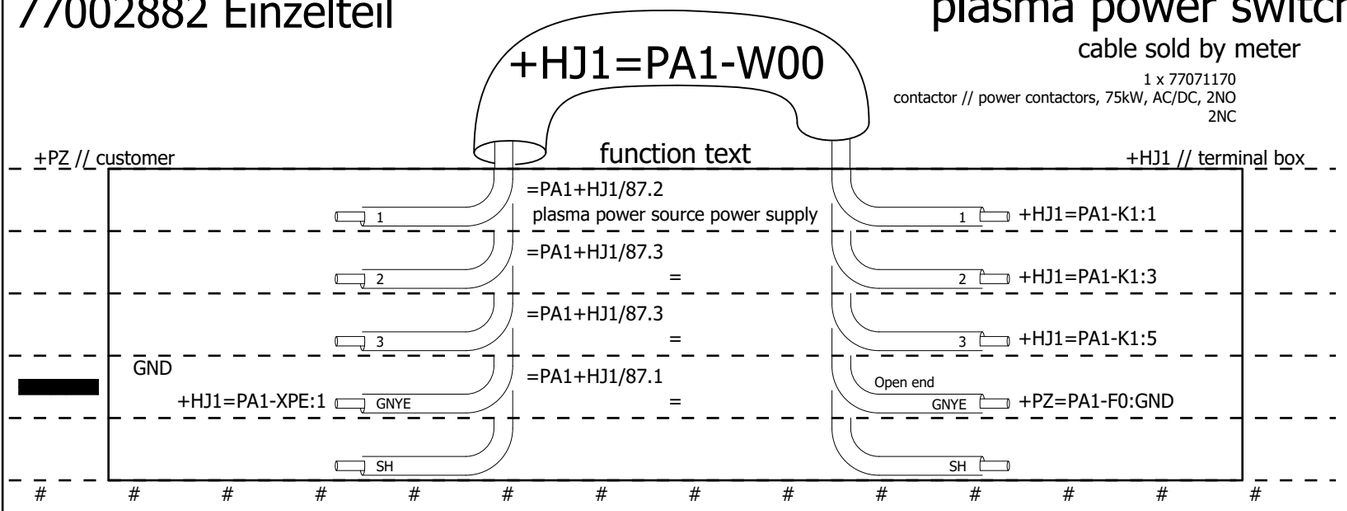
77002882 Einzelteil

plasma power switch box

cable sold by meter

1 x 77071170
contactor // power contactors, 75kW, AC/DC, 2NO 2NC

description: PVC, 4x35, PE, CY
number of cores: 4
cross section 35 mm²
length: 8 m



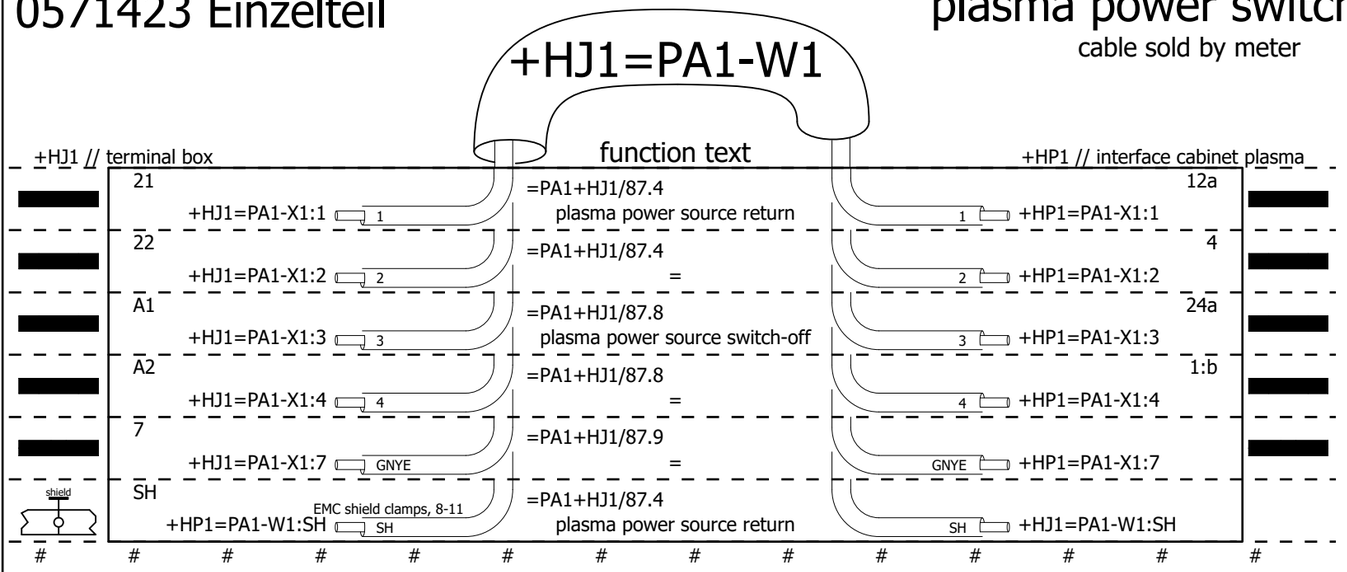
			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			134
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

0571423 Einzelteil

plasma power switch box

cable sold by meter

description: PVC, 5x 1,5, PE, CY
number of cores: 5
cross section 1 mm²
length: 9 m

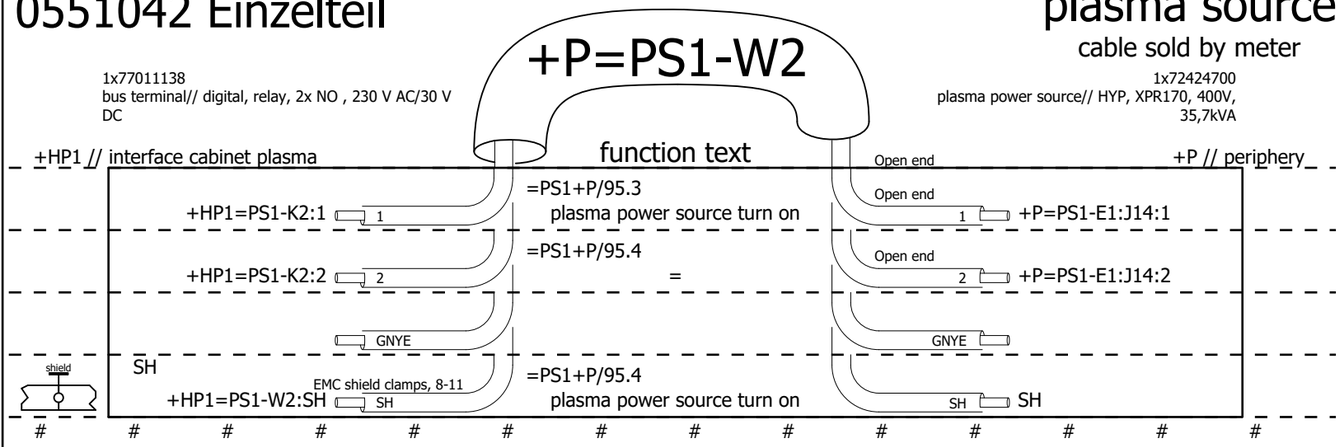


			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			135
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

0551042 Einzelteil

plasma source

cable sold by meter



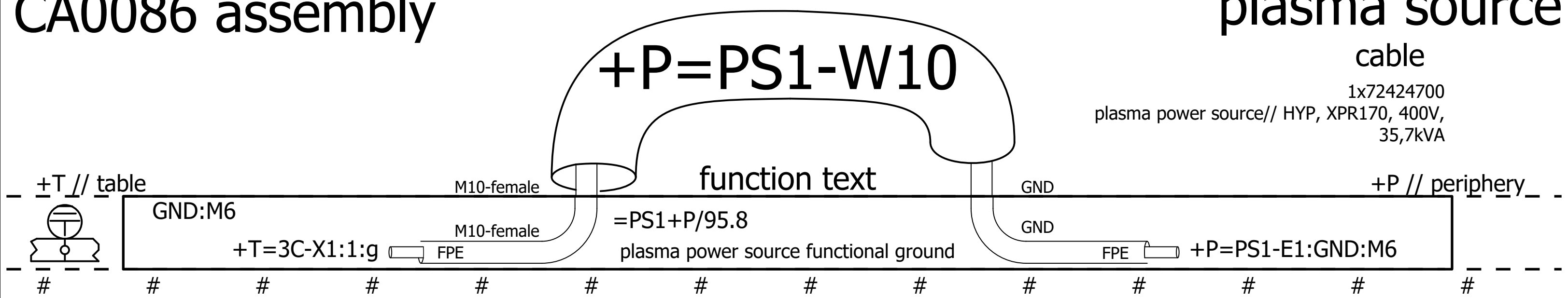
description: PVC, 3x 1, PE, CY
number of cores: 3
cross section 1 mm²
length: 5 m

CA0086 assembly

plasma source

cable

1x72424700
plasma power source// HYP, XPR170, 400V, 35,7kVA



description: FPE, ring, M6-M10, 50mm²
number of cores:
cross section 50 mm²
length: 20 m

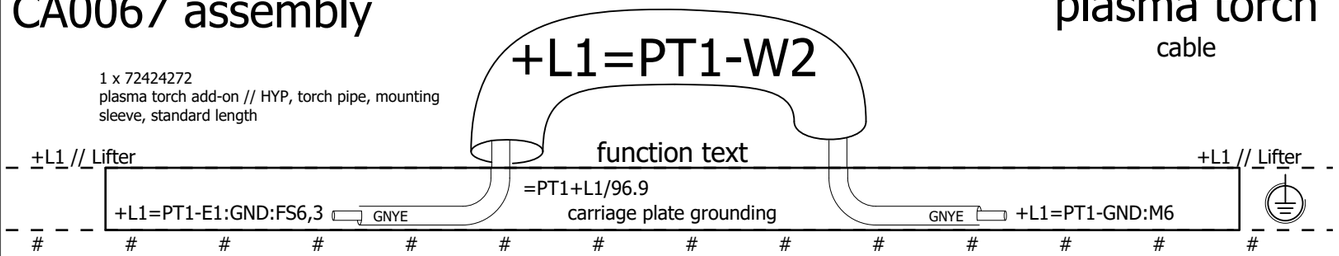
Quantity	Designation	Part number	
	cable sold by meter PVCT, 1x50	G10000792 plasma power source functional ground	A – B
Stück 1	cable accessory cable lug, M6, 50mm²	G10000672 =	
1	cable accessory cable lug, M10, 50mm²	556083 =	

CA0067 assembly

plasma torch

cable

1 x 72424272
plasma torch add-on // HYP, torch pipe, mounting sleeve, standard length



description: M6-POC, 1-core, ring-socket
number of cores:
cross section 4 mm²
length: 2 m

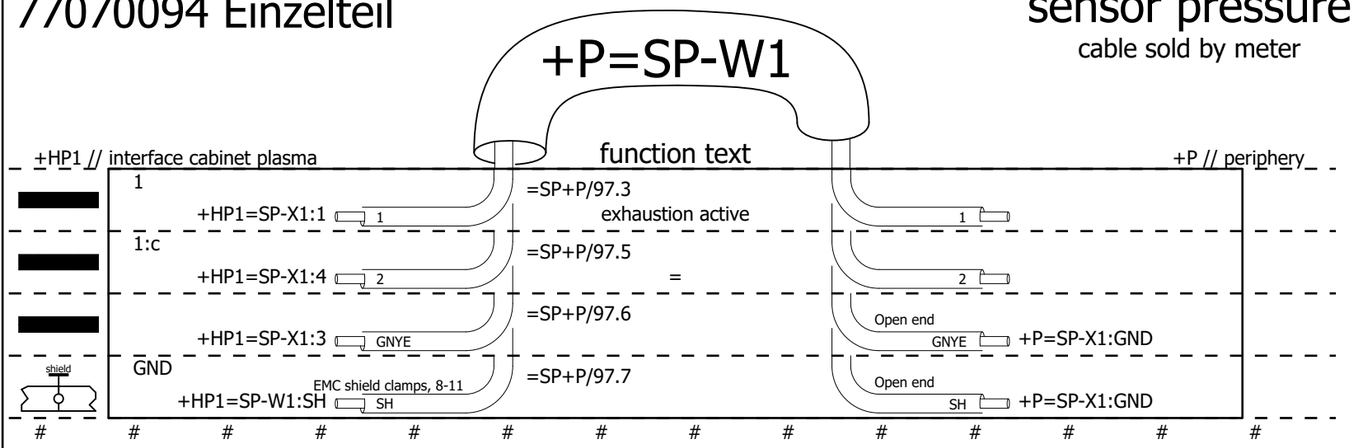
Quantity	Designation	Part number	
	cable sold by meter PVC, 1x 4	570130 carriage plate grounding	A B
Stück 1	cable accessory flat receptacle, 6,3mm, 4-6mm²	77070930 =	
1	cable accessory ring cable lug, M6, 6mm²	0556126 =	

77070094 Einzelteil

sensor pressure

cable sold by meter

description: PVC, 3x 0,5, PE, CY
number of cores: 3
cross section 0 mm²
length: 8 m



			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			139
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

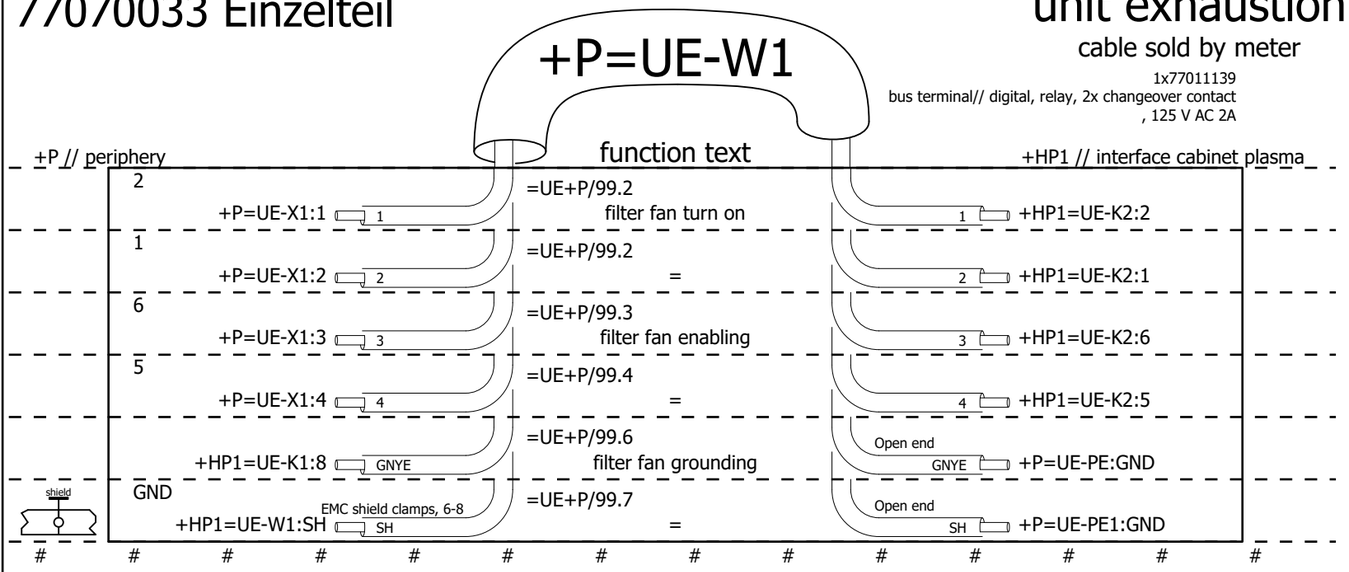
77070033 Einzelteil

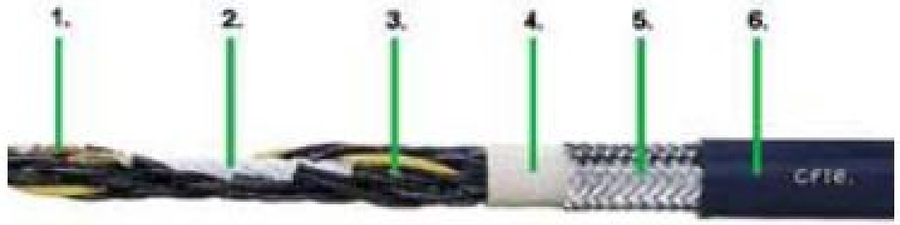
unit exhaustion

cable sold by meter

1x77011139
bus terminal// digital, relay, 2x changeover contact
, 125 V AC 2A

description: PVC, 5x 0,75, PE, CY
number of cores: 5
cross section 0 mm²
length: 8 m





			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			140
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

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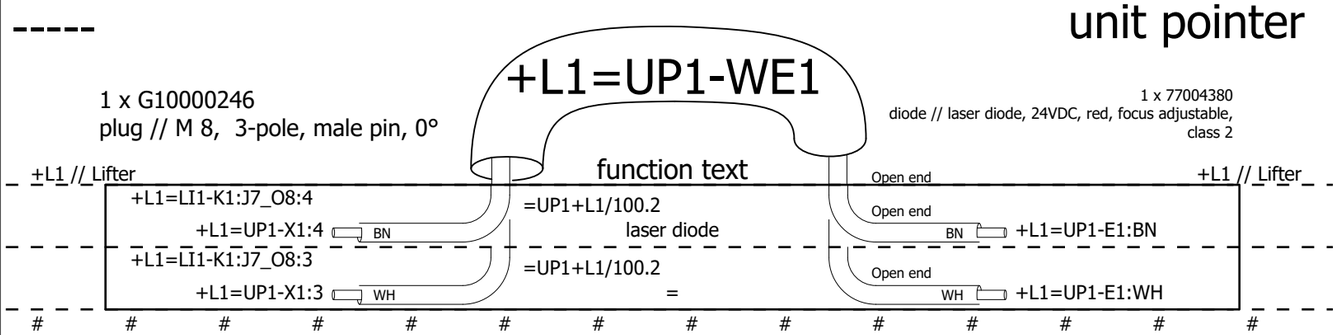
unit pointer



description:
number of cores:
cross section
length: 2 m

G10000957 Einzelteil

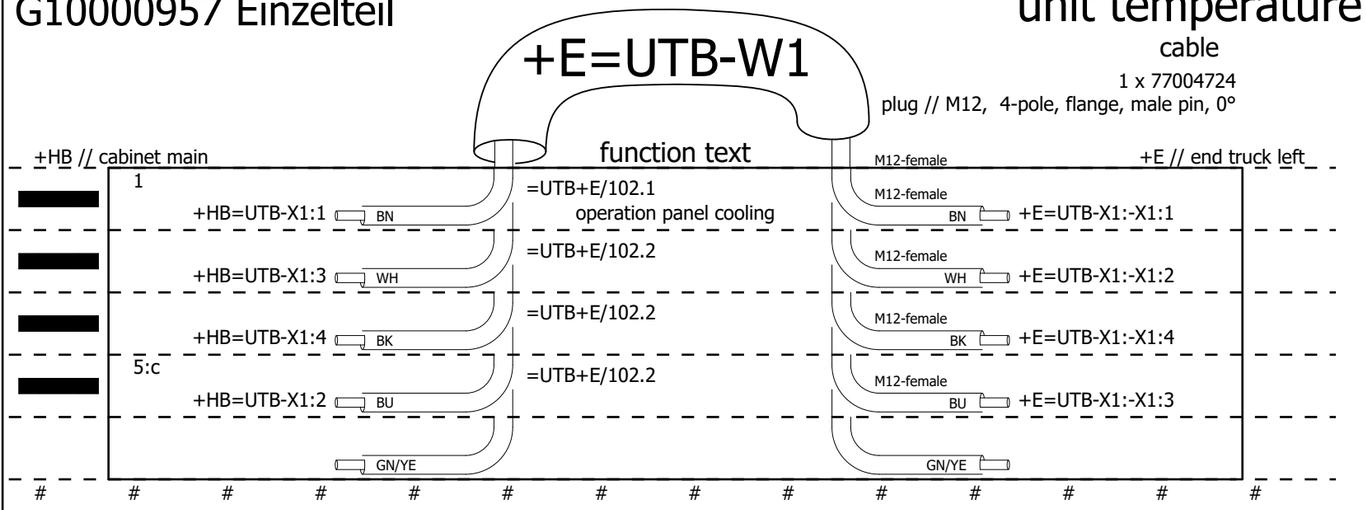
unit temperature

cable

1 x 77004724

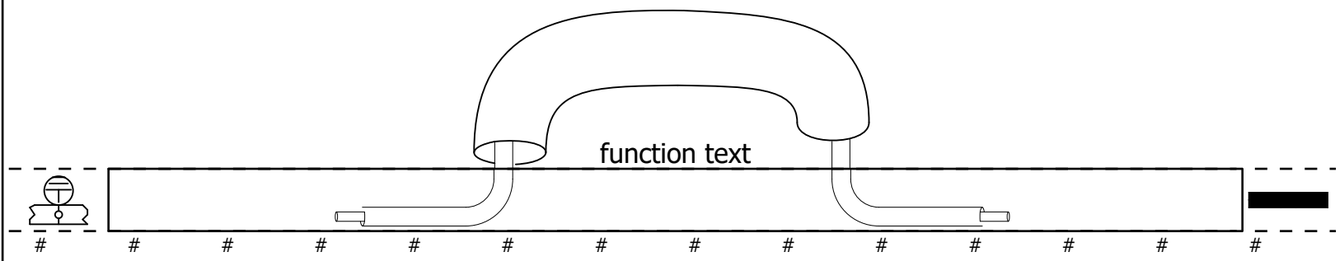
plug // M12, 4-pole, flange, male pin, 0°

description: OE-M12, 5-polig, Buchse, 10m
number of cores: 5
cross section 0 mm²
length: 10 m

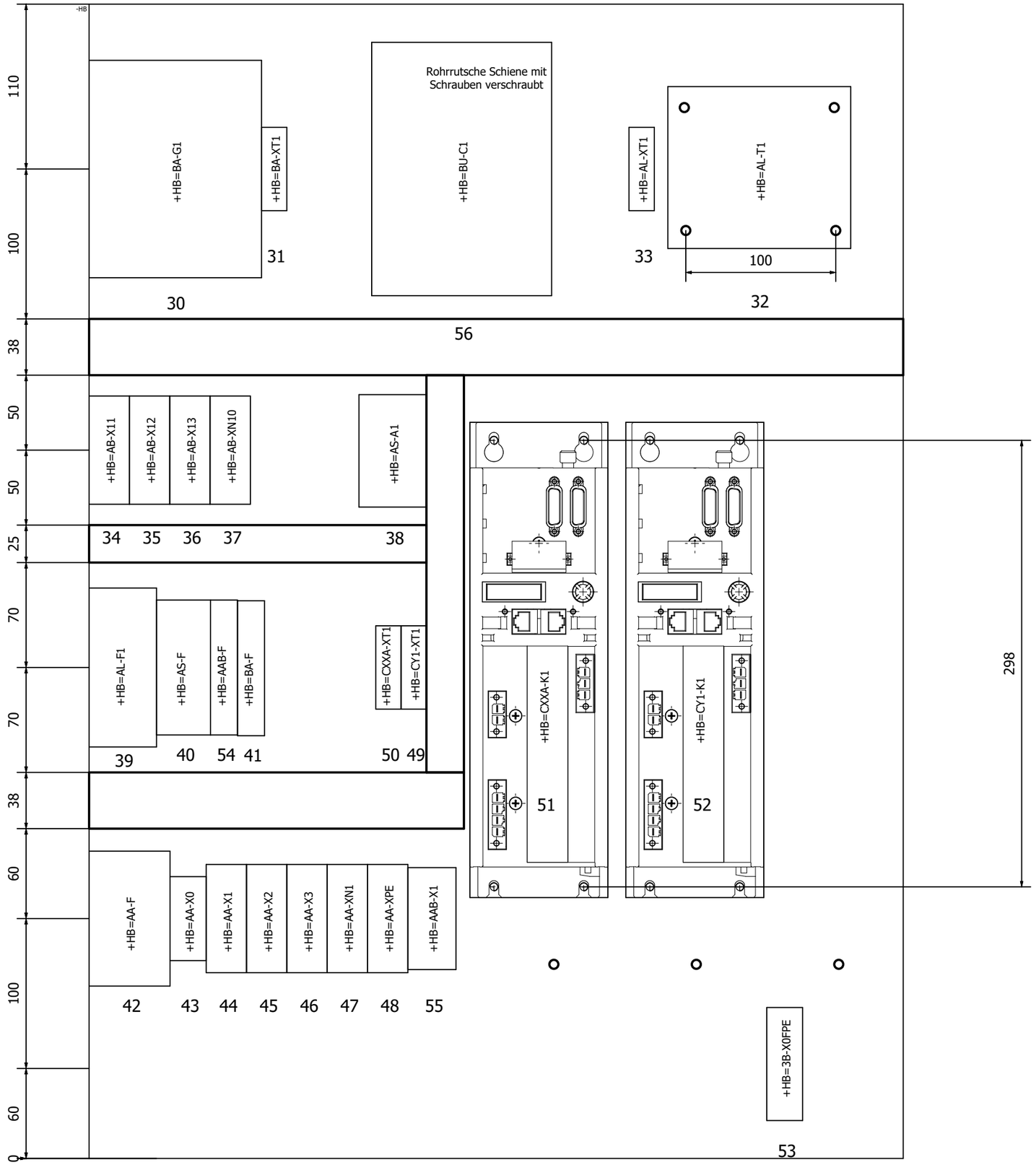


			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			142
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				

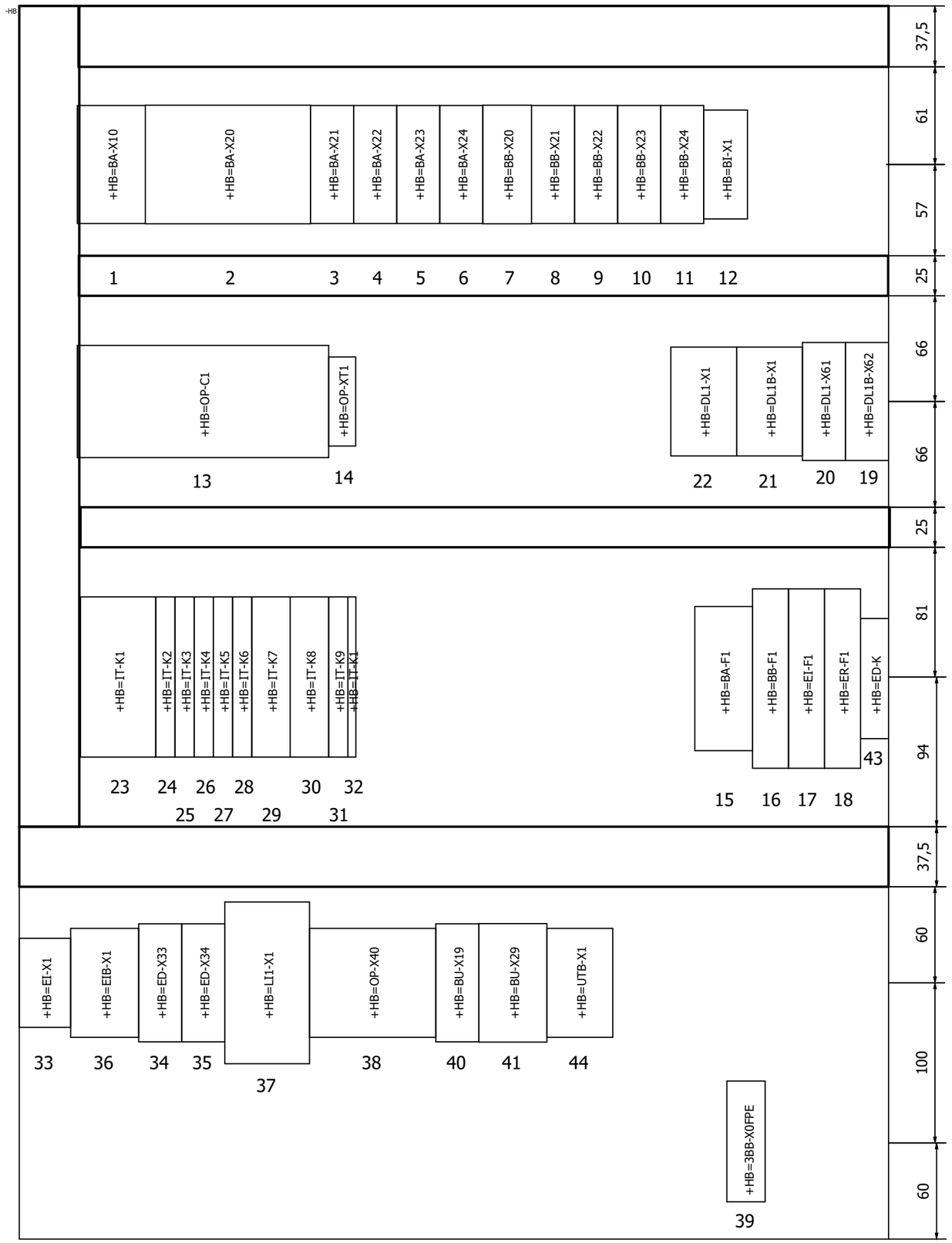
description:
number of cores:
cross section
length:



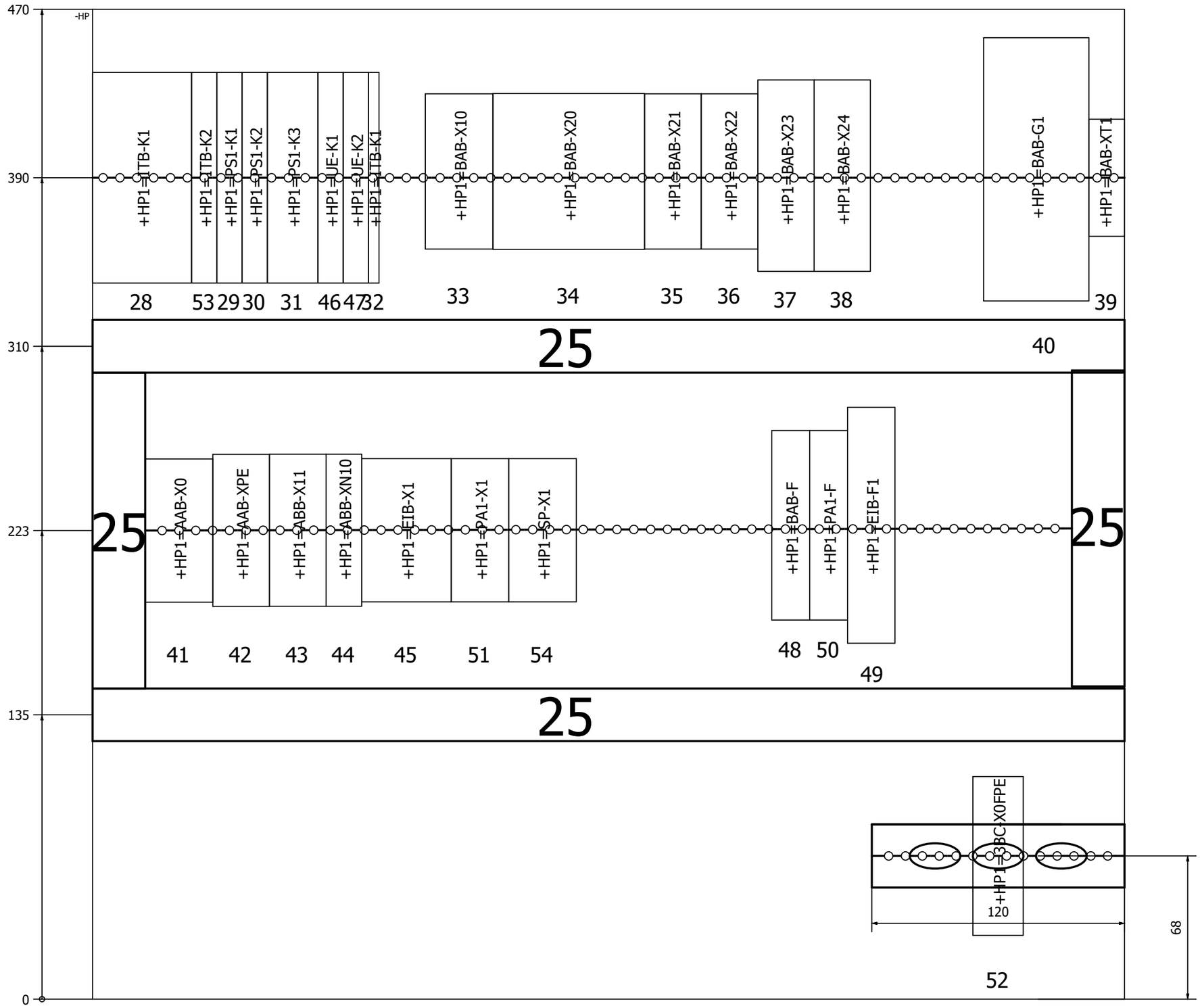
			Toolbox_31	Option:			module		Page
			Toolbox version	customer:	Blocotelha	connection plan			143
			automated	commission:	289001273		sector 111 location +A	=Z6B	
Modification	Date	Name	evaluation has been generated	Ed. by.	Thomas.Lehle 01.04.2021				



			Toolbox_31	Option:				module	switch cabinet enclosure
			Toolbox version	customer:	Blocotelha	MESSER	cabinet		Page
				commission:	289001273				144
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021			sector location +HB	=ZA5



			Toolbox_31	Option:			module	switch cabinet enclosure	Page
			Toolbox version	customer:	Blocotelha	MESSER	cabinet		145
				commission:	289001273				
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021		sector	location +HB	=ZA5



			Toolbox_31	Option:		MESSER	Interlock	module switch cabinet enclosure	Page
			Toolbox version	customer:	Blocotelha				146
				commission:	289001273			sector location +HP1 =ZA5	
Modification	Date	Name	Toolbox module designation	Ed. by.	Thomas.Lehle 01.04.2021				