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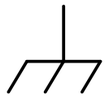
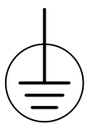
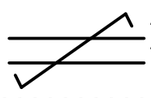

Stomme, ramverk/
Functional equipotential bonding

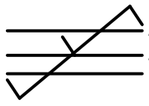

Stomme, ramverk/
Functional equipotential bonding

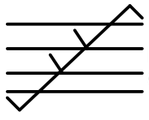

Jord, allmän symbol/
Earth , general symbol.

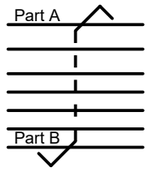

Störningsfri jord/
Functional earthing.


Skyddsjord/
Protective earthing.

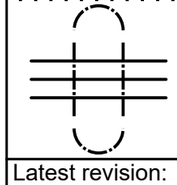

Tvinnade ledare/
Twisted conductors.

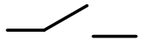

Trippel tvinnade ledare/
Triple twisted conductors.

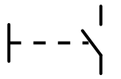

Fyrdubbelt tvinnade ledare/
Quadruple twisted conductors.

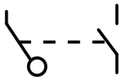


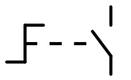
Tvinnade ledare part A med part B
Twisted conductors part A with part B

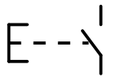

Skärm/
Shield.

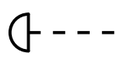

Slutkontakt/
Make contact, general.

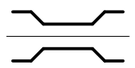

Handmanövrerad brytare, allmän/
Switch manually operated, general.


Styrning med spak/
Actuator (operated by lever).


Styrning genom vridning/
Actuator(operated by turning).

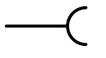

Styrning genom tryckning/
Actuator(operated by pushing).


Nödstopp (svamptryckknapp)/
Actuator, emergency.


Skarvhylsa
Through joint


Filter/
Filter.


Lampa/
Lamp.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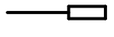
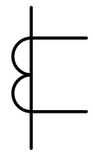
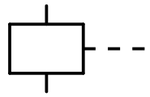
Socket outlet female.

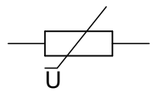

Kontaktstift hane/
Pin male.


Strömtransformator/
Current transformer.


Likström, DC /
Direct current, DC.


Växelström, AC /
Alternating current, AC.


Styrning, elektromagnetisk styrdon/
Actuator, by electromagnetic.



Varistor/
Varistor

PAST DESIGN
Old component design.
Old circuit design.
Old phased out option.

Ethernet signal:
1. Transmit TX+ or TX- and receive RX+ or RX-
2. Unit possible to transmit or recieve TX+/RX+ or TX-/RX-
3. Ethernet Gigabit signal, transmit pair one MX1+ , MX1- and receive the MX2+ , MX2-
If Gigabit transmit pair MX3+ , MX3- and receive pair MX4+ , MX4-

Column coordinate number on the drawing

Wire/connector one colour code.
BK = Black, BN = Brown, RD = Red, OG = Orange
YE = Yellow, GN = Green, BU = Blue, VT = Violet
GY = Grey, WH = White, PK = Pink, TQ = Turquoise

Wire/connector two colour code.

Example 1 : WH/RD = White and Red.
Example 2 : GNYE = Green and Yellow.

Example: Cable with four colour coded wire, square area AWG24 and cable number 709.

709 AWG24	BK
	BN
	RD/OG
	BK/OG

Translation table square area from AWG to mm2.

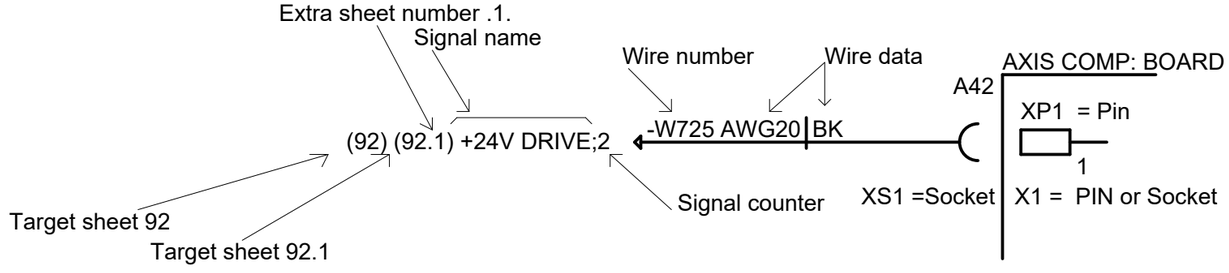
AWG28	0,093	AWG18	0,93
AWG26	0,15	AWG16	1,25
AWG24	0,25	AWG14	2,44
AWG22	0,34	AWG12	3,02
AWG20	0,56	AWG10	4,65

Run chain presentation starts at sheet 26.
The Run chain marked as a wider wire.

Example: Run chain marked with a wider wire.

Example: Not Run chain marked with a thin wire.

Example, showing how to read the information before and after a signal.



Latest revision:

Prepared by, date:A Hägglund | Approved by, date:S Hällgren 2023-10-31

ABB | Lab/Office: RA/RDP

IRC5 DESIGN Rel: 23:D
SYMBOL INFORMATION

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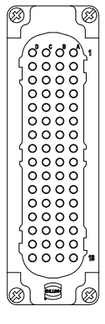
Top view 4 pole Phoenix

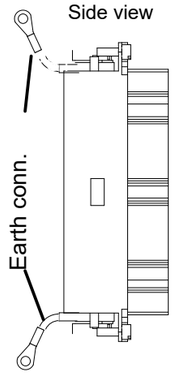
Top view

Power connection 64 pole. XP1
Industrial connector Harting/Amphenol

Front view

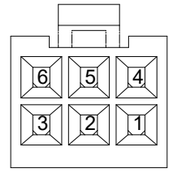


Side view

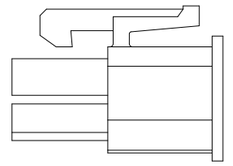


Position for Micro/Mini Fit (principal)

Back view 6 pole.



Side view



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				Document no. 3HAC024480-011	Rev. Ind 17	Page8 Next 8.1 Total 164
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31					

Revision 11 2018 10 Release 18.2

Sh.1 ABB AB changed to ABB
Sh.7 Symbol Varistor added. coordinate column 4 and 5.
Sh.16 New contact X63 Flow censor//XS11 add. coordinate column 2 and 3.
Sh.20 X3 added to A67 coordinate column 8
Sh.23 New contact X63 Flow censor//Second Power cable XP11 added, coordinate column 3 and 7.
Sh.24 Updated interruption point 0V DC in XT31:5 and :6// updated :1
Sh.30 AWG20 BU removed column coordinate 5
Sh. 51.2 XT31:1 and XT31:5 was exchanged //1.TXRX column 3 moved to -I/O.X5 column 3//
Wire 704 was exchanged to 776 in 18.2 and Wire 703 was exchanged to 775 in 18.2
Sh. 53.5 Terminal 1 was moved x1, x3, x11, x12, x13, x14
Sh. 94 Ref. to 3hac02803-3 was adjusted.
Sh. 100 Ref. to 3hac021351-003 was adjusted.
Sh.128.6 All terminal connection to R1.MP.B was updated.//A41.1. X15 and X16 updated coordinate column 3 and 4

Revision 12 2019 05 Release 19.A

Information: New release indentification 19.A, 19.B, 19.C, 19.D
the releases is precented four times every year instead of two times as before.
Sh.8.1 Revision information 19.A
Sh.9, 10 Device list Updated.
Sh.16 I/O connections implemented.
Sh.16.1 Added sheet. The information on this sheet is under shaping and will develop further in future releases.
Sh.17 X6 and X7 shifted location coordinate column 3
Sh.24 XT31:1 and :5 ref to 51.2
Sh.29 Changed presentation
Sh.29.1 added
Sh.31 changed presentation.
Sh.31.1 added
Sh.38.3 new sheet
Sh.38.4 new sheet
Sh.38.5 Wire 580 and 581 new target sheets
Sh.51.2 wire number 787 was 779, 785 was 777, 786 was 778 column 7//0V_INT1, +24V_INT1
0V_INT2, +24V_INT2 // wire 787, 785 new connection was at X63.// XT31-.1 and :5 added to cordinate column 8
Sh.51.4 0V_INT, +24V_INT
Sh.51.6 0V_INT, +24V_INT
Sh.51.8 0V_INT, +24V_INT

Revision 13 2019 06 -- 2020 02 Release 19.B, C, D, 20.A

Sh.8.1 new revision information.
Sh.16 Devicetag add. A41.1, .3, .4, .5 column 2 and 3.
Sh.23 new sheet ref. XS11/XP11 128.6//
Sh.28 deffenition line added at column 6 contact x11 AWG24.
Sh.34 Main computer Unit DSQC1024 add. to rel.19.B for IRB140, 1600, 2600, from Rel 20.A the remaining robots.
Sh.35 Main computer Unit DSQC1024 add. to rel.19.B for IRB140, 1600, 2600, from Rel 20.A the remaining robots.
Sh.36 Main computer Unit DSQC1024 add. to rel.19.B for IRB140, 1600, 2600, from Rel 20.A the remaining robots.
Sh.40 new sheet ref. to A35 column 4.
Sh.51.8 Internal serial bu was removed at column 3
Sh.55 AWG10 column 4// GNYE AWG10 at column 4
Sh.55.5 New sheet Transformer location
Sh.57 IRB1200 implemented
Sh.63 wire 142 BK, 143 BK, 144 BK added at coordinate column 8
Sh.76 C1--D2 shield connection removed column 7.
Sh.91 Ref 40 A35 was A35.1" Column 1.
Sh.109 GNYE column 5 new position.
Sh.111 "Customer Connection" text removed column 1//A35 ref.40 added.
Sh.120.7 Ref 40 A35 was A35.1" Column 1.
Sh.128.9 DevNet removed from sheet name.

Revision 14 2020 09 Release 20.B

Sh.2 Table of contest updated.
Sh.3 Table of contest updated.
Sh.4 Table of contest updated.

Sh.5 Table of contest updated.
Sh.6 Table of contest updated.
Sh.8.1 new revision information.
Sh.9 Device list table updated.
Sh.10 Device list table updated.

Sh.87.4 Wire number and connections XP1/R1.MP updated.
Sh.87.5 Wire number and connections XP1/R1.MP updated.

Sh.91 Ethernet 460, 660, 760, Profinet, added.
Sh.125 Ethernet/Profinet implemented. IRB6660

Revision 15 2021 05 Release 21.C

Sh.1 Copyright updated 2021

Sh.2 Table of contest updated.
Sh.3 Table of contest updated.
Sh.4 Table of contest updated.
Sh.6 Table of contest updated.

Sh.8.1 new revision information.
Sh.23 XS3/XP3 External customer Ref.28.1 was ref. to 33

Sh.27 A21.X5 :3, :5, :9, :11 Jumper text add. Not connected. Ref to manual. Column 2.
Sh.28.1 X5:3, :5, :9, :11 Jumper text add. (Not 2) Not connected. Ref to manual. At Column 8

Sh.34 PCI- cards 31.2, 31.3, 31.4 exchanged place

Revision 16 2022 09 Release 22.C

Sh.23	Added Functional earth.
Sh.29.1	Swapped 24V-/0V COMMON_CH1/-CH2 connection on -S21.1-XP1 (2Mode Selector)
Sh.31.1	Swapped 24V-/0V COMMON_CH1/-CH2 connection on -S21.1-XP1 (2Mode Selector)
Sh.56	Changed wire 150 and 151 from AWG12 to AWG10
Sh.61	Added new Fan connection (Fan Control)
Sh.61.1	Contains the old Fan connection (without Fan Control)
Sh.63	Added Auxiliary contact block connection (Fan Control)
Sh.75	Added reference to Option 1389-1
Sh.75.1	Added reference to Option 1389-1
Sh.90	Added Option 803-3 and 803-4
Sh.90	Added interruption point for DeviceNet and ProfiBus to p. 91. Added Grounding see Sh.117 note
Sh.91	Added "Option 803-3" and interruption point to DeviceNet
Sh.108	Added "Option 803-2" and interruption point to ProfiNet/EthernetIP. Added Grounding see Sh.117 note
Sh.109	Added grounding on harness CP/CS D7 and "Not connected"-note on manipulator side
Sh.110	Added grounding on harness CP/CS D7 and "Not connected"-note on manipulator side
Sh.111	Added interruption point for ProfiNet/EtherNetIP
Sh.117	Added grounding on harness CP/CS D7 and "Not connected"-note on manipulator side
Sh.118	Added Option 802-2 and ProfiNet/EthernetIP ref. to p. 120. Added Grounding see Sh.117 note
Sh.119	Added grounding on harness CP/CS D7 and "Not connected"-note on manipulator side
Sh.120	Added interruptions points for ProfiNet/EthernetIP
Sh.120.6	Added grounding on harness CP/CS D7 and "Not connected"-note on manipulator side
Sh.128.9	Added DeviceNet and ProfiBus connection

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Revision 17 2023 10 Release 23.D

Complete update of circuit diagrams to get a more united look of text font, placement, and general esthetics.
All pages updated.
Specific changes as described below.

Sh. 8.2 New page
Sh. 38.3 Misspelling of contact -S21 was -XP37
Sh. 40.1 Misspelling of contact -XP1 was -XP39
Sh. 54 Past design, DSQC680 is replaced with DSQC1024
Sh. 54.1 Remote service 4G implemented.
Sh. 60 Misspelling of contact -XP1 was -XP39
Sh. 62/65/75.1 Redesign of PTC-circuits to accommodate several designs.
Sh. 89/107/116/120.5 Jumper added to PTC-circuit.

Location name	Function name	Page	Location name	Function name	Page
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EXT-S22	Option HOT PLUG	32	E1-E44	Fan unit	61
EXT-S22-H1	SIGNAL LAMP	32	E1-E44-R1	Thermistor	61
A21	PANEL BOARD	26	E2	EXT. COMPUTER FAN opt.708-2	61
A23	OPTION:STATUS LED ON FRONT	28.2	E2-M1	EXTERNAL COMPUTER FAN	61
A31	MAIN COMPUTER	35	E3	INTERNAL FAN	61
A31-E22	CHASSIS BLOWER	35	E3-M1	INTERNAL FAN	61
A31.2	DeviceNet M/S DSQC1006	39	E5	MDU FAN	61
A31.3	PROFIBUS M	38	E5-M1	OPTION : INTERNAL FAN	61
A31.4	Safety Board DSQC1015	38.5	EXT-A21-S21.2-H1	MOTOR ON (LAMP)	31
A32	Expansion board serie DSQC1003	36	EXT-ETH_FPU	FLEXPENDANT	30.1
A32.1	ETHERNET/IP Fieldbus adapter DSQC 669 Slave	37	EXT-ETH_FPU-USB	FLEXPENDANT	30.1
A32.2	PROFIBUS Fieldbus adapter DSQC 667 Slave	37	EXT-S21.2	MOTOR ON PB	31
A32.3	PROFINET IO Fieldbus adapter DSQC 688 Slave	37	EXT-S21.3	EMERGENCY PB	31
A32.4	DEVICENET IO Fieldbus adapter DSQC 1004 Slave	37	EXT-T10	T10 JOGGING DEVICE	30.1
A34	ETHERNET SWITCH A34 opt. MULTI MOVE 604-1/2	40.1	EXT-T10.1	HOLD TO RUN DEVICE	30.1
A41	MAIN SERVO DRIVE UNIT	94	EXT-T10-ETH_FPU	FLEXPENDANT	30.1
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A41.1-6	MAIN SERVO DRIVE UNIT	103	F4	EARTH FAULT BREAKER	58
A41.2	ADDITIONAL RECTIFIER UNIT	72	F5	CIRCUIT BRAKER	58
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A41.4	ADDITIONAL DRIVE UNIT	75	G1	POWER SUPPLY DSQC661	60
A41.5	ADDITIONAL DRIVE UNIT	75	G2	POWER DISTRIBUTION BOARD DSQC662	60
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A41.5	ADDITIONAL DRIVE UNIT	72	M360-A41.1	MAIN SERVO DRIVE UNIT	85
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E1-E42-R1	Thermistor	61	O726-I/O.X	ENCODER UNIT	53
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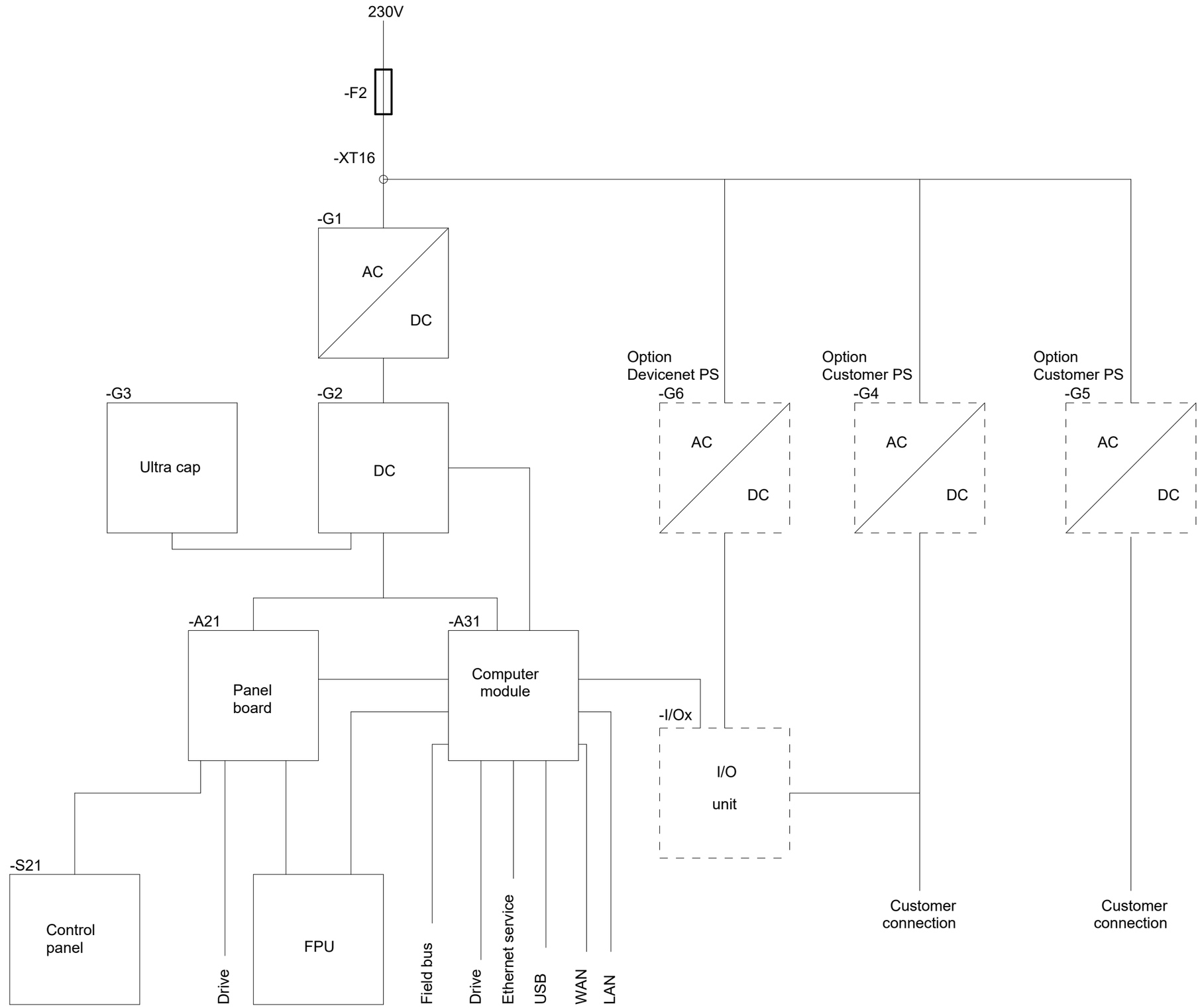
A61	Option: REMOTE SERVICE BOX DSQC680	54			
A41.1	MAIN SERVO DRIVE UNIT	120.1			



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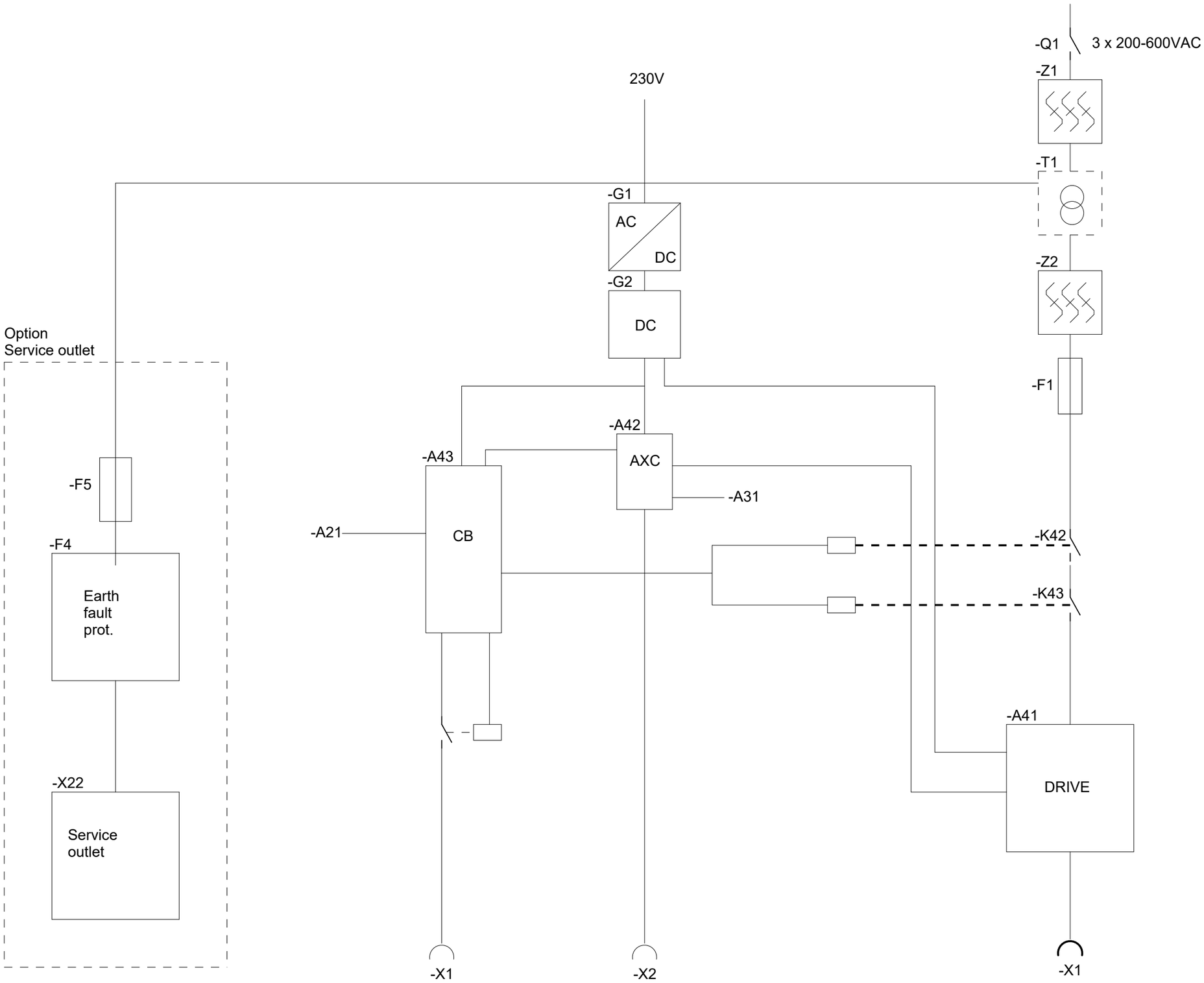

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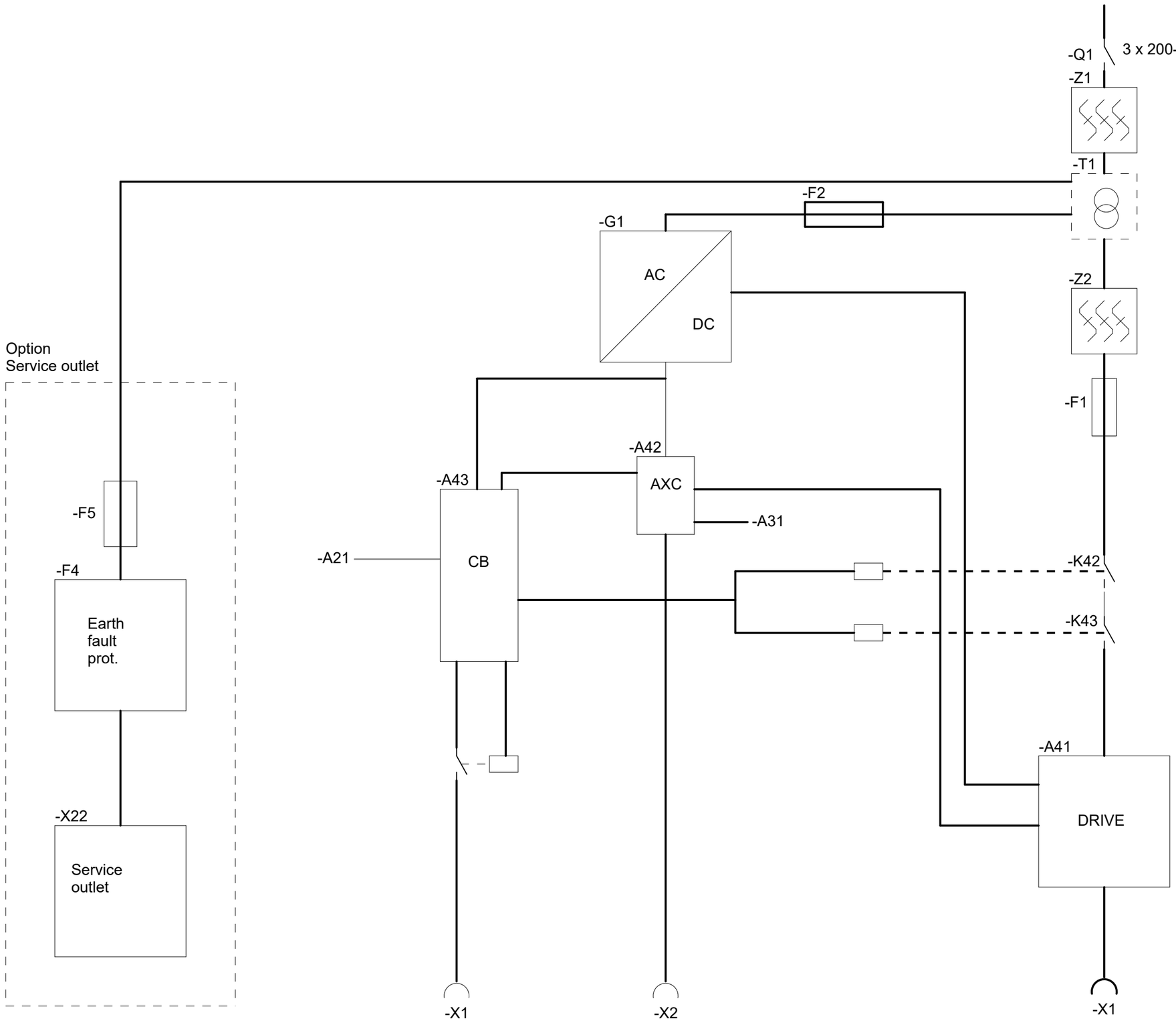

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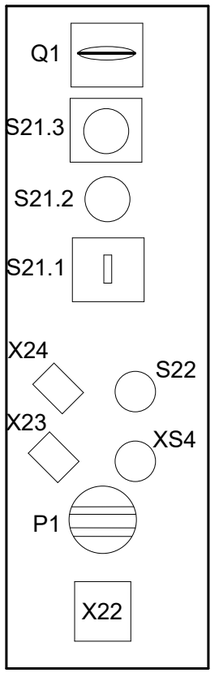
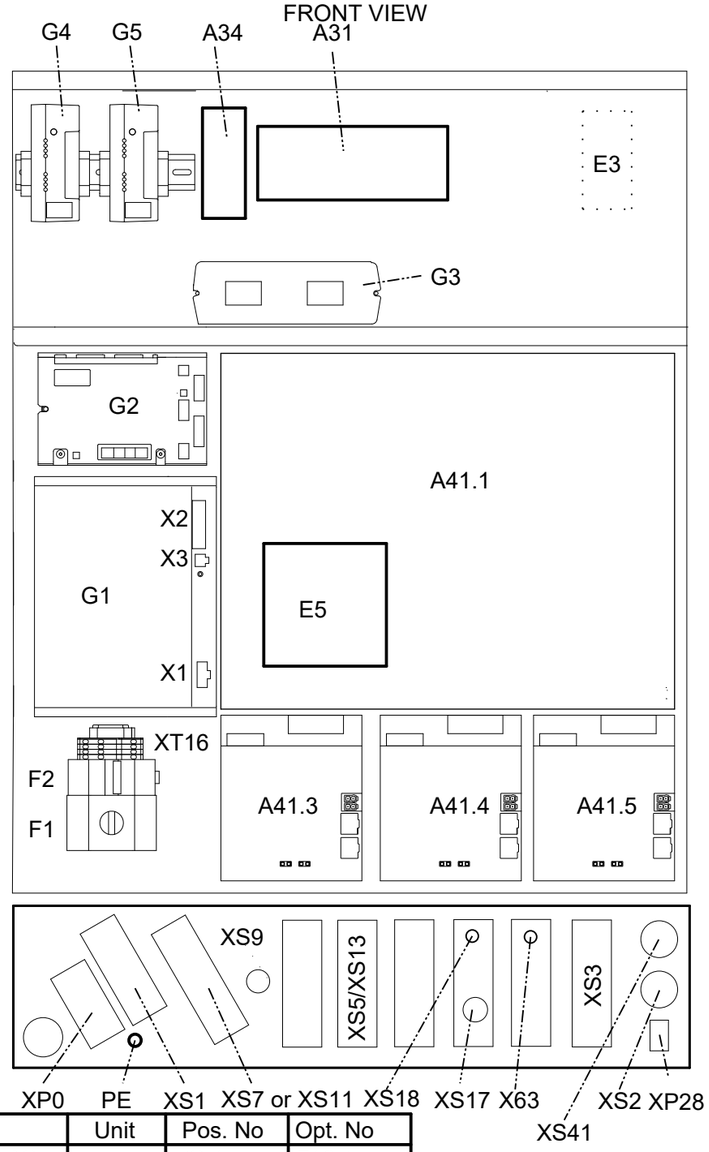
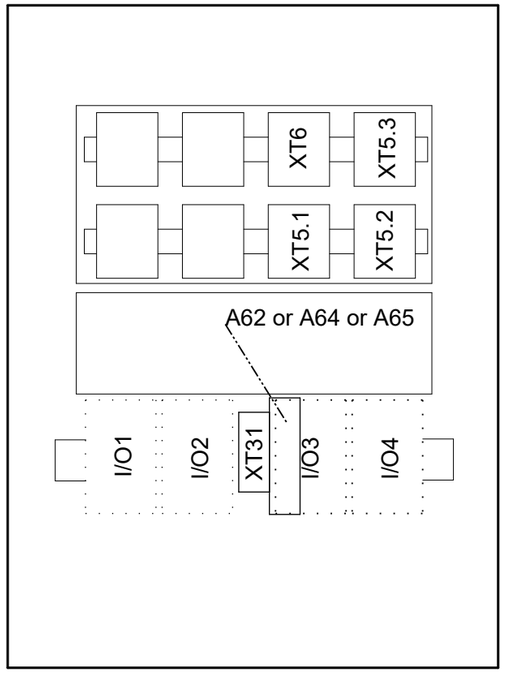
FRONT PANEL



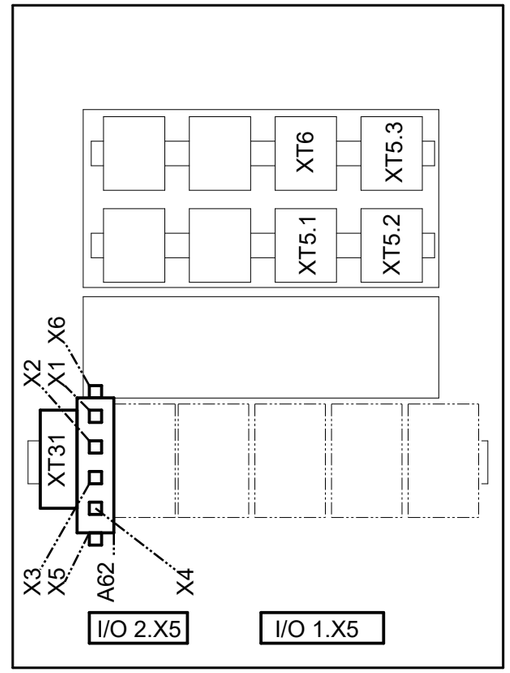
FRONT VIEW



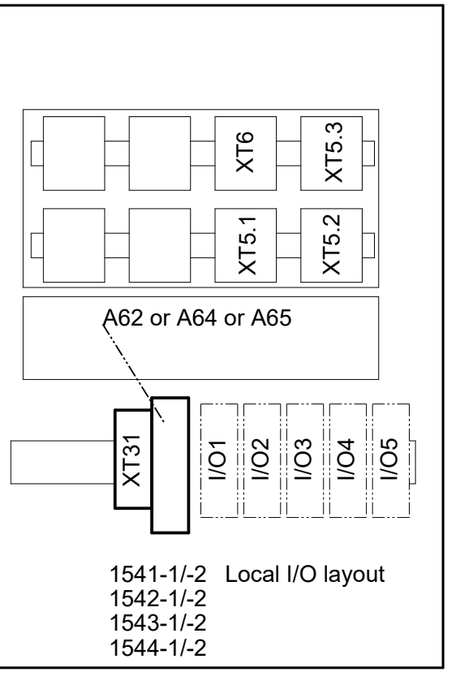
Opt. inside door with I/O and ETHERNET switch



DSQC1030 Opt 1541-1/-2



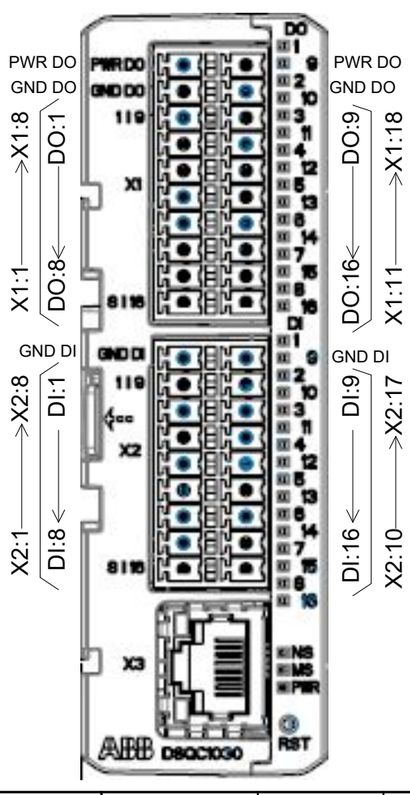
DSQC1031 Opt 1542-1/-2

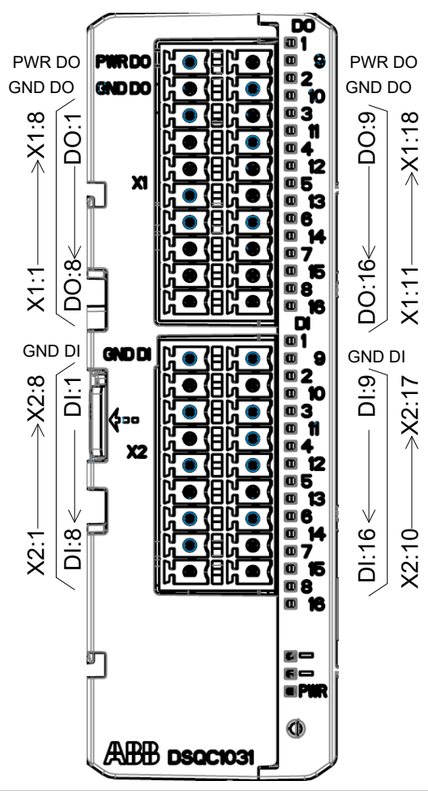


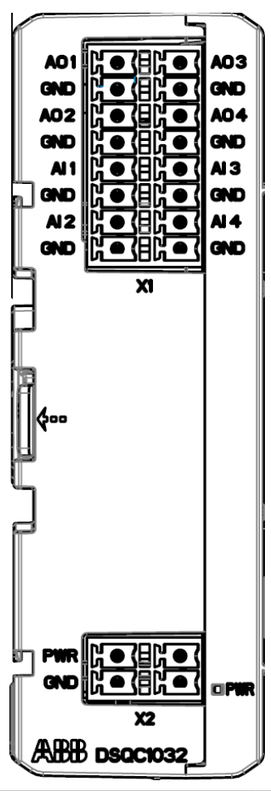
1541-1/-2 Local I/O layout
1542-1/-2
1543-1/-2
1544-1/-2

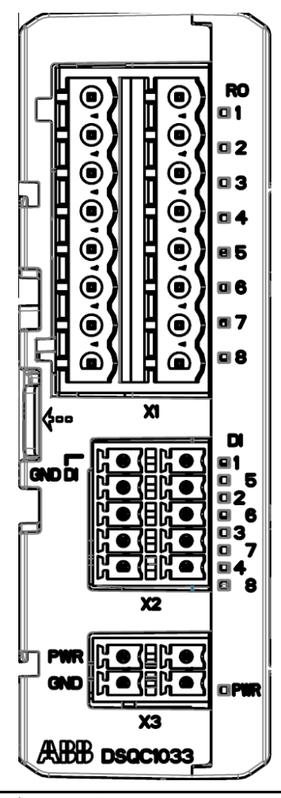
DSQC1032 Opt 1543-1/-2

DSQC1033 Opt 1544-1/-2









Denomination	Unit	Pos. No	Opt. No
Digital 24 VDC		I/O 1-4	716-1
AD Combi I/O		I/O 1-4	717-1
Digital with relay		I/O 1-4	718-1
Analog 4 in/4 out		I/O 1-4	719-1
Profibus DP Slave		I/O 1-4	720-1
Interbus-S Slave		I/O 1-4	722-1
CC-link slave		I/O 1-4	723-1
ENC unit		I/O 1-4	726-1
Digital Base 16in/16out		I/O 1	1541-1/-2
Digital Add on 16in/16out		I/O 2-5	1542-1/-2
Analogue Add on 4in/4out		I/O 2-5	1543-1/-2
Relay Add on 8RO/8DI		I/O 2-5	1544-1/-2
Ethernet switch	A34		604-1/-2
Ethernet switch	A62		901-1
Ethernet switch	A64		1341-1
Ethernet switch	A65		941-1

Latest revision:

Prepared by, date:A Hägglund | Approved by, date:S Hällgren 2023-10-31

Lab/Office: RA/RDP

IRC5 DESIGN Rel: 23:D
FRONT VIEW OF SINGLE CABINET MDU HV

Status: APPROVED
Plant: =
Location: +
Sublocation: +

Document no. 3HAC024480-011
Rev. Ind 17

Wire no.	Designation	Terminal	Remark.	Application	Document.
147	XT31	1	+	G4 DSQC609	3HAC066749-002
148	XT31	5	-		
147	XT31	1	+	A62.X7	3HAC035136-002
148	XT31	5	-		
147	XT31	2	+	G5 DSQC609	
148	XT31	6	-		
147	XT31	3	+	G7 DSQC609	
148	XT31	7	-		
193	XT31	4	+	Harn I/O/ Devicenet supply	
194	XT31	8	-		
193	XT31	9	+	Harn I/O/ Devicenet supply	3HAC028588-002
194	XT31	10	-		
247	XT31	1	+	G2.x4	3HAC028581-001
248	XT31	5	-		
295	XT31	2	+	G4.x2	3HAC024979-027
296	XT31	6	-		
295	XT31	3	+	G5.x2	3HAC024979-027
296	XT31	7	-		
297	XT31	9	+	G6	3HAC024979-028
298	XT31	10	-		3HAC024527-001
787	XT31	5	-	Sensor connection	3HAC066749-002
Bu	XT31	5	-		
785	XT31	1	+		
Rd/Bn	XT31	1	+		
703 or 775	XT31	1	+	Assembly set I/O IRC5	3HAC060971-002
704 or 776	XT31	5	-		
745	XT31	1	+	Remote Service SC	3HAC031252-002
746	XT31	5	-		
747	XT31	1	+	DC in	3HAC037747-002
748	XT31	5	-	DC in	
764	XT31	2	+	Camera 1 and 3	3HAC046782-002
765	XT31	6	-		
766	XT31	2	+	Camera 2	3HAC046782-002
767	XT31	6	-		
775 or 703	XT31	1	+	Assembly set I/O IRC5	3HAC060971-002
776 or 704	XT31	5	-		
777	XT31	2	+		3HAC060971-002
778	XT31	6	-		
779	XT31	2	+		3HAC060971-002
780	XT31	6	-		
901	XT31	1	+	Assembly set I/O IRC5, VW	3HAC066590-002
902	XT31	5	-		
1032	XT31	1 alt 2	+ -	Euromap	3HAC025481-003
901	XT31	1	+	Assembly set I/O IRC5, VW	3HAC066590-002
902	XT31	5	-		
901	XT31	1	+	Assembly set I/O IRC5, VW	3HAC066590-002
902	XT31	5	-		
1041	XT31	1	+	(Process interface board PIB A57 Opt.901-1 902-1)	3HAC035136-002
1042	XT31	2	-		
1043	XT31	1	+	(Ethernet switch A62 Opt.901-1 or Ethernet switch A64 or Ethernet switch A65)	3HAC046782-002 3HAC047120-002
1044	XT31	5	-		
1046 and 1055	XT31	5 alt. 6	-	Euromap	3HAC025481-003

Wire no.	Designation	Terminal	Remark.	Application	Document.
1417	XT31	2	+	Process interface ARISTOMIG safety interlock	3HEA803113-001
1422		6	-		
1429		6	-		

XT31: 1 (Rd/Bn, 147, 247, 703, 705, 745,747, 775, 785, 901,1032, 1041, 1043)

XT31:2 (147, 295, 764, 766, 777, 779, 1032, 1042.

XT31:3 (147, 295)

XT31:4 (193)

XT31:5 (Bu, 148, 248, 704, 746, 748, 776, 787, 902, 1044, 1046, 1055)

XT31:6 (148, 296, 765, 767, 778, 780, 1046, 1055)

XT31:7 (148, 296)

XT31:8 (194)

XT31:9 (193, 297)

XT31:10 (194, 298)

Latest revision:

Prepared by, date:A Hägglund

Approved by, date:S Hällgren 2023-10-31

ABB

Lab/Office: RA/RDP

IRC5 DESIGN Rel: 23:D
XT31, connected options

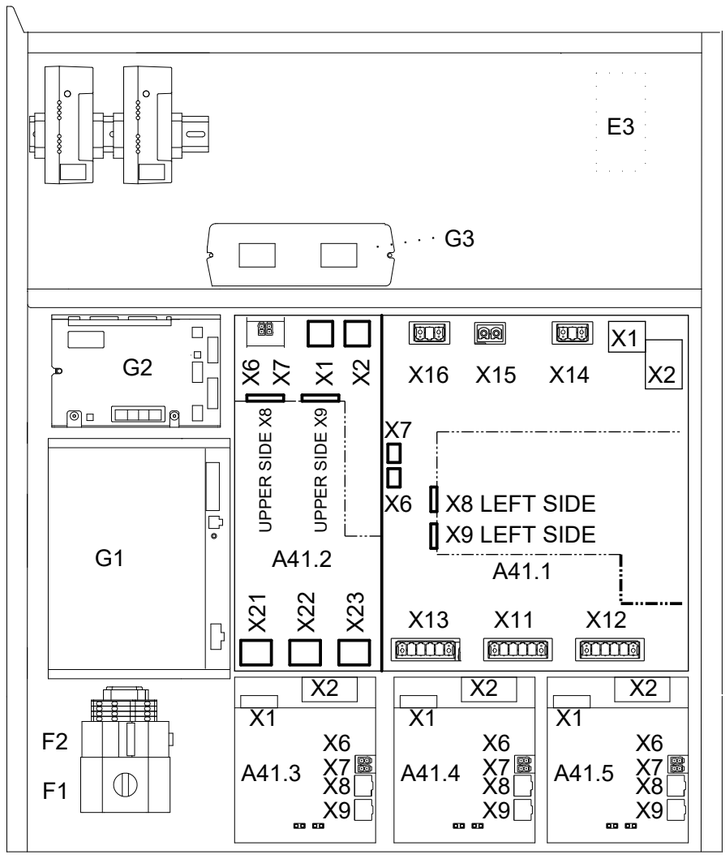
Status: APPROVED

Plant: =
Location: +
Sublocation: +

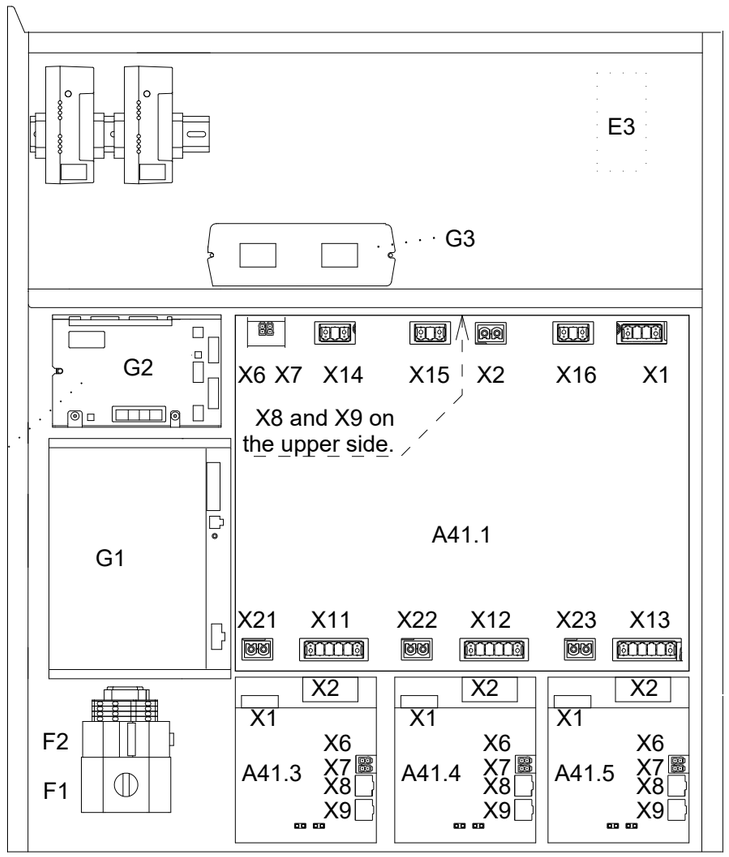
Document no. 3HAC024480-011

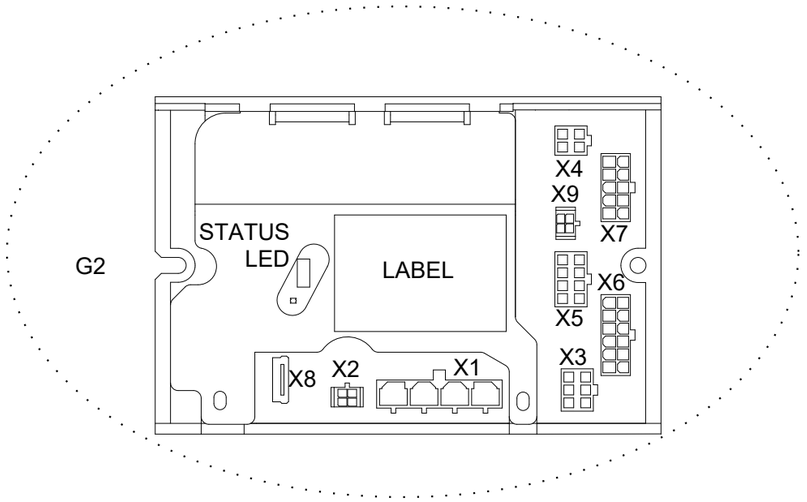
Rev. Ind 17

FRONT VIEW
MAIN DRIVE UNIT FOR IRB 120 - 1600
LV Low voltage



FRONT VIEW
MAIN DRIVE UNIT FOR IRB 2400 - 87XX
HV High voltage





Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FRONT VIEW OF SINGLE CABINET MDU LV and HV	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011	Rev. Ind 17
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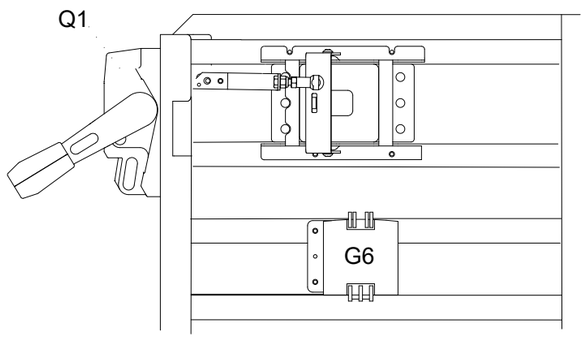
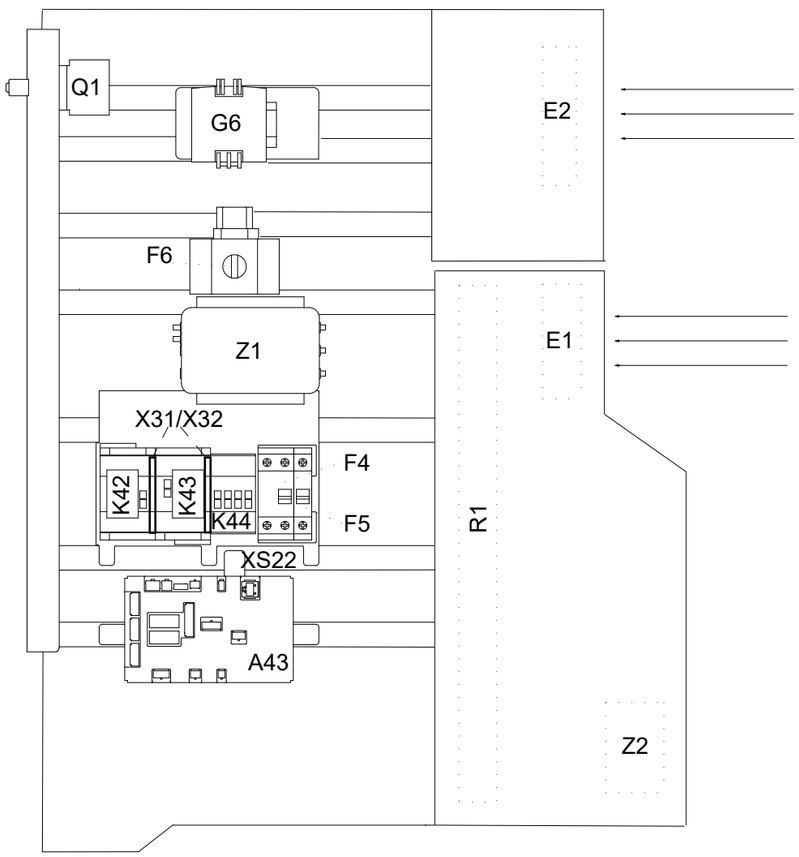
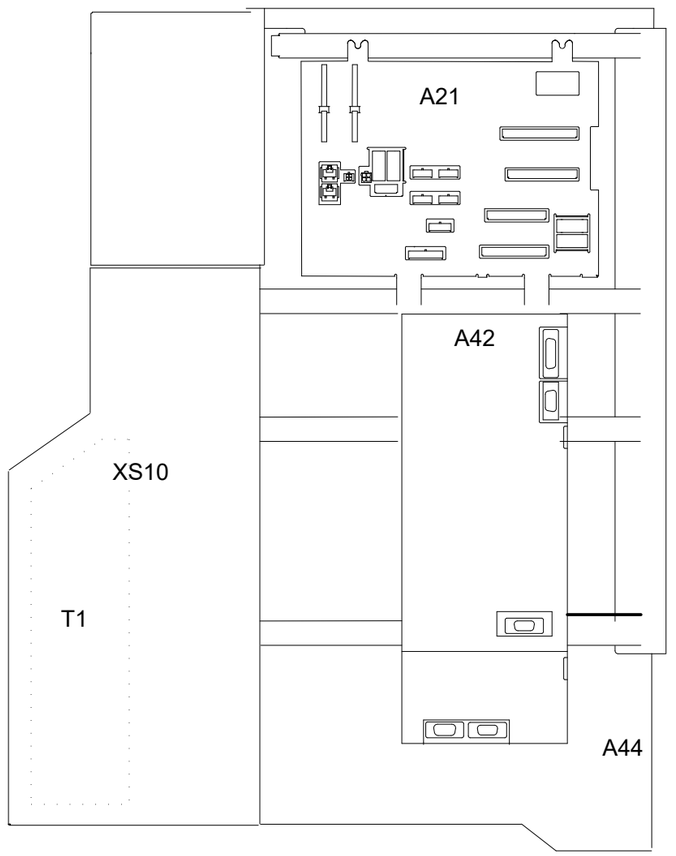
LEFT VIEW WITH
FLANGE DISCONNECT



LEFT VIEW



RIGHT VIEW



Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SIDE VIEWS OF SINGLE CABINET	Status: APPROVED	Plant: = Location: + Sublocation: +
					Document no. 3HAC024480-011	Rev. Ind 17
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31					Page 18 Next 19 Total 164

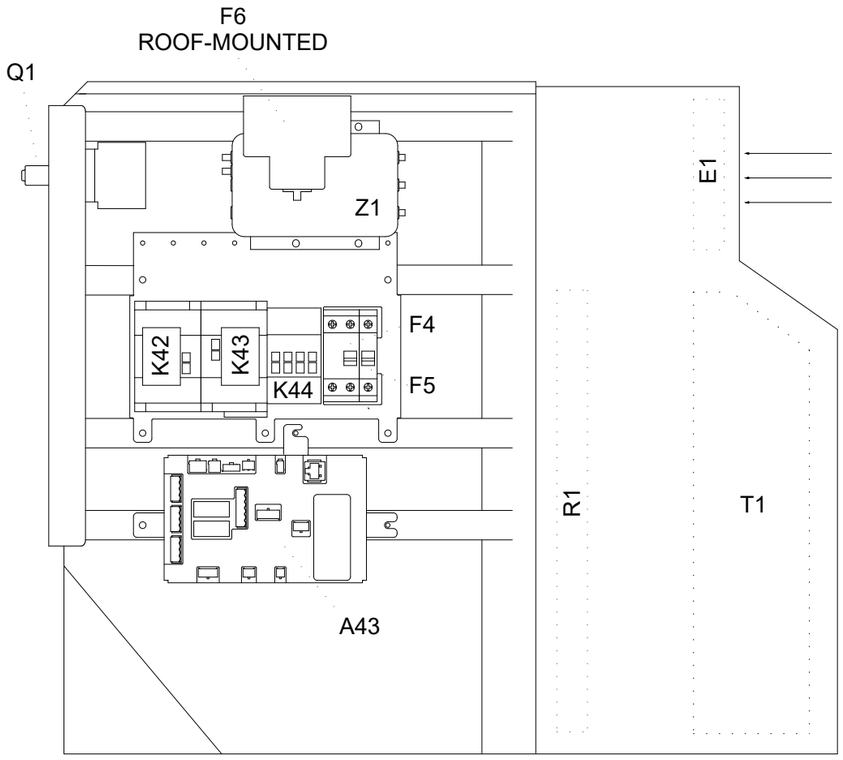
1	2	3	4	5	6	7	8

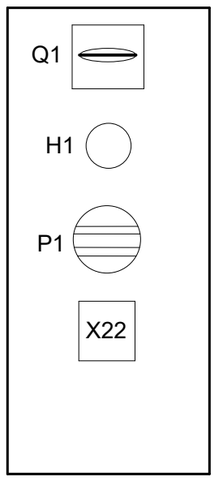
LEFT VIEW

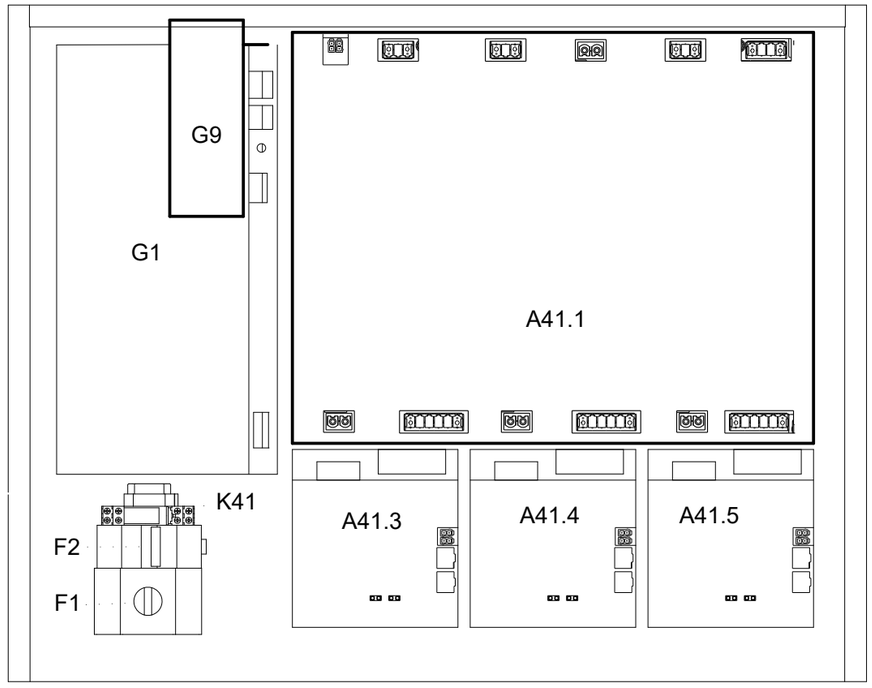
FRONT PANEL

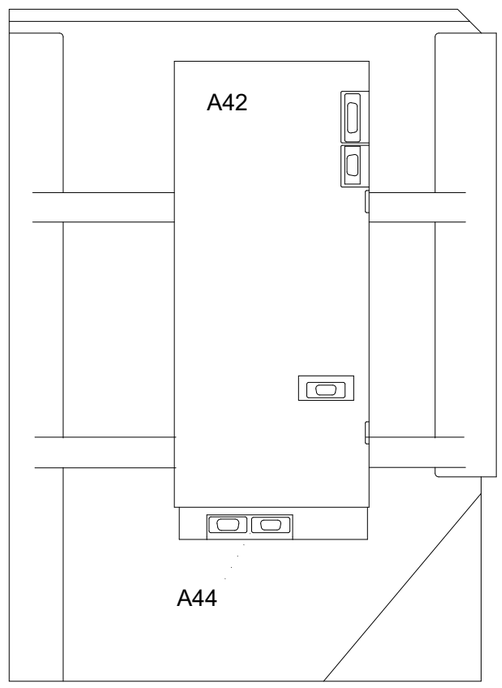
FRONT VIEW

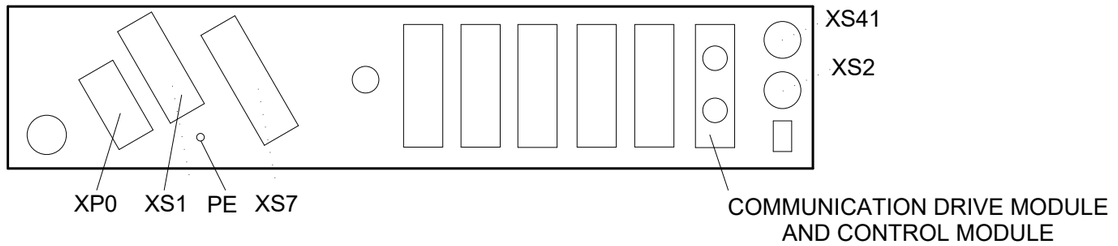
RIGHT VIEW











Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D VIEW OF DRIVE MODULE CABINET	Status: APPROVED	Plant: = Location: + Sublocation: +
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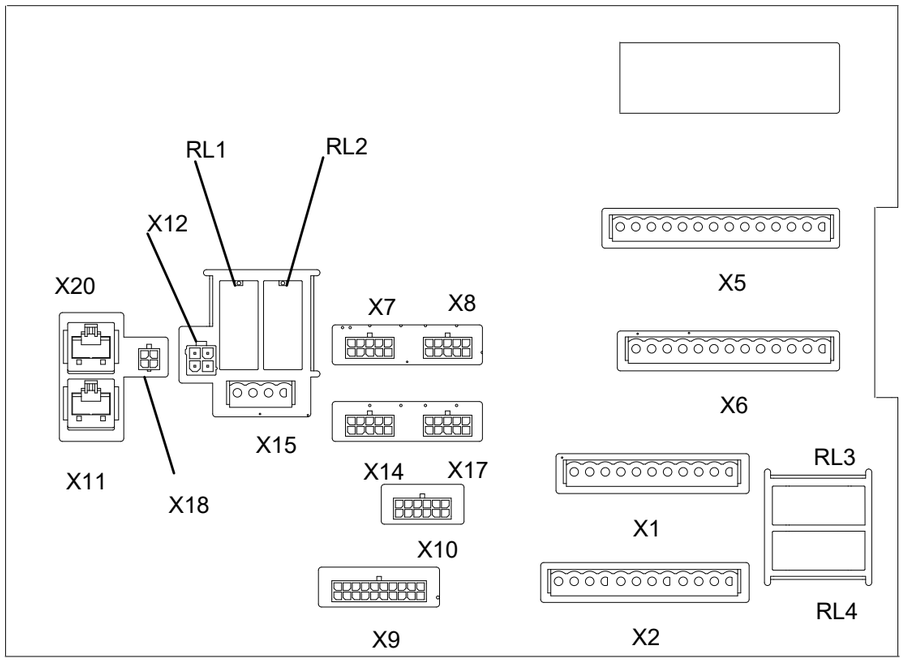
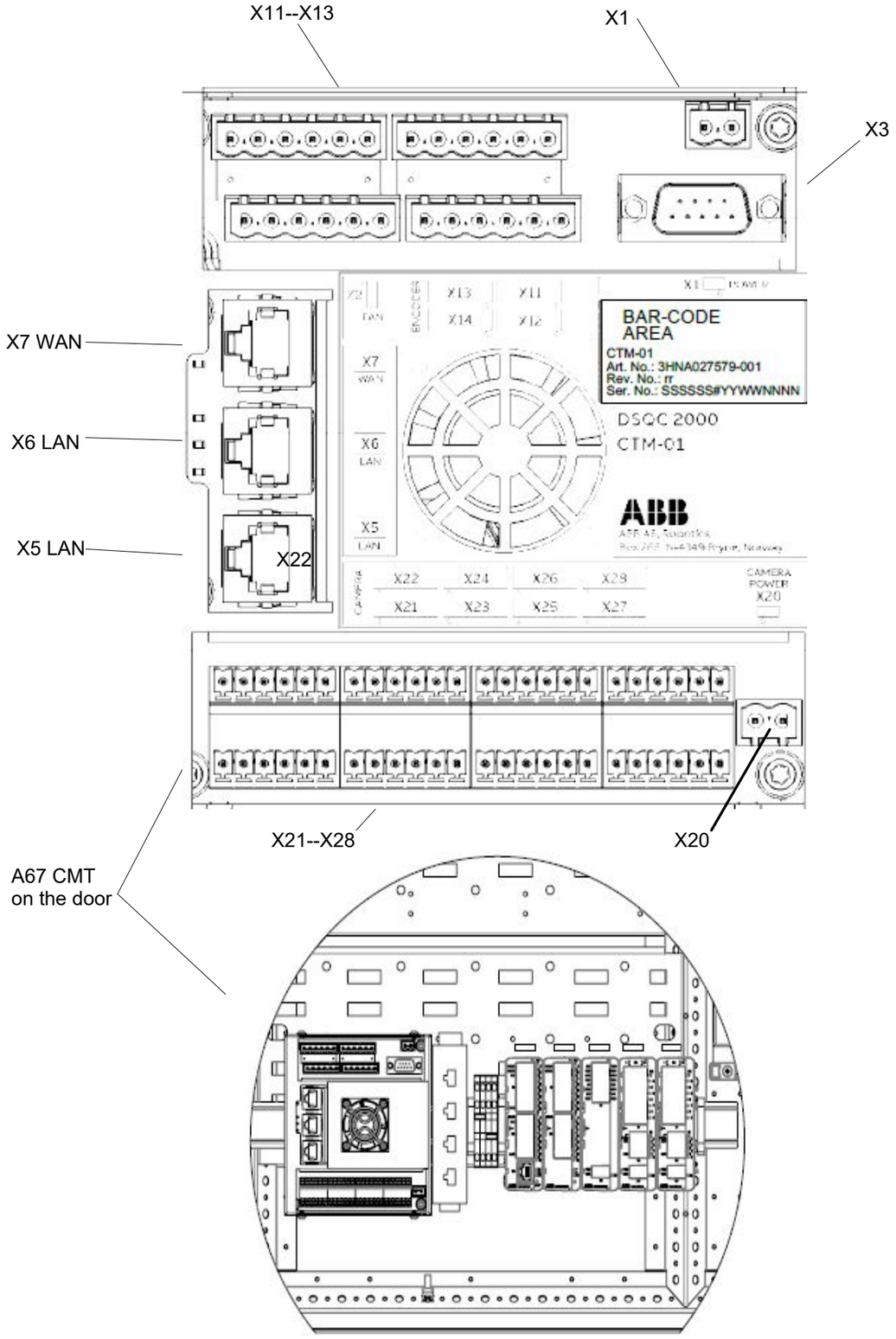
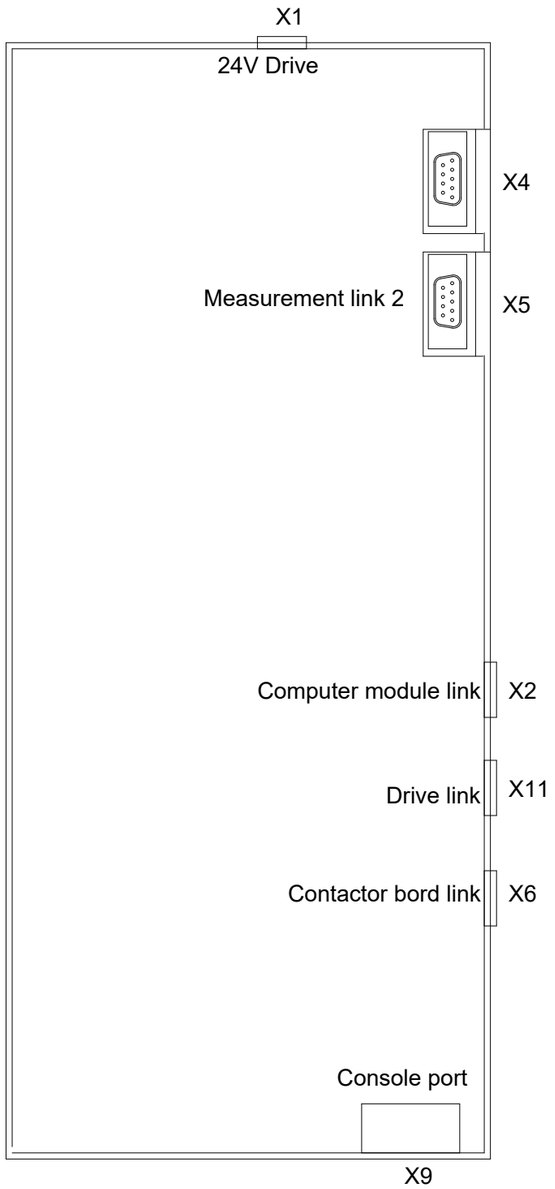
PANEL
BOARD
A21



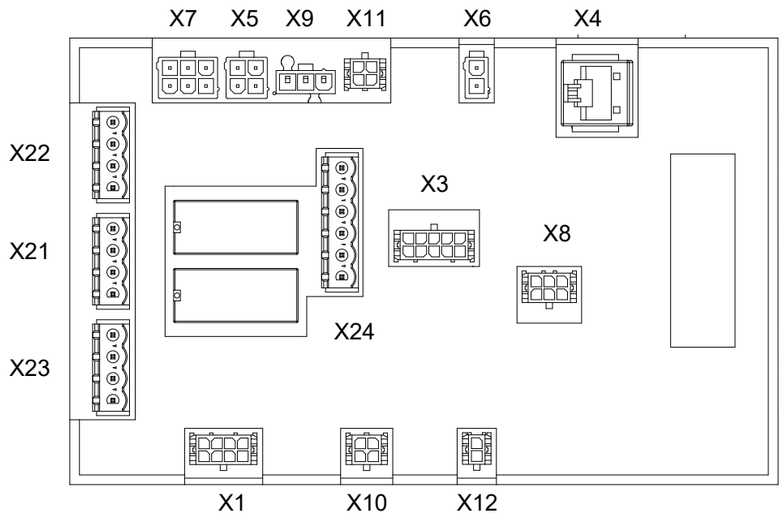


Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D VIEW OF PANEL BOARD CONVEYOR TRACKING	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page20 Next 21 Total 164

A42 Axis computer unit

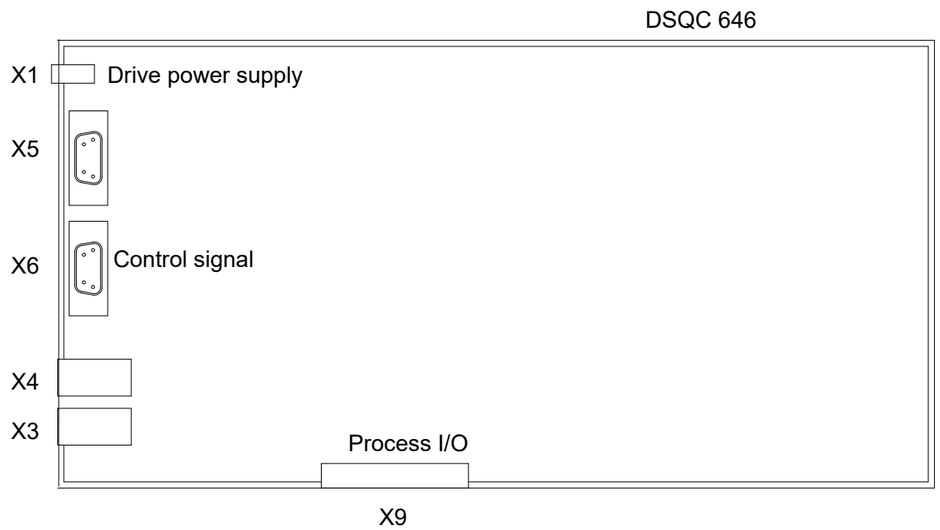


A43 Contactor unit



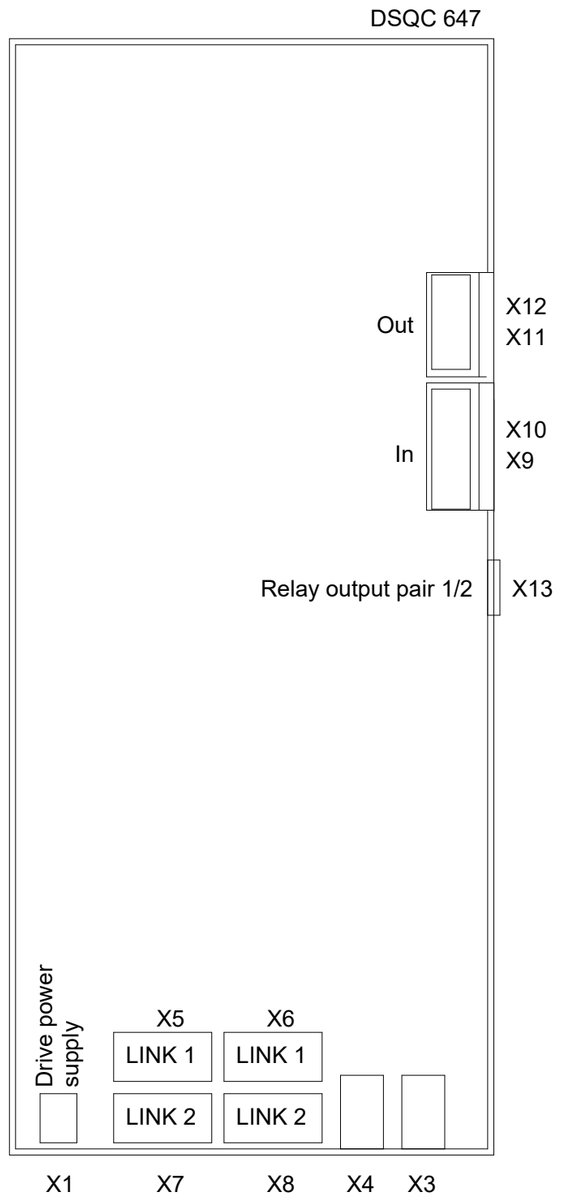
A44.1 EPS unit

DSQC 646



A44.2 Safe move

DSQC 647



Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D VIEW OF CONTACTOR & AXIS COMPUTER UNIT	Status: APPROVED	Plant: = Location: + Sublocation: +
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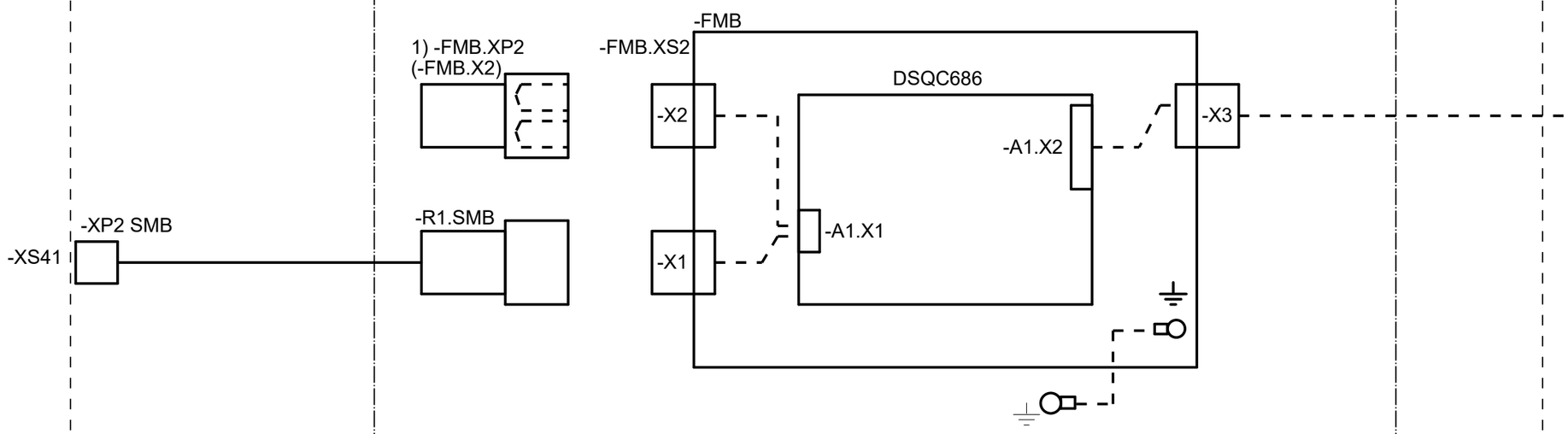
-CONTROLLER

Reference to circuit diagram

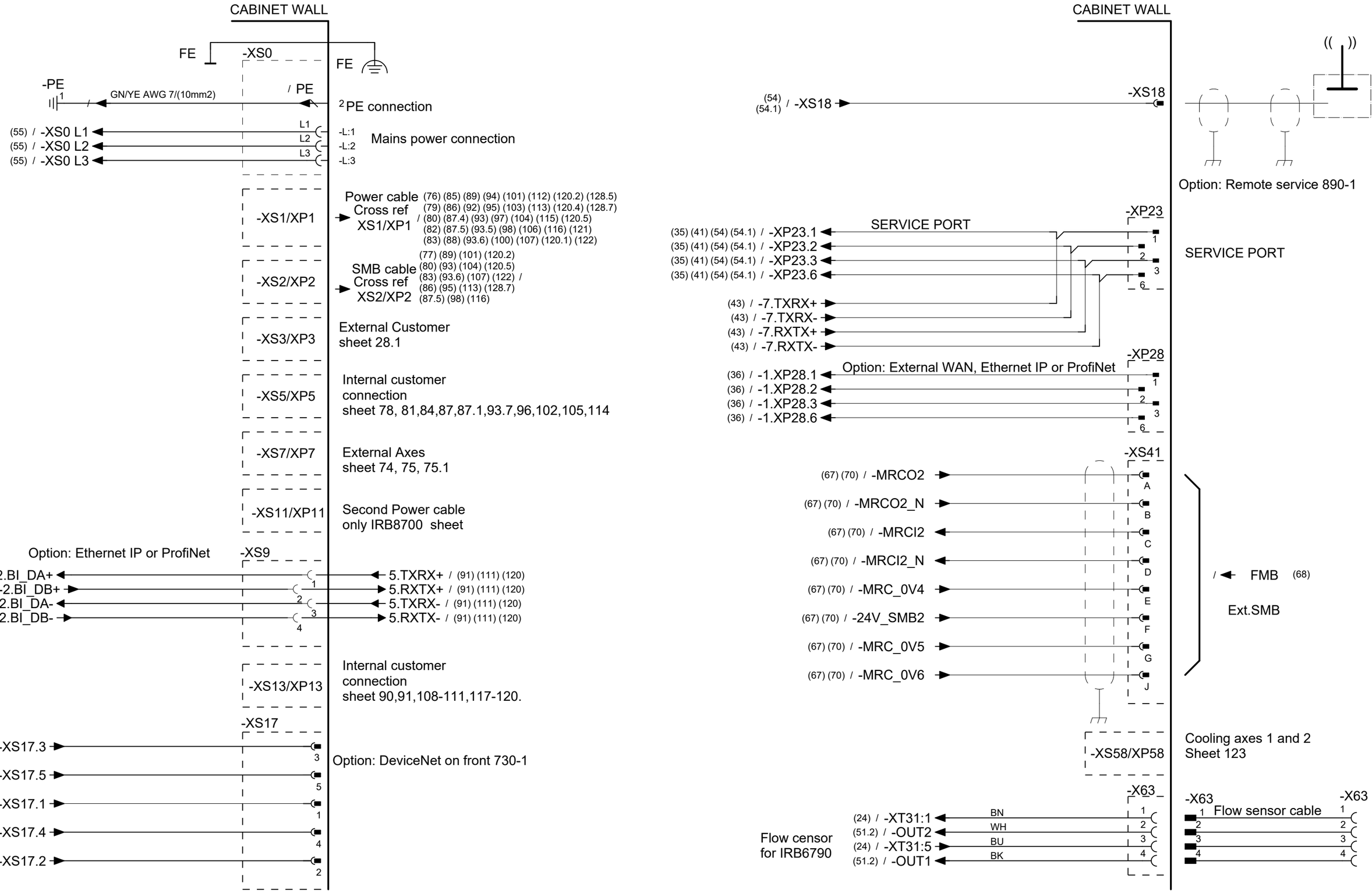
-FMB Option: 738-1

1) FMB.XP2 Bridge connector if no other option.

-MANIPULATOR



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D VIEW OF VOLTAGE MEARSUREMENT BOX	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 22 Next 23 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTACT AT THE CABINET WALL	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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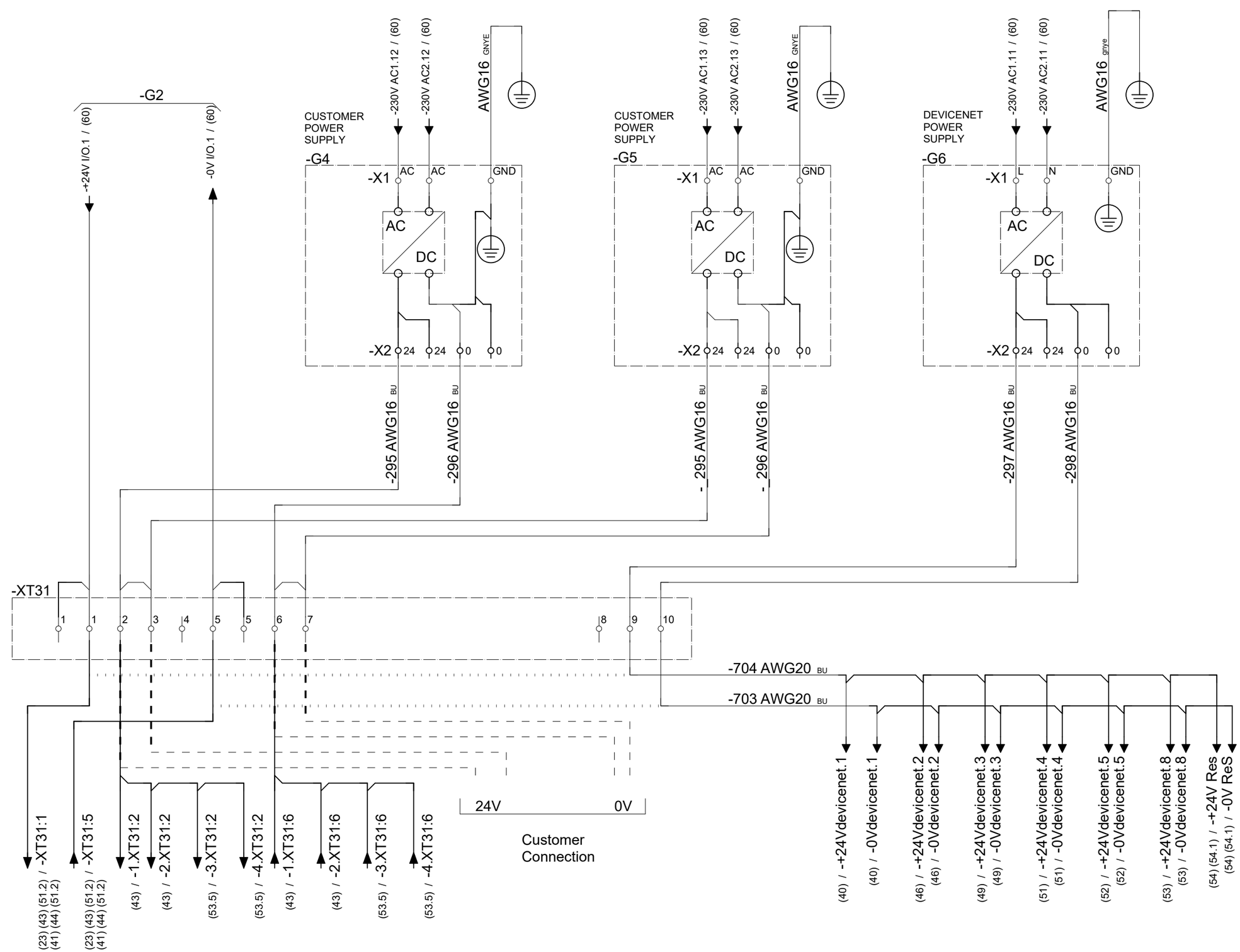

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D OPT:POWER SUPPLY DSQC609 XT31, G4, G5, G6	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011	Rev. Ind 17
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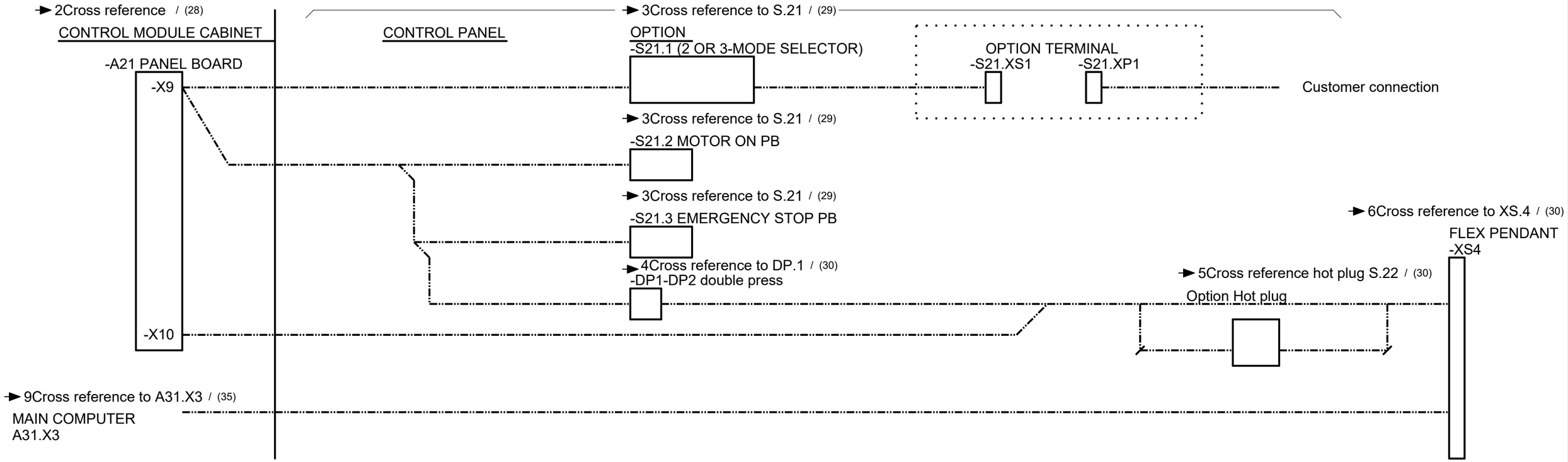
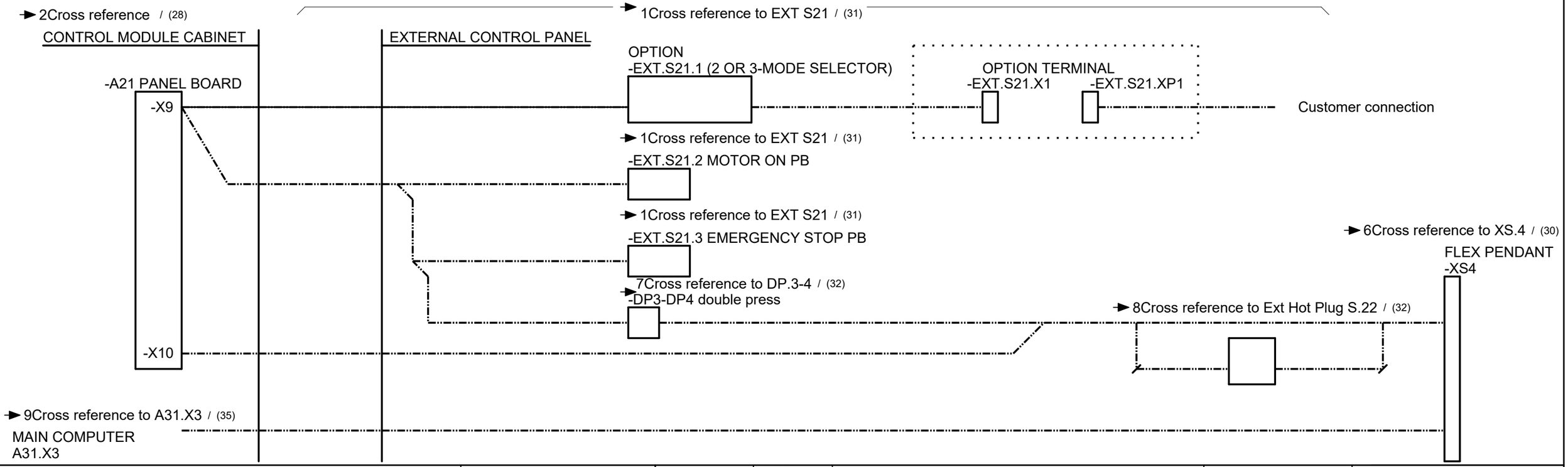
BLOCK DIAGRAM - RUN CHAIN IN A21 PANEL BOARD AND S21 CONTROL PANEL WITH OPTIONS



BLOCK DIAGRAM - RUN CHAIN AND EXTERNAL CONTROL PANEL WITH OPTIONS



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN block diagram in PANEL BOARD A21 and CONTROL PANEL S21	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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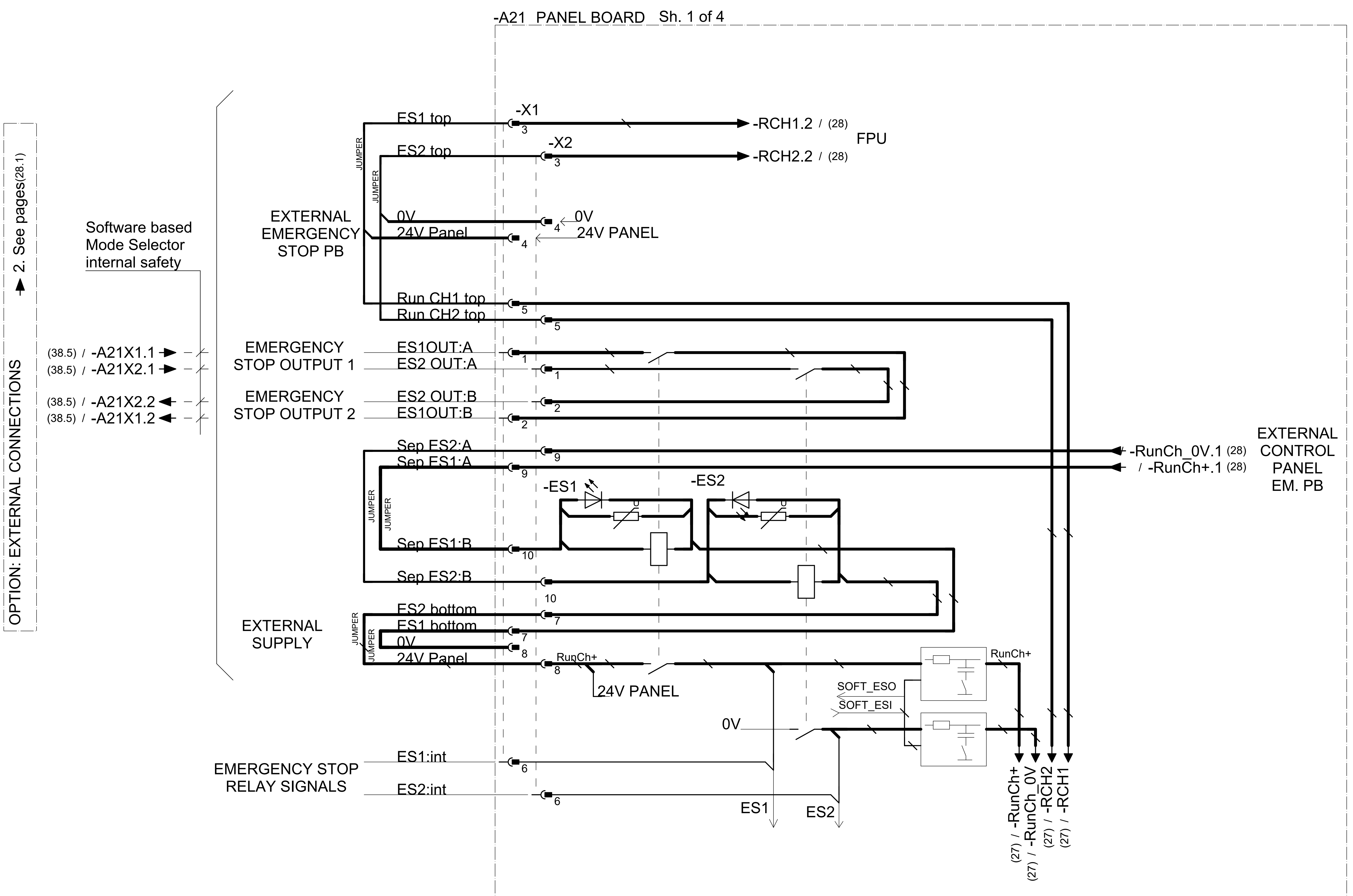

-A21 PANEL BOARD Sh. 1 of 4
OPTION: EXTERNAL CONNECTIONS
2. See pages(28.1)
Software based
Mode Selector
internal safety
EXTERNAL
EMERGENCY
STOP PB
ES1 top
ES2 top
-X1
-X2
-RCH1.2 / (28)
-RCH2.2 / (28)
FPU
JUMPER
0V
24V Panel
0V
24V PANEL
Run CH1 top
Run CH2 top
(38.5) / -A21X1.1
(38.5) / -A21X2.1
(38.5) / -A21X2.2
(38.5) / -A21X1.2
EMERGENCY
STOP OUTPUT 1
EMERGENCY
STOP OUTPUT 2
ES1OUT:A
ES2 OUT:A
ES2 OUT:B
ES1OUT:B
Sep ES2:A
Sep ES1:A
-RunCh_0V.1 (28)
/ -RunCh+.1 (28)
EXTERNAL
CONTROL
PANEL
EM. PB
-ES1
-ES2
Sep ES1:B
Sep ES2:B
EXTERNAL
SUPPLY
ES2 bottom
ES1 bottom
0V
24V Panel
RunCh+
24V PANEL
RunCh+
SOFT_ESO
SOFT_ESI
0V
EMERGENCY STOP
RELAY SIGNALS
ES1:int
ES2:int
ES1
ES2
(27) / -RunCh+
(27) / -RunCh_0V
(27) / -RCH2
(27) / -RCH1

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN and PANEL BOARD A21 Sh. 1 of 4	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011	Rev. Ind 17 / Page26 / Next 27 / Total 164

Option: External Enable Device → 1 See pages (28.1)

-A21 PANEL BOARD Sh. 2 of 4

(28) / -SPEED

AUTO STOP

GENERAL STOP

SUPERIOR STOP

JUMPER -X5 12 24V PANEL
JUMPER 6 24V PANEL
JUMPER 7 0V
JUMPER 1 0V

24V PANEL

Not connected. Ref to manual. AS1± 11 AS1
Not connected. Ref to manual. AS1- 9 AS2
Not connected. Ref to manual. AS2+ 5 AS2
Not connected. Ref to manual. AS2- 3 GS1
GS1+ 10 GS1
GS1- 8 GS2
GS2+ 4 GS2
GS2- 2

-MAN2 / (28)
-MAN1 / (28)
EN2 / (28)
EN1 / (28)
-RunCh_0V / (26)
-RunCh+ / (26)
-RCH2 / (26)
-RCH1 / (26)

AS1 SOFT AS
AS2
GS1 SOFT GS
GS2

&

-X6 JUMPER JUMPER 6 1 24V PANEL 0V
SS1+ 4 SS1
SS1- 2 SS2
SS2+ 5 SS2
SS2- 3

SOFT SS

(38.5) / -A21X6.4 290 AWG BU
(38.5) / -A21X6.2 291 AWG BU
(38.5) / -A21X6.5 292 AWG BU
(38.5) / -A21X6.3 293 AWG BU

Software based Mode Selector internal safety

EXTERNAL ENABLE DEVICE
EN1_1A 7
EN1_1B 8
EN2_1B 9
EN2_1A 10

-EN1_1A.1 / (28)
-EN2_1A.1 / (28)

CH1
CH2

Drive module1 A43.X1

-X7
1 RUN CH1 → -RUN_CH1 / (62)
2 0V RUN CH1Ret → -RUN_CH1Ret / (62)
4 RUN CH2Ret → -RUN_CH2Ret / (62)
3 24V PANEL RUN CH2 → -RUN_CH2 / (62)
5 SPEED → -SPEED.1 / (62)
6 0V → -0V / (62)
7 ENABLE2_1 ← -ENABLE2.1 / (62)
8 ENABLE2_1Ret ← -ENABLE2_1Ret / (62)
9 AC_ON1 → AC_ON.1 / (59)
10 0V ← 0V.1 / (59)

Drive module2 A43.X1

-X8
1 RUN CH1
2 0V RUN CH1Ret
4 RUN CH2Ret
3 24V PANEL RUN CH2 BU
5 SPEED
6 0V
7 ENABLE2_2 if not used
8 ENABLE2_2Ret BU
9 AC_ON1 if not used
10 0V

Drive module3 A43.X1

-X14
1 RUN CH1
2 0V RUN CH1Ret
4 RUN CH2Ret
3 24V PANEL RUN CH2
5 SPEED
6 0V if not used
7 ENABLE2_3
8 ENABLE2_3Ret BU
9 AC_ON1 if not used
10 0V

Drive module4 A43.X1

-X17
1 RUN CH1
2 0V RUN CH1Ret
4 RUN CH2Ret
3 24V PANEL RUN CH2 BU
5 SPEED
6 0V if not used
7 ENABLE2_4
8 ENABLE2_4Ret BU
9 AC_ON1 if not used
10 0V

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN and PANEL BOARD A21 Sh. 2 of 4	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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X9 and X10 → 2Cross reference / (25) (25) to board A21 blockdiagram.

-A21 PANEL BOARD Sh. 3 of 4

(27) / -SPEED ← 1

-X9

1	24V PANEL	-A21X9:1 / (29) (31)
2	AUTO2	-A21X9:2 / (29) (31) (38.5)
3	MAN2	-A21X9:3 / (29) (31) (38.5)
4	MAN FS2	-A21X9:4 / (29) (31) (38.5)
5	0V	-A21X9:5 / (29) (31)
6	AUTO1	-A21X9:6 / (29) (31) (38.5)
7	MAN1	-A21X9:7 / (29) (31) (38.5)
8	MAN FS1	-A21X9:8 / (29) (31) (38.5)
9	24V PANEL	-A21X9:9 / (29) (29)
10	MOTON	-A21X9:10 / (29) (29)
11	ES PANEL 2B	-A21X9:11 / (29) (29)
12	ES PANEL 2B	-A21X9:12 / (29) (29)
13	ES FPU2A	-A21X9:13 / (29) (29)
14	ES FPU2A	-A21X9:14 / (29) (29)
15	ES PANEL 1B	-A21X9:15 / (29) (29)
16	ES PANEL 1B	-A21X9:16 / (29) (29)
17	ES FPU1A	-A21X9:17 / (29) (29)
18	ES FPU1A	-A21X9:18 / (29) (29)
19	MONLMP	-A21X9:19 / (29) (29)

(27) / -EN2
(27) / -MAN2
(27) / -EN1
(27) / -MAN1
(26) / -RunCh_0V.1
(26) / -RunCh+.1
/ -MAN1

-PE1 — GN/YE — EARTH — EARTH — GN/YE — -PE1

-X12

(28.2) / -+24VSYS.1	250 AWG18 BU	1	24V SYS	24V FPU POWER
(28.2) / -0VSYS.1	251 AWG18 BU	2	0V SYS	
(28.2) / -+24VCOOL8.2	252 AWG20 BU	3		24V PANEL
(28.2) / -0VCOOL8.2	253 AWG20 BU	4		

-X10

1	24V FPU	BK	-24VFPUPOWER / (30) (32)
2	0V	BN	-0VPANELB / (30) (32)
3	EN1_1	RD	-EN1_1 / (30) (30) (32)
4	EN2_1	OG	-EN2_1 / (30) (30) (32)
5	YE		
6	GN		-1.-ESFPU1:A / (30) (30)
7	BU		-1.-ESFPU1:B / (30) (30)
8	VT		-1.-ESFPU2:A / (30) (30)
9			-1.-ESFPU2:B / (30) (30)

EXT.PANEL

Connected If Internal Control Panel. If internal Hot plug.

(27) / -EN1_1A.1
(27) / -EN2_1A.1
(26) -RCH1.2
(26) -RCH2.2

Jumper removed when option Internal Control Panel

AWG20 BU

24V PANEL

OP_COM
OP_MAN
OP_AUTO
OP_MAN_FS

-X15

1	OP_COM
3	OP_MAN
2	OP_AUTO
4	OP_MAN_FS

-X11

AWG24

2	WHGN	-+24V_Sig.ref. / (35)
3	BU	-RS485+ / (35)
4	WHBU	-RS485- / (35)
7	WHBN	-0V_Sig.ref. / (35)

A31.X7 MAIN COMPUTER

-X20

(28.2) / -X20:1	1	RS485+
(28.2) / -X20:2	2	RS485-
(28.2) / -RS485+.1	4	24V DC
(28.2) / -RS485-.1	5	
(28.2) / -24DC.1	3	0V
(28.2) / -X20:6	6	
(28.2) / -0V.2	7	
(28.2) / -X20:8	8	

-X18

24V COOL	2	24VCOOL / (61)
TACHO	3	TACHO / (61)
FAN 0V	1	FAN 0V / (61)

EXTERNAL COMPUTER FAN

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN and PANEL BOARD A21 Sh. 3 of 4
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			

Status: APPROVED	Plant: = Location: + Sublocation:+		
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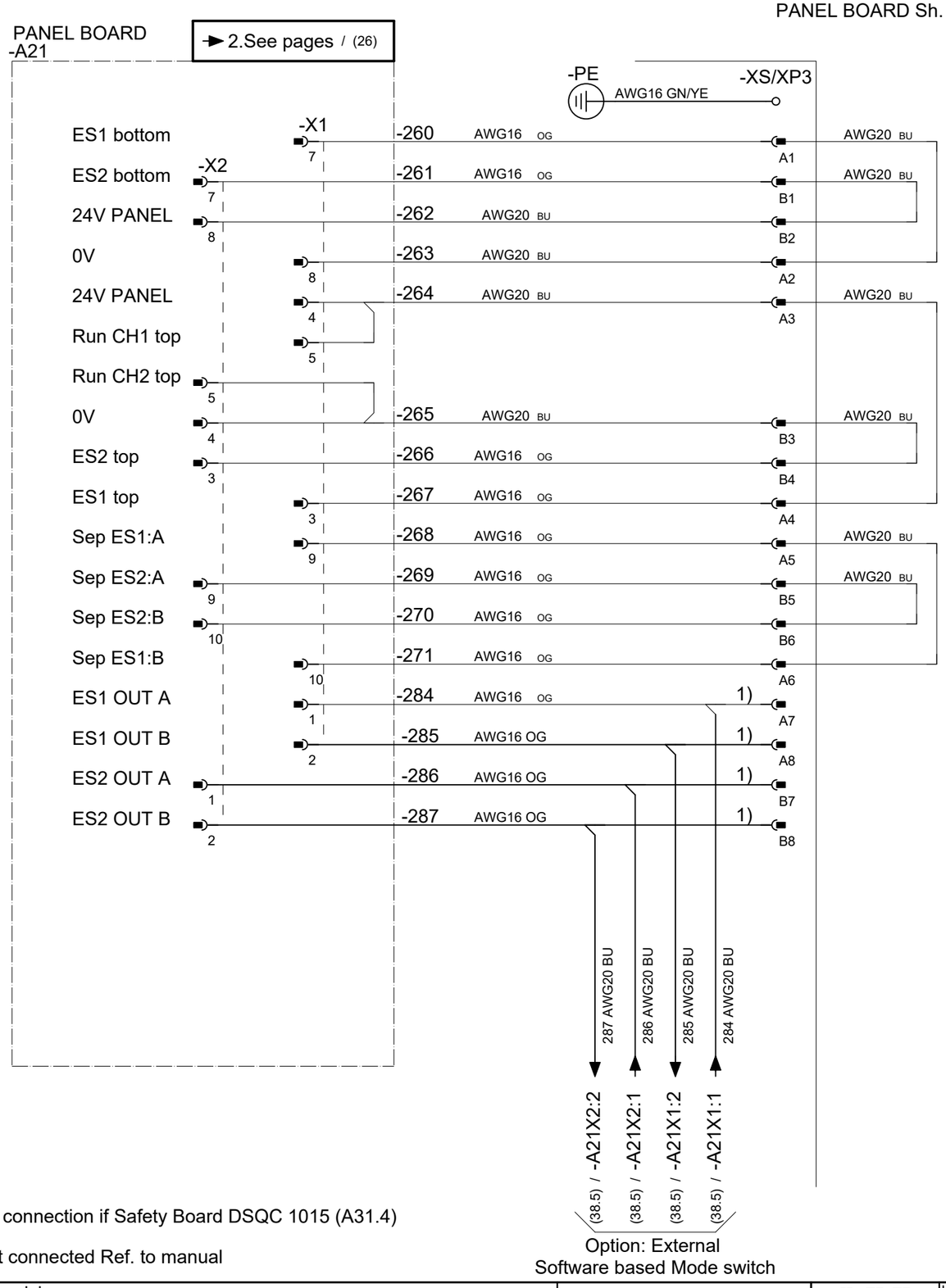

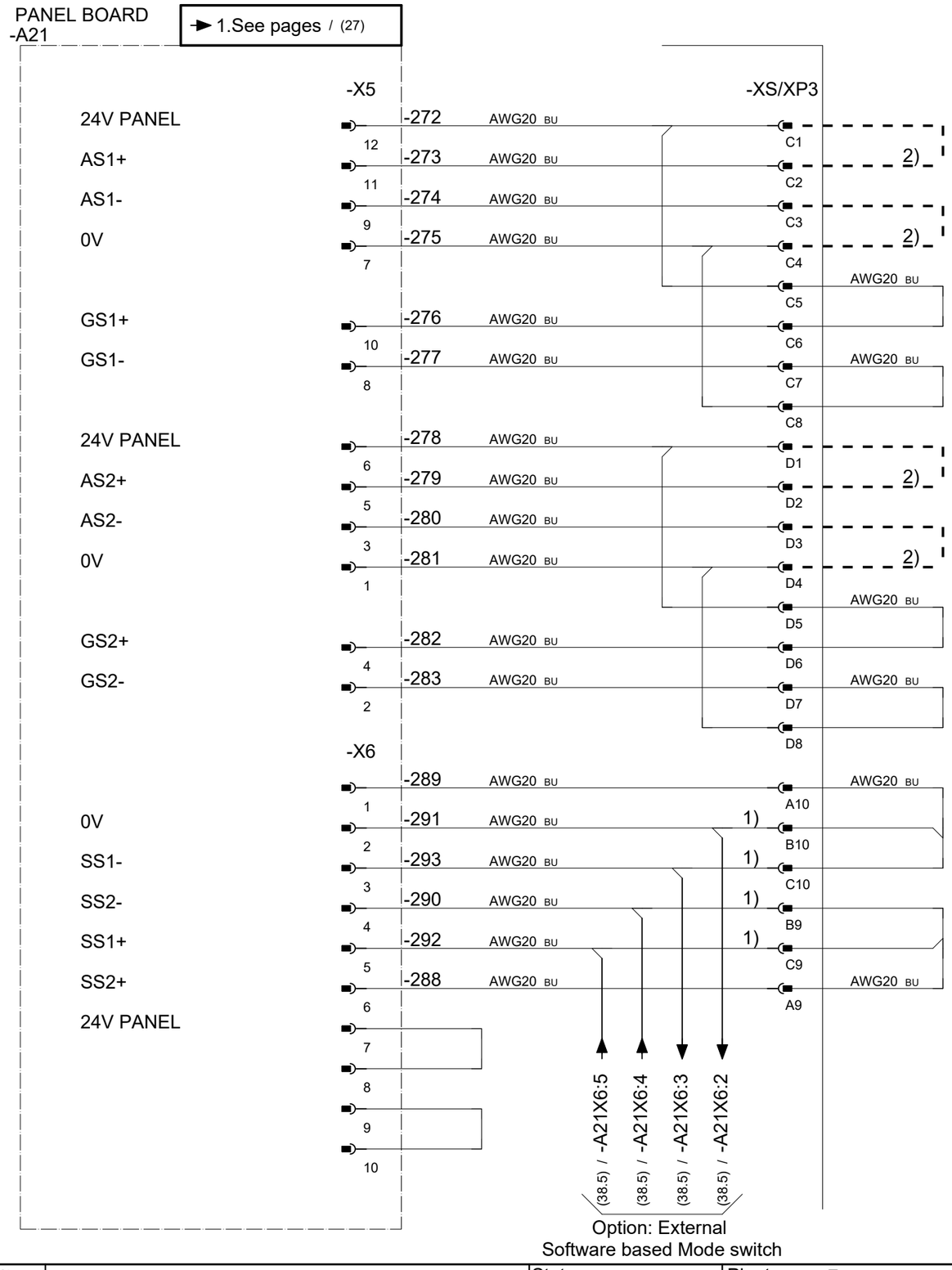

1) No connection if Safety Board DSQC 1015 (A31.4)

2) Not connected Ref. to manual

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D PANEL BOARD A21 Sh. 4 of 4 Opt:EXT.CUSTOMER. CONNECT. SYSTEM SIGNALS	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011	Rev. Ind 17

-A21.X12

(60) / +24VSYS
(60) / -0VSYS
(60) / +24VCOOL8
(60) / 0VCOOL8

Connection alt. 1
Standard

+24VSYS.1 / (28)
0VSYS.1 / (28)
+24VCOOL8.2 / (28)
0VCOOL8.2 / (28)

Connection alt. 2
Opt. Safety module
DSQC1015

Software based
Mode Selector
internal safety

595 AWG20 BU
596 AWG20 BU

A31.4X1.1 / (38.5)
A31.4X1.2 / (38.5)

-A21.X21.1

1 597 AWG16 BU
2 598 AWG16 BU
3 599 AWG16 BU
4 600 AWG16 BU

Y1
Y2

-A21.X12

Connection alt. 3
Opt. 52 degree
fan panel board.

+24VCOOL8.1 / (61)
0VCOOL8.1 / (61)

-XP12

-A21.XS12

250 AWG18 BU 24V SYS
251 AWG18 BU 0V SYS
252 AWG20 BU
253 AWG20 BU

Connection alt. 4
Opt. Safety module DSQC1015
and Opt. 52 degree fan panel board.

595 AWG20 BU
596 AWG20 BU

A31.4X1.1 / (38.5)
A31.4X1.2 / (38.5)

Software based
Mode Selector
internal safety

+24VCOOL8.1 / (61)
0VCOOL8.1 / (61)

-A21.X21.1

1 597 AWG16 BU
2 598 AWG16 BU
3 599 AWG16 BU
4 600 AWG16 BU

Y1
Y2

-A21.X12
-XP12
-A21.X12

250 AWG18 BU 24V SYS
251 AWG18 BU 0V SYS
252 AWG20 BU
253 AWG20 BU

OPTION:STATUS
LED ON FRONT
-A23

-ES2
-ES1
-SUP_ST2
-SUP_ST1
-GS2
-GS1
-AS2
-AS1
-ENABLE1

-X2

AWG26

WHBN
BN
WHOG
OG
BU
WHBU
WHGN
GN

RS485+
RS485-
24V DC
0V

X20:1 / (28)
X20:2 / (28)
RS485+.1 / (28)
RS485-.1 / (28)
24DC.1 / (28)
X20:6 / (28)
0V.2 / (28)
X20:8 / (28)

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D Opt. LED on front; Software based Mode Selector Internal safety harness	Status: APPROVED	Plant: = Location: + Sublocation:+
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3Cross reference to S.21 / (25) (25) (25)

-S21 CONTROL PANEL Sh.1

2 Mode selector is Standard, for Run chain Operating.
2 and 3 Mode selector is not used with software switch, for Run chain Operating.

(28) / -A21X9:3 -222 AWG20
(28) / -A21X9:2 -221 AWG20
(28) / -A21X9:7 -226 AWG20
(28) / -A21X9:6 -225 AWG20

2-MODE SELECTOR
-S21.1
AUTO MAN AUTO MAN
1 3 5 7
2 6

Option: Extended 2 Mode Selector on a specific sheet.

Ref_Extended_2Mode (29.1) (29.1)

(28) / -A21X9:5 -224 AWG20
(28) / -A21X9:1 -220 AWG20

3 Mode selector is optional for Run chain Operating.

(28) / -A21X9:8 -227 AWG20
(28) / -A21X9:4 -223 AWG20

3-MODE SELECTOR
-S21.1
AUTO MAN MAN 100% AUTO MAN MAN 100%
6 12 10 2 4 8
5 1

Option: Extended 3 Mode Selector on a specific sheet.

Ref_Extended_3Mode (29.1) (29.1)

-XS/XP37

(28) / -A21X9:9 -588 AWG20 BU 1
(28) / -A21X9:10 -589 AWG20 BU 2
(28) / -A21X9:19 -590 AWG20 BU 11
(28) / -A21X9:17 -586 AWG20 OG 9
(28) / -A21X9:18 -587 AWG20 OG 10
(28) / -A21X9:13 -582 AWG20 OG 5
(28) / -A21X9:14 -583 AWG20 OG 6
(28) / -A21X9:11 -580 AWG20 OG 3
(28) / -A21X9:12 -581 AWG20 OG 4
(28) / -A21X9:15 -584 AWG20 OG 7
(28) / -A21X9:16 -585 AWG20 OG 8

24V Panel
MOTON
MONLMP

-237 AWG20 OG ES panel 1:A
-238 AWG20 OG ES panel 1:A
-233 AWG20 OG ES panel 2:A
-234 AWG20 OG ES panel 2:A
-231 AWG20 OG ES panel 2:B
-232 AWG20 OG ES panel 2:B
-235 AWG20 OG ES panel 1:B
-236 AWG20 OG ES panel 1:B

Software based
Mode Selector
internal safety

(28) / -A21X9:17 -237 AWG20 ES panel 1:A
(28) / -A21X9:18 -238 AWG20 ES panel 1:A
(28) / -A21X9:13 -233 AWG20 ES panel 2:A
(28) / -A21X9:14 -234 AWG20 ES panel 2:A
(28) / -A21X9:11 -231 AWG20 ES panel 2:B
(28) / -A21X9:12 -232 AWG20 ES panel 2:B
(28) / -A21X9:15 -235 AWG20 ES panel 1:B
(28) / -A21X9:16 -236 AWG20 ES panel 1:B

EMERGENCY PB
-S21.3
21 22
11 12

-XP37
Connected jumper when no Emergency Stop on Panel.

1 ES panel 2:A-B
2 ES panel 2:A-B
11 ES panel 1:B-A
9 ES panel 1:B-A
10 -591 AWG20 OG
5 -592 AWG20 OG
6 -593 AWG20 OG
3 -594 AWG20 OG
4
7
8

MOTOR ON PB
S21.2
14 13
X2 X1

(28) / -A21X9:10 -229 AWG20
(28) / -A21X9:19 -230 AWG20
(28) / -A21X9:9 -228 AWG20

-PE1 GN/YE
-PE1 GN/YE

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN, EM.STOP, Standard 2 MODE SELECTOR option 3 MODE SELECTOR	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17

-S21 CONTROL PANEL Sh.2

Option: Extended 2 Mode Selector
Run chain Operating

(29) / Ref_Extended_2Mode

-S21.1-XS1 -S21.1-XP1

-241 EXT.AUTO1
-240 EXT.MAN1
-245 EXT.AUTO2
-244 EXT.MAN2
OPTION
-246 EXT.COMMON2
-242 EXT.COMMON1

Customer connection

Option: Extended 3 Mode Selector
Run chain Operating

(29) / Ref_Extended_3Mode

-S21.1-XS1 -S21.1-XP1

-245 EXT.AUTO2
-244 EXT.MAN2
-243 EXT MAN FS2
-241 EXT.AUTO1
-240 EXT.MAN1
-239 EXT MAN FS1
OPTION
-242 EXT.COMMON1
-246 EXT.COMMON2

Customer connection

Option:With Safety board
Run chain Operating,
Extended 2 Mode Selector

(29) / Ref_Extended_2Mode

-S21.1-XS1 -S21.1-XP1

-241 EXT.AUTO1
-240 EXT.MAN1
-245 EXT.AUTO2
-244 EXT.MAN2
OPTION
-246 EXT.COMMON2
-242 EXT.COMMON1

572 EXT.AUTO1 / (38.5)
573 EXT.MAN1 / (38.5)
575 EXT.AUTO2 / (38.5)
576 EXT.MAN2 / (38.5)
581 0V COMMON_CH2 / (38.5)
580 24V COMMON_CH1 / (38.5)

Hardware based Mode switch

Option:With Safety board
Run chain Operating,
Extended 3 Mode Selector

(29) / Ref_Extended_3Mode

-S21.1-XS1 -S21.1-XP1

-245 EXT.AUTO2
-244 EXT.MAN2
-243 EXT MAN FS2
-241 EXT.AUTO1
-240 EXT.MAN1
-239 EXT MAN FS1
OPTION
-242 EXT.COMMON1
-246 EXT.COMMON2

575 EXT.AUTO2 / (38.5)
576 EXT.MAN2 / (38.5)
577 EXT.MAN FS2 / (38.5)
572 EXT.AUTO1 / (38.5)
573 EXT.MAN1 / (38.5)
574 EXT.MAN FS1 / (38.5)
580 24V COMMON_CH1 / (38.5)
581 0V COMMON_CH2 / (38.5)

Hardware based Mode switch

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN S21, 2 & 3 EXTEND MODE SELECTOR, and HARDW. MODE SWITCH with SAFETY BOARD	Status: APPROVED	Plant: = Location: + Sublocation: +
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4Cross reference to DP.1 / (25)
5Cross reference hot plug S.22 / (25)
6Cross reference to XS.4 / (25) (25)

Option with HOT PLUG
-S22
-H1
SIGNAL LAMP
BU1
64 63 X1 X2
14 13
53 54

CONTROLLER

(28) / 1.-ESFPU1:A YE -209 BU
(28) / 1.-ESFPU2:A BU -211 BU
(28) / 1.-ESFPU2:B VT -212 BU
(28) / 1.-ESFPU1:B GN -210 BU
(28) / -EN1_1 RD 21 22 -207 BU
(28) / -EN2_1 OG 41 42 -208 BU

Without hot plug.

-XS4

(28) / 1.-ESFPU1:A YE 3 1) 2)
(28) / 1.-ESFPU2:A BU 5 1) 2)
(28) / 1.-ESFPU2:B VT 6 1) 2)
(28) / 1.-ESFPU1:B GN 4 1) 2)
(28) / -EN1_1 RD 7 2)
(28) / -EN2_1 OG 17 2)

PANEL BOARD A21-X10
(28) / -24VFPUPOWER BK 205 2 -Y.1 205 1 12 2)
(28) / -0VPANELB BN 206 2 -Y.2 206 2 8 2)

MAIN COMPUTER A31.X3
(35) / -TD+ AWG24 4x2 SFTP OG 13 2)
(35) / -TD- WHOG 14 2)
(35) / -RD+ GN 15 2)
(35) / -RD- WHGN 16 2)

1) Connect to XS4 when option External Control Panel.
Or cold plug(included in the delivery)

-XP4
3 RunCh1
5 RunCh0
6 0V
4

2) If option With Standard flexpendant cable

2.ESFPU1.A / (30.1)
2.ESFPU2.A / (30.1)
2.ESFPU2.B / (30.1)
2.ESFPU1.B / (30.1)
2.EN1.1 / (30.1)
2.EN2.1 / (30.1)
2.24VFPUPOWER / (30.1)
2.0VPANELB / (30.1)
2.TD+ / (30.1)
2.TD- / (30.1)
2.RD+ / (30.1)
2.RD- / (30.1)

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FPU, FLEXPENDANT and option HOT PLUG	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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PAST DESIGN

HOLD TO RUN DEVICE
-EXT.T10.1

EMERGENCY-STOP
-K1
EN-DEVICE
-K2

Option: 983-1 Hold to run device

FLEXPENDANT
-ETH_FPU

EMERGENCY-STOP
-K1
EN-DEVICE
-K2

-EXT.XP4

(30) / (32) / 2.ESFPU1.A → 3
(30) / (32) / 2.ESFPU2.A ← 5
(30) / (32) / 2.ESFPU2.B → 6
(30) / (32) / 2.ESFPU1.B ← 4
(30) / (32) / 2.EN1.1 ← 7
(30) / (32) / 2.EN2.1 ← 17
(30) / (32) / 2.24VFPUPOWER → 1, 12
(30) / (32) / 2.0VPANELB → 2, 8
(30) / (32) / 2.TD+ → 13
(30) / (32) / 2.TD- → 14
(30) / (32) / 2.RD+ → 15
(30) / (32) / 2.RD- → 16

-USB

T10 JOGGING DEVICE
-EXT.T10

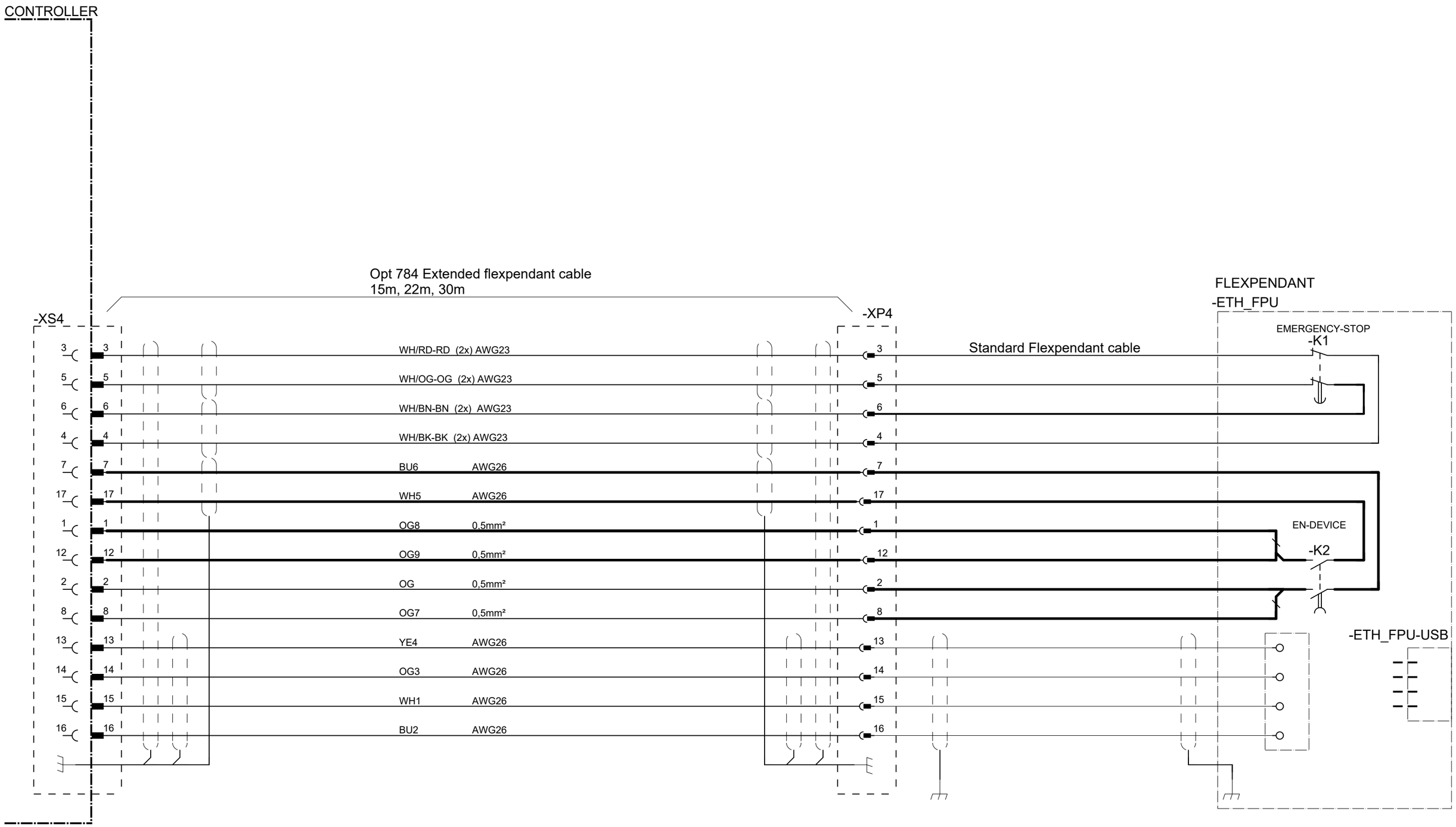
EMERGENCY-STOP
-K1
EN-DEVICE
-K2

Option: 976-1 T10 Jogging device

-ETH_FPU

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FPU, FLEXPENDANT and Opt. HOLD TO RUN DEVICE T10 JOGGING DEVICE	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17

Harness: 3HAC055665-002,-003,-004



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FPU, Extended FLEXPENDANT cable 15 - 30 m	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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1Cross reference to EXT S21 / (25) (25) (25)

-EXT-S21 EXT.CONTROLL PANEL/BOX Sh.1 of 2

2 Mode selector, Option for Run chain Ext.Operating.
2 and 3 Mode selector is not used with software switch.

(28) / A21X9:3 — RD — -222 AWG20
(28) / A21X9:2 — BN — -221 AWG20
(28) / A21X9:7 — BU — -226 AWG20
(28) / A21X9:6 — GN — -225 AWG20

2-MODE SELECTOR
-EXT-S21.1
AUTO MAN AUTO MAN
1 3 5 7
2 6

Option: Extended 2 Mode Selector see sheet. → Ext_Extended_2_Mode / (31.1) (31.1)

(28) / A21X9:5 — YE — -224 AWG20
(28) / A21X9:1 — BK — -220 AWG20

3 Mode selector is optional for
Run chain Operating.

(28) / A21X9:8 — VT — -227AWG20
(28) / A21X9:4 — OG — -223AWG20

3-MODE SELECTOR
-EXT-S21.1
AUTO MAN MAN 100% AUTO MAN MAN 100%
6 12 10 2 4 8
5 1

Option: Extended 3 Mode Selector see sheet. → Ext_Extended_3_Mode / (31.1) (31.1)

MOTOR ON PB
-EXT-S21.2
14 13
X2 X1

(28) / A21X9:10 — WH — -229 AWG20
(28) / A21X9:19 — WH/BK — -230 AWG20
(28) / A21X9:9 — GY — -228 AWG20

EMERGENCY PB
-EXT-S21.3
21 22
11 12

DP6 / (32) — -DP6 1 — -237 AWG20 ES panel 1:A
-238 AWG20 ES panel 1:A
DP5 / (32) — -DP5 1 — -233 AWG20 ES panel 2:A
-234 AWG20 ES panel 2:A

(28) / A21X9:11 — WH/BN — -231 AWG20 ES panel 2:B
(28) / A21X9:12 — WH/RD — -232 AWG20 ES panel 2:B
(28) / A21X9:15 — WH/GN — -235 AWG20 ES panel 1:B
(28) / A21X9:16 — WH/BU — -236 AWG20 ES panel 1:B

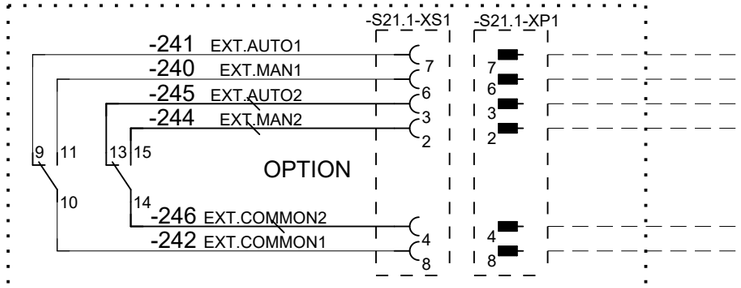
-PE1 — GN/YE — GN/BN GN/WH — GN/YE — -PE1

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN A21 EXTERNAL CONTROLL PANEL/BOX , 2 & 3 MODE SELECTOR, EM.STOP	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17 / Page31 / Next 31.1 / Total 164

-EXT-S21 EXTERNAL CONTROL PANEL/BOX Sh.2

Option: Extended 2 Mode Selector
Run chain Operating

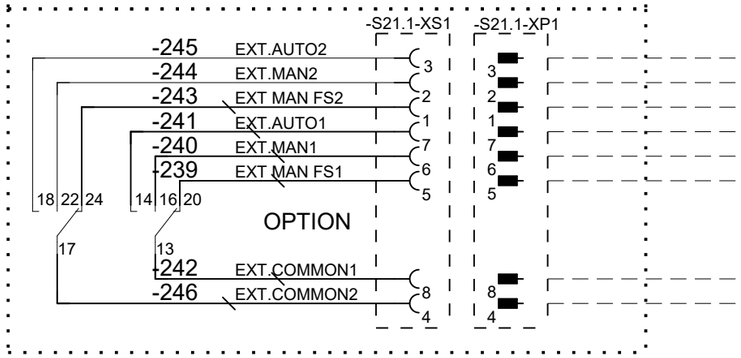
(31) / Ext_Extended_2_Mode ◄



Customer connection

Option: Extended 3 Mode Selector
Run chain Operating

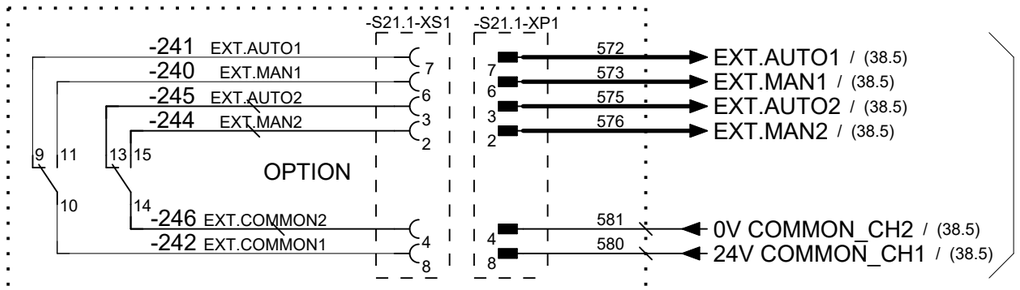
(31) / Ext_Extended_3_Mode ◄



Customer connection

Option:With Safety board
Run chain Operating,
Extended 2 Mode Selector

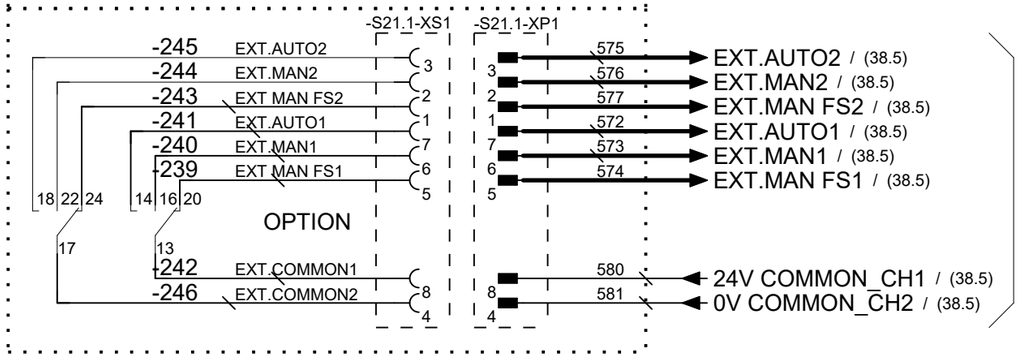
(31) / Ext_Extended_2_Mode ◄



Hardware based Mode switch

Option:With Safety board
Run chain Operating,
Extended 3 Mode Selector

(31) / Ext_Extended_3_Mode ◄



Hardware based Mode switch

Latest revision:			Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D EXTERNAL CONTROLL PANEL/BOX RUN CHAIN EXT.S21, 2 & 3 MODE SELECTOR	Status: APPROVED	Plant: = Location: + Sublocation:+
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8Cross reference to Ext Hot Plug S.22 / (25)

Option:Hot plug from Rel.11.1

7Cross reference to DP.3-4 / (25)

-EXT-S21 EXT.CONTROL PANEL Sh.2 of 2

Option HOT PLUG
-EXT-S22

SIGNAL LAMP
-H1
W529
64 63 x1 x2 213
W525/BU 14 13 W526
W527/BU 53 54 W528
W521 22 21 W522
W523 42 41 W524

-XP100 5 7 1 3 4 2 8 6
-XS100 5 7 1 3 4 2 8 6

521 AWG20 BU
523 AWG20 BU
Without hot plug
-XP100 1 3 4 2

-496 AWG20 BU
-495 AWG20 BU
-497 AWG20 BU
-500 AWG20 BU

AWG20
AWG20

(28) / 24VFPUPOWER — BN/BK — -DP1 — 24V FPU_POWER 205 BU — -XS4 1 — 2.24VFPUPOWER / (30.1)
24V FPU_POWER 205 BU — 12
(28) / 0VPANELB — BN/RD — -DP2 — 0VPANELB 206 BU — 2 — 2.0VPANELB / (30.1)
0VPANELB 206 BU — 8

A21 PANEL BOARD

(28) / EN1_1 — BN/OG — EN 1_1 -214 — 7 — 2.EN1.1 / (30.1)
(28) / EN2_1 — BN/YE — EN 2_1 -215 — 17 — 2.EN2.1 / (30.1)
(28) / A21X9:17 — WH/VT — -DP4 1 — ES FPU 1:A -216 — 3 — 2.ESFPU1.A / (30.1)
(28) / A21X9:18 — WH/GY — ES FPU 1:B -217 BU — 4 — 2.ESFPU1.B / (30.1)
(28) / A21X9:13 — WH/OG — DP3 1 — ES FPU 2:A -218 — 5 — 2.ESFPU2.A / (30.1)
(28) / A21X9:14 — WH/YE — ES FPU 2:B -219 BU — 6 — 2.ESFPU2.B / (30.1)

(31) / DP6
(31) / DP5

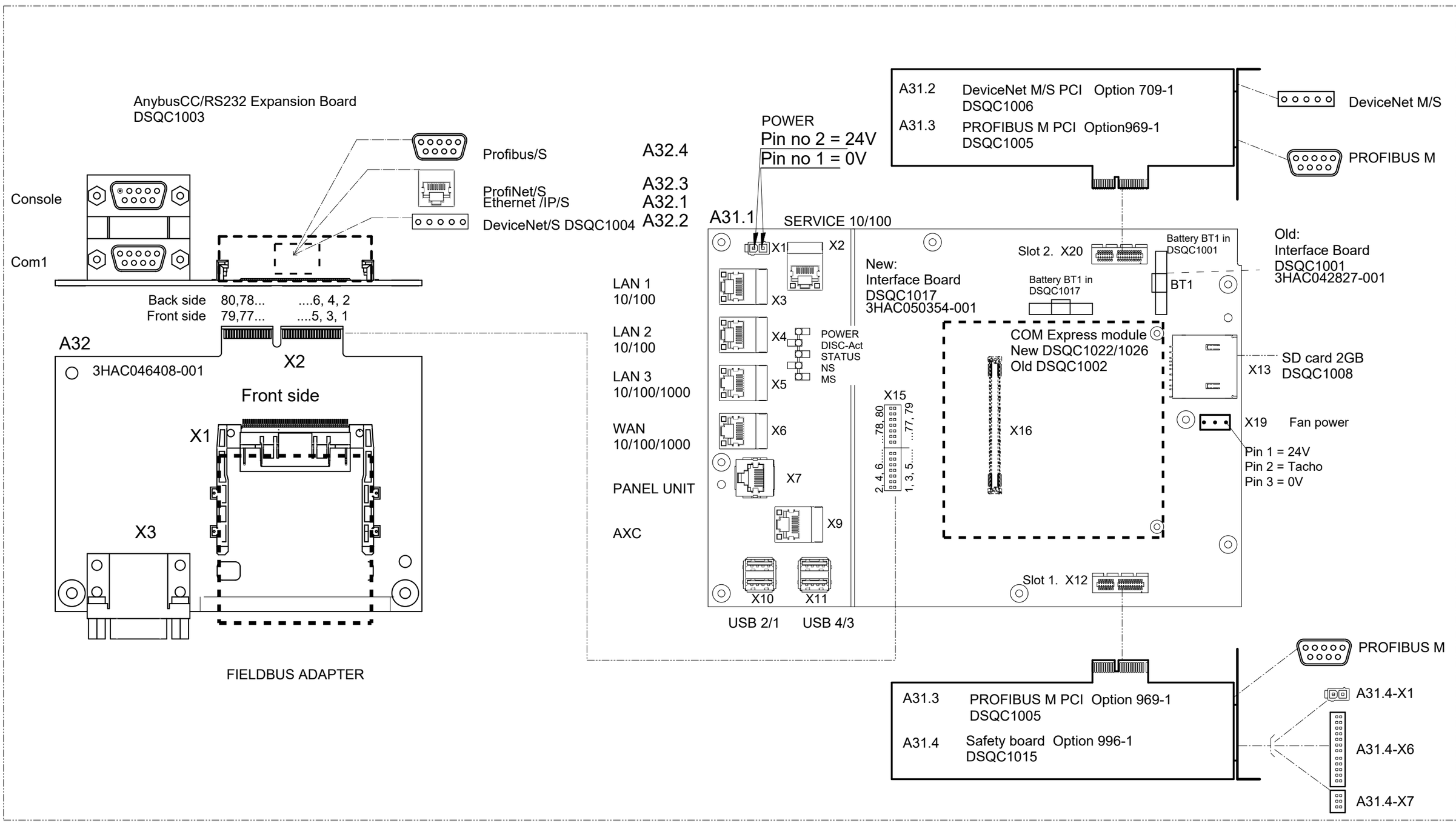
MAIN COMPUTER
A31.X3

AWG24 4x2 SFTP

(35) / TD+ — BN — TD+ — 13 — 2.TD+ / (30.1)
(35) / TD- — WHOG — TD- — 14 — 2.TD- / (30.1)
(35) / RD+ — GN — RD+ — 15 — 2.RD+ / (30.1)
(35) / RD- — BNWH — RD- — 16 — 2.RD- / (30.1)

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RUN CHAIN EXT A21 OPERATING WITH OPT: HOT PLUG rel 11.1	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17 / Page32 / Next 34 / Total 164

A31 Main Computer Unit DSQC1000 Rel. 15.2 and earlier / Main Computer Unit DSQC1018 Rel. 16.1 / Main Computer Unit DSQC1024 Rel. 20.A



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D MAIN COMPUTER/ANYBUS_CC/RS232 EXP. /INTERFACE BOARD/	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17

M.Comp. DSQC1000 Rel. 15.2 and earlier
M.Comp. DSQC1018 Rel. 16.1
M.Comp. DSQC1024 Rel. 20.A

9Cross reference to A31.X3 / (25) (25)

-A31 MAIN COMPUTER

PROCESS POWER SUPPLY
(60) / +24V PC.1
(60) / -0V PC.1

-X1
2
1

POWER (GREEN)
DISC-ACT (YELLOW)
STATUS (GREEN-RED)
NS (GREEN-RED)
MS (GREEN/RED)

CHASSIS BLOWER
-E22
M
-X19
AWG24
1 GND BK
2 +24V RD
3 FAN_TACH YE

YELLOW LABEL
ETH_SERVICE

-X2
TX+ 1
TX- 2
RX+ 3
RX- 6

AWG24 WHOG, OG, WHGN, GN
XP23.1 / (23)
XP23.2 / (23)
XP23.3 / (23)
XP23.6 / (23)

SERVICE PORT

1.TXRX+ / (41) (43) (54) (54.1)
1.TXRX- / (41) (43) (54) (54.1)
1.RXTX+ / (41) (43) (54) (54.1)
1.RXTX- / (41) (43) (54) (54.1)

A61:X10
REMOTE SERVICE
or
A62.X1 opt. 901-1
or
A64.X1

GREEN LABEL
TPU

-X3
1 RD+ / (30) (32)
2 RD- / (30) (32)
3 TD+ / (30) (32)
4
5
6 TD- / (30) (32)
7
8

FLEXPENDANT

LAN -X4
TX+ 1
TX- 2
RX+ 3
RX- 6

2.BI_DA+ / (23)
2.BI_DA- / (23)
2.BI_DB+ / (23)
2.BI_DB- / (23)
5.TXRX+ / (51.2)
5.TXRX- / (51.2)
5.RXTX+ / (51.2)
5.RXTX- / (51.2)

Dig I/O Base

BLUE LABEL
PANEL UNIT
RS 485

-X7
xAWG24
1
2 WHGN +24V_Sig.ref. / (28)
3 BU -RS485+ / (28)
4 WHBU -RS485- / (28)
5
7 GN -0V_Sig.ref. / (28)

PANEL BOARD

RED LABEL
AXC1
ETH_DRIVE

-X9
TX+ 1
TX- 2
RX+ 3
4
5
RX- 6
7
8

-2.TXRX+ / (66) (69) (70)
-2.TXRX- / (66) (69) (70)
-2.RXTX+ / (66) (69) (70)
-2.RXTX- / (66) (69) (70)

DRIVE MODULE AXIS COMPUTER

8.TXRX+ / (40.1)
8.TXRX- / (40.1)
8.RXTX+ / (40.1)
8.RXTX- / (40.1)

A34.X5
AXC SWITCH

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D MAIN COMPUTER A31 DSQC1000/1018	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011	Rev. Ind 17 / Page35 / Next 36 / Total 164

M.Computer DSQC1000 Rel. 15.2 and earlier
M.Computer DSQC1018 Rel. 16.1
M.Computer DSQC1024 Rel. 20.A

-A31

-A32 Expansion board serie DSQC1003

-X3 COM1

1	COM1_DCD
2	COM1_RXD
3	COM1_TXD
4	COM1_DTR
5	0V
6	COM1_DSR
7	COM1_RTS-N
8	COM1_CTS-N
9	COM1_RI

-X3 CONSOLE

1	CONSOLE_DCD
2	CONSOLE_RXD
3	CONSOLE_TXD
4	CONSOLE_DTR
5	GND
6	CONSOLE_DSR
7	CONSOLE_RTS-N
8	CONSOLE_CTS-N
9	CONSOLE_RI

-X2 / -X15

-X2	-X15
1	1
2	2
3	3
4	4
5	5
76	76
77	77
78	78
79	79
80	80

LAN -X5

MX1+	1	2.BI_DA+ / (23)
MX1-	2	2.BI_DA- / (23)
MX2+	3	2.BI_DB+ / (23)
MX2-	6	2.BI_DB- / (23)
	4	1.MX1.RX+ / (44)
	5	1.MX1.RX- / (44)
	7	1.RXMX2.+ / (44)
	8	1.RXMX2.- / (44)

Ethernet

IF OPT. 941-1
A65.X5

	4	-A31.X5.TX3+ / (53.5)
	5	-A35.X5.TX3- / (53.5)
	7	-A35.X5.RX3+ / (53.5)
	8	-A35.X5.RX3- / (53.5)

IF OPT. 1550-1 AND
NOT OPT. 941-1
CTM.X7

WHITE LABEL
A31.X6

WAN -X6

MX1+	1	1.XP28.1 / (23)
MX1-	2	1.XP28.2 / (23)
MX2+	3	1.XP28.3 / (23)
MX2-	6	1.XP28.6 / (23)

OPTION:
EXTERNAL
WAN

-X10.USB 1

3	
2	
4	
1	

-X10.USB 2

3	AWG28	GN	-USB2 D+ / (60)
2	AWG28	WH	-USB2 D- / (60)
4	AWG24	BK	-USB2_GND / (60)
1	AWG24	RD	-USB2 +5V / (60)

PROCESS
POWER
SUPPLY

-X11.USB 3

3	
2	
4	
1	

-X11.USB4

3	
2	
4	
1	

Latest revision:			Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D MAIN COMPUTER A31 DSQC1000/1018 ; A32 DSQC1003	Status: APPROVED Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren	2023-10-31			Document no. 3HAC024480-011 / Rev. Ind 17 / Page 36 / Next 37 / Total 164

(36.1)
-A32
Expansion Board
DSQC 1003

-X2
1 2 3 4 77 78 79 80

-X1
1 2 3 4 5 6 7 8

ETHERNET/IP Fieldbus adapter DSQC 669
-A32.1 Slave
-Z1
SLAVE
CompactCom
-X1
TX+ 1
TX- 2
RX+ 3
4
RX- 5
6
7
8

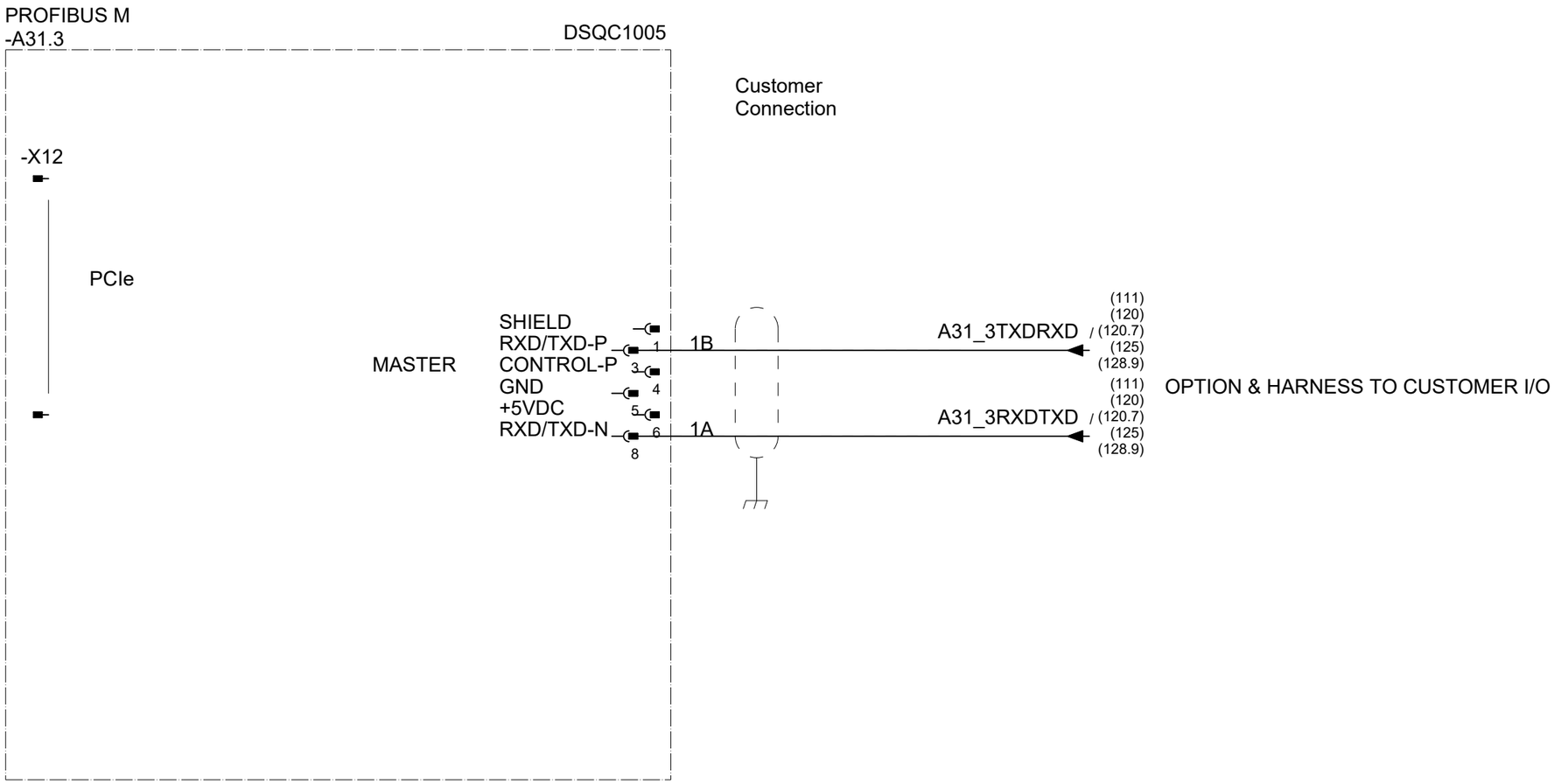
PROFIBUS Fieldbus adapter DSQC 667
-A32.2 Slave
-Z1
SLAVE
CompactCom
-X1
SHIELD 1
RXD/TXD-p 3
CONTROL-P 4
GND 5
+5VDC 6
RXD/TXD-N 8

PROFINET IO Fieldbus adapter DSQC 688
-A32.3 Slave
-Z1
SLAVE
CompactCom
-X1
TX+ 1
TX- 2
RX+ 3
RX- 6

DEVICENET IO Fieldbus adapter DSQC 1004
-A32.4 Slave
-Z1
SLAVE
CompactCom
-X1
TX+ 1
TX- 2
RX+ 3
RX- 6

OPTION & HARNESS TO CUSTOMER I/O

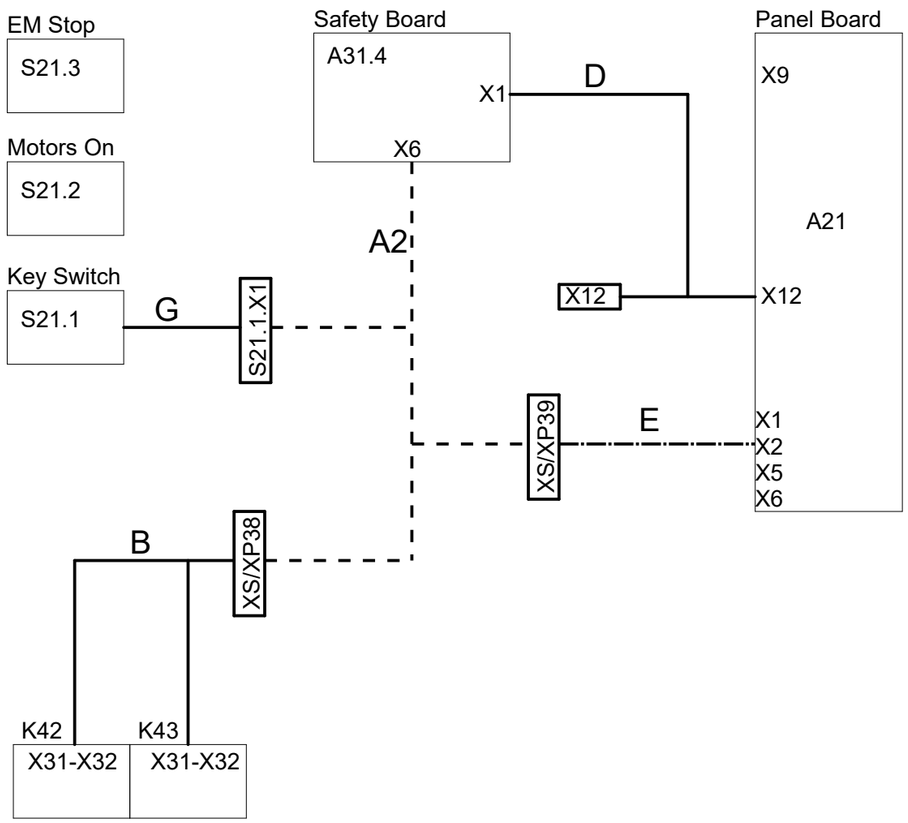
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FIELDBUS ADAPTER A32: ETHERNET/IP, PROFIBUS and PROFINET IO	Status: APPROVED	Plant: = Location: + Sublocation:+	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page37 Next 38 Total 164



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D PROFIBUS DP M/S A31.3	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 38 Next 38.3 Total 164

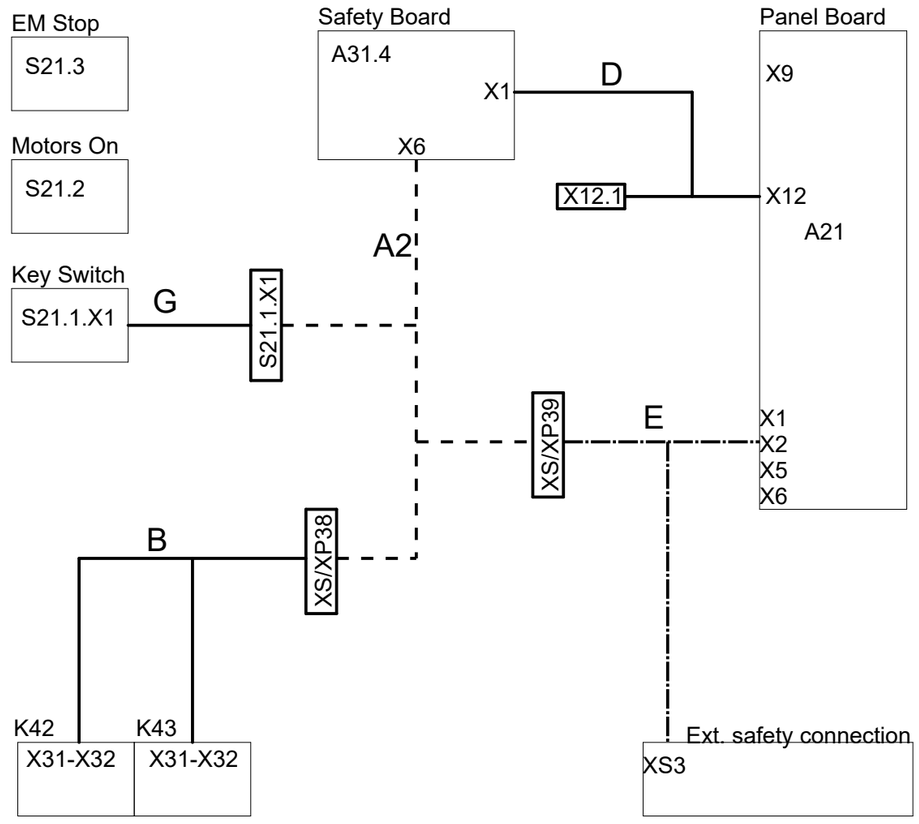
Options:
996-1 Safety Module.
AND
735-1 Add. Contacts, 3 modes OR
735-2 Add. Contacts, 2 modes
AND
731-1 Safety internal connection.

Internal-Hardware Safety switch conn.



Options:
996-1 Safety Module.
AND
735-1 Add. Contacts, 3 modes OR
735-2 Add. Contacts, 2 modes
AND
731-2 Safety external connection.

External-Hardware Safety switch conn.



A = Re-designed Safety harness for Key-less	3HAC056648-001
A2 = Safety harness for hard Key switch	3HAC057150-001
B = Main Contactor supervision harness.	3HAC055642-001
C= Emergency Stop harness.	3HAC056527-001
D= +24V and 0V supply.	3HAC055633-001
E = Internal Safety Conn. harness. New design.	3HAC056638-001
F = External Safety Conn. New design.	3HAC056622-001
G = Extended Key switch harness.	3HAC023476-001

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SAFETY BOARD A31.4 HARDWARE SWITCH	Status: APPROVED	Plant: = Location: + Sublocation: +
				Document no. 3HAC024480-011	Rev. Ind 17
					Page 38.3 Next 38.4 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31				

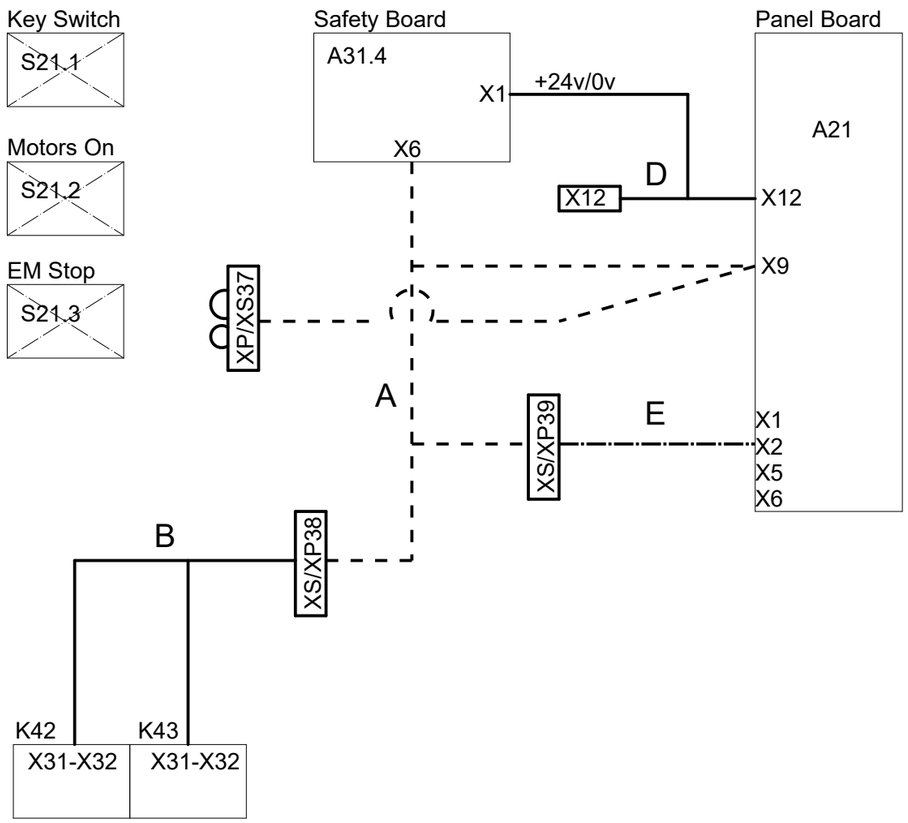
Options:

With harness connection
996-1 Safety Module ——————
AND

735-7 Keyless Selector 3 modes OR - - - - - -
735-8 Keyless Selector 2 modes
AND

731-1 Safety internal connection. —·—·—·—·—

Software Internal Safety connection



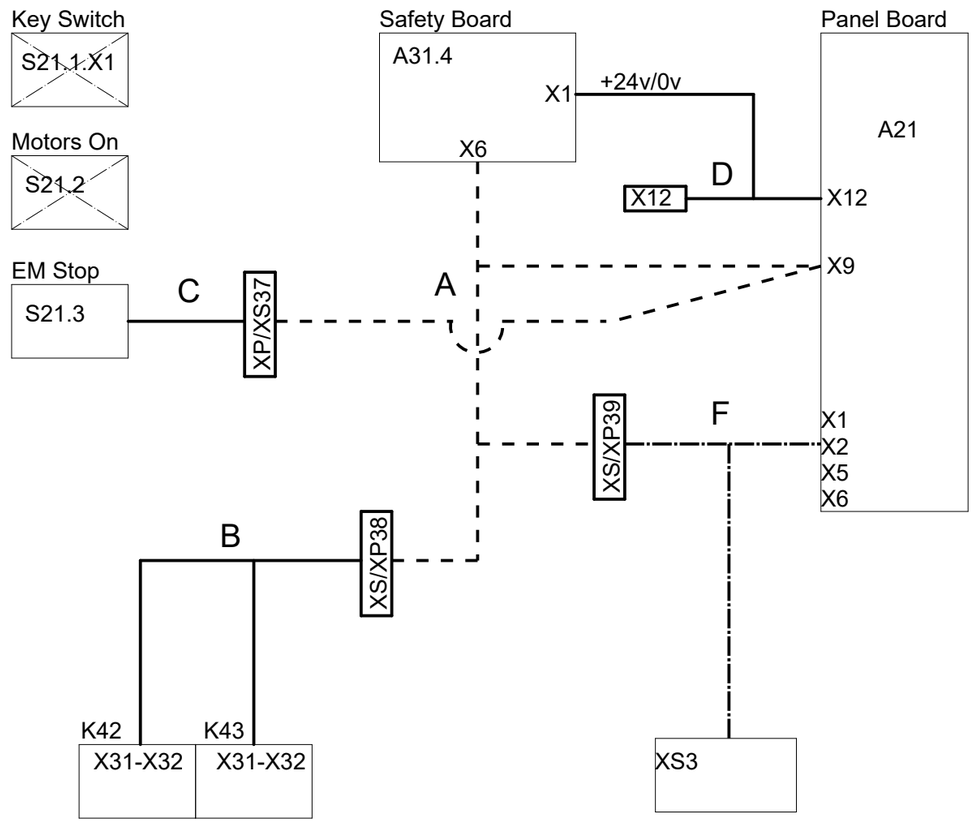
Options:

With harness connection
996-1 Safety Module ——————
AND

735-7 Keyless Selector 3 modes OR - - - - - -
735-8 Keyless Selector 2 modes
AND

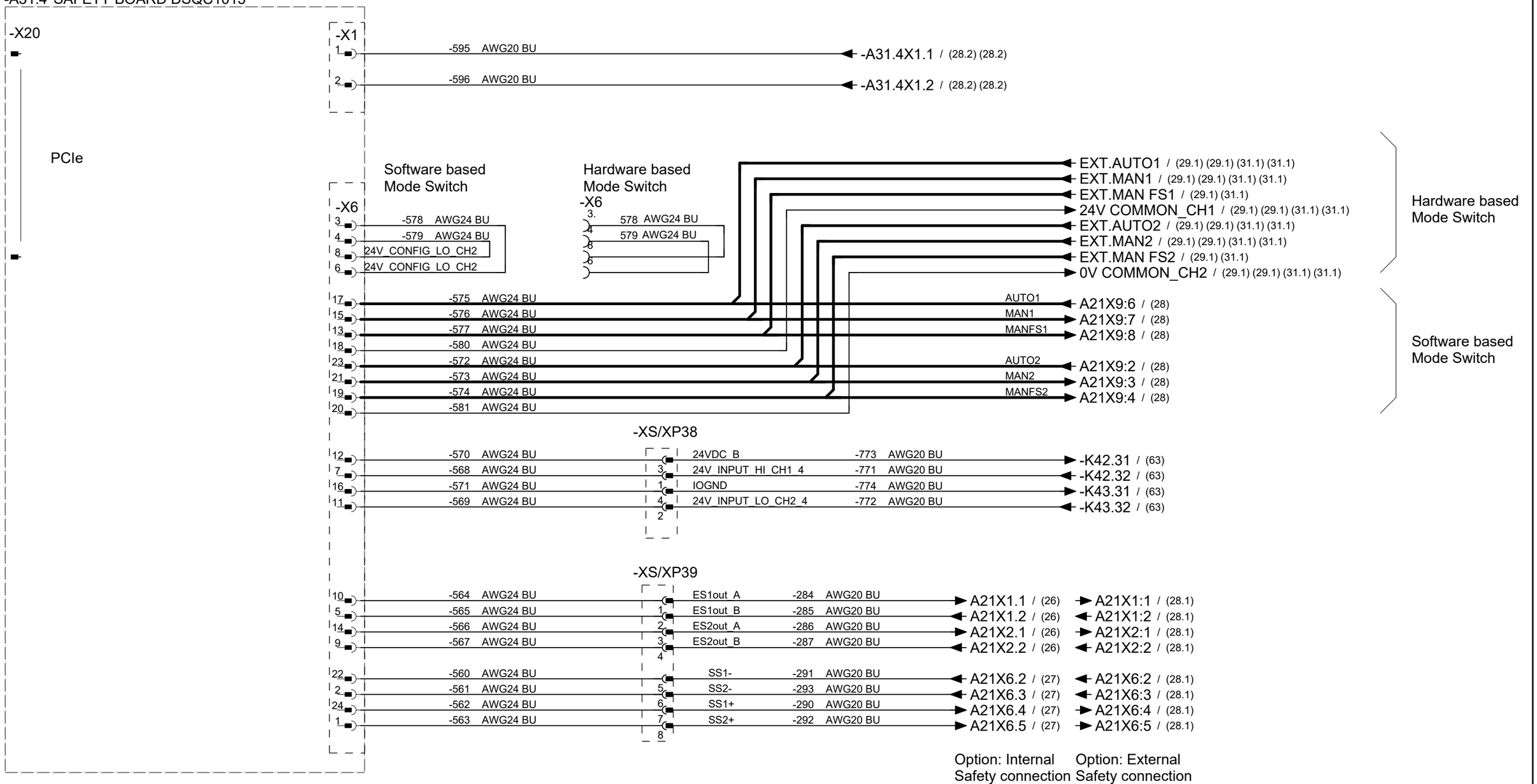
731-2 Safety External connection. —·—·—·—·—

Software External Safety connection



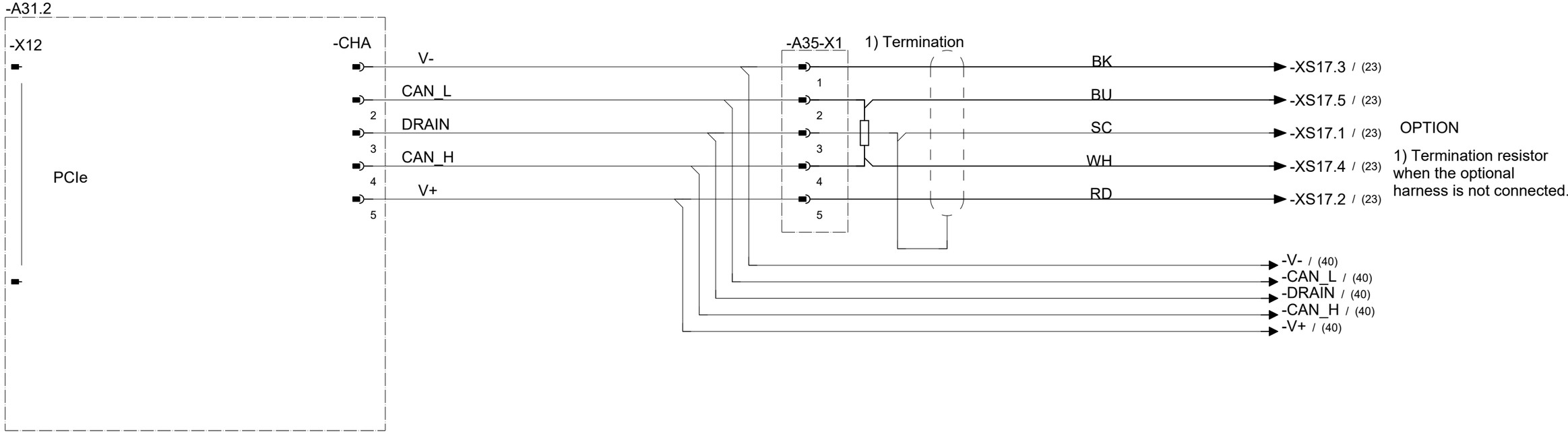
A = Re-designed Safety harness for Key-less 3HAC056648-001
B = Main Contactor supervision harness. 3HAC055642-001
C = Emergency Stop harness. 3HAC056527-001
D= +24V and 0V supply harness. 3HAC055633-001
E = Internal Safety Conn. New design. 3HAC056638-001
F = External Safety Conn. New design. 3HAC056622-001

Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SAFETY BOARD A31.4 SOFTWARE SWITCH	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17



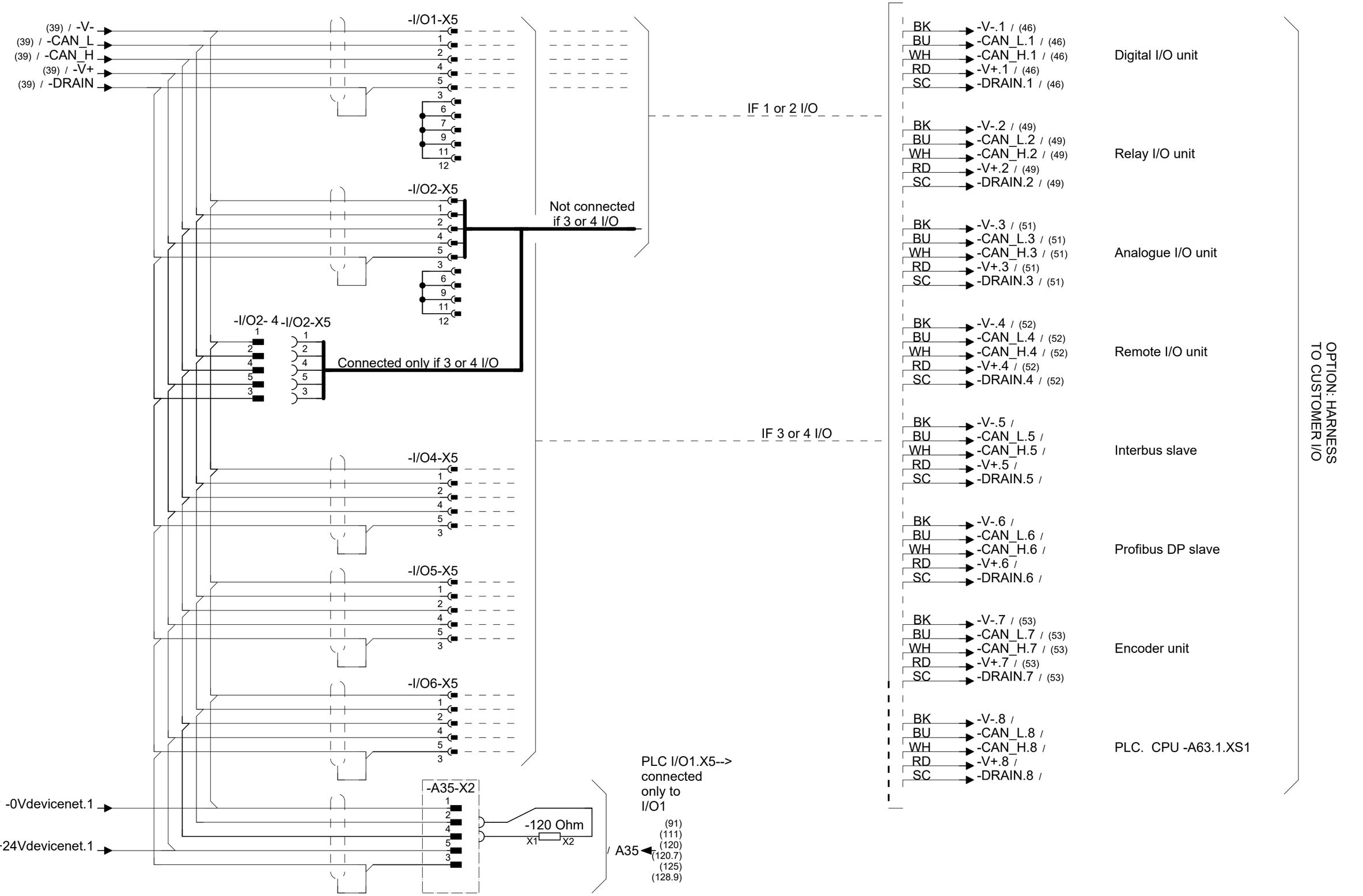
Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SAFETY BOARD A31.4 DSQC1015 Hardware and Software based Mode Switch	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 38.5 Next 39 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					

DeviceNet M/S DSQC1006
-A31.2

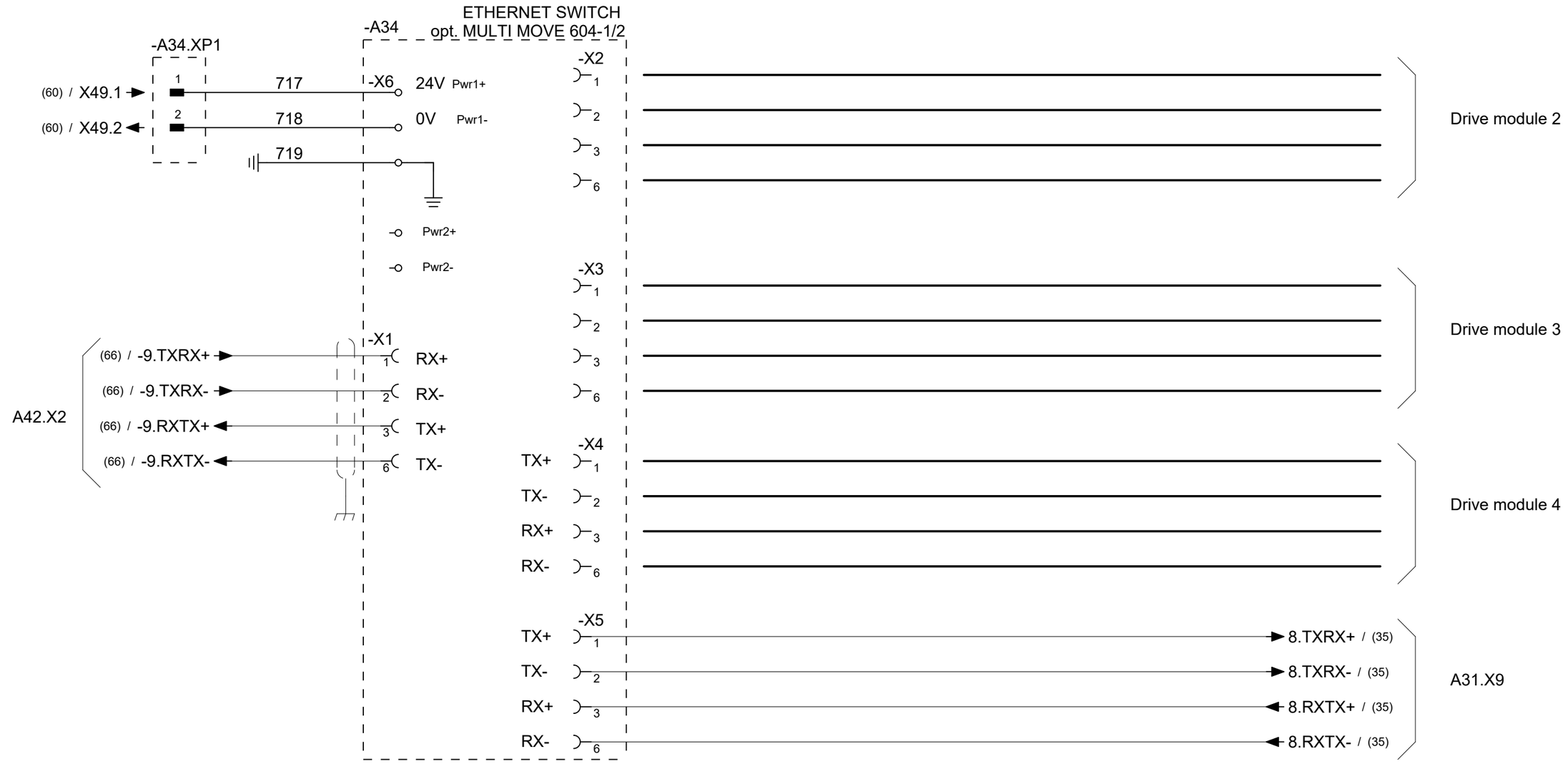


OPTION

1) Termination resistor when the optional harness is not connected.

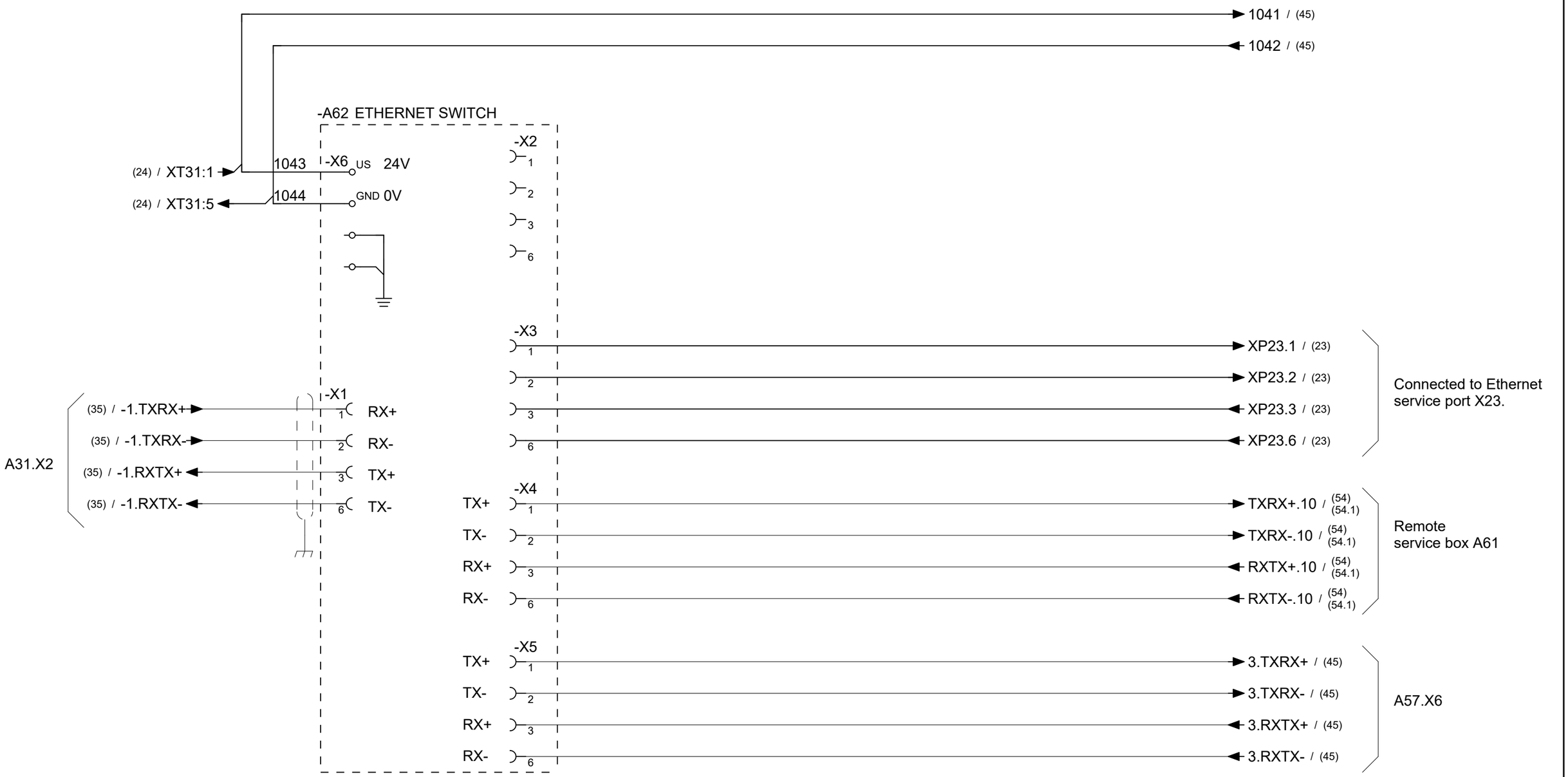


Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D DEVICENET ADAPTER	Status: APPROVED	Plant: = Location: + Sublocation:+	
				Document no. 3HAC024480-011	Rev. Ind 17	Page40 Next 40.1 Total 164
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31					



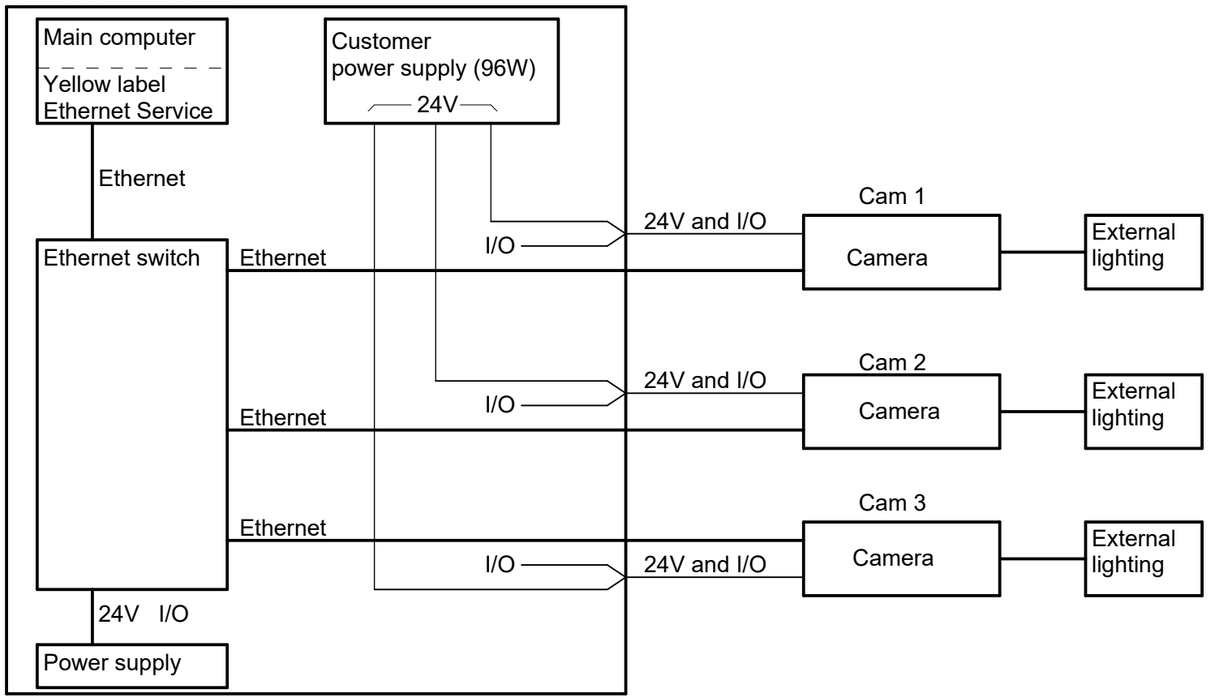
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D ETHERNET SWITCH A34, option MULTI MOVE 604-1/2	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page40.1 Next 41 Total 164

if opt. 901-1

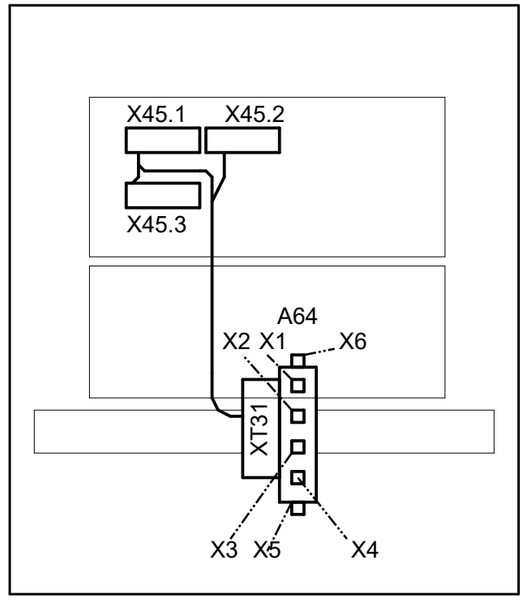


Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D ETHERNET SWITCH A62	Status: APPROVED	Plant: = Location: + Sublocation: +
				Document no. 3HAC024480-011	Rev. Ind 17
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Page41 Next 42 Total 164

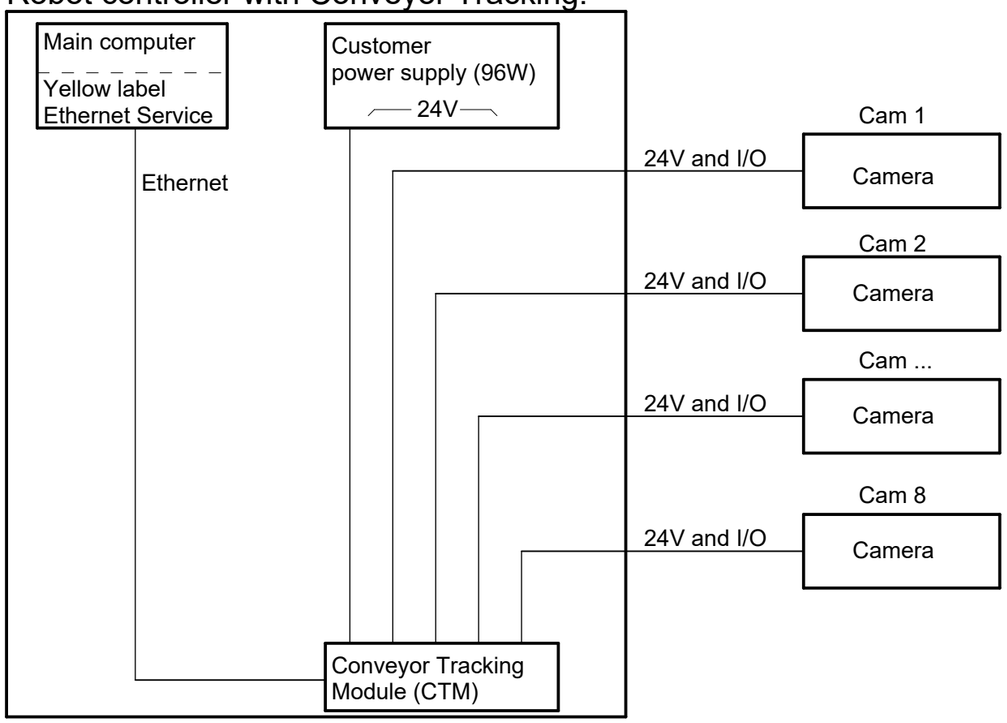
Robot controller



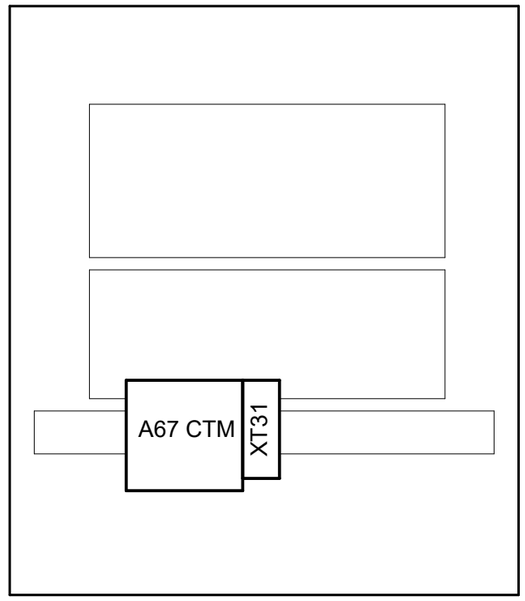
Opt. INSIDE DOOR WITH ETHERNET for CAMERAS



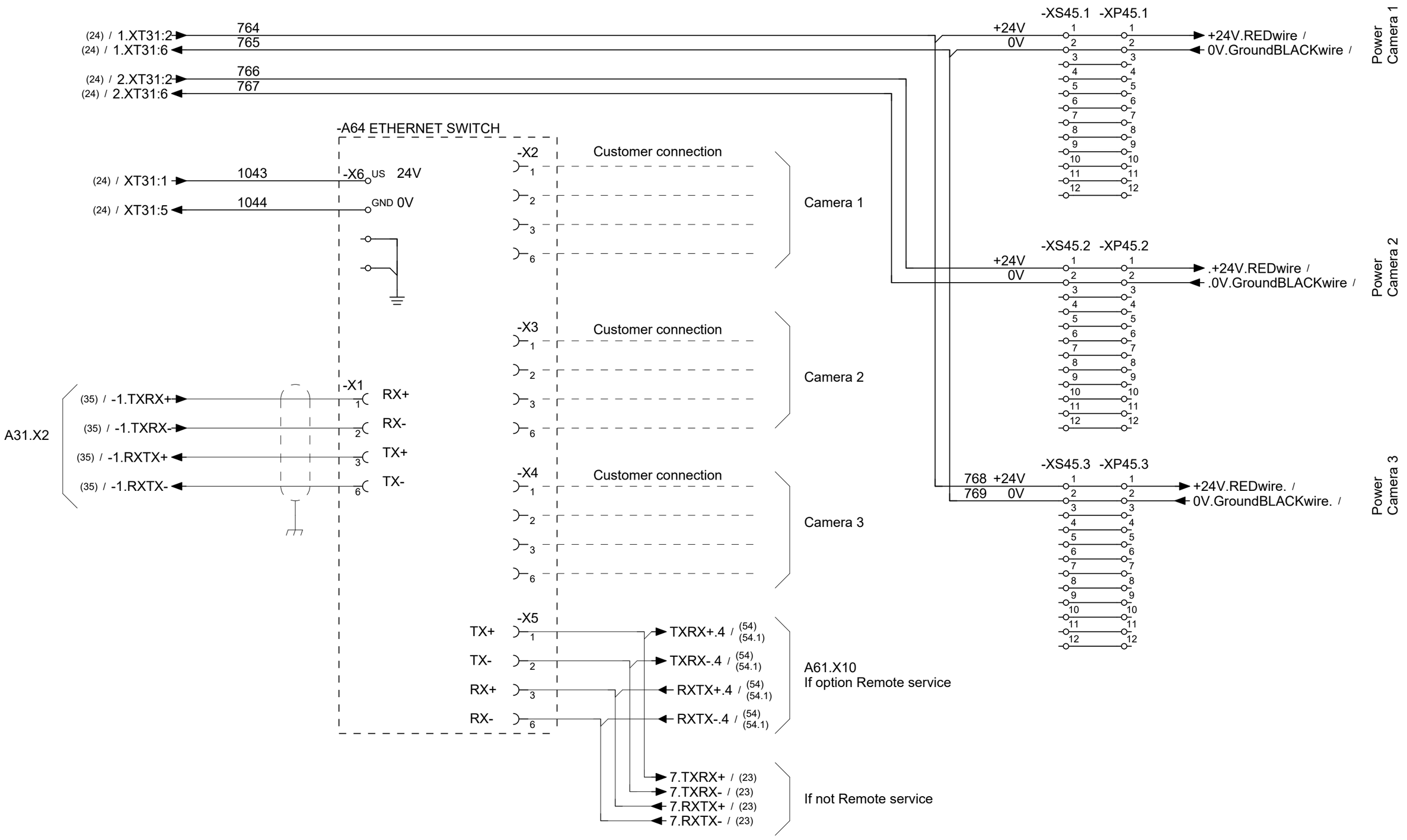
Opt.1550-1
Robot controller with Conveyor Tracking.



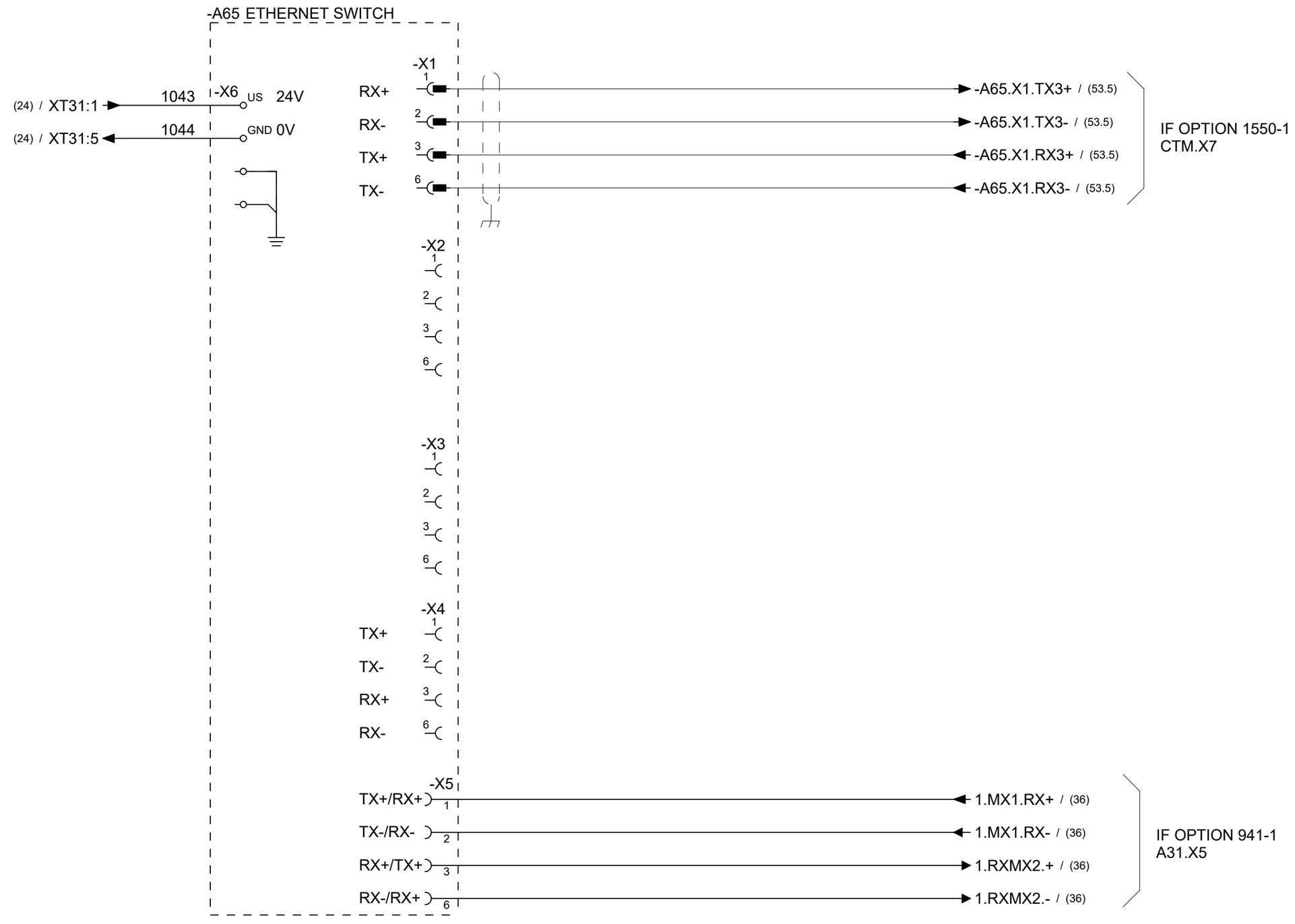
Opt. INSIDE DOOR WITH CTM



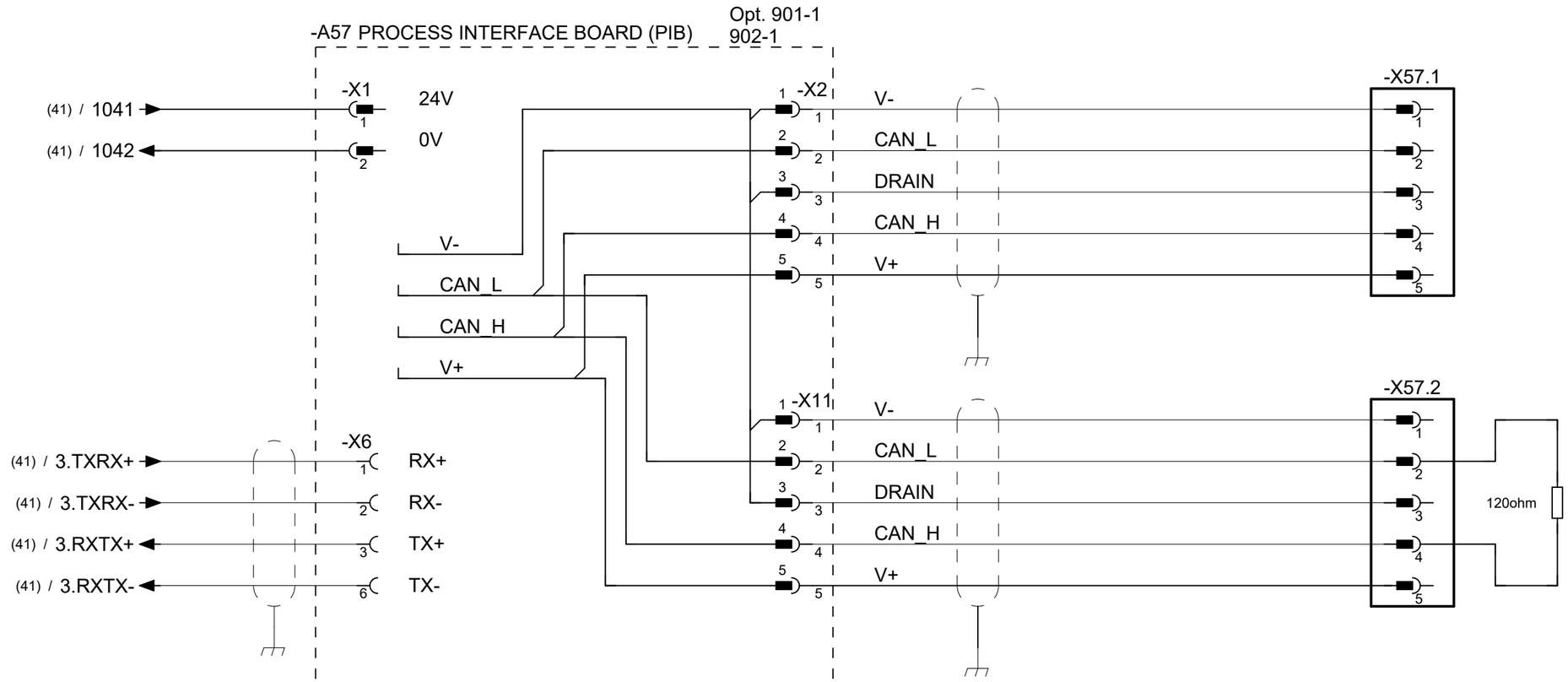
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D VISION, INTEGRATED CAMERAS and CONVEYOR TRACKING Opt.1550-1	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page42 Next 43 Total 164

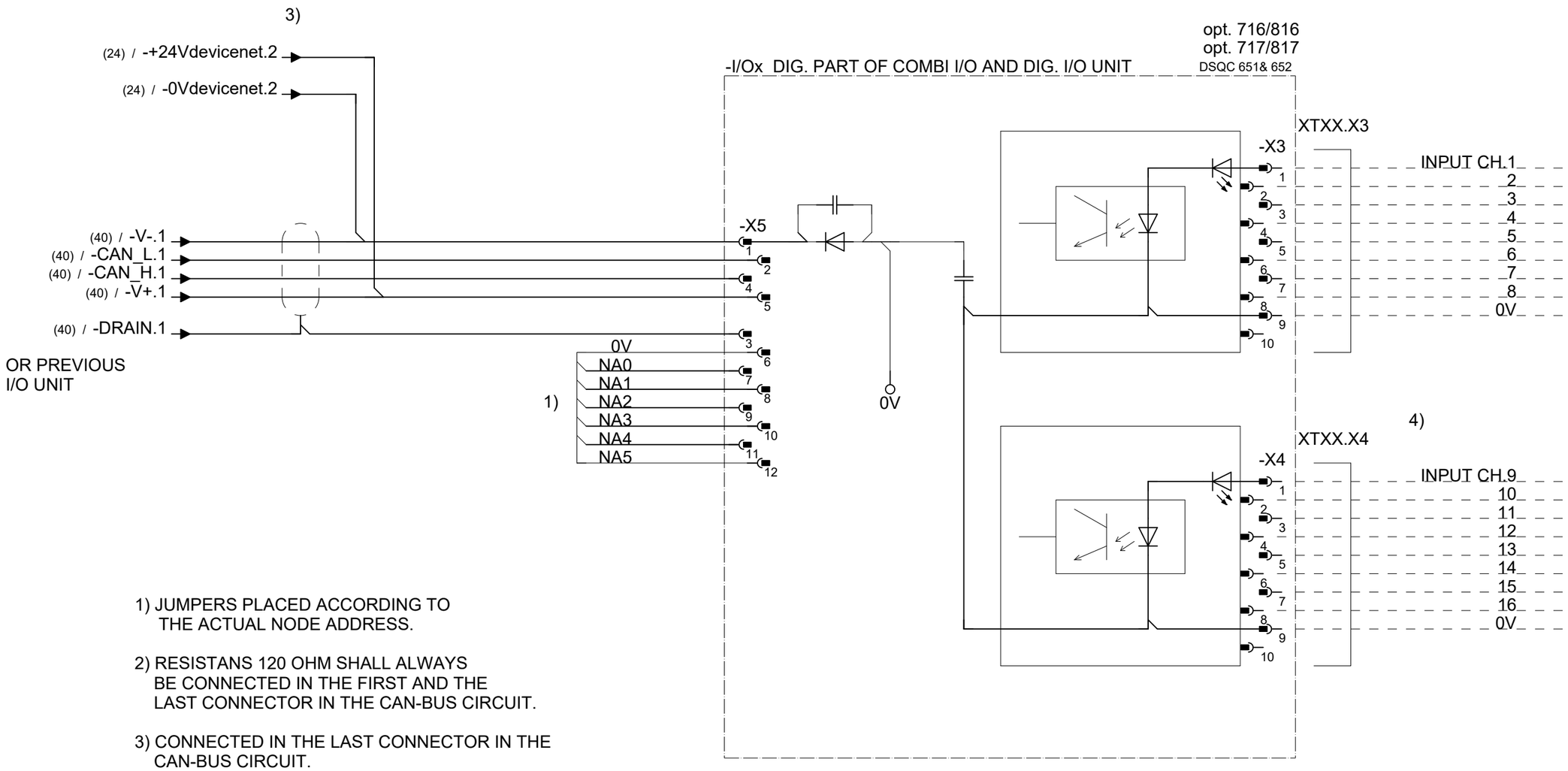


Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D ETHERNET SWITCH A64/CAMERA	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page43 Next 44 Total 164



Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D ETHERNET SWITCH A65	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 44 Next 45 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					





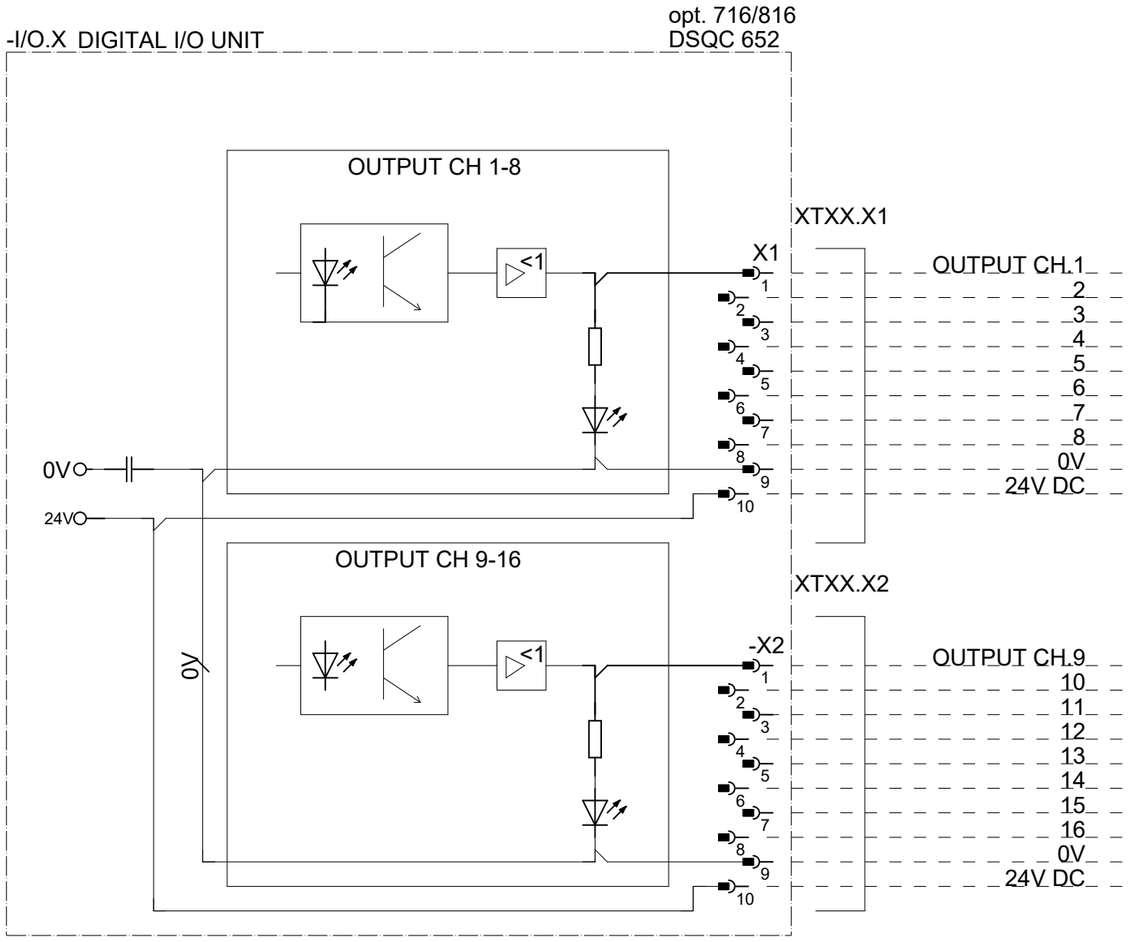
1) JUMPERS PLACED ACCORDING TO THE ACTUAL NODE ADDRESS.

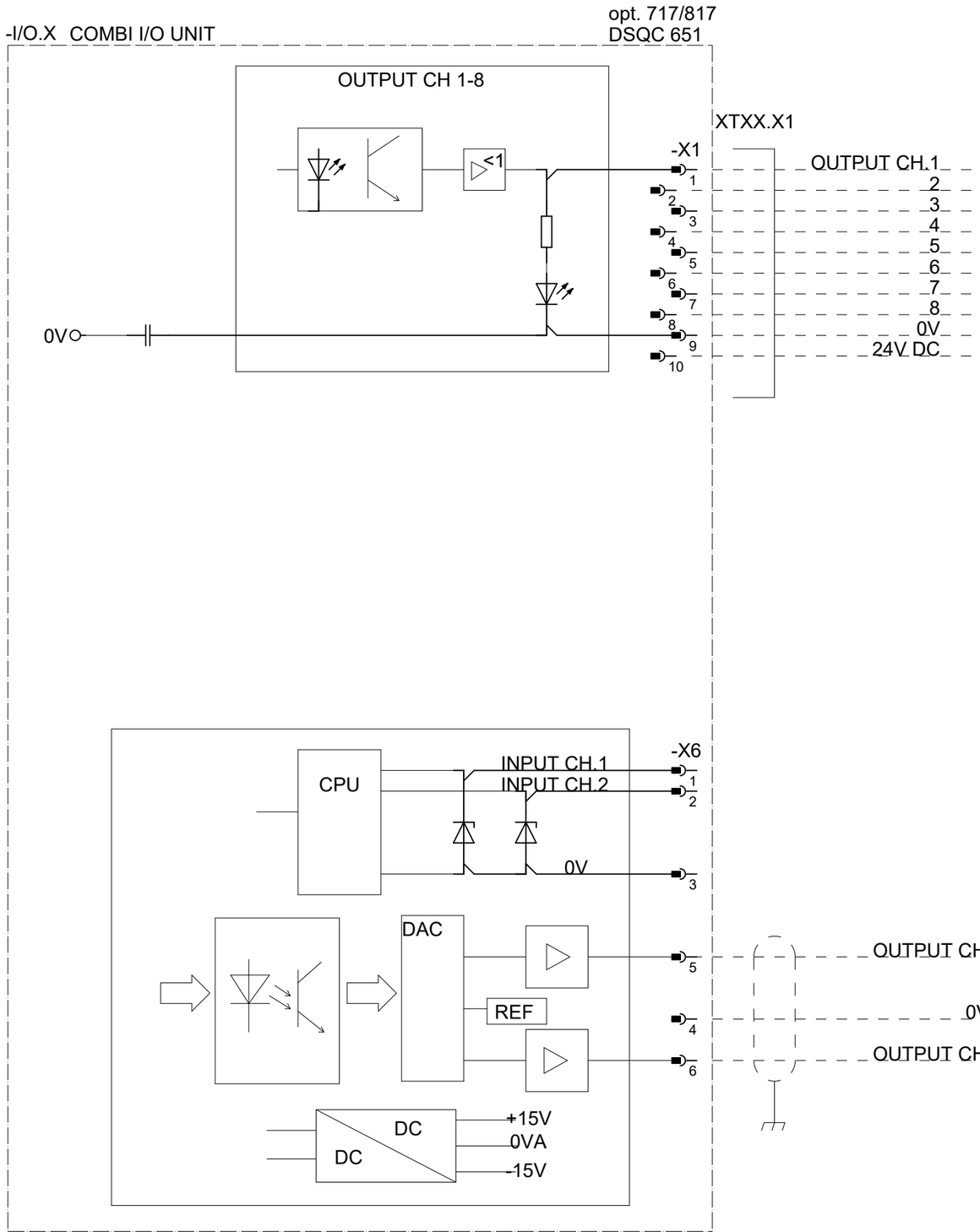
2) RESISTANS 120 OHM SHALL ALWAYS BE CONNECTED IN THE FIRST AND THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

3) CONNECTED IN THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

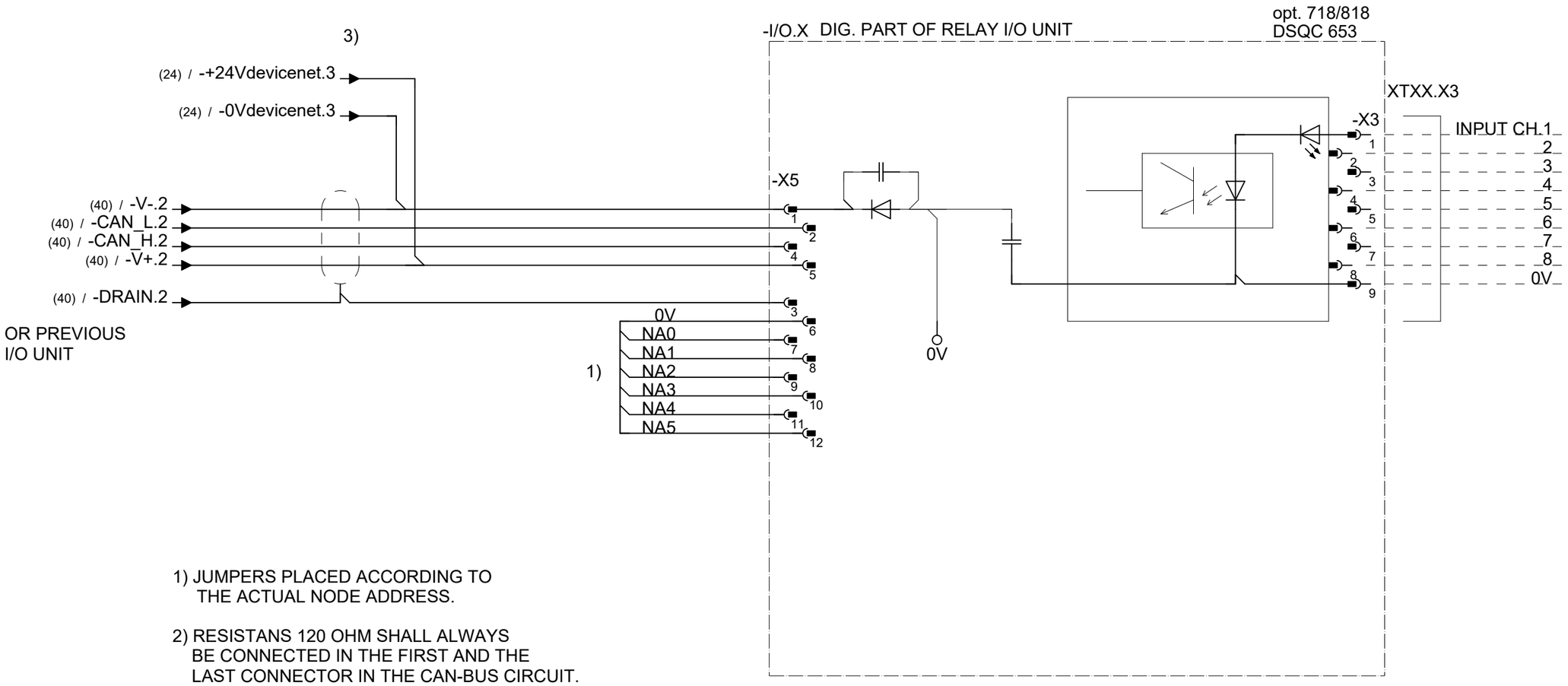
4) ONLY FOR DIGITAL I/O DSQC 652.

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D DIGITAL PART OF COMBI I/O AND DIGITAL I/O UNIT DSQC651&652	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page46 Next 47 Total 164





Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D COMBI I/O UNIT DSQC651	Status: APPROVED	Plant: = Location: + Sublocation: +
					Document no. 3HAC024480-011	Rev. Ind 17
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31					Page48 Next 49 Total 164

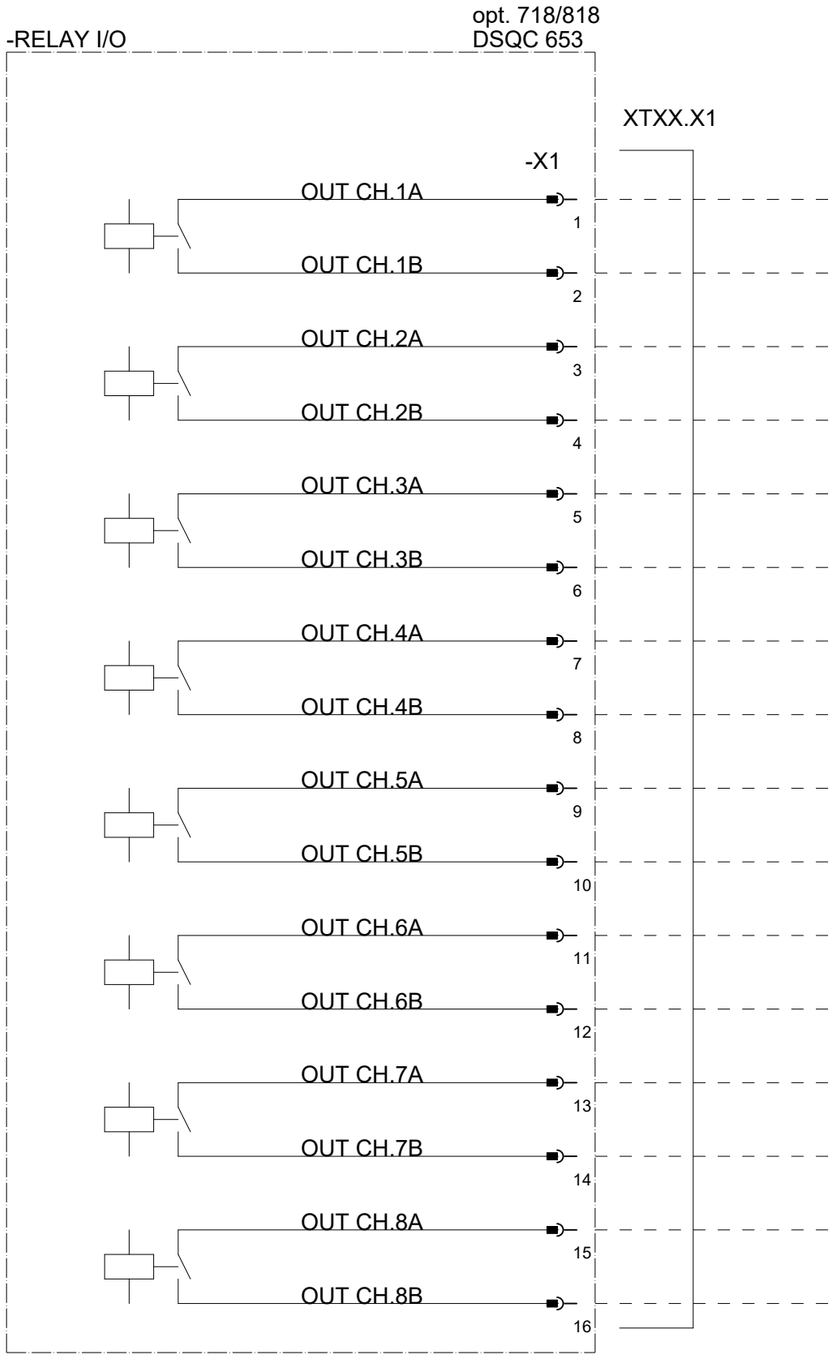


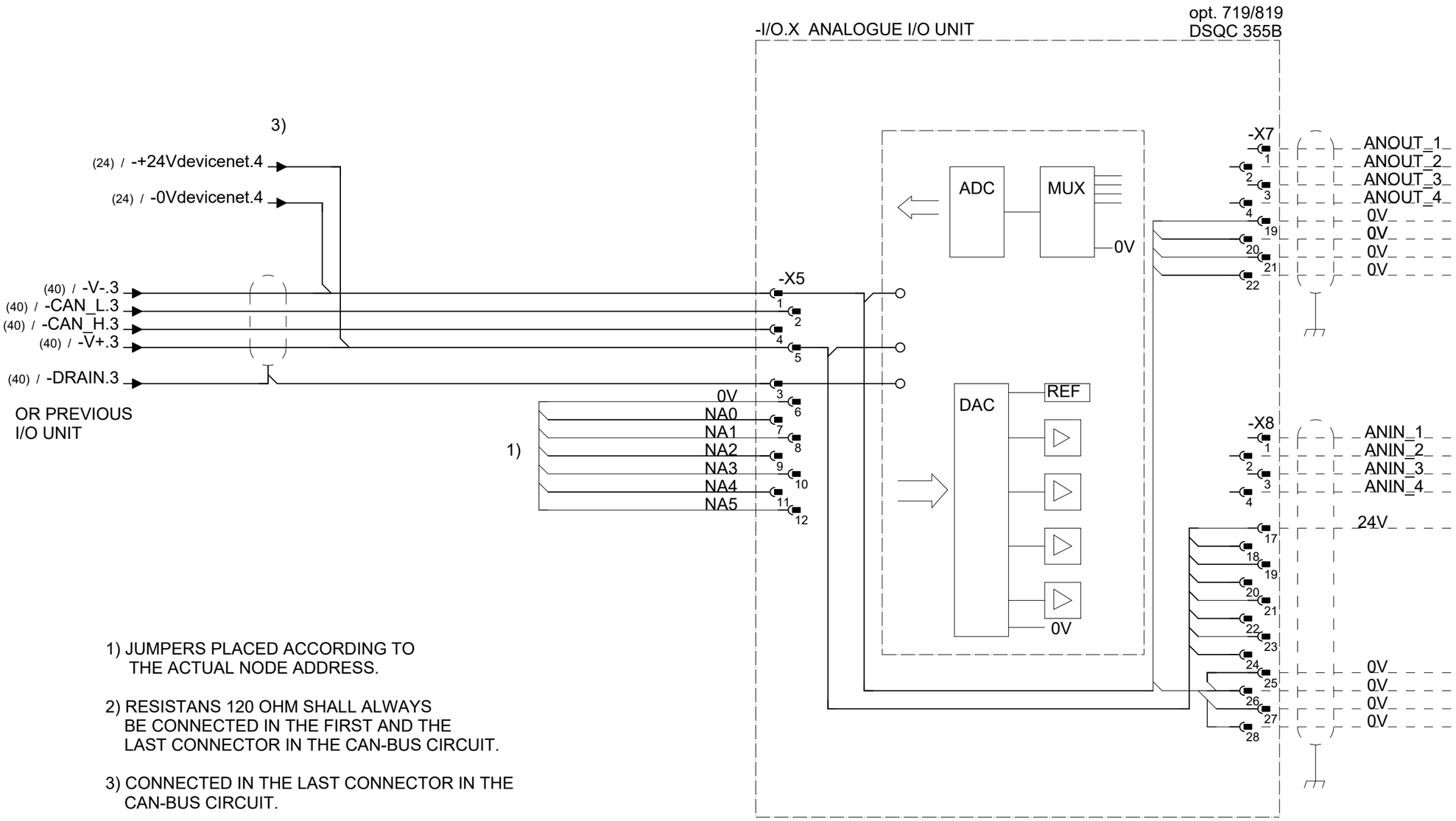
1) JUMPERS PLACED ACCORDING TO THE ACTUAL NODE ADDRESS.

2) RESISTANS 120 OHM SHALL ALWAYS BE CONNECTED IN THE FIRST AND THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

3) CONNECTED IN THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D RELAY I/O UNIT DSQC653	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17





1) JUMPERS PLACED ACCORDING TO THE ACTUAL NODE ADDRESS.

2) RESISTANS 120 OHM SHALL ALWAYS BE CONNECTED IN THE FIRST AND THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

3) CONNECTED IN THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

Wire 704 was exchanged to 776 in 18.2
Wire 703 was exchanged to 775 in 18.2

Opt 1541-1
opt 1541-2
DSQC1030

-I/Ox DIGITAL I/O BASE MODULE

A31.X4 Main computer

(24) / XT31:5 — 776 — -X4 1
(24) / XT31:1 — 775 — -X4 2
-X4 1 — 0V GND
-X4 2 — +24V PWR
-X4 3
-X4 4
ISO. test voltage 500VAC

DC/DC

0V_INT1
+24V_INT1

DO_ 1-16

XTXX.X1
-X1
DO_8 7 6 5 4 3 2 1
GND DO 8
PWR DO 9
DO_16 15 14 13 12 11 10 9
GND DO 18
PWR DO 19 20

DO 0-24VDC
GND DO — 787 — XT31:5 / (24)
PWR DO — 785 — XT31:1 / (24)
Flow censor for IRB6790

GND DO — 786 — Flow censor for IRB6790

-X3
1 RX+
2 RX-
3 TX+
6 TX-

-X5
(35) / 5.TXRX+ — 1 RX+
(35) / 5.TXRX- — 2 RX-
(35) / 5.RXTX+ — 3 TX+
(35) / 5.RXTX- — 6 TX-

0V_INT2
+24V_INT2

DC/DC

XTXX.X2
-X2
DI_8 7 6 5 4 3 2 1
GND DI 8
GND DI 9
DI_16 15 14 13 12 11 10 9
GND_DI 18

OUT1 / (23) — DI_8
OUT2 / (23) — 7
Flow censor for IRB6790

0-24VDC

DI_ 1-16

GND DI — GND_DI > 0V

Internal serial bus

Optical connection /electrical insulated

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D Local I/O Digital Base 16in/16out	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011	Rev. Ind 17
						Page 51.2 Next 51.4 Total 164

Opt 1542-1
Opt 1542-2
DSQC1031

-I/Ox DIGITAL I/O ADD ON MODULE

DC/DC

+24V_INT
0V_INT

DO_ 1-16

<1

XTXX.X1

-X1

1	DO_8	
2	7	
3	6	
4	5	
5	4	
6	3	
7	2	
8	1	> DO 0-24V
9	GND DO	> GND
10	PWR DO	< PWR +24V
11	DO_16	
12	15	
13	14	
14	13	
15	12	
16	11	
17	10	
18	9	
19	GND DO	> GND
20	PWR DO	< PWR

ISO. test voltage 500VAC

XTXX.X2

-X2

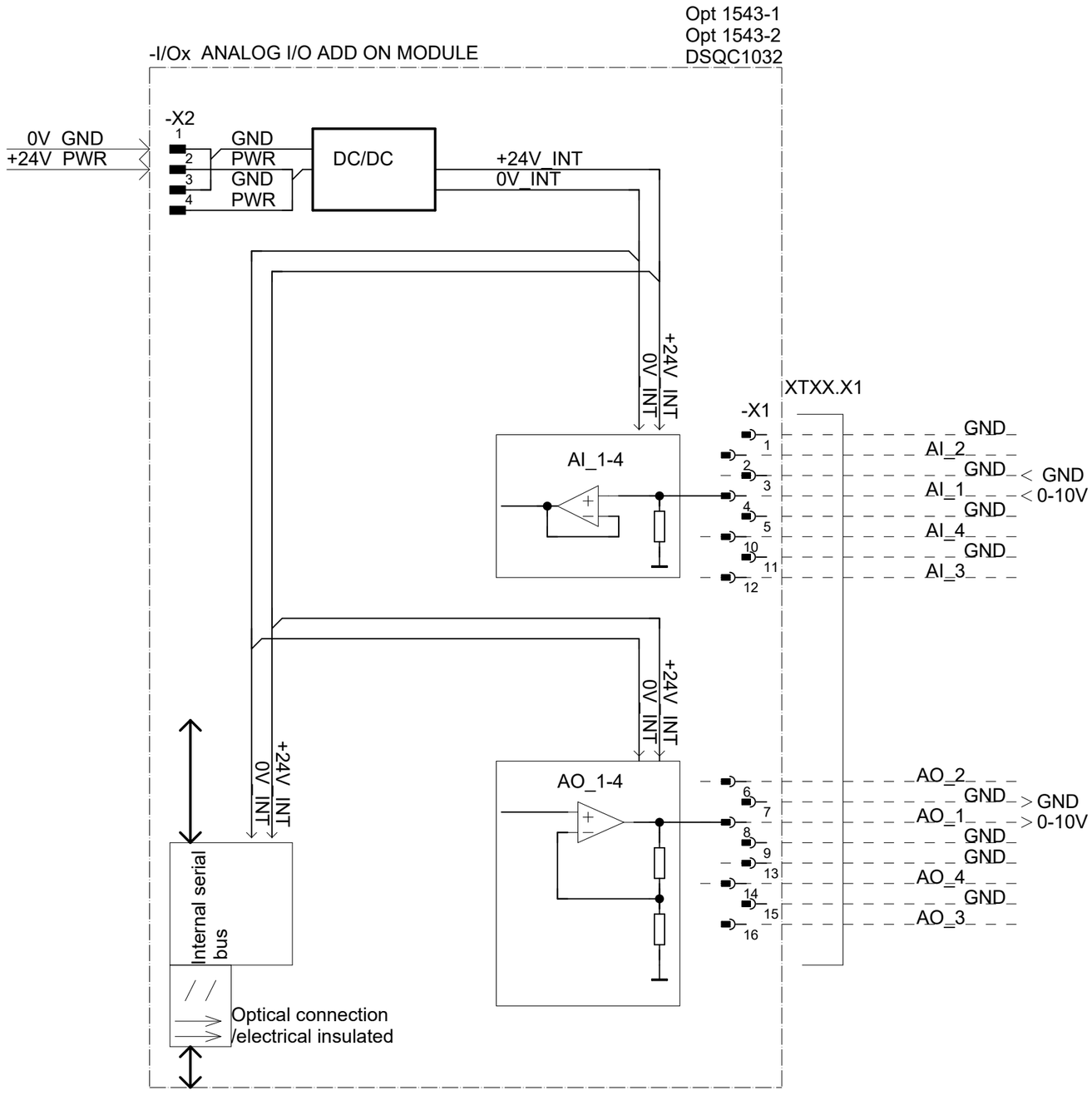
1	DI_8	
2	7	
3	6	
4	5	
5	4	
6	3	
7	2	
8	1	< DI 0-24V
9	GND DI	> GND DI
10	DI_16	
11	15	
12	14	
13	13	
14	12	
15	11	
16	10	
17	9	
18	GND_DI	< GND DI

DI_ 1-16

Internal serial bus

Optical connection
/electrical insulated

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D Local I/O Digital add on 16in/16out	Status: APPROVED	Plant: = Location: + Sublocation: +
				Document no. 3HAC024480-011	Rev. Ind 17
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Page51.4 Next 51.6 Total 164



Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D Local I/O Analog add on 4in/4out	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 51.6 Next 51.8 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					

Opt 1544-1
Opt 1544-2
DSQC1033

-I/Ox RELAY I/O ADD ON MODULE

-X3

0V GND — 1 GND
+24V PWR — 2 PWR
3 GND
4 PWR

DC/DC

+24V INT
0V INT

+24V INT
0V INT

RLY_ 1-8

OUT CH.1A

OUT CH.1B

ISO. test voltage 3000VAC

XTXX.X1

-X1

1	RLY_4
2	RLY_4
3	RLY_3
4	RLY_3
5	RLY_2
6	RLY_2
7	RLY_1 -> RO
8	RLY_1 -> RO
9	RLY_8
10	RLY_8
11	RLY_7
12	RLY_7
13	RLY_6
14	RLY_6
15	RLY_5
16	RLY_5

+24V INT
0V INT

+24V INT
0V INT

Internal serial bus

Optical connection /electrical insulated

DI_ 1-8

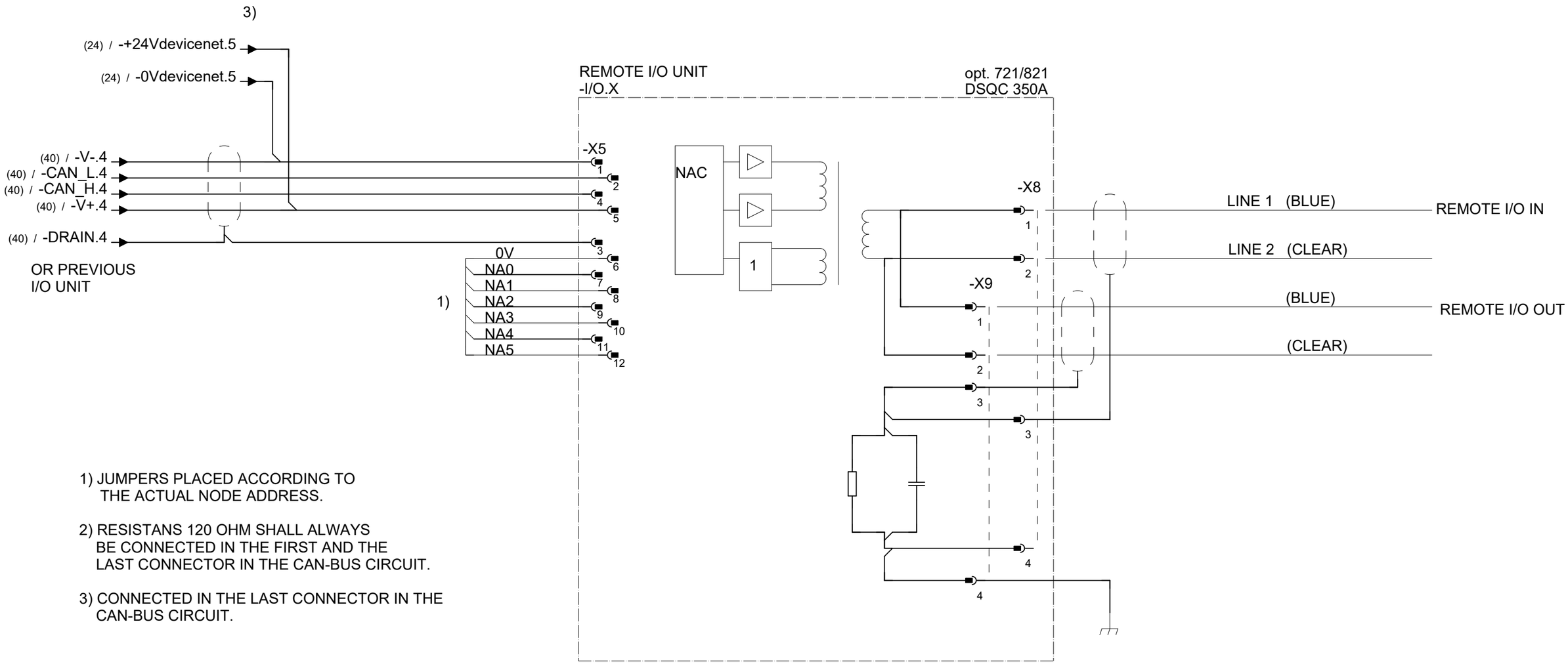
ISO. test voltage 500VAC

XTXX.X2

-X2

1	DI_4
2	3
3	2
4	1 — PWR DI 0-24V
5	GND_DI — GND DI
6	DI_8
7	7
8	6
9	5
10	GND_DI

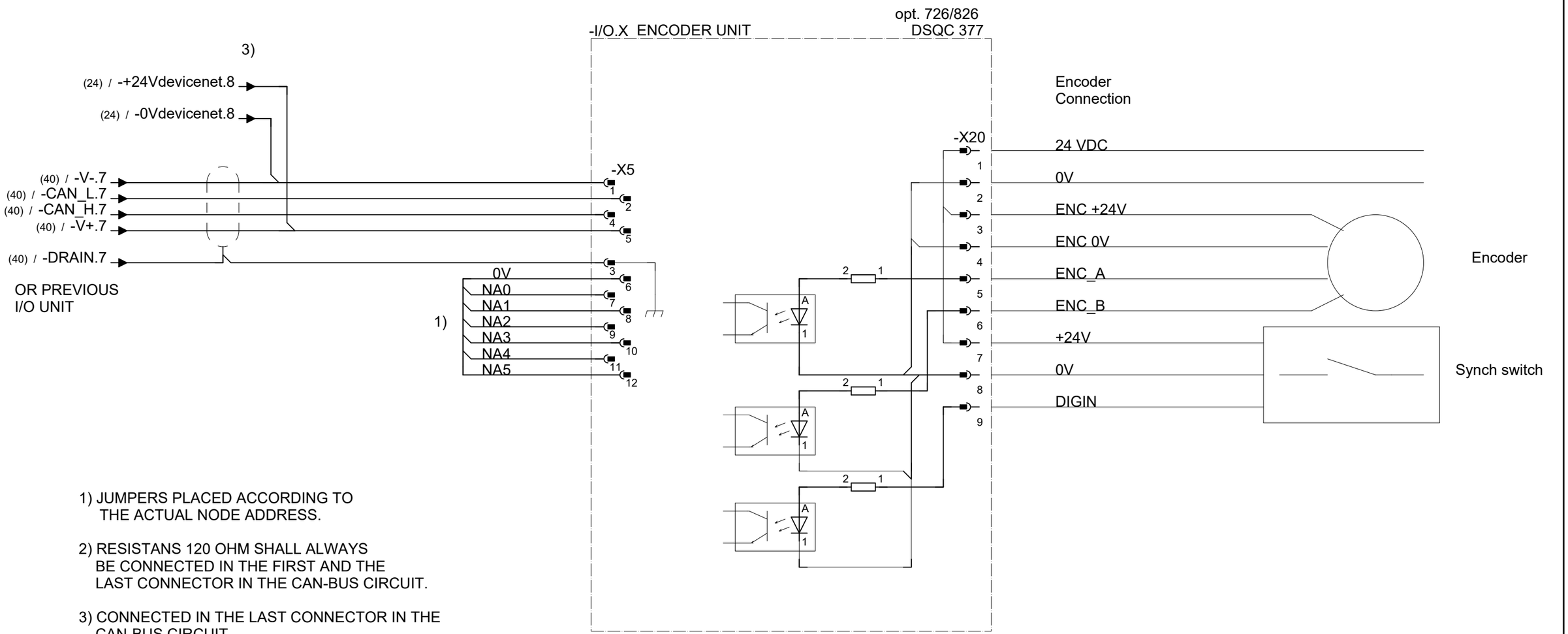
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D Local I/O Relay add on 8RO/8DI	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page 51.8 Next 52 Total 164



1) JUMPERS PLACED ACCORDING TO THE ACTUAL NODE ADDRESS.

2) RESISTANS 120 OHM SHALL ALWAYS BE CONNECTED IN THE FIRST AND THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

3) CONNECTED IN THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.



1) JUMPERS PLACED ACCORDING TO THE ACTUAL NODE ADDRESS.

2) RESISTANS 120 OHM SHALL ALWAYS BE CONNECTED IN THE FIRST AND THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

3) CONNECTED IN THE LAST CONNECTOR IN THE CAN-BUS CIRCUIT.

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D ENCODER UNIT DSQC377	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 53 Next 53.5 Total 164

(44) / -A65.X1.TX3+
(44) / -A65.X1.TX3-
(44) / -A65.X1.RX3+
(44) / -A65.X1.RX3-
(36) / -A31.X5.TX3+
(36) / -A35.X5.TX3-
(36) / -A35.X5.RX3+
(36) / -A35.X5.RX3-
AWG26 WH/OG OG WH/GN GN
SH

-A67-CTM DSQC2000 CONVEYOR TRACKING

CTM-X7 WAN
TX3+
TX3-
RX3+
RX3-

CTM-X6 LAN PORT 2
TX2+
TX2-
RX2+
RX2-

CTM-X5 LAN PORT 1
TX1+
TX1-
RX1+
RX1-

1) The PCB contact X1 and X20 have shifted pins compared to the harness contact.

3.XT31:2 (24)
3.XT31:6 (24)
777
778
-X1

4.XT31:2 (24)
4.XT31:6 (24)
779
780

ENCODER 4 -X14: Enc4_B- Enc4_B+ Enc4_A- Enc4_A+ GND Enc4_Pwr
ENCODER 3 -X13: Enc3_B- Enc3_B+ Enc3_A- Enc3_A+ GND Enc3_Pwr
ENCODER 2 -X12: Enc2_B- Enc2_B+ Enc2_A- Enc2_A+ GND Enc2_Pwr
ENCODER 1 -X11: Enc1_B- Enc1_B+ Enc1_A- Enc1_A+ GND Enc1_Pwr
CONSOLE PORT FOR DEBUGGING -X3: Not connected, Not connected, Not connected, Not connected, GND, Not connected, SCI_TX, SCI_RX, Not connected
-X1: 24V_INP, GND

-X21 CAMERA 1: CAM_Pwr1, CAM_GND1, Sync1, Sync_Pwr1, GND, Trig1
-X22 CAMERA 2: CAM_Pwr2, CAM_GND2, Sync2, Sync_Pwr2, GND, Trig2
-X23 CAMERA 3: CAM_Pwr3, CAM_GND3, Sync3, Sync_Pwr3, GND, Trig3
-X24 CAMERA 4: CAM_Pwr4, CAM_GND4, Sync4, Sync_Pwr4, GND, Trig4
-X25 CAMERA 5: CAM_Pwr5, CAM_GND5, Sync5, Sync_Pwr5, GND, Trig5
-X26 CAMERA 6: CAM_Pwr6, CAM_GND6, Sync6, Sync_Pwr6, GND, Trig6
-X27 CAMERA 7: CAM_Pwr7, CAM_GND7, Sync7, Sync_Pwr7, GND, Trig7
-X28 CAMERA 8: CAM_Pwr8, CAM_GND8, Sync8, Sync_Pwr8, GND, Trig8
-X20: CAM_GND, CAM_PWR

0V DC
+24V DC
-X1 1)

OPTION 1550-1

Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONVEYOR TRACKING MODULE, DSQC 2000	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17

1) Only connected if Opt. REMOTE SERVICE BOX

PAST DESIGN

REMOTE SERVICE BOX DSQC680

-A61 opt. 890-1 / 890-2

(24) / -0V ReS — 746 — -A61-X1 1 — 1) — -X1 1

(24) / +24V Res — 745 — -A61-X1 2 — 1) — -X1 2

AWG24

-A61-X10

(35) / -1.TXRX+ — WHOG — 1 — 1) — -X10 1 — RX+

(35) / -1.TXRX- — OG — 2 — 1) — -X10 2 — RX-

(35) / -1.RXTX+ — WHGN — 3 — 1) — -X10 3 — TX+

(35) / -1.RXTX- — GN — 6 — 1) — -X10 6 — TX-

A31.X2
or
A62.X4
or
A64.X5
if opt. 1341-1

(43) / TXRX+.4

(43) / TXRX-.4

(43) / RXTX+.4

(43) / RXTX-.4

(41) / TXRX+.10

(41) / TXRX-.10

(41) / RXTX+.10

(41) / RXTX-.10

-X15

1 2 3 4 5 6 7 8 9

Console

LAN3 only for diagnostic 8/ — -X12

LAN4 only for unit diagnostic 8/ — -X13

WAN Internet 8/ — -X14

-X2 — 1) — -A61-X2 1 — opt.(890-1, 890-3) only — -XS18 / (23)

-X11

1 — 1) — -A61-X11 1 — WHOG — XP23.1 / (23)

2 — 1) — -A61-X11 2 — OG — XP23.2 / (23)

3 — 1) — -A61-X11 3 — WHGN — XP23.3 / (23)

6 — 1) — -A61-X11 6 — GN — XP23.6 / (23)

7

8

Coupler connection if Opt.890-3

-X12.1 — -X12.2

1 — 1

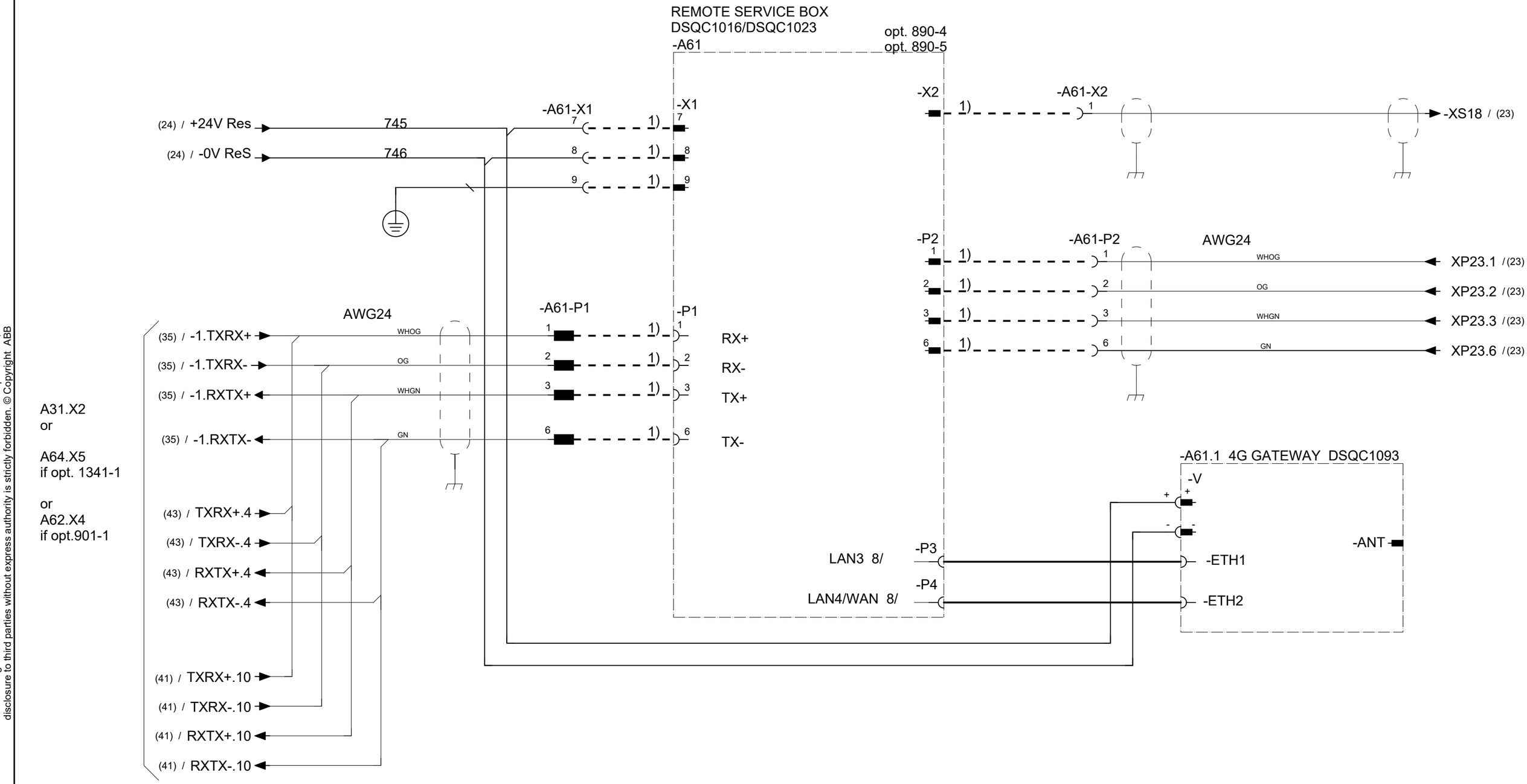
2 — 2

3 — 3

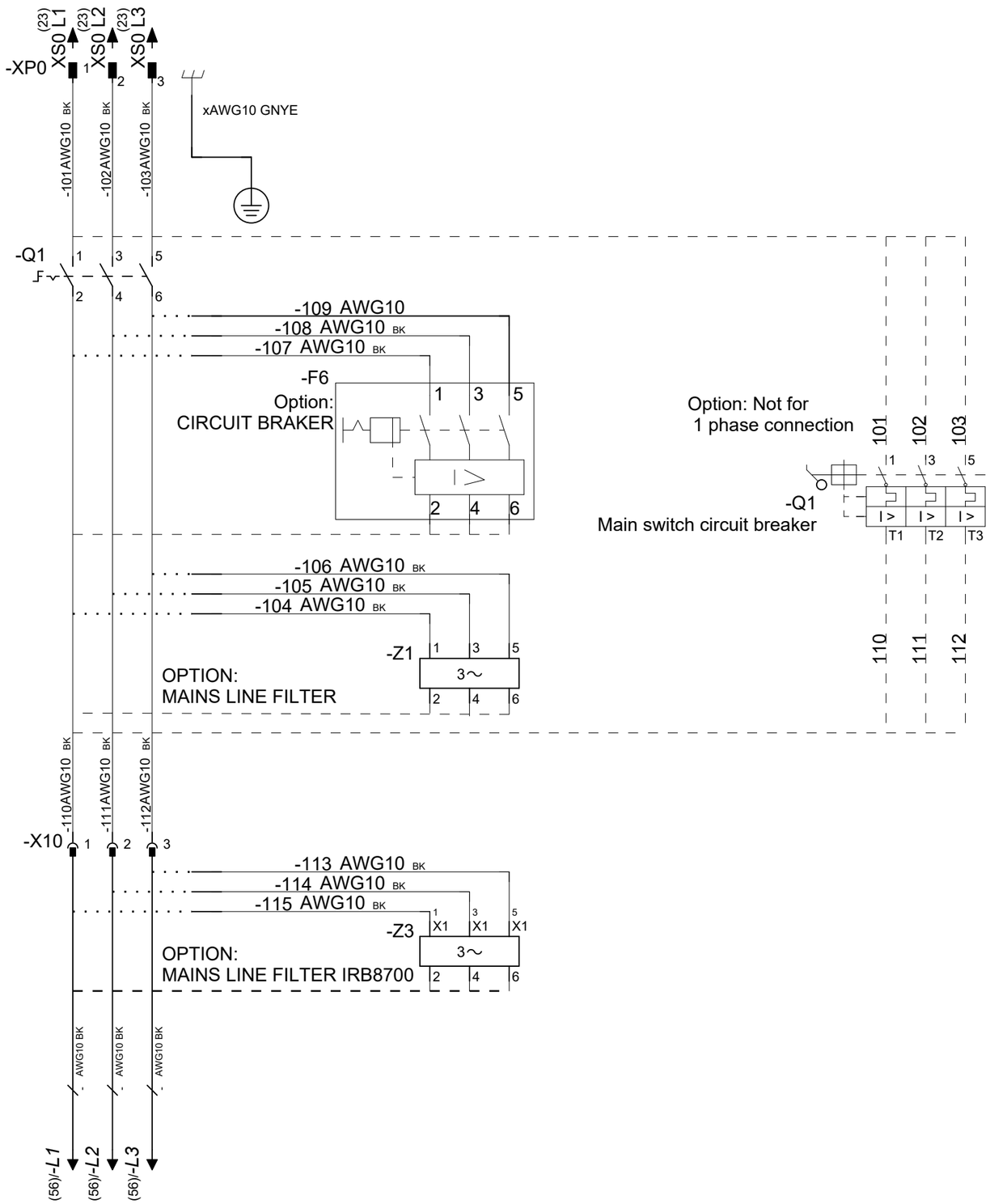
6 — 6

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D REMOTE SERVICE BOX DSQC680 to Rel. 16.1	Status: APPROVED	Plant: = Location: + Sublocation: +
					Document no. 3HAC024480-011	Rev. Ind 17
						Page 54 Next 54.1 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					

1) Only connected if Opt. REMOTE SERVICE BOX



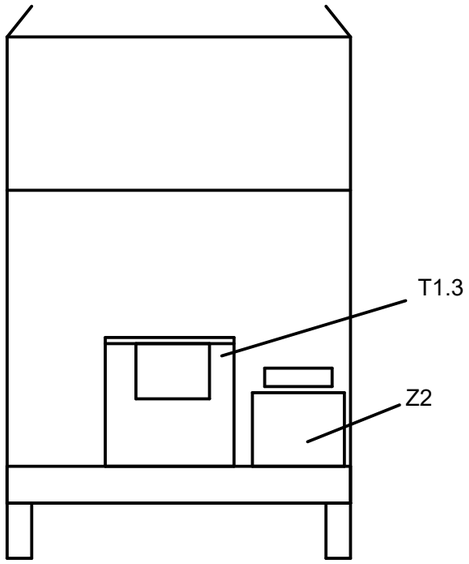
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D REMOTE SERVICE BOX DSQC1016/DSQC1023 from Rel. 16.2	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page 54.1 Next 55 Total 164



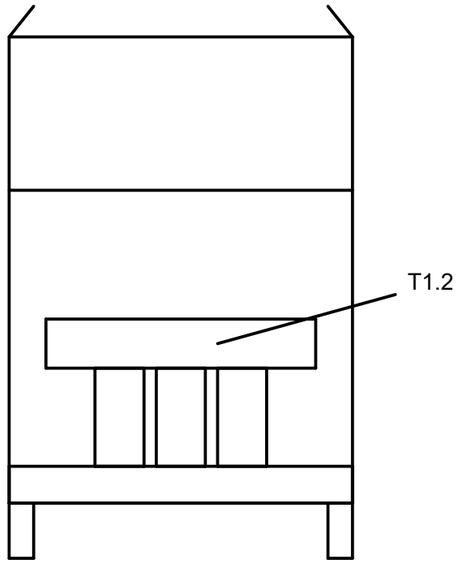
If Option: 3 Phase
TRANSFORMER UNIT

Latest revision:			Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D MAINS CONNECTION XP0, Q1, F6, Z1, Z3	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren	2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page55 Next 55.5 Total 164

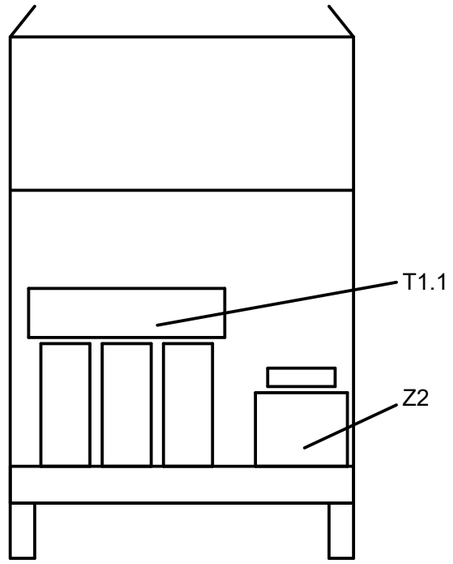
1,2/2,5kVA
Transformer



4,2/6kVA
Transformer



13kVA
Transformer



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D Transformer and Reactor location Rear side of the Enclosure	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page55.5 Next 56 Total 164

MAINS CONNECTION

-L1 / (55)
-L2 / (55)
-L3 / (55)

113 AWG 10 BN
114 AWG 10 BN
115 AWG 10 BN

Transformer
Option T1.2 L1-L2-L3
262V AC if IRB140-2600

L1.1 (57)
L2.1 (57)
L3.1 (57)

Transformer
T1.1 3HAC 024138-001 (13kVA)
IRB460, 660, 760, 4600, 66x0, 6700, 7600, 8700

-T1.1 TRANSFORMER UNIT

-X1

200V 220V 400V 440V 480V 500V 600V

GNYE
AWG10

-X2 230V
230V
480VAC
480VAC
480VAC
230VAC
115VAC
N

1 2 3

-Z2
116 117 118
REAKTOR UNIT
-X1 INL1 INL2 INL3
F1 F3 F5
-L1
F2 F4 F6
-X2 OUTL1 OUTL2 OUTL3

119 120 121
/ -T1_L1 / -T1_L2 / -T1_L3
(63) (63) (63)

1 2
(60) / -230VAC1 SC.1
(60) / -230VAC2 SC.1

(58) / -T1_230V
(58) / -T1_115V
(58) / -T1_N

POWER SUPPLY
CONTACTOR UNITS
SERVICE OUTLET

Transformer
T1.3 USED FOR DIRECT POWER SUPPLY:
IRB460, 660, 760, 4600, 66x0, 6700 .400-480V
IRB7600, 8700 .....480V

3HAC 037015-001 1,2 kVA

-T1.3 TRANSFORMER UNIT

-X1
IN
230V 400V 440V 480V

AWG10 BK
AWG10 BK
150
151

113 114 115

-Z2
REAKTOR UNIT
-X1 L1IN L2IN L3IN
-L1 F1 F3 F5
F2 F4 F6
-X2 L1UT L2UT L3UT

GNYE
AWG10

-X2 230VAC
OUT 230VAC
230VAC
115VAC
N

1 2 3

1 2
(59) / 230V AC1.DC
(59) / 230V AC2.DC
(60) / -230VAC1 SC.1
(60) / -230VAC2 SC.1
(58) / -T1_230V
(58) / -T1_115V
(58) / -T1_N

119 120 121
(63) / -T1_L1
(63) / -T1_L2
(63) / -T1_L3

230VAC POWER SUPPLY DRIVE MODULE
230VAC POWER SUPPLY SINGLE DRIVE MODULE
SERVICE OUTLET
CONTACTOR UNITS

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D TRANSFORMER UNIT 480V T1.1, T1.3, Z2, X10	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011	Rev. Ind 17
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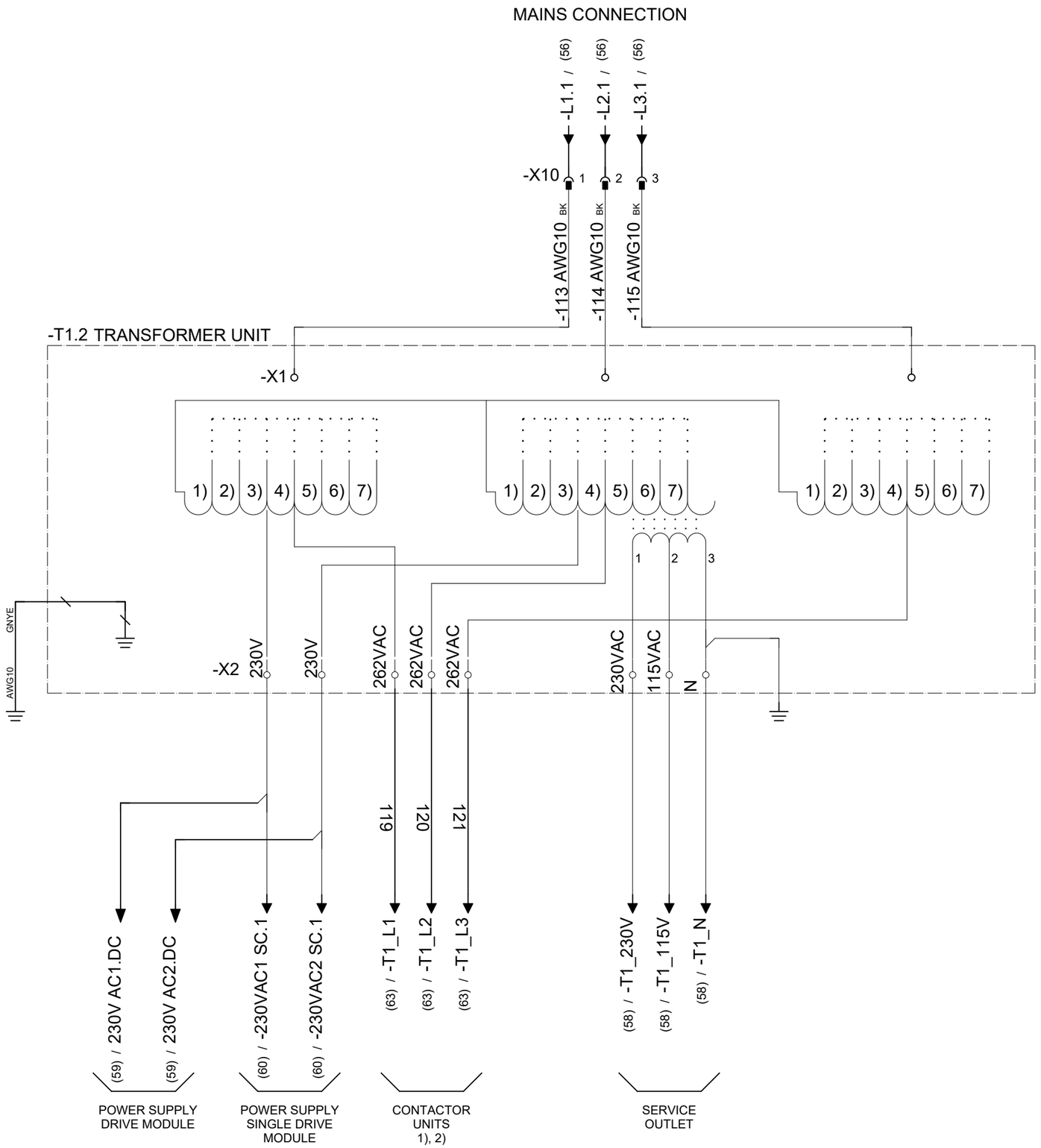


Option: Transformer T1.2 L1-L2-L3 = 262V
if IRB120 - 360, 1200, 14x0 - 44x0, 6400R

T1.2	(4,2kVA)	(4,2kVA)	(4,2kVA)	(6,0kVA)
Terminal	3HAC037016-001	3HAC037017-001	3HAC037018-001	3HAC024180--001
1)	200V	400V	440V	200V
2)	220V	—	480V	220V
3)	—	—	500V	400V
4)	—	—	600V	440V
5)	—	—	—	480V
6)	—	—	—	500V
7)	—	—	—	600V

Latest revision:

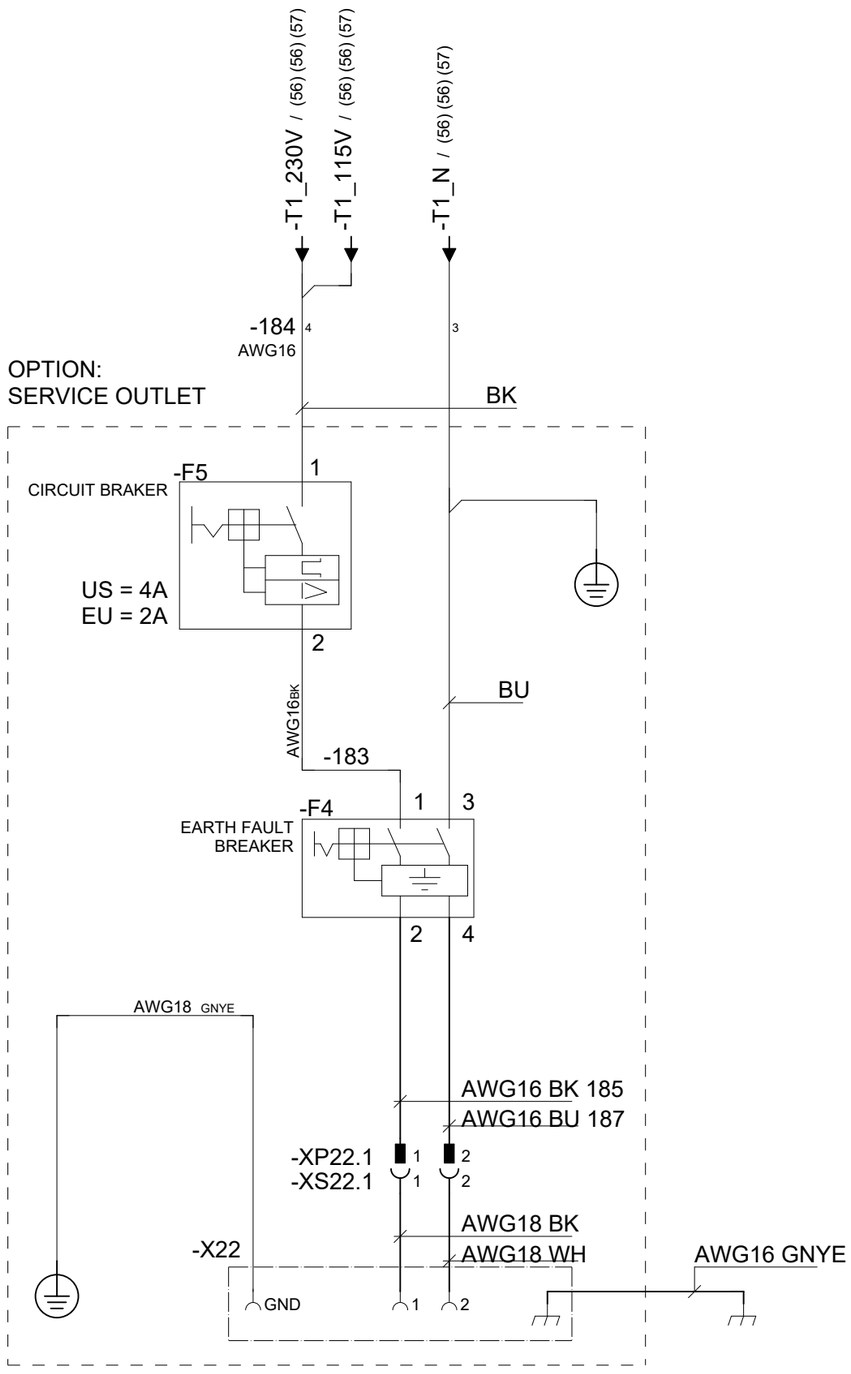
Prepared by, date:A Hägglund | Approved by, date:S Hällgren 2023-10-31

ABB | Lab/Office: RA/RDP

IRC5 DESIGN Rel: 23:D
TRANSFORMER UNIT 262V T1.2, X10

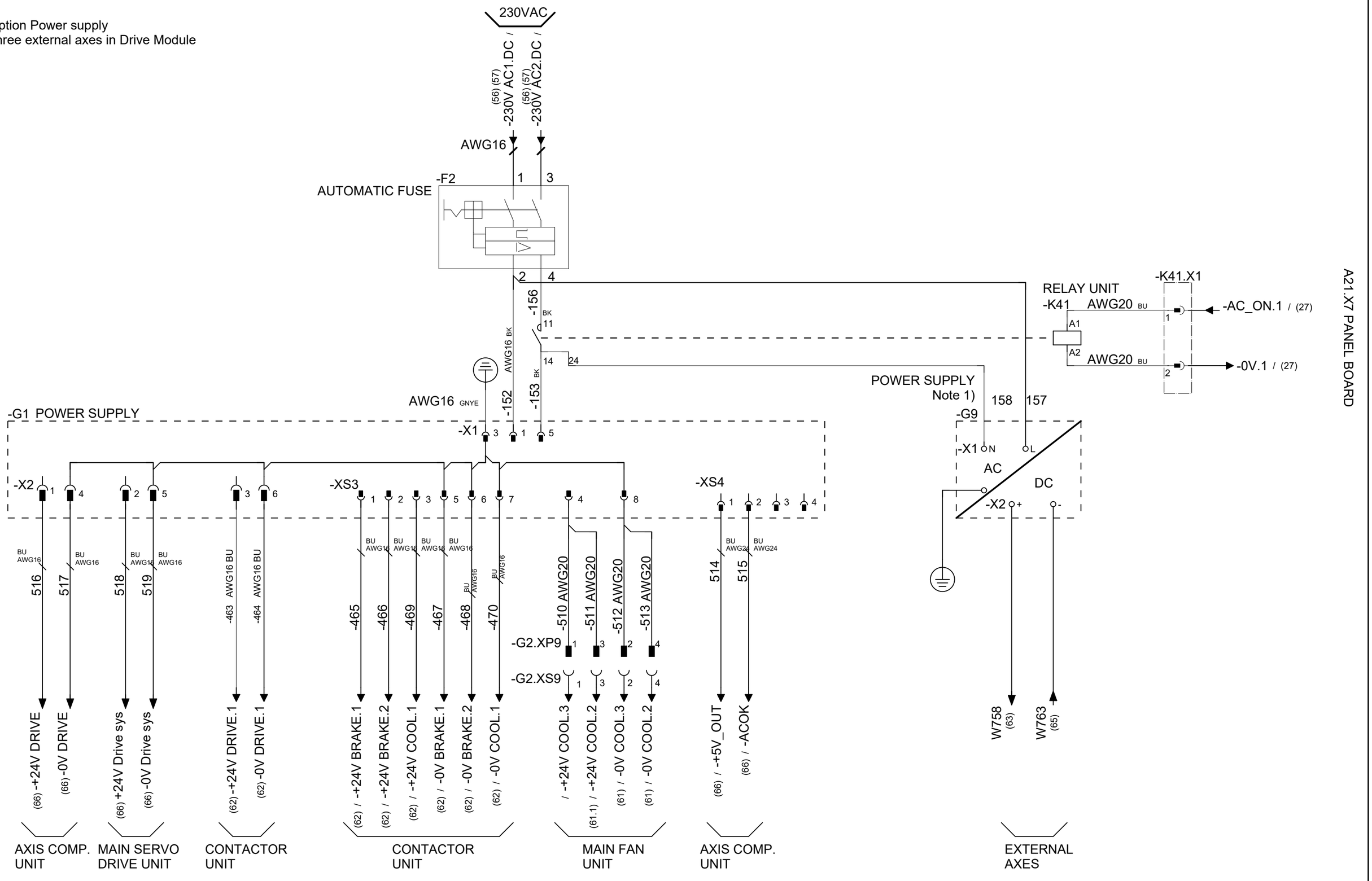
Status: APPROVED
Plant: =
Location: +
Sublocation:+

Document no. 3HAC024480-011
Rev. Ind 17



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D OPTION : SERVICE OUTLET F4, F5, X22	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page58 Next 59 Total 164

1) Option Power supply
for three external axes in Drive Module



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D POWER SUPPLY DSQC 626 AND 627 FOR DRIVE MODULE F2, G1, G9, K41.X1	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17 / Page59 / Next 60 / Total 164

Harness:
3HAC047294-001 (xs49)

If Option: 3 phase connection

230VAC

-G1 POWER SUPPLY DSQC661

-X1 3 1 5

AWG16 GNYE

-152 AWG16 BK

-153 AWG16 BK

AC

DC

TEMP OK_N

ACOK_N

+24V +24V 0V 0V

-X2 1 2 3 4

-X3 3 4

AWG12 BU

AWG20 BU

(24) -230V AC2.11 -309 AWG16 BK

(24) -230V AC2.12 -158 AWG16 BK

(24) -230V AC2.13 -158 AWG16

(24) -230V AC1.11 -308 AWG16 BK

(24) -230V AC1.12 -157 AWG16 BK

(24) -230V AC1.13 -157 AWG16

-XT16

L2 L2 L2 L2 L2 L2 L1 L1 L1 L1 L1 L1

JUMPER JUMPER

(56) (56) (57) -230VAC1 SC.1/

(56) (56) (57) -230VAC2 SC.1/

AUTOMATIC FUSE -F2 1/BK 2/BK AWG16

1 3 2 4

-G2 POWER DISTRIBUTION BOARD DSQC662

-X1 1 2 3 4

-X2 3 4

-X3 1 4 2 5 3 6

-X4 1 2 3 4

-X5 1 2 3 4 5 6 7 8

-X6 1 2 3 4 5 6 7 8 9 10 11 12

-X7 1 2 3 4 5 6 7 8 9 10

-X8 1 2 3 4

-X9 1 2 3 4

-Y1

-Y2

302

304

-A34.XS1 1 2

(40.1) X49.1

(40.1) X49.2

516 AWG16 BU (66) -+24V DRIVE

517 AWG16 BU (66) -0V DRIVE

518 AWG16 BU (66) / +24V Drive sys

519 AWG16 BU (66) / -0V Drive sys

-463 AWG16 BU (62) -+24V DRIVE.1

-464 AWG16 BU (62) -0V DRIVE.1

-247 AWG16 BU (24) / +24V I/O.1

-248 AWG16 BU (24) / -0V I/O.1

-466 AWG16 BU (62) / -+24V BRAKE.1

-465 AWG16 BU (62) / -+24V BRAKE.2

-469 AWG16 BU (62) / -+24V COOL.1

-467 AWG16 BU (62) / -0V BRAKE.1

-468 AWG16 BU (62) / -0V BRAKE.2

-470 AWG16 BU (62) / -0V COOL.1

-250 AWG16 BU (28.2) / +24VSYS

-252 AWG16 BU (28.2) / +24VCOOL8

-301 AWG16 BU (35) / +24V PC.1

-251 AWG16 BU (28.2) / -0VSYS

-253 AWG16 BU (62) (63) (28.2) (62) (62) (63) (63) 0VCOOL8

-303 AWG16 BU (35) / -0V PC.1

-G3

-X1 1 2 3 4 5 6 7 8 9 10

ENERGY BANK

2/RD 1/WH 1/GN 2/BK

(36) / -USB2 +5V

(36) / -USB2 D-

(36) / -USB2 D+

(36) / -USB2_GND

AWG20 BK RD BN OG

(63) / +24V COOL.3

(61) / +24V COOL.2

(61) / -0V COOL.3

(61) / -0V COOL.2

AXC SWITCH A34.X6

AXIS / DRIVE / CONTACTOR BOARD

CUSTOMER I/O

CONTACTOR BOARD

PANEL BOARD, PC

MAIN COMPUTER

MAIN FAN UNIT

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D POWER SUPPLY DSQC 661 AND 662 G1, G2, G3, F2, XT16	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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(61.1) (59) (60) -0V COOL.2

(61.1) (59) (60) -0V COOL.3

(60) -+24V COOL.2

(63) +24VCOOL.3.1

AWG24 OG BN BK BU

This configuration is part of release 22A

Option 1170-1:
Thermistor R1 at E41, E42, E43, E44.

-E1 FAN UNIT

-XS1 4 2 1 3

AWG24 BU

-E41 FAN UNIT
-E42 FAN UNIT
-E43 FAN UNIT
-E44 FAN UNIT

-X1 3 - M + -X1 1
-X2 1 -X2 1
-R1 1 2 2
(61.1.2)

POWER SUPPLY PANEL BOARD X18

(28) FAN0V
(28) TACHO
(28) 24VCOOL

(61.1) (28.2) (28.2) (28.2) +24VCOOL8.1 252
(61.1) (28.2) (28.2) 0VCOOL8.1 253

(62) +24VCOOL.4 386 AWG20 BU
(62) 0VCOOL.4 387 AWG20 BU
FAN1ret.4 (62)

(62) 0VCOOL.5
(62) +24VCOOL.5
FAN2ret.5 (62)

if HV
if LV

+A43-XS11 1 2 3
-W751 BU AWG24
-W753 BU AWG24
-W754 BU AWG24

+A43-XP11.1 1 2 3

W750 BU AWG24
W752 BU AWG24

SWITCH -S1 14 13
=IRC5-W756 BU AWG24

360 AWG20 BU
362 AWG20 BU
361 AWG20 BU

-A21
-X18 1 3 2

BK BN RD

-E2 EXT. COMPUTER FAN opt.708-2
-X1 3 2 1
- M +

-363 AWG20BU
-364 AWG20BU

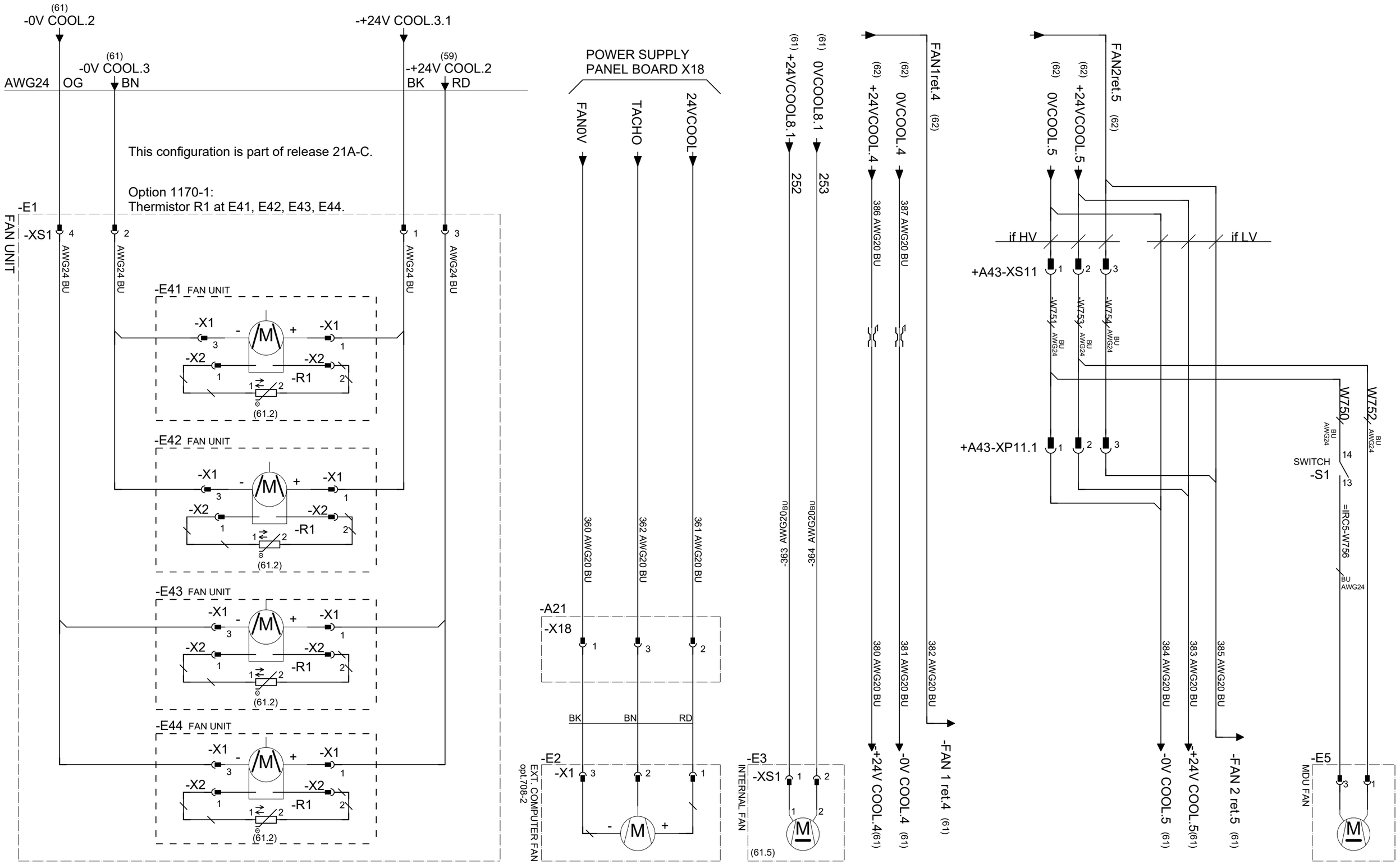
-E3 INTERNAL FAN
-XS1 1 2
1 2 M
(61.1.5)

380 AWG20 BU
381 AWG20 BU
382 AWG20 BU
384 AWG20 BU
383 AWG20 BU
385 AWG20 BU

+24V COOL.4 (61.1)
-0V COOL.4 (61.1)
-FAN 1 ret.4 (61.1)
-0V COOL.5 (61.1)
+24V COOL.5 (61.1)
-FAN 2 ret.5 (61.1)

-E5 MDU FAN
3 1
M

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FAN UNIT E1, E2, E3, E5, A21, A43	Status: APPROVED	Plant: = Location: + Sublocation:+
				Document no. 3HAC024480-011	Rev. Ind 17
					Page61 Next 61.1 Total 164
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				



Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FAN UNIT E1, E2, E3, E5, A21, A43 Release 21A-C	Status: APPROVED Plant: = Location: + Sublocation:+
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-A43 CONTACTOR BOARD

DRIVE POWER SUPPLY

(59) (60) -0V DRIVE.1 → -XS6 1
(59) (60) -+24V DRIVE.1 → -XS6 2
-XS6 2 → 24VDrive
-XS6 2 → PTC → 24V

CONTROL MODULE A21.X7

(27) / -RUN_CH1 → -X1 1
(27) / -RUN_CH1Ret → -X1 2
(27) / -RUN_CH2 → -X1 3
(27) / -RUN_CH2Ret → -X1 4

LIMIT SWITCH 2 EXTERNAL AXIS

LIM2 ch1 → -X22 1
LIM2 ch2 → -X22 3
LIM2 ch2 ret → -X22 4
LIM2 ch1 ret → -X22 2
-X22 1 → 24VDrive
-X22 3 → RunCh2

LIMIT OVERRIDE

24VDrive → -X23 1 → -X23 3
-X23 4 → -X23 2
RunCh1 → LIM2
RunCh1 → LIM1

1) Jumpers if not used

LIMIT SWITCH 1 CONTROL CABLE

(70) (83) (98) (101) (104) (113) / -A43-X21.1 → LIM1 ch1 → -X21 1
(70) (83) (98) (101) (104) (113) / -A43-X21.3 → LIM1 ch2 → -X21 3
1) / -A43-X21.4 → LIM1 ch2 ret → -X21 4
1) / -A43-X21.2 → LIM1 ch1 ret → -X21 2

CONTROL MODULE A21.X7

(27) / -ENABLE2.1 → -X1 5
(27) / -ENABLE2_1Ret → -X1 6
(27) / -SPEED.1 → -X1 7
(27) / -0V → -X1 8

AXIS COMPUTER A42.X6

(66) / -RS485+ BU → -X4 4
(66) / -RS485- WHBU → -X4 5
(66) / -0V ENABLE2 OG → -X4 7
(66) / -ENABLE2 WHOG → -X4 8

AXC

INTERLOCKING

RunCh2
RunCh1
-LOCK1A (63)
-LOCK2B (63)
-SELF1 (63)
-SELF2 (63)
K2
K1
0V COOL → (60) / 0VCOOL8
24V COOL → (63) / -RCH1
24V COOL → (60) / 0VCOOL8
24V COOL → (63) / -RCH2
PAN_CH1
PAN_CH2

(59) (60) / -+24V BRAKE.2 → -XS7 1
(59) (60) / -0V COOL.1 → -XS7 2
(59) (60) / -+24V COOL.1 → -XS7 3
(59) (60) / -+24V BRAKE.1 → -XS7 4
(59) (60) / -0V BRAKE.1 → -XS7 5
(59) (60) / -0V BRAKE.2 → -XS7 6

PAST DESIGN

If external axes - Connection if Rel.13.2 and earlier.
A43X5:1.3 / (65) / -A43X5:1.4
A43X5:2.3 / (65) / -A43X5:2.4
A43X5:3.3 / (65) / -A43X5:3.4
A43X5:4.3 / (65) / -A43X5:4.4

-X5
If external axes - Connection from Rel.14.1
A43X5:1.1 / (75.1) / -A43X5:1.2
A43X5:2.1 / (75.1) / -A43X5:2.2
A43X5:3.1 / (75.1) / -A43X5:3.2
A43X5:4.1 / (75.1) / -A43X5:4.2

If no external axes

-X10
FAN1ret.4 / (61) (61.1)
0VCOOL.4 (61) (61.1)
+24VCOOL.4 (61) (61.1)

-PTC1 / -PTC 1 ret / -0V BRAKE3 / -0V BRAKE4 / (80) (86) (89) (93.6) (98) (104) (113) (120.2) (122) (83) (87.5) (93) (95) (101) (107) (116) (120.5)

BRAKE CTRL
24V COOL → (63) / -BRAKE
0V COOL → (60) / 0VCOOL8

-X11
FAN2ret.5 / (61) (61.1)
0VCOOL.5 (61) (61.1)
+24VCOOL.5 (61) (61.1)

-X12
-491 AWG20 BU +24V
-492 AWG20 BU 0V

OPTION :DUTY TIME COUNTER
-P1

CONTINUATION NEXT PAGE

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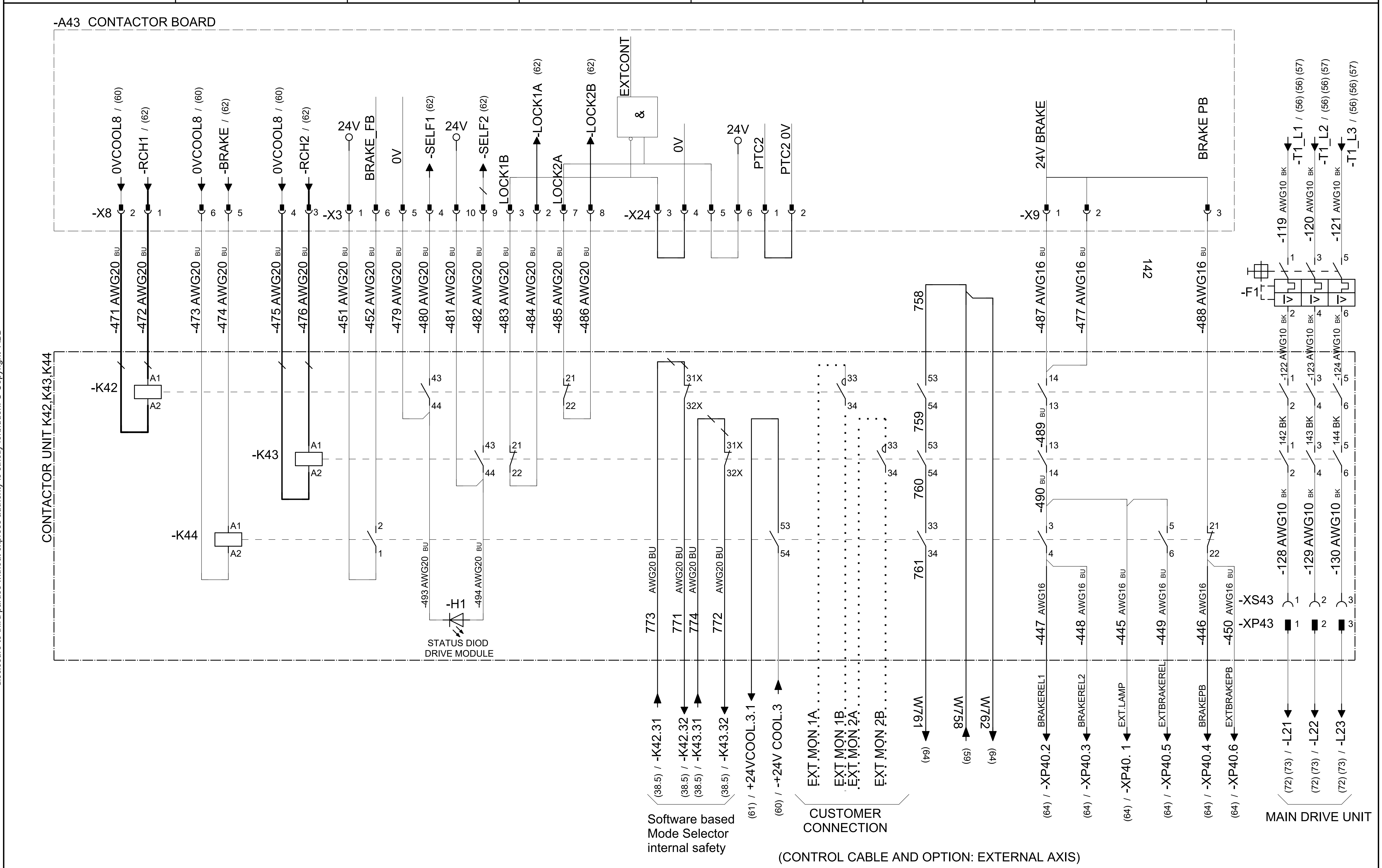

-A43 CONTACTOR BOARD
0VCOOL8 / (60)
-RCH1 / (62)
-BRAKE / (62)
-RCH2 / (62)
24V
BRAKE_FB
0V
-SELF1 (62)
-SELF2 (62)
LOCK1B
-LOCK1A (62)
LOCK2A
-LOCK2B (62)
EXTCONT
&
PTC2
PTC2 0V
24V BRAKE
BRAKE PB
-T1_L1 / (56) (56) (57)
-T1_L2 / (56) (56) (57)
-T1_L3 / (56) (56) (57)
-X8
-X3
-X24
-X9
-F1
142
CONTACTOR UNIT K42,K43,K44
-K42
-K43
-K44
-H1
STATUS DIOD
DRIVE MODULE
-XS43
-XP43
(38.5) / -K42.31
(38.5) / -K42.32
(38.5) / -K43.31
(38.5) / -K43.32
(61) / +24VCOOL.3.1
(60) / -+24V COOL.3
EXT MON 1A
EXT MON 1B
EXT MON 2A
EXT MON 2B
W761 (64)
W758 (59)
W762 (64)
(64) / -XP40.2 BRAKEREL1
(64) / -XP40.3 BRAKEREL2
(64) / -XP40. 1 EXT.LAMP
(64) / -XP40.5 EXTBRAKEREL
(64) / -XP40.4 BRAKEPB
(64) / -XP40.6 EXTBRAKEPB
(72) (73) / -L21
(72) (73) / -L22
(72) (73) / -L23
Software based
Mode Selector
internal safety
CUSTOMER
CONNECTION
MAIN DRIVE UNIT
(CONTROL CABLE AND OPTION: EXTERNAL AXIS)

Latest revision:	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTACTOR UNIT A43, K42, K43, K44
Prepared by, date: A Hägglund	Approved by, date: S Hällgren	2023-10-31

ABB

Status: APPROVED

Plant: =
Location: +
Sublocation: +

Document no. 3HAC024480-011

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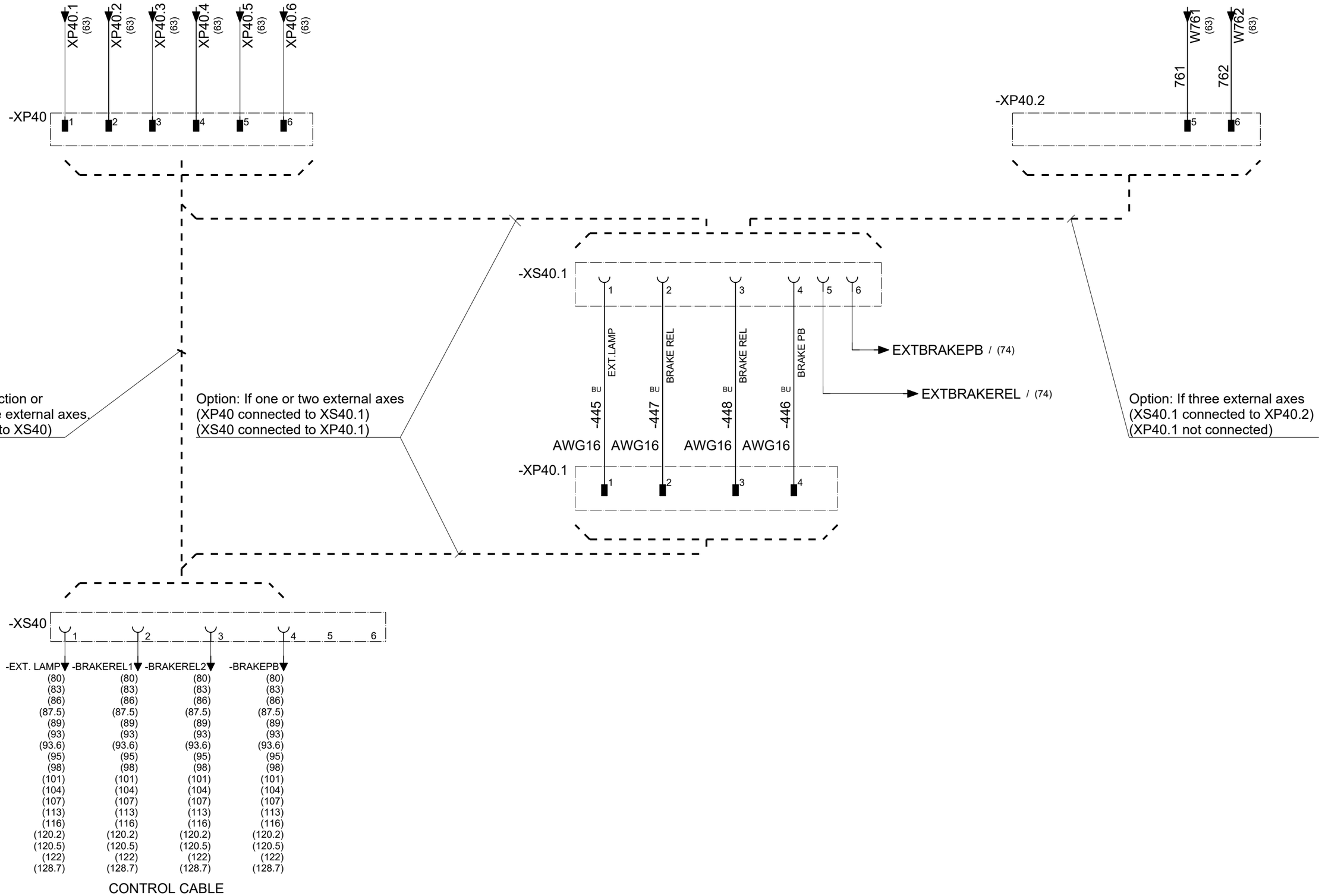

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTACTOR UNIT XS40, XP40 Only for release 13.2 and earlier	Status: APPROVED	Plant: = Location: + Sublocation: +
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PAST DESIGN

CONNECTED IN STANDARD AND IF THREE EXTERNAL AXES

A43X5:1.3 / (62) → -XP5/XS5 1 → A43X5:1.4 / (62)
A43X5:2.3 / (62) → -XP5/XS5 2 → A43X5:2.4 / (62)
A43X5:3.3 / (62) → -XP5/XS5 3 → A43X5:3.4 / (62)
A43X5:4.3 / (62) → -XP5/XS5 4 → A43X5:4.4 / (62)

OPTION: IF THREE EXTERNAL AXES

(59) / W763 0V BRAKE → -XP5.2 3

OPTION: IF ONE OR TWO EXTERNAL AXES

-XP5.2 1 → -XS5.1 1 → 4018 → -XP5.1 1
-XP5.2 2 → -XS5.1 2 → 4019 → -XP5.1 2
-XP5.2 3 → -XS5.1 3 → 4016 → 4015 → -XP5.1 3
-XS5.1 4 → 4017 → -XP5.1 4

-XP5.1 0V BRAKE → 4012 → XS5.1:3 / (74)

Block diagram for:
Connected in standard

Contactor unit -A43.X5 → -XS5 → Connected

Block diagram for:
Option one or two external axes in Drive module ,
or Single drive unit 1-3 axes.

Contactor unit -A43.X5 → -XS5.1 → -XP5.1 → -XS5 → Connected
-XP5.1 0V BRAKE → 4012 → Connected

Block diagram for:
Option if three external axes and
Drive module with 2600-87xx

Contactor unit -A43.X5 → -XS5 → Connected

Power supply -G9 → -XP5.2 → -XS5.1 → -XP5.1 Not connected
-XP5.1 → Connected

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTACTOR BOARD A43.X5, XS5, XP5 Connection for release 13.2 and earlier	Status: APPROVED	Plant: = Location: + Sublocation: +	
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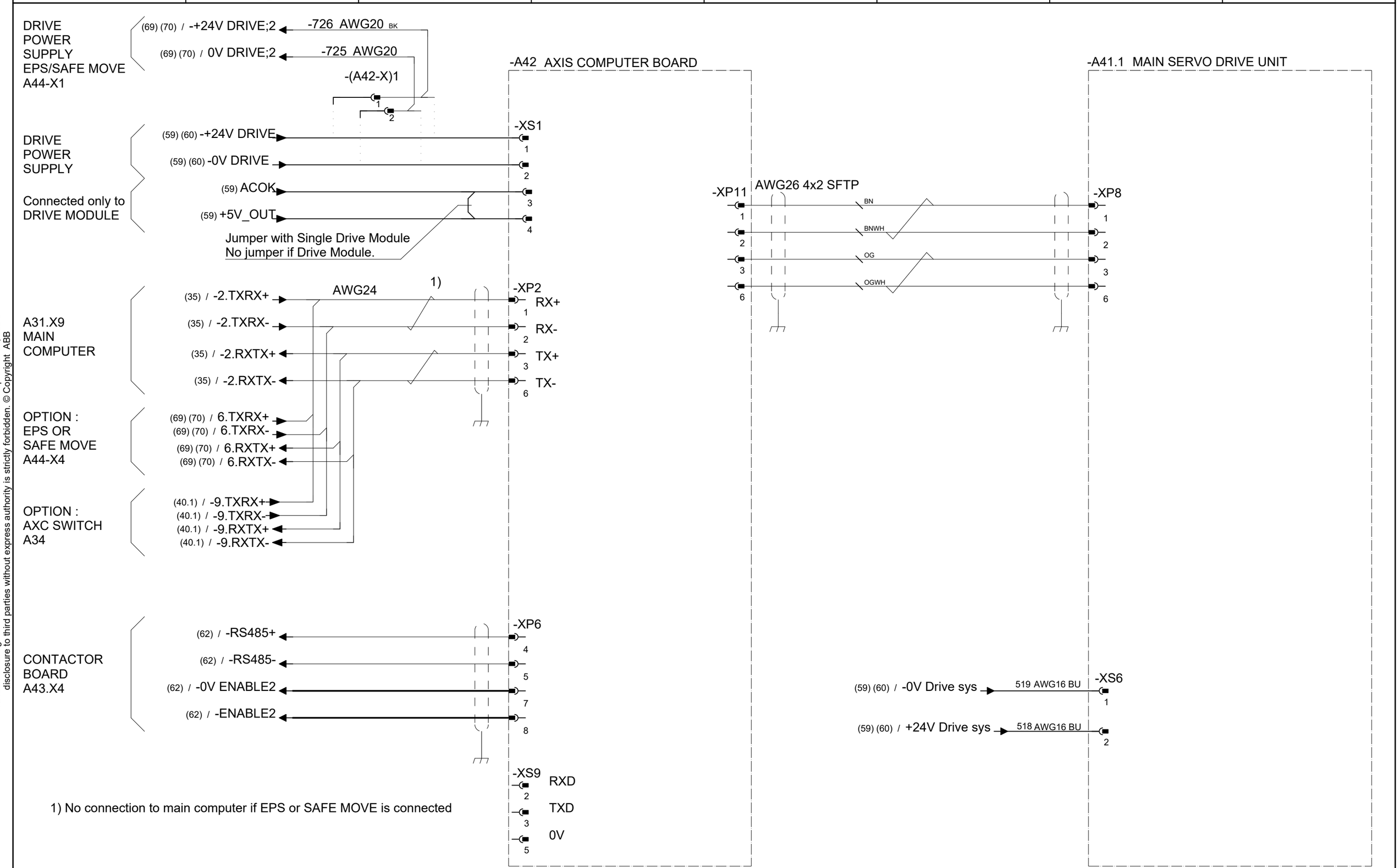

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D AXIS COMPUTER UNIT A42, A41.1	Status: APPROVED	Plant: = Location: + Sublocation: +
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-A44 _ EPS

Option: EPS connect to A44-X5

(.3) (69.4) (70.3) (71.3)

3.See pages / (69)

-A44 _SAFE MOVE

Option: Safe Move connect to A44-x5 and x7

4.See pages / (70) (70)

-A42 AXIS COMPUTER BOARD

-XP4

MRCO1	1	-MRCO1 /
MRCO1_N	2	-MRCO 1_N /
MRCI1	4	-MRCI1 /
MRCI1_N	5	-MRCI 1_N /
0V	6	-MRC_0V1 /
24V_SMB1	7	+24V_SMB1 /
0V	3	-MRC_0V2 /
0V	9	-MRC_0V3 /

(77) (80) (83) (86) (87.5) (89) (93) (93.6) (95) (98) (101) (104) (107) (113) (116) (120.2) (120.5) (122) (128.7)

CONTROL SIGNAL XS2

-XP5

MRCO2	1	-MRCO2 / (23)
MRCO2_N	2	-MRCO2_N / (23)
MRCI2	4	-MRCI2 / (23)
MRCI2_N	5	-MRCI2_N / (23)
0V	6	-MRC_0V4 / (23)
24V_SMB2	7	-24V_SMB2 / (23)
0V	3	-MRC_0V5 / (23)
0V	9	-MRC_0V6 / (23)

EXT. AXIS SIGNAL XS41

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D AXIS COMPUTER UNIT A42, A44	Status: APPROVED	Plant: = Location: + Sublocation: +
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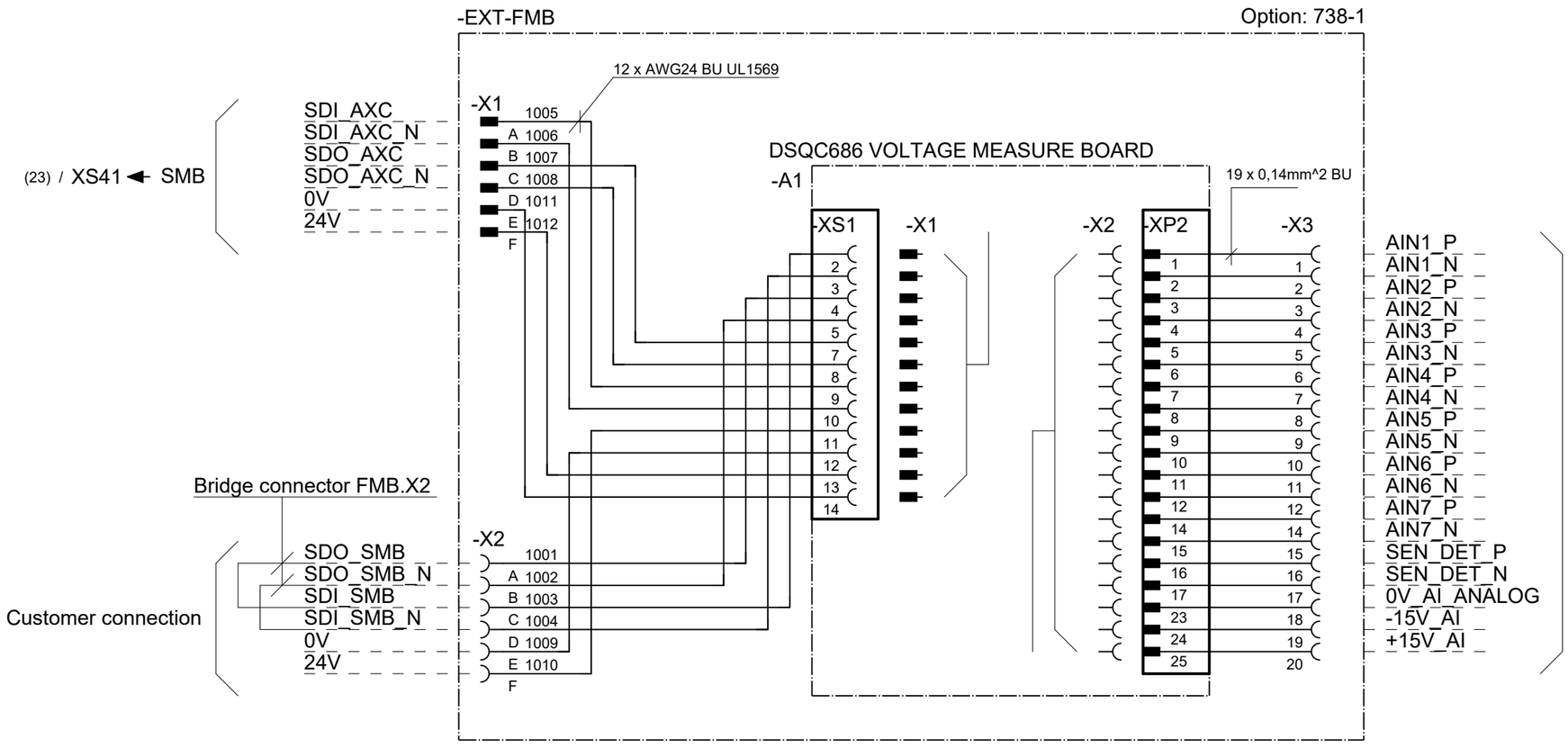

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D FORCE MEASUREMENT BOX	Status: APPROVED	Plant: = Location: + Sublocation: +
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Option: EPS
Option: 810-1

-A44 DSQC 646

DRIVE POWER SUPPLY
(66) / 0V DRIVE;2 → -X1 1
(66) / -+24V DRIVE;2 → -X1 2

-X4
TX+ 1 — BU — 6.TXRX+ / (66)
TX- 2 — WHBU — 6.TXRX- / (66)
RX+ 3 — OG — 6.RXTX+ / (66)
RX- 6 — WHOG — 6.RXTX- / (66)
AWG24
AXIS COMPUTER BOARD A42-X2

A31.X9 MAIN COMPUTER
AWG24
(35) / -2.TXRX+ — WHOG → -X3 1 RX+
(35) / -2.TXRX- — OG → -X3 2 RX-
(35) / -2.RXTX+ — WHGN → -X3 3 TX+
(35) / -2.RXTX- — GN → -X3 6 TX-

-X6
1 MRCO1
2 MRCO1-N
4 MRCI1
5 MRCI1-N
6 0V
7 24V-SMB1
3 0V
9 0V
CONTROL SIGNAL XS2

Option: EPS Connect to AXIS COMPUTER BOARD A42-X4

3.See pages / → (67)

-X5
MRCO1 1
MRCO1-N 2
MRCI1 4
MRCI1-N 5
0V 6
24V-SMB1 7
0V 3
0V 9

-X9
1 +24V
2 0V
3 OUT1A
4 OUT1B
5 OUT2A
6 OUT2B
7 OUT3A
8 OUT3B
9 OUT4A
10 OUT4B
11 OUT5A
12 OUT5B
13 CSC INA
14 CSC INB
PROCESS I/O

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D EPS A44, DSQC646	Status: APPROVED	Plant: = Location: + Sublocation: +
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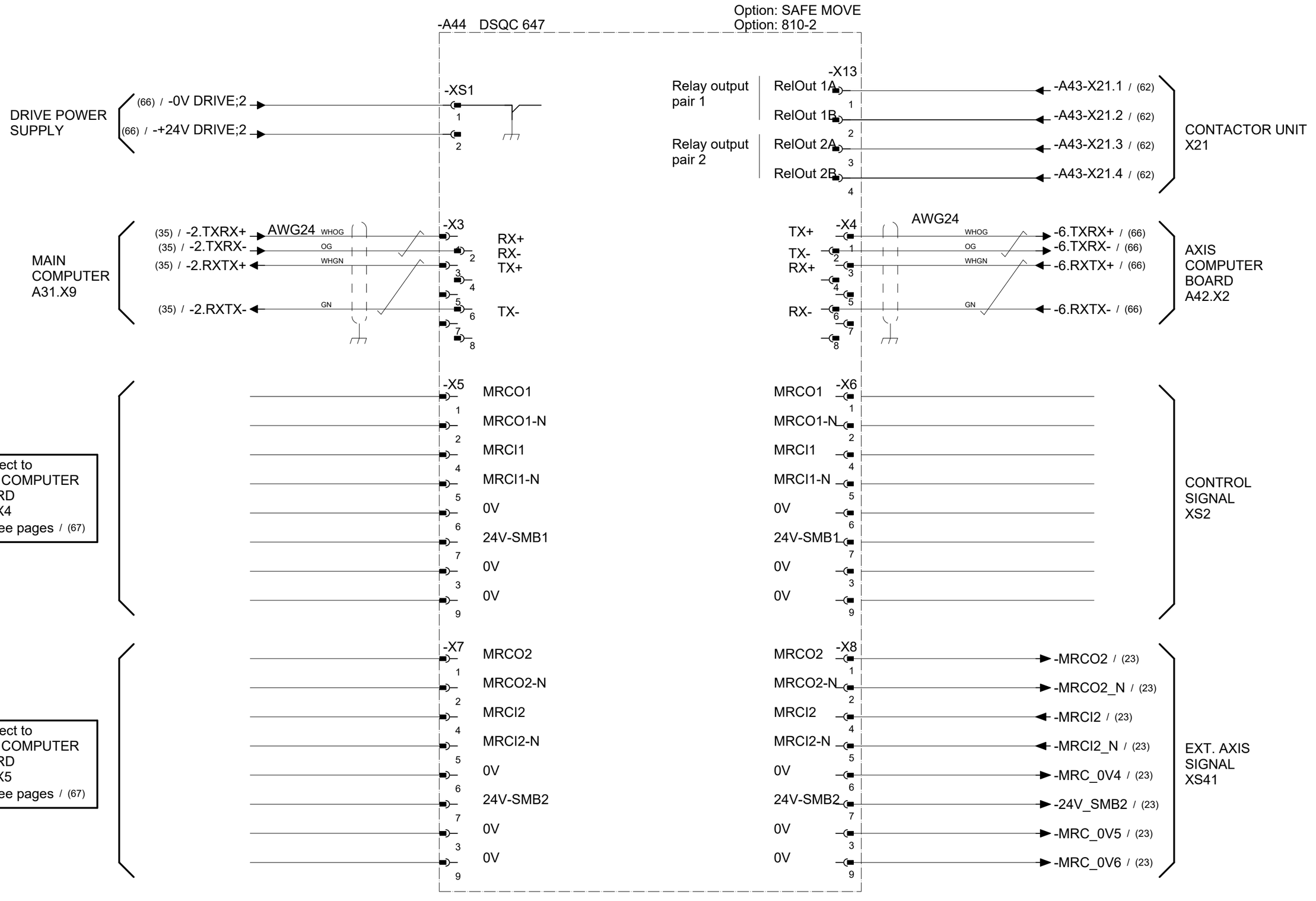

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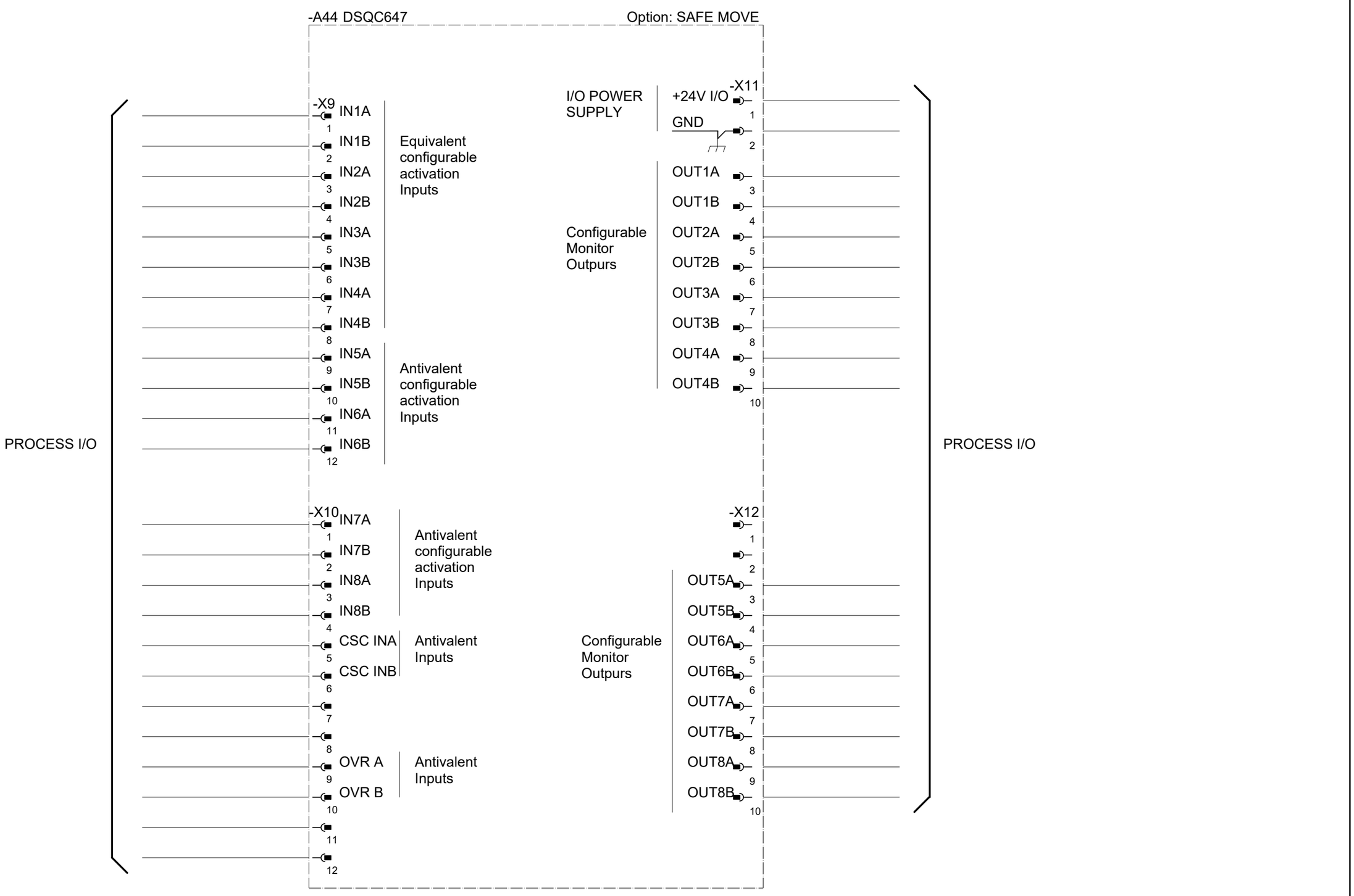

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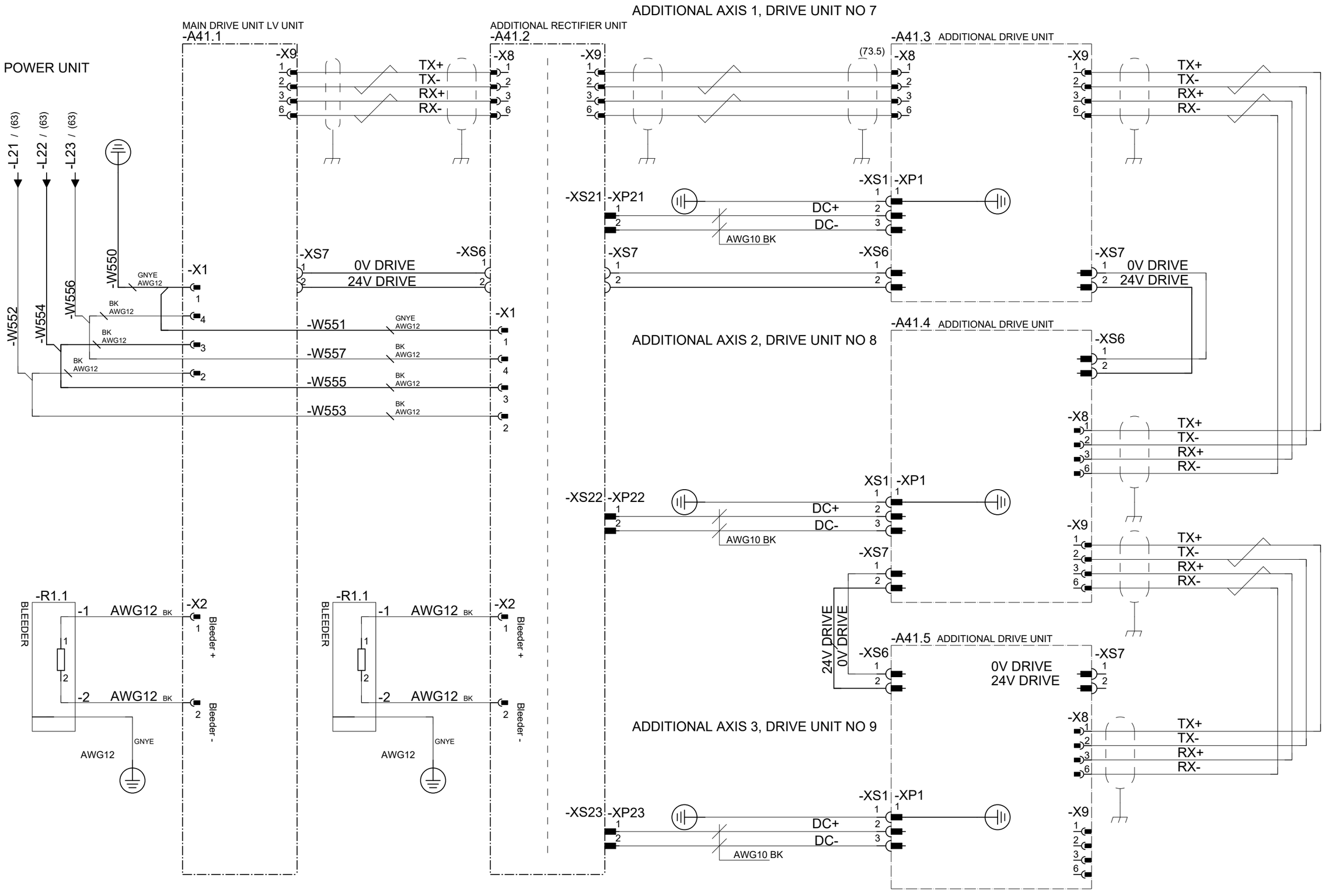
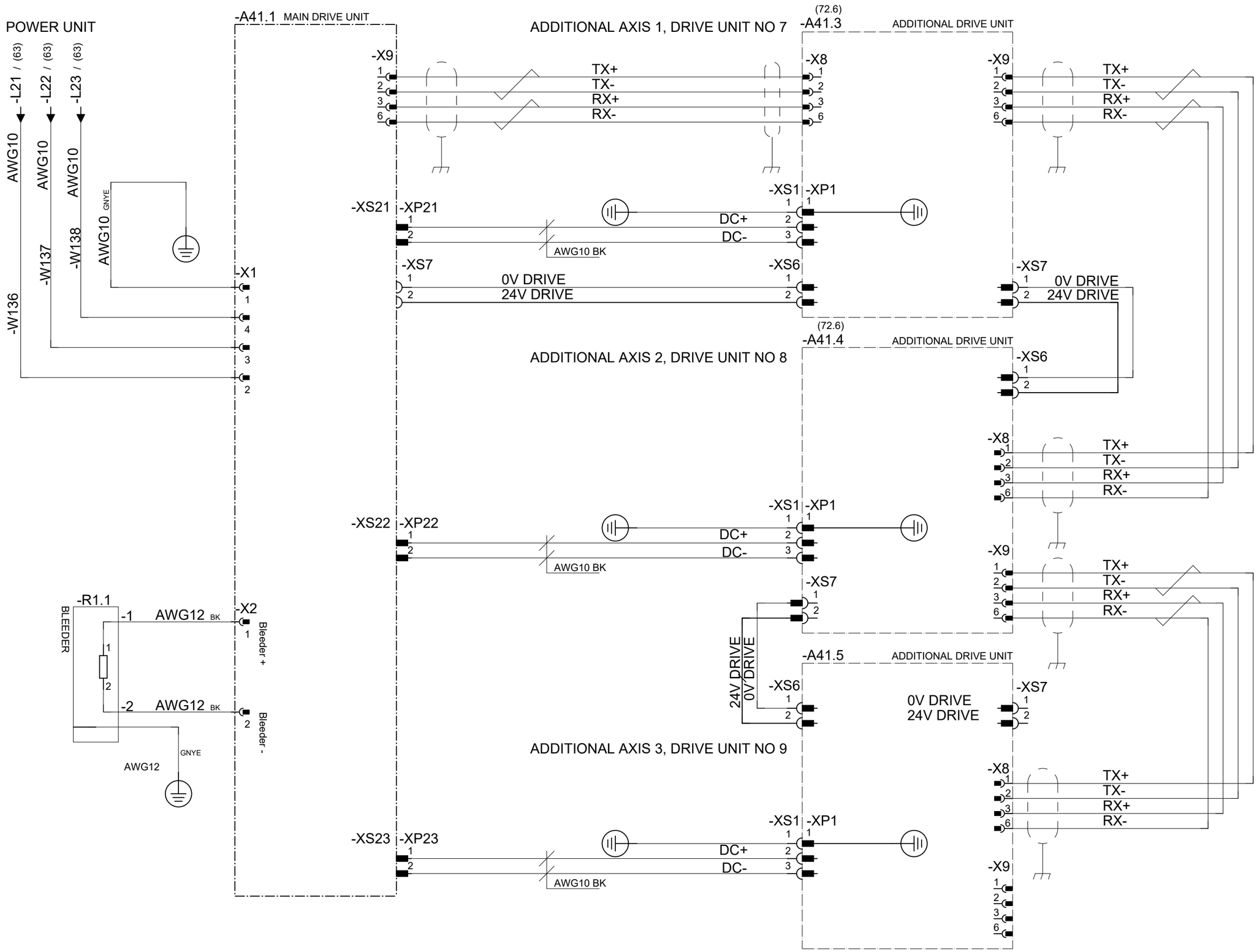
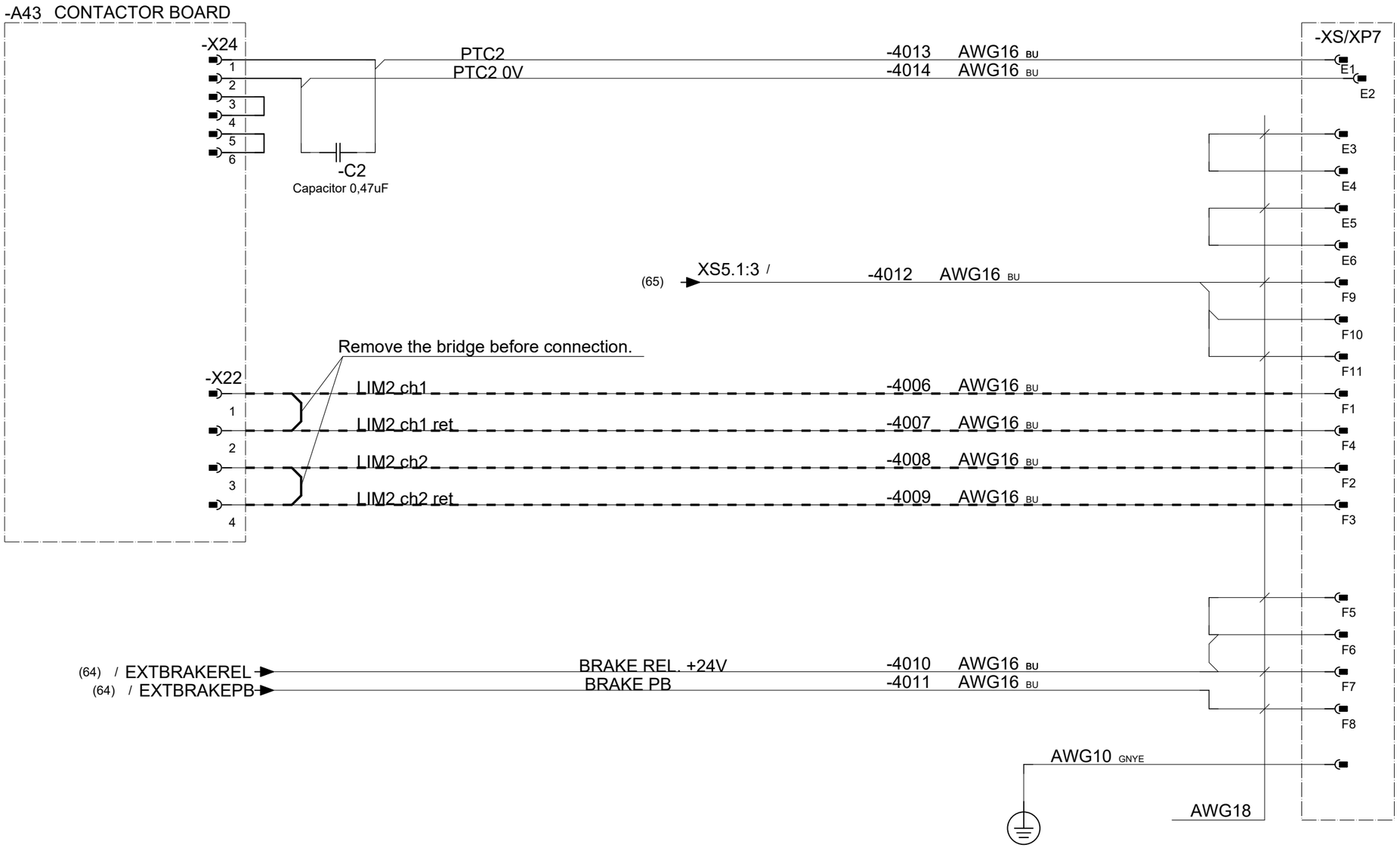


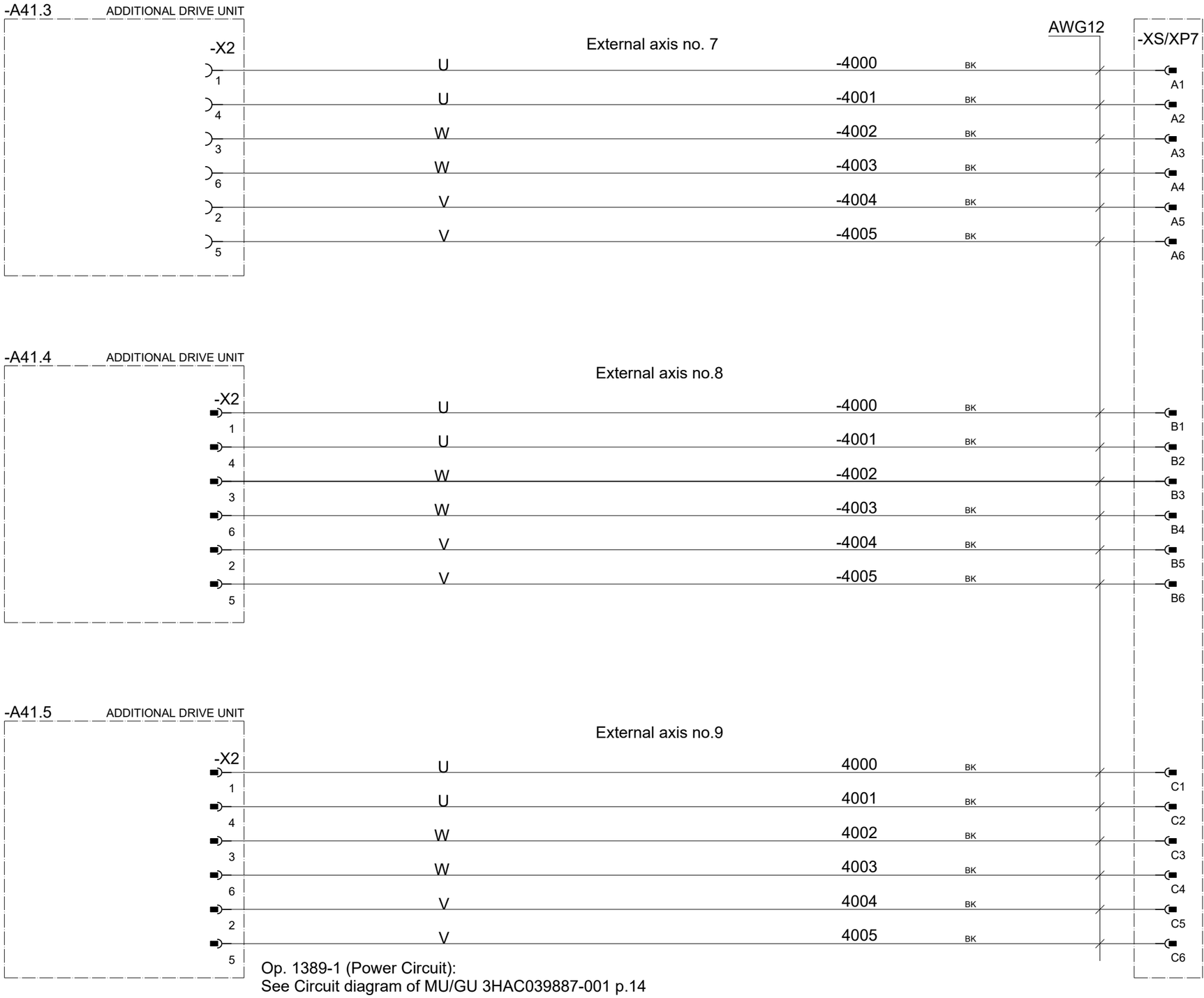
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D MAIN DRIVE UNIT and ADDITIONAL AXIS 1-3 for LV A41.1 ,2 ,3 ,4 ,5	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D MAIN DRIVE UNIT and ADDITIONAL AXIS 1-3 for HV A41.1, 3, 4, 5	Status: APPROVED	Plant: = Location: + Sublocation:+	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 73 Next 74 Total 164
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31					

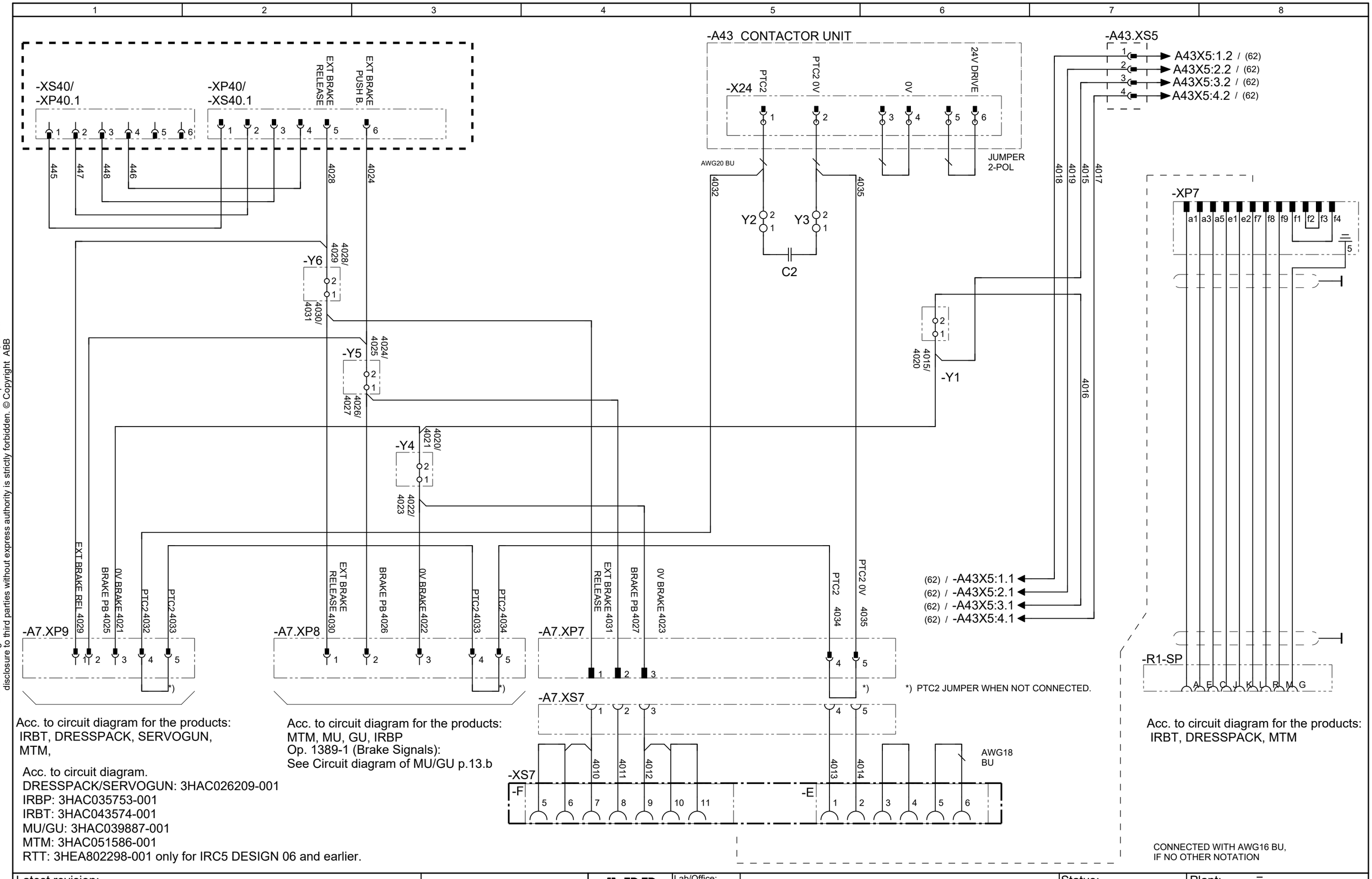


Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D EXTERNAL AXIS A43, XS/XP7 Only for release 13.2 and earlier	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 74 Next 75 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



Op. 1389-1 (Power Circuit):
See Circuit diagram of MU/GU 3HAC039887-001 p.14

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D EXTERNAL AXIS no 7, 8, 9 A41.3 .4 .5 , XS/XP7	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page 75 Next 75.1 Total 164



Acc. to circuit diagram for the products:
IRBT, DRESSPACK, SERVOGUN,
MTM,

Acc. to circuit diagram.
DRESSPACK/SERVOGUN: 3HAC026209-001
IRBP: 3HAC035753-001
IRBT: 3HAC043574-001
MU/GU: 3HAC039887-001
MTM: 3HAC051586-001
RTT: 3HEA802298-001 only for IRC5 DESIGN 06 and earlier.

Acc. to circuit diagram for the products:
MTM, MU, GU, IRBP
Op. 1389-1 (Brake Signals):
See Circuit diagram of MU/GU p.13.b

Acc. to circuit diagram for the products:
IRBT, DRESSPACK, MTM

CONNECTED WITH AWG16 BU,
IF NO OTHER NOTATION

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D EXTERNAL AXES ADAPTER HARNESS XS/XP40, A43:XP5, A7:XP7 :XP8 :XP9 Only for rel.14.1 and later.	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page 75.1 Next 76 Total 164

This is not any available option.
This is only examples how to connect the break release button for the IRB120 internal or external the cabinet.

Connection to the break release button, with power from the cabinet.

-XS.35 4

-XS.40 3 4

0V BREAKE

24V BREAK REL. 12

24V BRAKE PB 14

-K100 E- 11

-X100 1

-X100 2

Connection to the break release button, with power outside the cabinet.

-A41.1 MAIN SERVO DRIVE UNIT

-X11 1 3 2 | -X12 1 3 2 | -X13 1 3 2 | -X14 1 3 2 | -X15 1 3 2 | -X16 1 3 2

AWG16 BK: -400 -402 -404 -406 -408 -410 -412 -414 -416 -418 -420 -422 -424 -425 -426 -428 -430 -432

-PE100

AWG16 GNYE

DRIVE MODULE

D1 D3 D2 D4 C1 C2

Cross ref XS1/XP1 / (23)

-XS/XP1 A1 A3 A5 B14 B12 A7 A9 A11 A13 A15 B1 B3 B4 B5 B6 B7 B8 B9 B10 B11

FLOOR CABLE

AWG20 BK

AWG20 BK

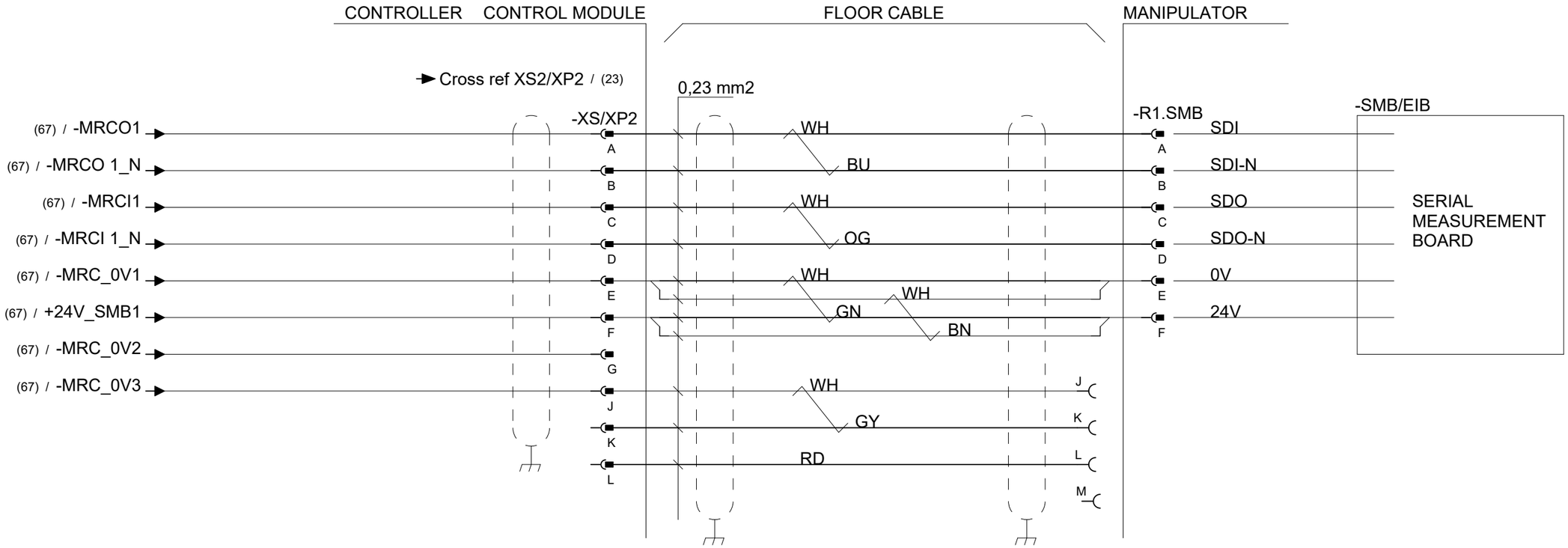
MU3 MV3 MW3 0V Brake 24V Brake MU1 MV1 MW1 MU2 MV2 MW2 MU6 MV6 MW6 MU5 MV5 MW5 MU4 MV4 MW4

MANIPULATOR

-R1.MP 6 9 10 12 13 LUG1 1 2 5 3 4 8 20 23 24 17 21 22 15 16 19

According to Manipulator circuit diagram 3HAC031408-003

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 120	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 76 Next 77 Total 164



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 120	Status: APPROVED	Plant: = Location: + Sublocation: +	
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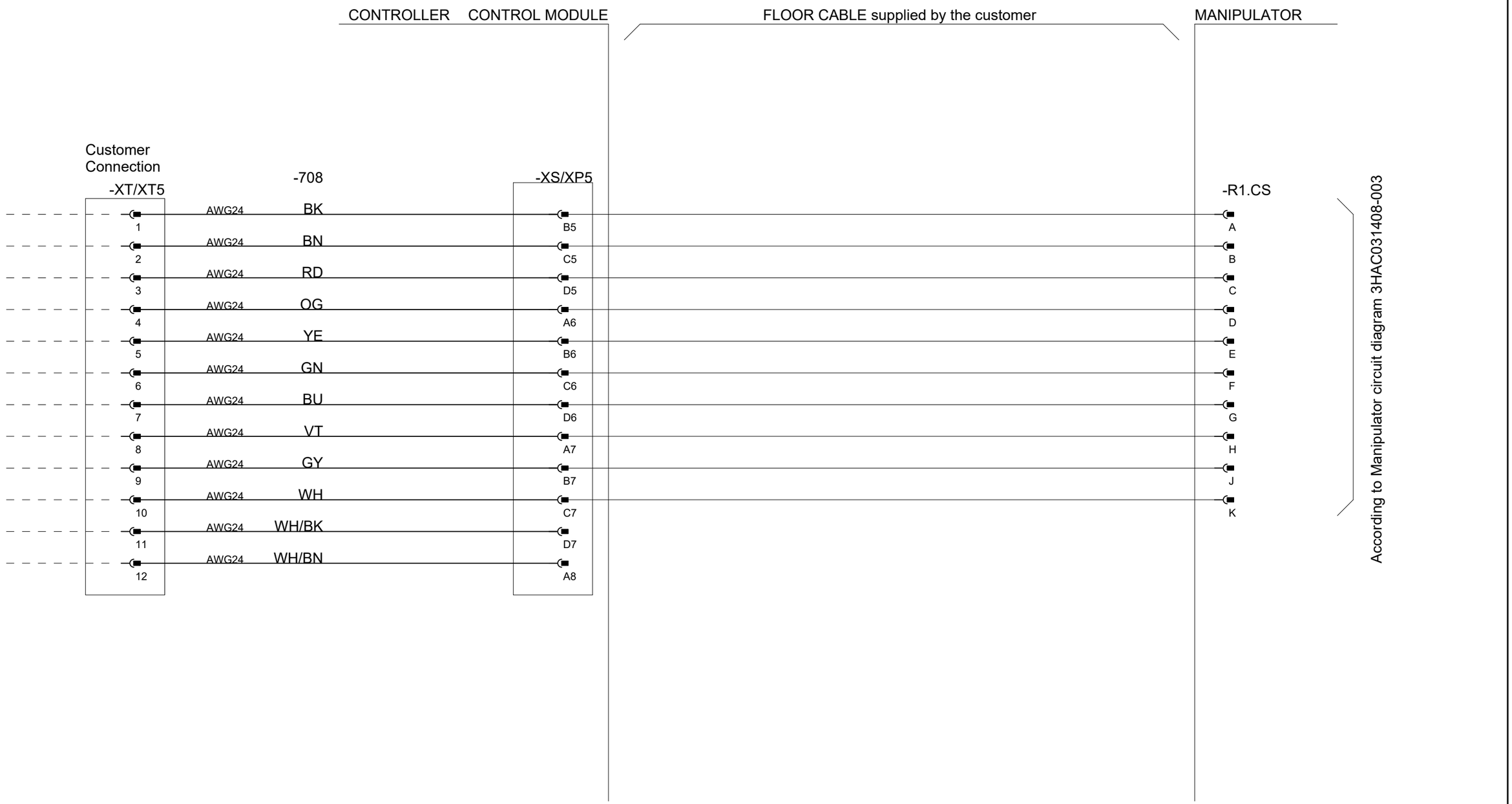
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER SIGNALS IRB 120	Status: APPROVED	Plant: = Location: + Sublocation: +	
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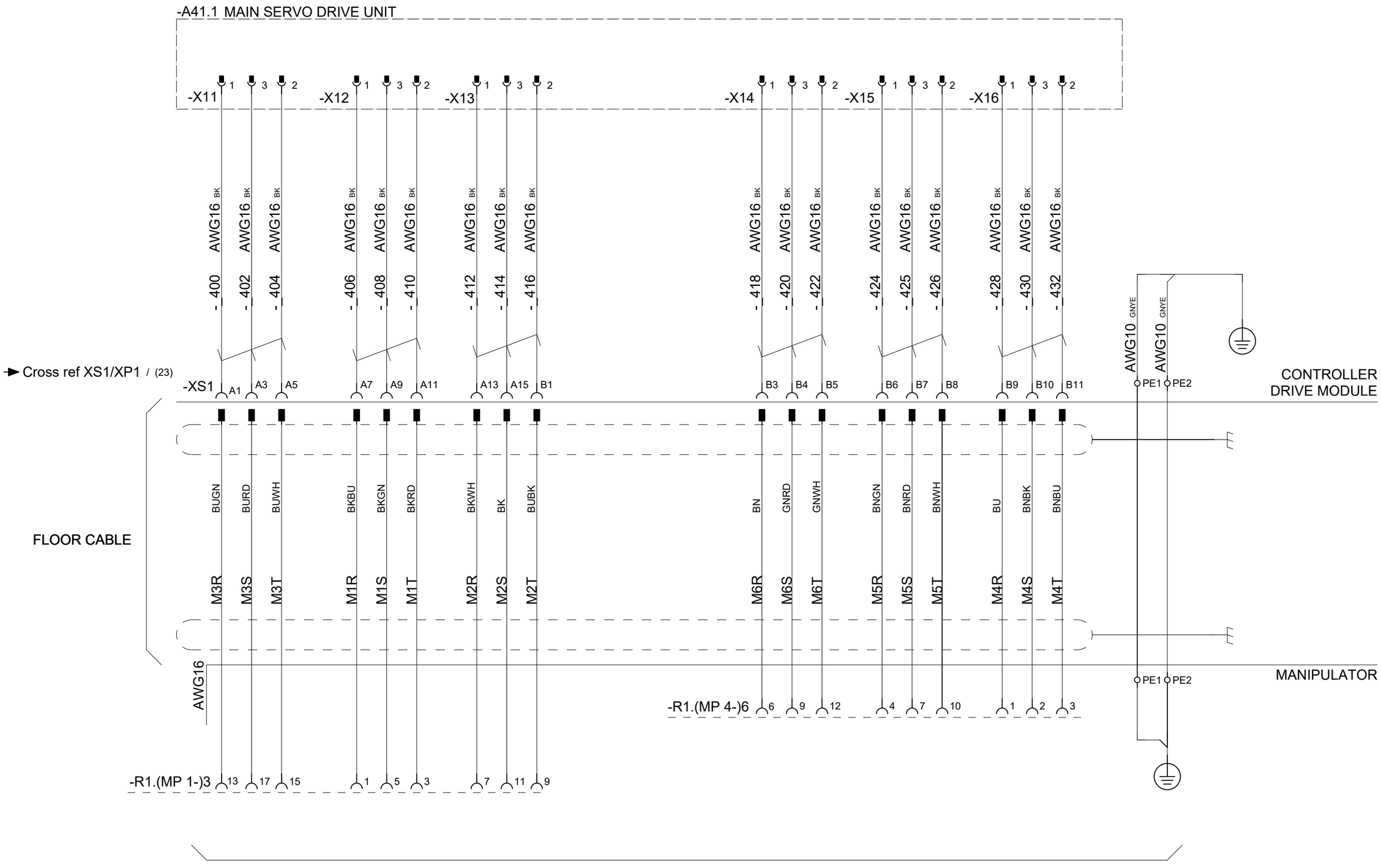
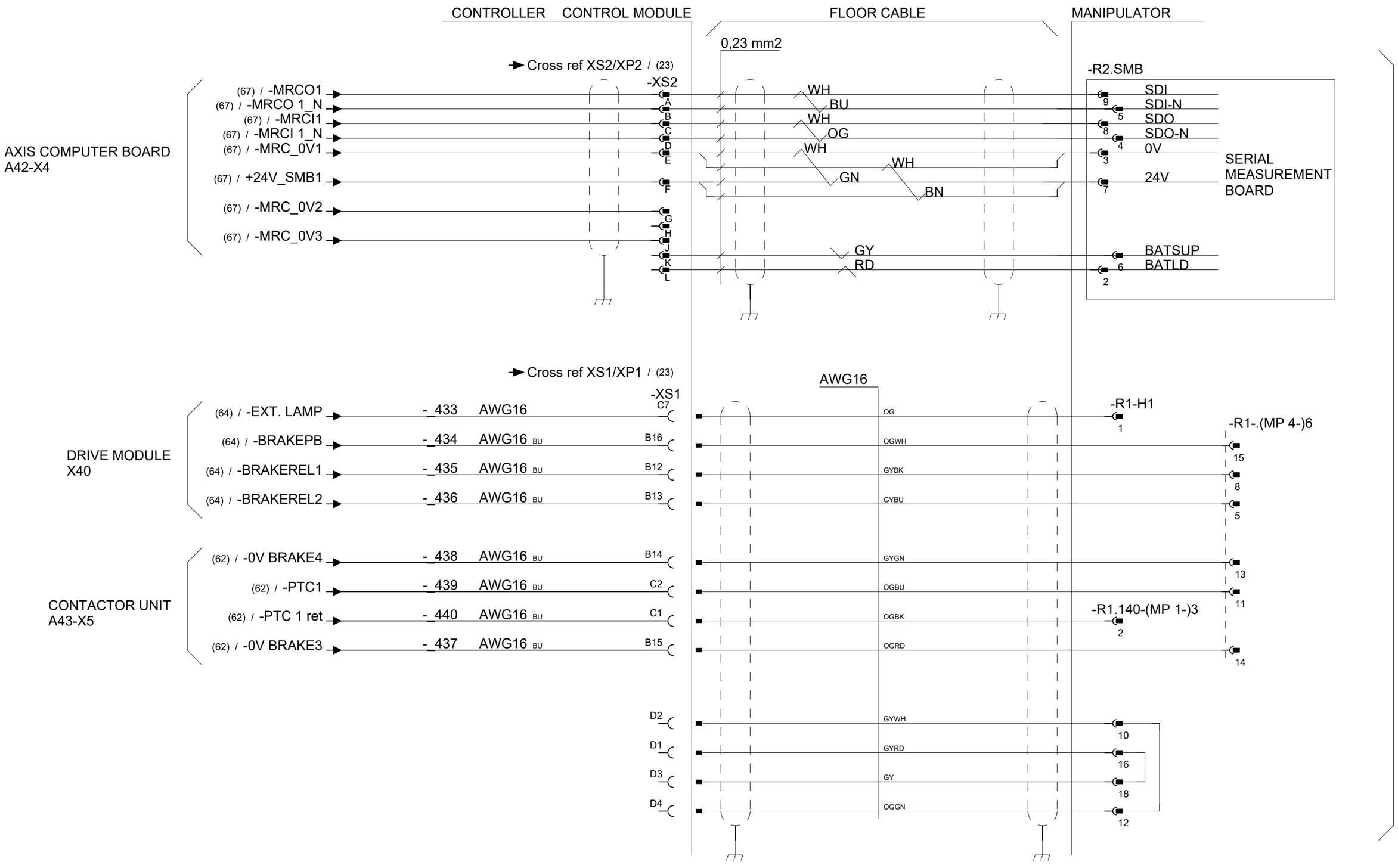
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



According to Manipulator circuit diagram 3HAC6816-3

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 140	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page 79 Next 80 Total 164



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 140	Status: APPROVED	Plant: = Location: + Sublocation: +
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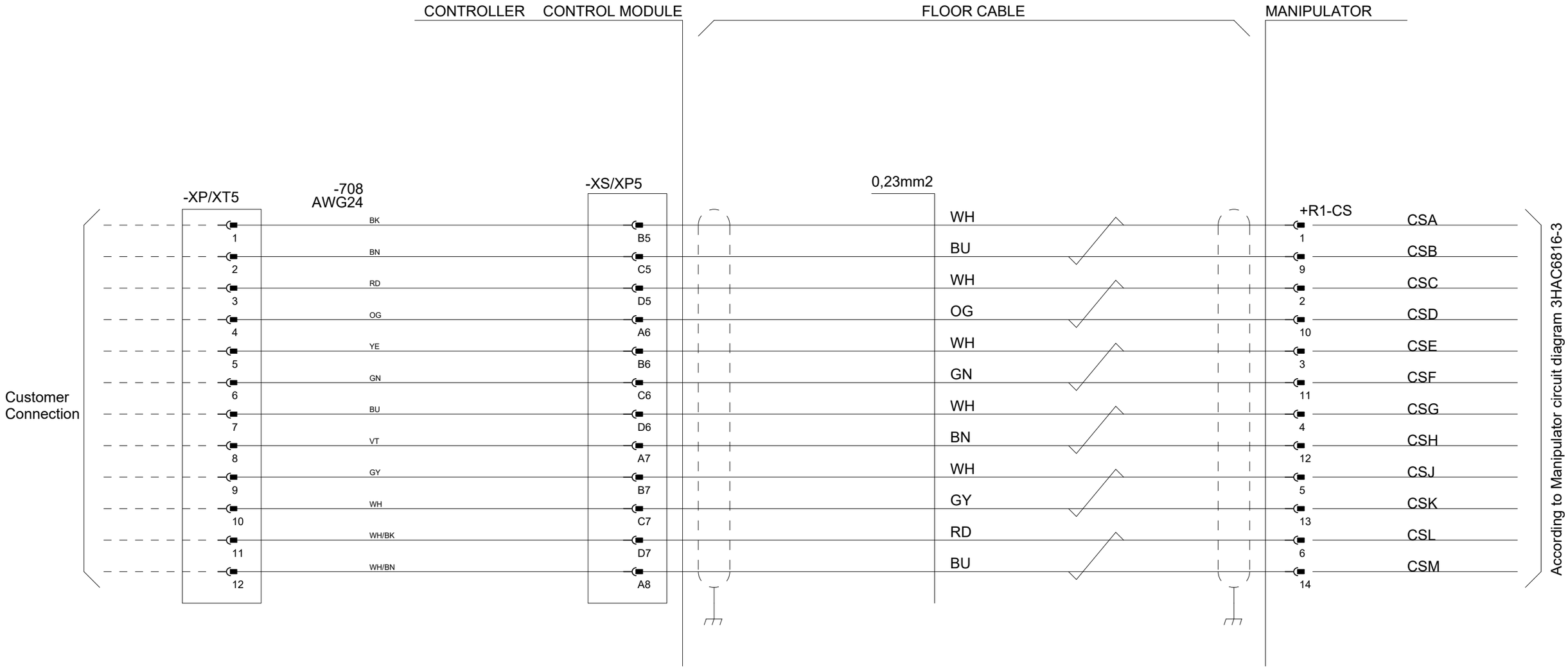
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Page 80 Next 81 Total 164



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER SIGNAL SINGLE CABINET IRB 140	Status: APPROVED	Plant: = Location: + Sublocation: +	
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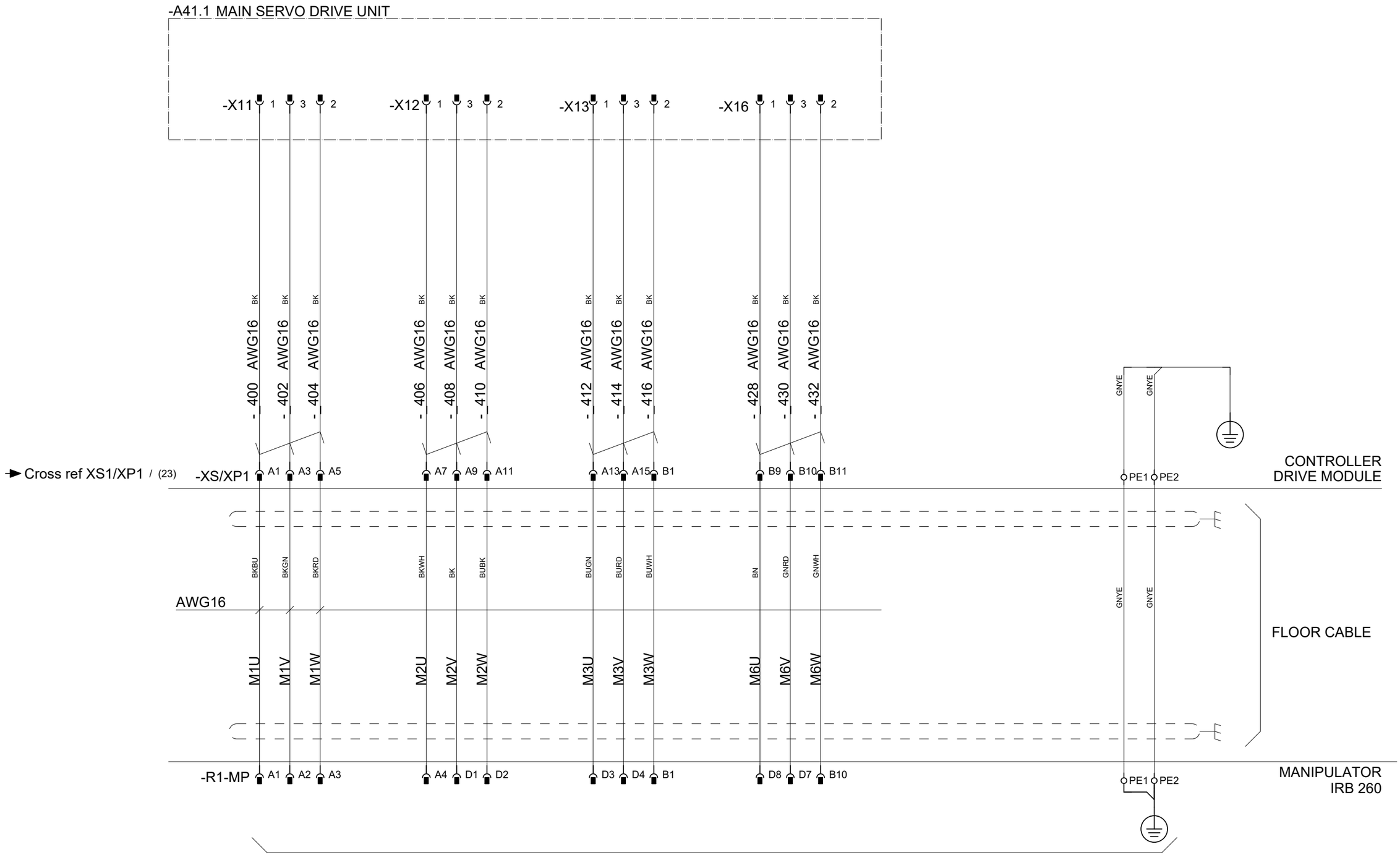
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



According to Manipulator circuit diagram 3HAC025611-001

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE UNIT IRB 260	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17 / Page82 / Next 83 / Total 164

CONTROLLER | CONTROL MODULE | FLOOR CABLE | MANIPULATOR

AXIS COMPUTER BOARD
A42-X4

→ Cross ref XS2/XP2 / (23)

0,23 mm²

-XS/XP2

(67) / -MRCO1	A	WH		A	+R1-SMB	SDI
(67) / -MRCO 1_N	B		BU	B		SDI-N
(67) / -MRCI1	C	WH		C		SDO
(67) / -MRCI 1_N	D		OG	D		SDO-N
(67) / -MRC_0V1	E	WH		E		0V
(67) / +24V_SMB1	F	GN	WH	F		24V
			BN			
(67) / -MRC_0V2	G					
(67) / -MRC_0V3	J	WH		J		0V
	K		GY	K		BATT+
	L	RD		L		BATT LOAD
				M		Keypin

SERIAL MEASUREMENT BOARD

AWG16

→ Cross ref XS1/XP1 / (23)

-XS/XP1

DRIVE MODULE
X40

(64) / -EXT. LAMP		-433	AWG16 BU	C7	OG	C7
(64) / -BRAKEPB		-434	AWG16 BU	B16	OGWH	B8
(64) / -BRAKEREL1		-435	AWG16 BU	B12	GYBK	C9
(64) / -BRAKEREL2		-436	AWG16 BU	B13	GYBU	C8

CONTACTOR UNIT
A43-X5

(62) / -0V BRAKE4		-438	AWG16 BU	B14	GYGN	C10
(62) / -PTC1		-439	AWG16 BU	C2	OGBU	B9
(62) / -PTC 1 ret		-440	AWG16 BU	C1	OGBK	B2
(62) / -0V BRAKE3		-437	AWG16 BU	B15	OGRD	B7

CONTACTOR UNIT
A43-X21

(62) / -A43-X21.2	LIM 1A	-441	AWG16 BU	D2	GYWH	B3
(62) / -A43-X21.4	LIM 2A	-442	AWG16 BU	D1	GYRD	B4
(62) / -A43-X21.3	LIM 2B	-443	AWG16 BU	D3	GY	C2
(62) / -A43-X21.1	LIM 1B	-444	AWG16 BU	D4	OGGN	C1

+R1-MP

According to Manipulator circuit diagram 3HAC025611-001

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 260	Status: APPROVED Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Document no. 3HAC024480-011 Rev. Ind 17 Page 83 Next 84 Total 164

CONTROLLER CONTROL MODULE | FLOOR CABLE | MANIPULATOR

Customer Connection

-XP/XT6

-709 AWG24

-XS/XP5

AWG18

-R1-CP/CS

1	BK	A1	RD	CPA
2	BN	B1	BU	CPB
3	RD	C1	GN	CPC
4	OG	D1	YE	CPD
5	YE	A2	WH	CPE
6	GN	B2	BK	CPF
7	BU	C2	BN	CPJ
8	VT	D2	VT	CPK
9	GY	A3	OG	CPL
10	WH	B3	PK	CPM
11	WH/BK	C3	TQ	
12	WH/BN	D3	GY	

-XP/XT5.1

-710 AWG24

0,23mm2

1	BK	B5	WH	CSA
2	BN	C5	BU	CSB
3	RD	D5	WH	CSC
4	OG	A6	OG	CSD
5	YE	B6	WH	CSE
6	GN	C6	GN	CSF
7	BU	D6	WH	CSG
8	VT	A7	BN	CSH
9	GY	B7	WH	CSJ
10	WH	C7	GY	CSK
11	WH/BK	D7	RD	CSL
12	WH/BN	A8	BU	CSM

-XP/XT5.2

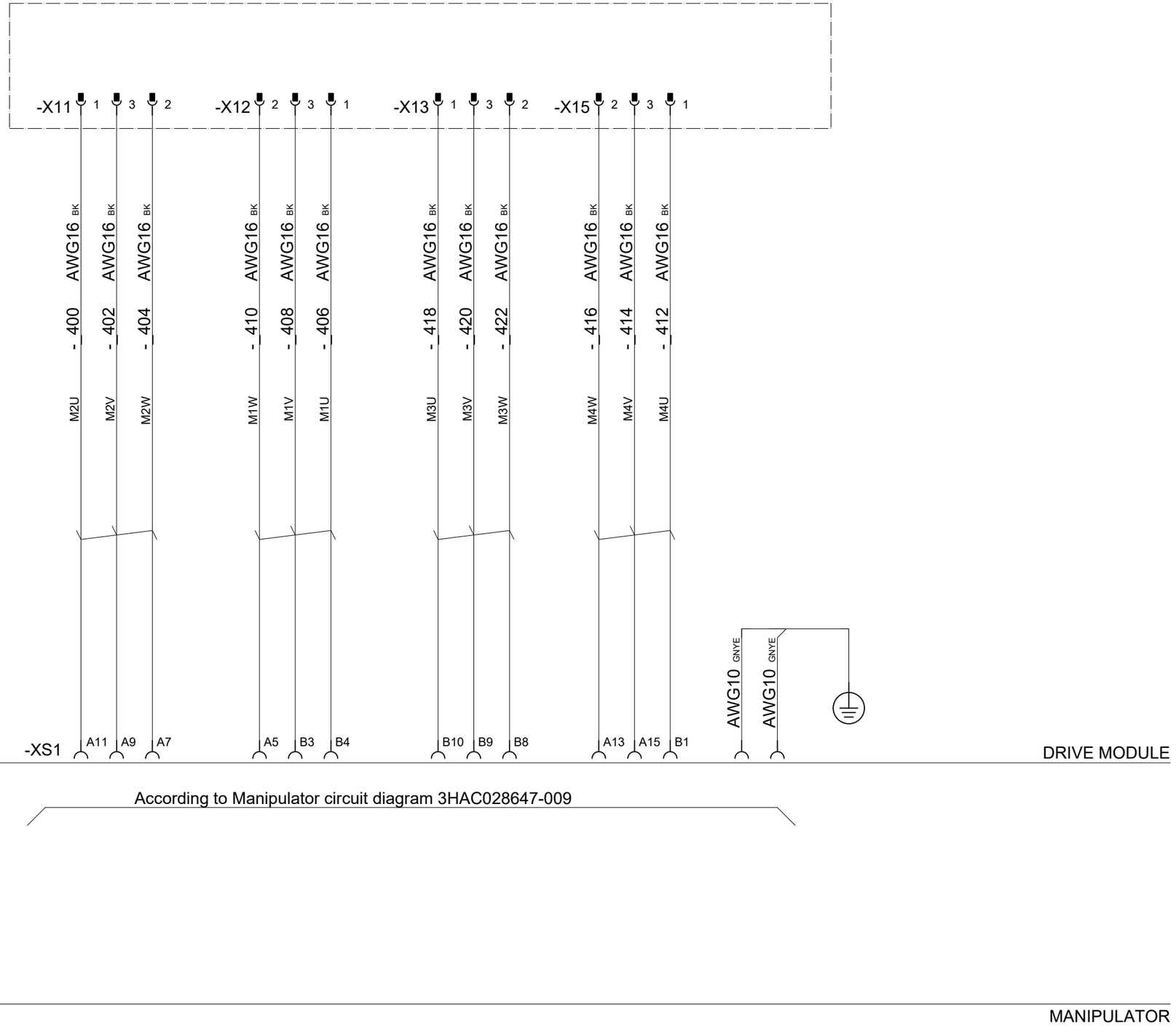
13	WH/RD	B8	RD	CSN
14	WH/OG	C8	OG	CSP
15	WH/YE	D8	RD	CSR
16	WH/GN	A9	GN	CSS
17	WH/BU	B9	RD	CST
18	WH/VT	C9	BN	CSU
19	WH/GY	D9	RD	CSV
20	BN/BK	A10	GY	CSW
21	BN/RD	B10	BK	CSX
22	BN/OG	C10	BU	CSY
23	BN/YE	D10	WH	CSZ

or PK
or Light GN
or RD/BK
or GN/BK
or OG/BK
or YE/BK

According to Manipulator circuit diagram 3HAC025611-001

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL SINGLE CABINET IRB 260	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17

-A41.1 MAIN SERVO DRIVE UNIT



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				Document no. 3HAC024480-011	Rev. Ind 17	Page 85 Next 86 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					

CONTROLLER	CONTROL MODULE	FLOOR CABLE	MANIPULATOR

AXIS COMPUTER BOARD
A42-X4

→ Cross ref XS2/XP2 / (23)

-XS2

(67) / -MRCO1		A
(67) / -MRCO 1_N		B
(67) / -MRCI1		C
(67) / -MRCI 1_N		D
(67) / -MRC_0V1		E
(67) / +24V_SMB1		F
(67) / -MRC_0V2		G
		H
(67) / -MRC_0V3		J
		K
		L

→ Cross ref XS1/XP1 / (23)

-XS1

DRIVE MODULE
X40

(64) / -EXT. LAMP	-_433 AWG16 BU	C7
(64) / -BRAKEPB	-_434 AWG16 BU	B16
(64) / -BRAKEREL1	-_435 AWG16 BU	B12
(64) / -BRAKEREL2	-_436 AWG16 BU	B13

CONTACTOR UNIT
A43-X5

(62) / -0V BRAKE4	-_438 AWG16 BU	B14
(62) / -PTC1	-_439 AWG16 BU	C2
(62) / -PTC 1 ret	-_440 AWG16 BU	C1
(62) / -0V BRAKE3	-_437 AWG16 BU	B15

	D2
	D1
	D3
	D4

According to Manipulator circuit diagram 3HAC028647-009

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 360	Status: APPROVED	Plant: = Location: + Sublocation: +
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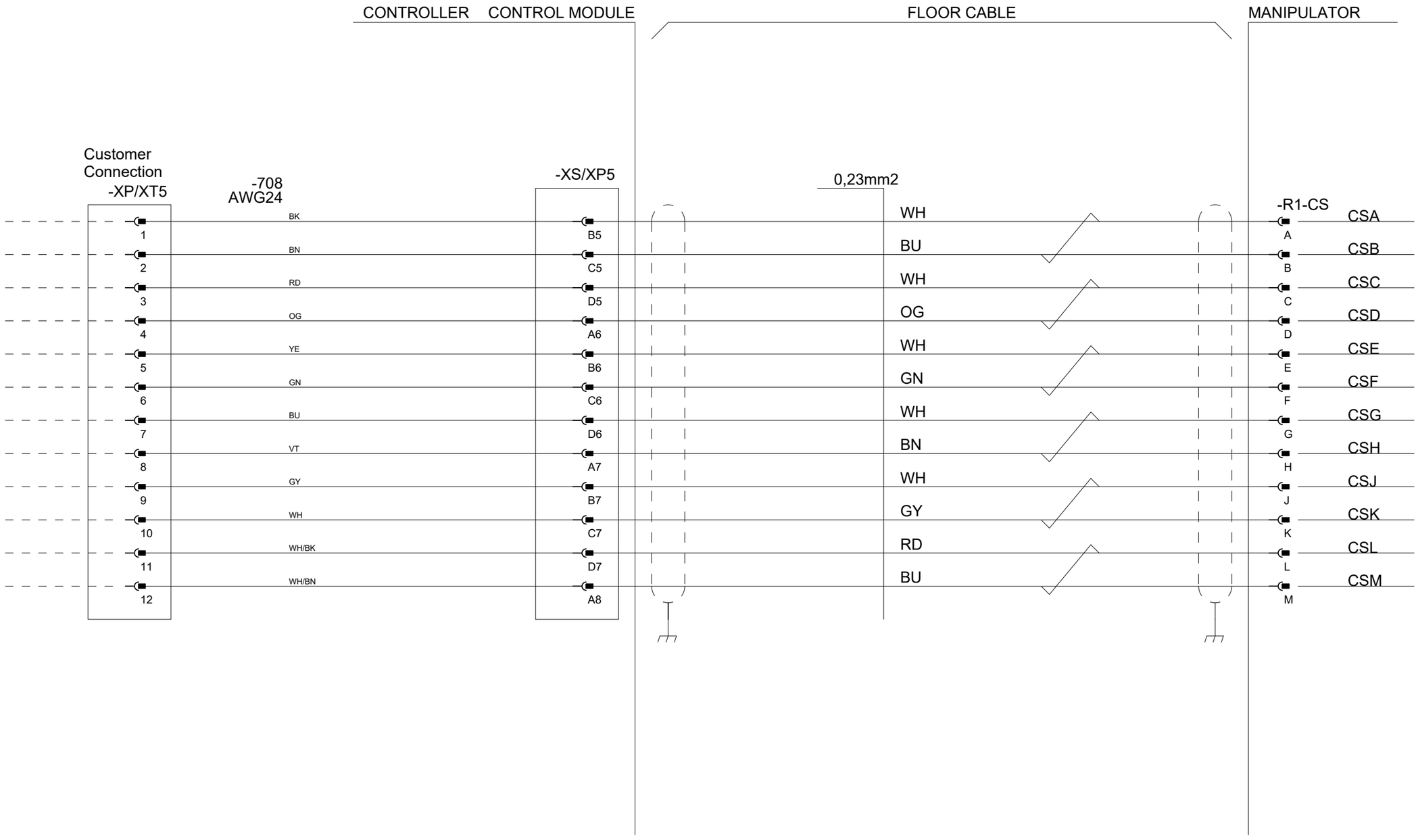

According to Manipulator circuit diagram 3HAC028647-009

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER SIGNAL SINGLE CABINET IRB 360	Status: APPROVED	Plant: = Location: + Sublocation: +	
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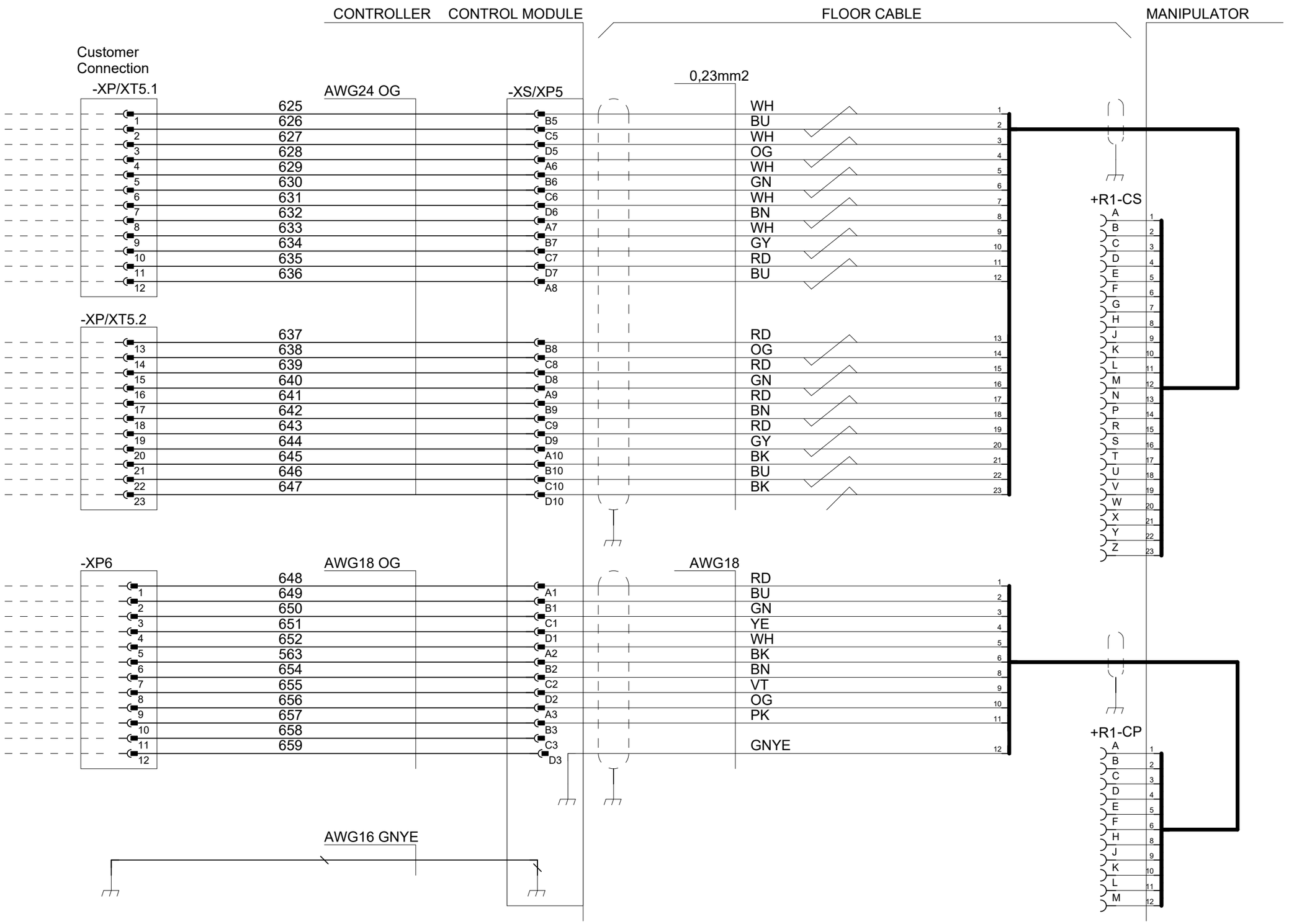
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



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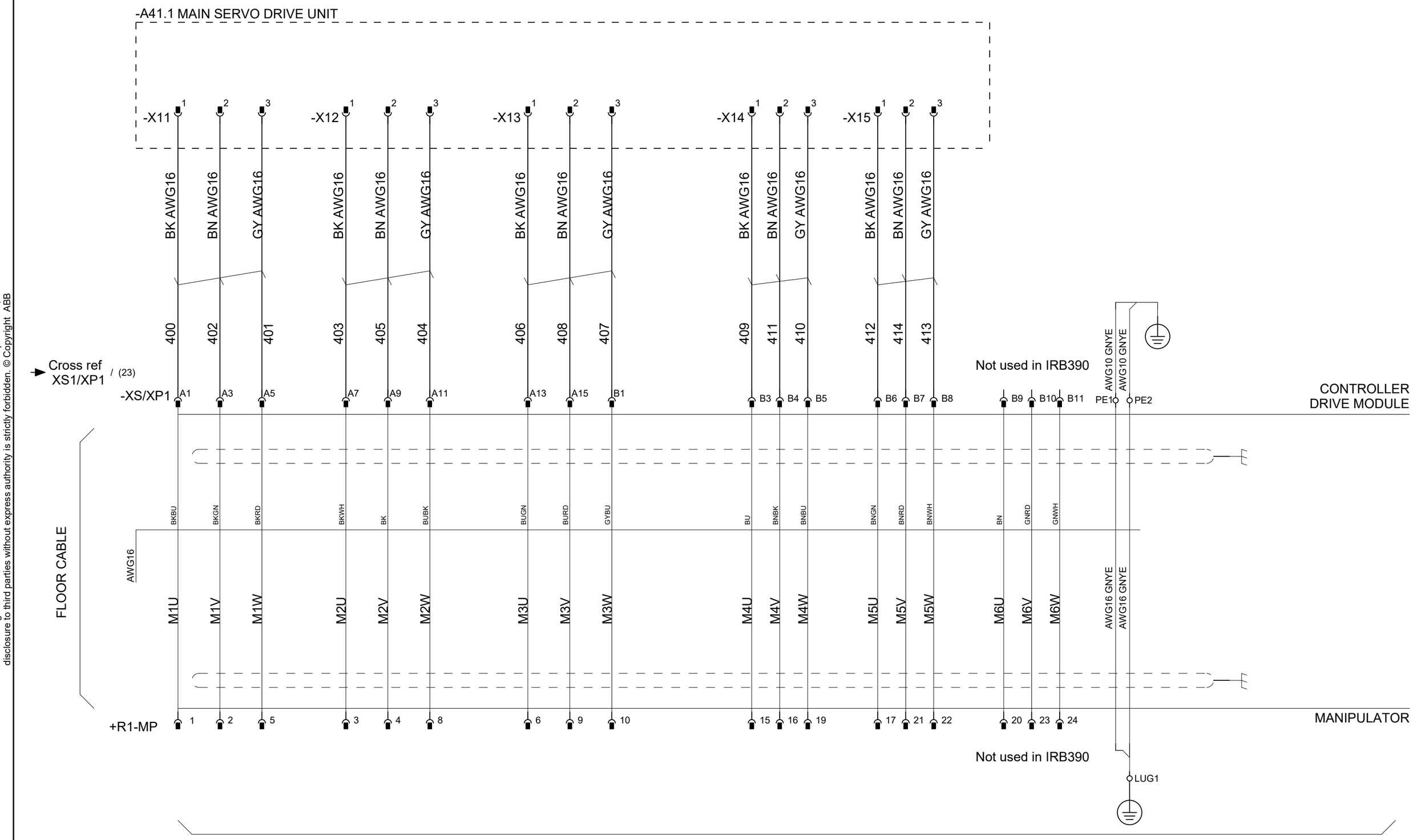

Acc. to Manipulator circuit diagram 3HAC060545-009

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 390	Status: APPROVED	Plant: = Location: + Sublocation:+
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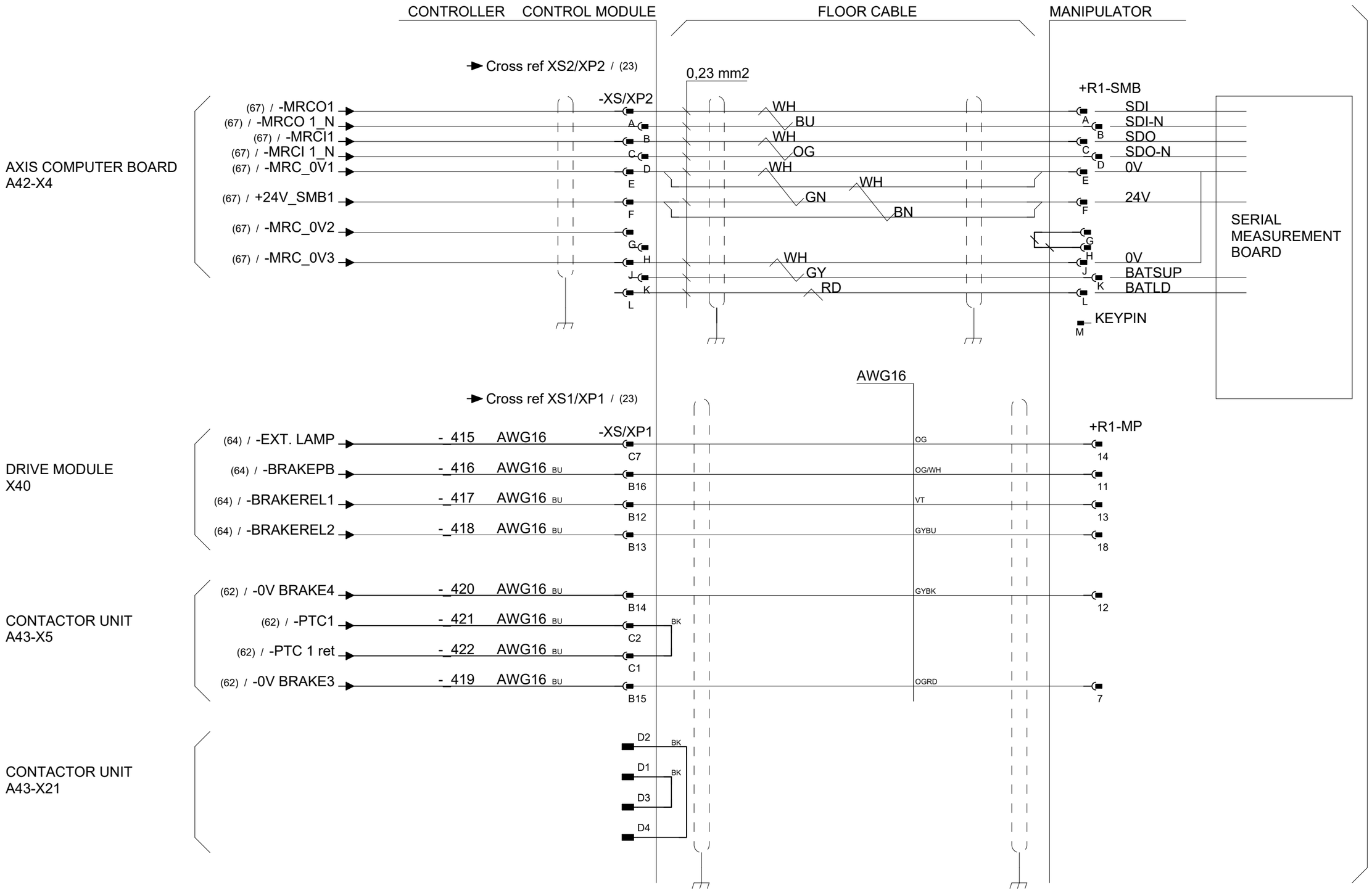
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Page87.4 Next 87.5 Total 164



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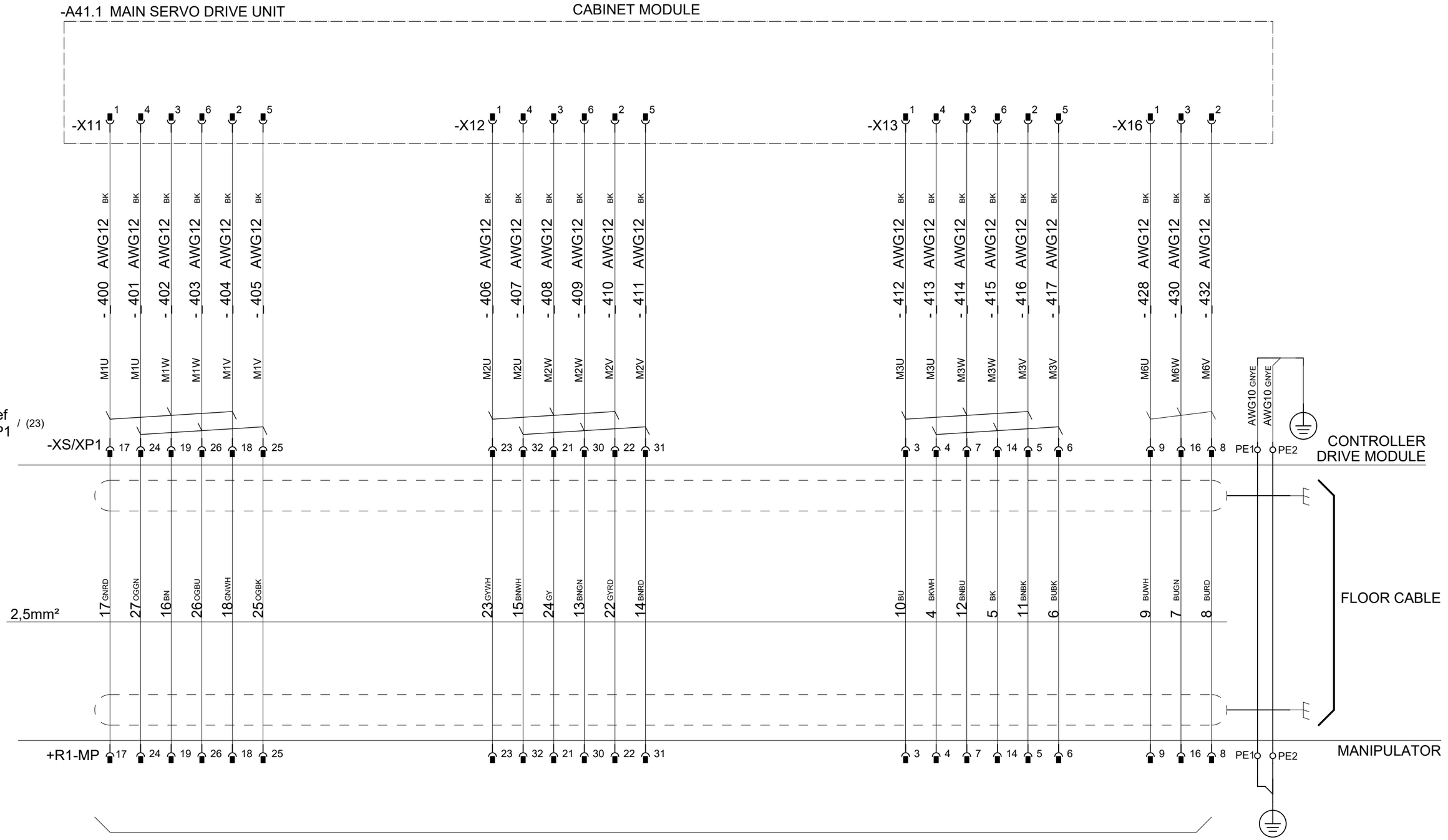
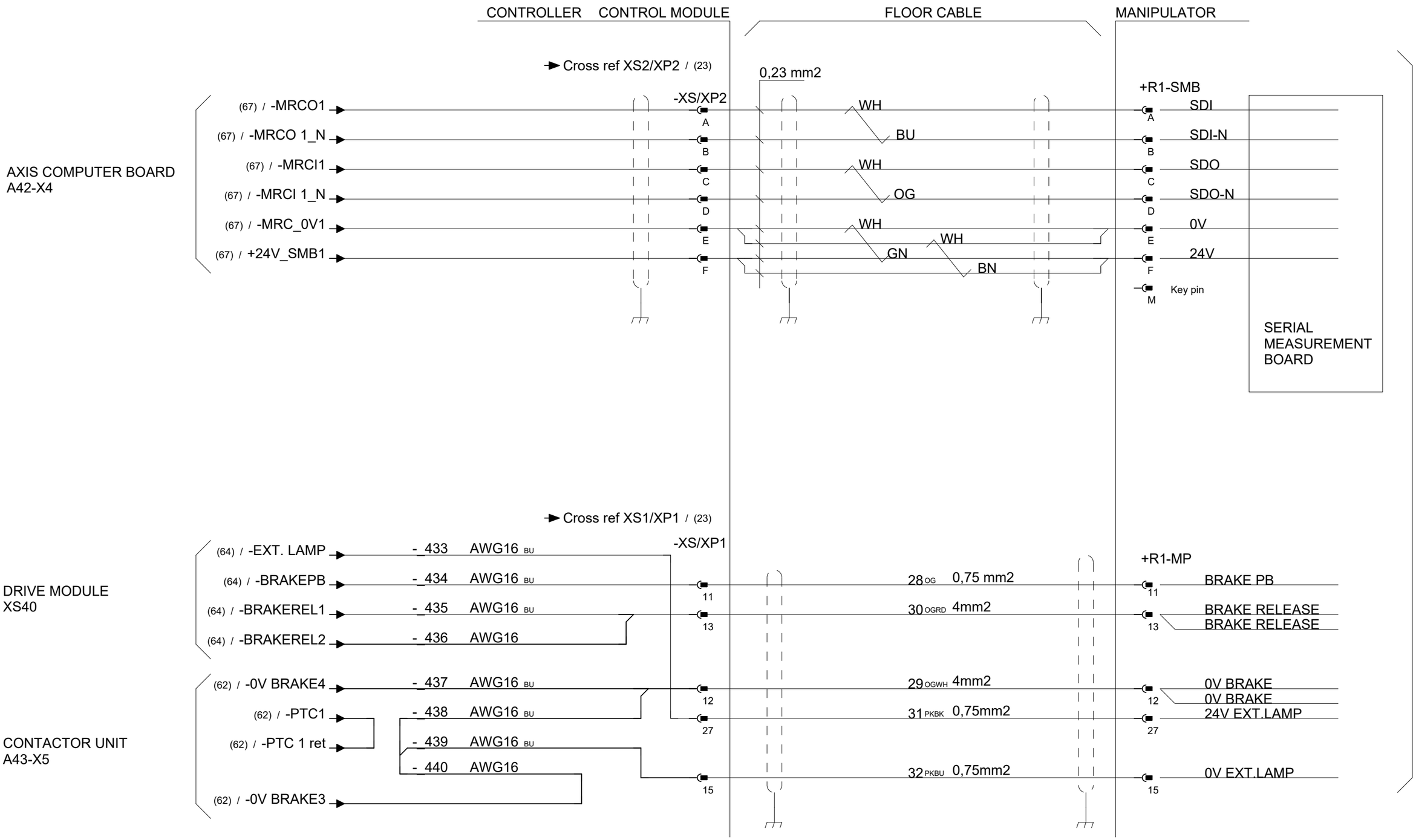


According to Manipulator circuit diagram 3HAC036446-005

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 460	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page88 Next 89 Total 164



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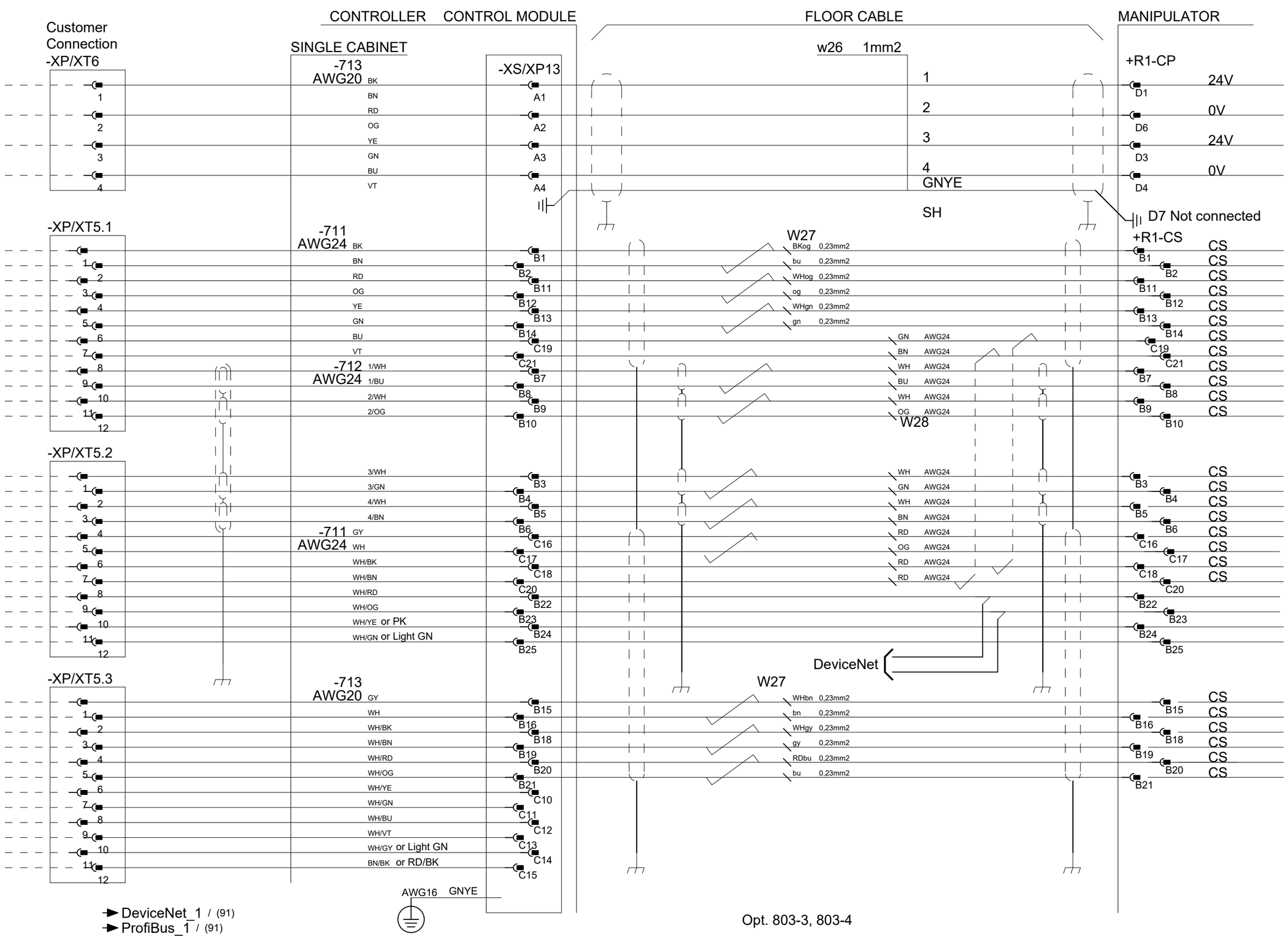

According to Manipulator IRB 660, 760 circuit diagram 3HAC025691-001
According to Manipulator IRB 460 circuit diagram 3HAC036446-005

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL IRB460, 660, 760	Status: APPROVED	Plant: = Location: + Sublocation: +
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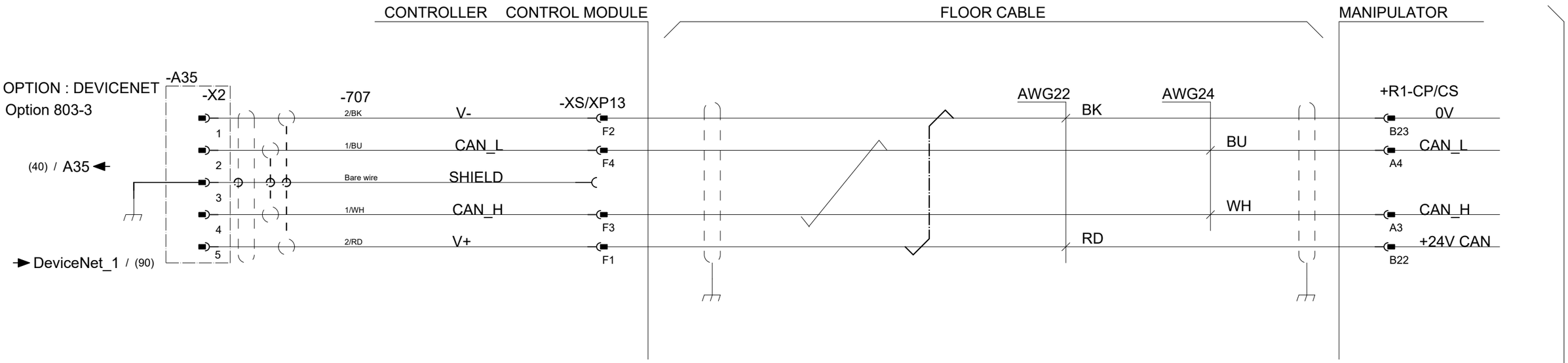
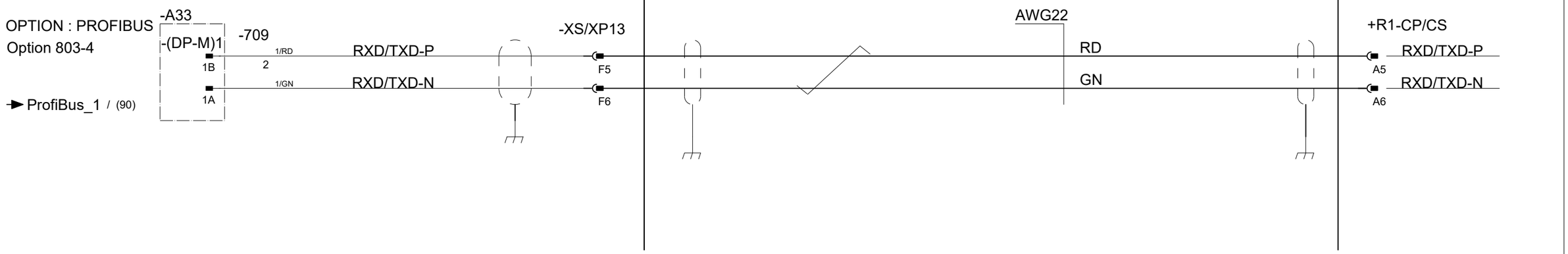
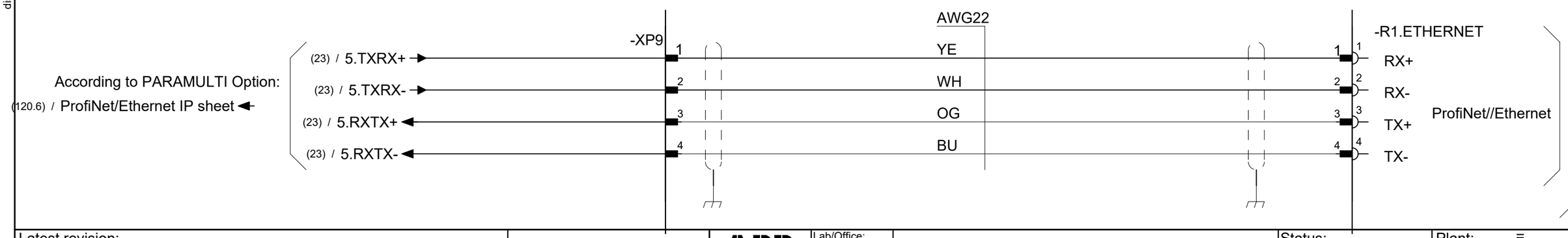
					Page 90 Next 91 Total 164
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				



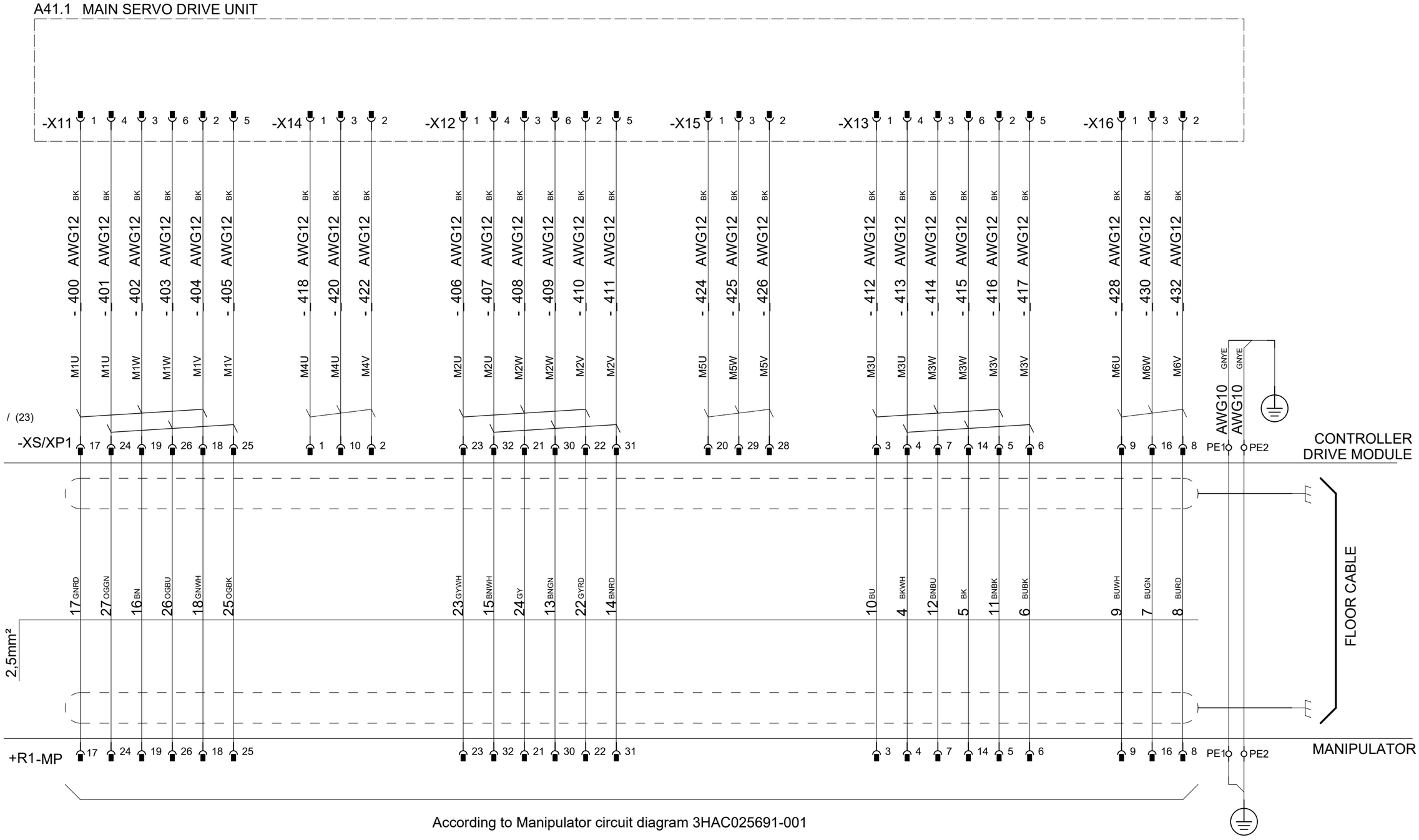




According to Manipulator IRB 660, 760 circuit diagram 3HAC025691-001
According to Manipulator IRB 460 circuit diagram 3HAC036446-005

PARAMULTI

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D C-BUS/P-BUS/ CP/CS//Profi-Net IRB460, 660, 760	Status: APPROVED	Plant: = Location: + Sublocation:+
				Document no. 3HAC024480-011	Rev. Ind 17
					Page91 Next 92 Total 164
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				



According to Manipulator circuit diagram 3HAC025691-001

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 660, 760	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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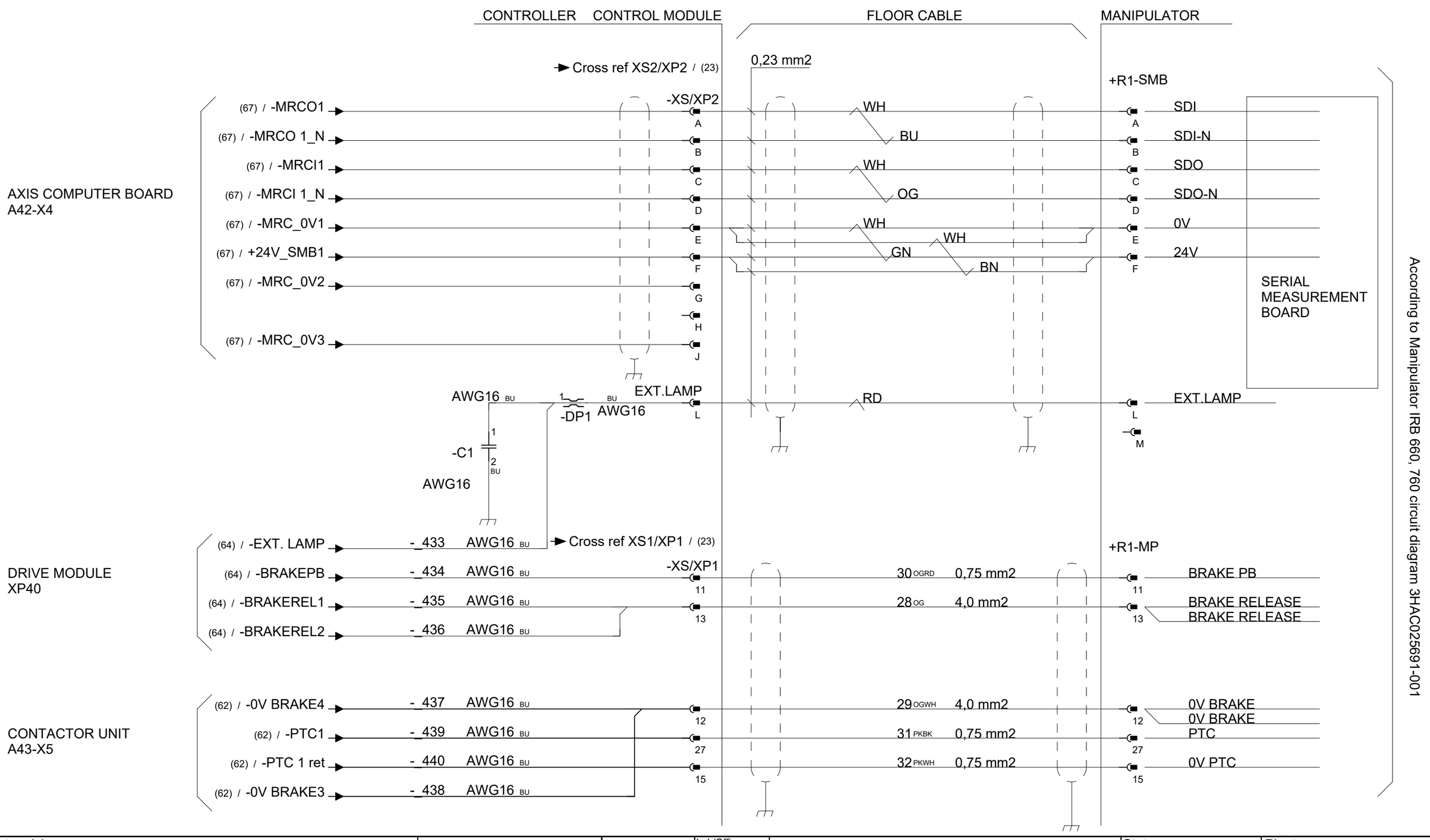

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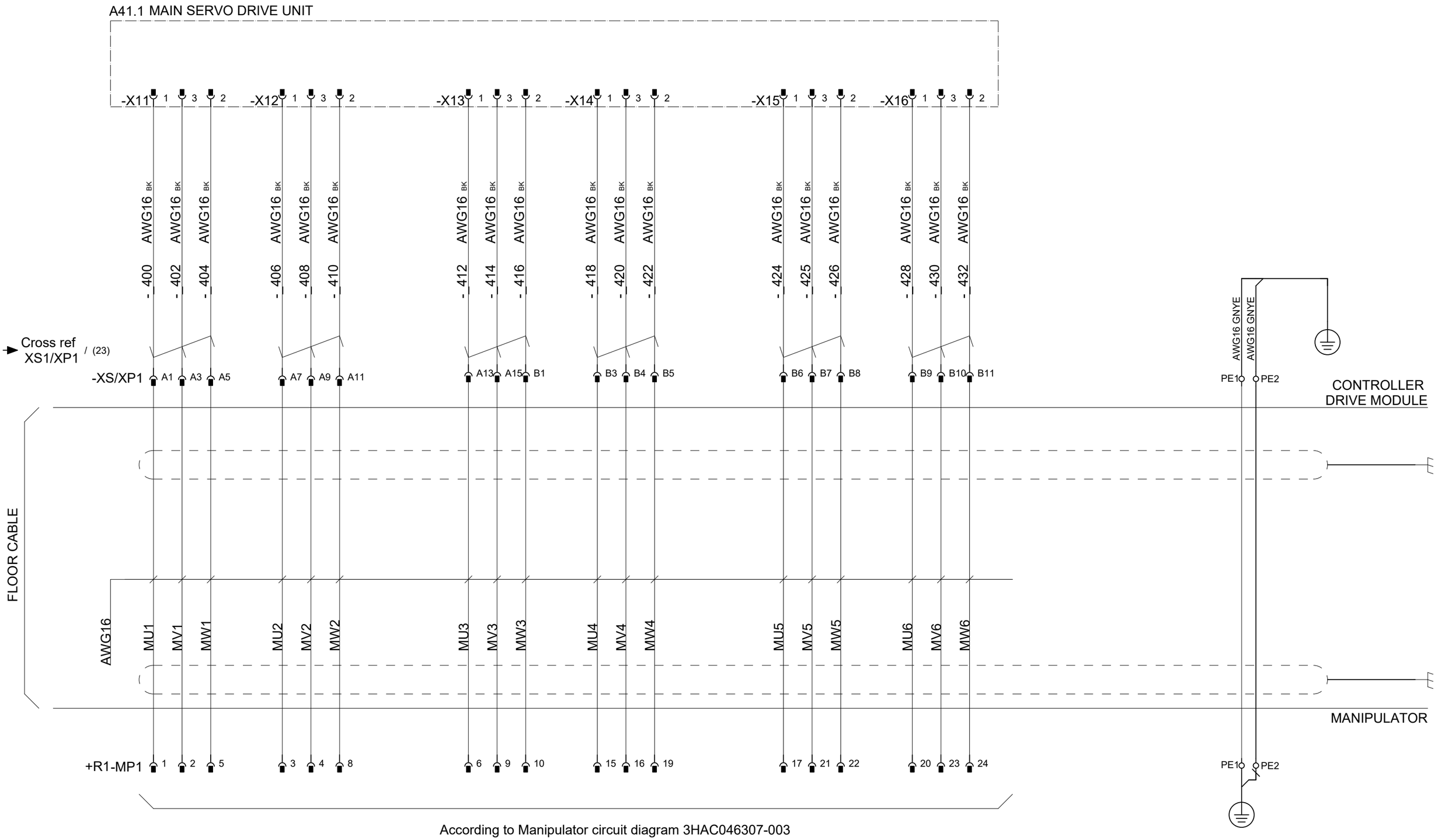
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Page 93 Next 93.5 Total 164



According to Manipulator circuit diagram 3HAC046307-003

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 1200	Status: APPROVED	Plant: = Location: + Sublocation:+	
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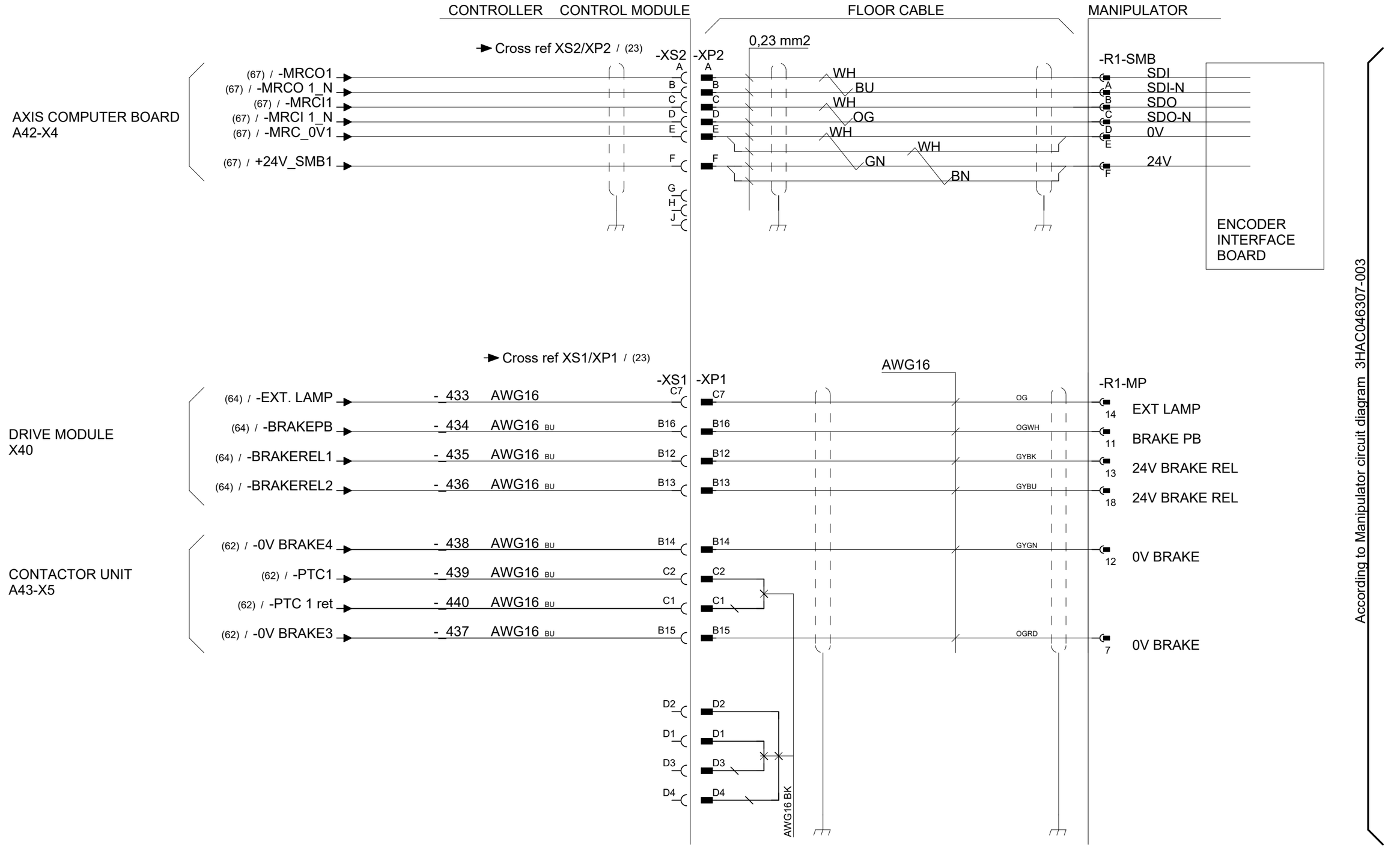
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



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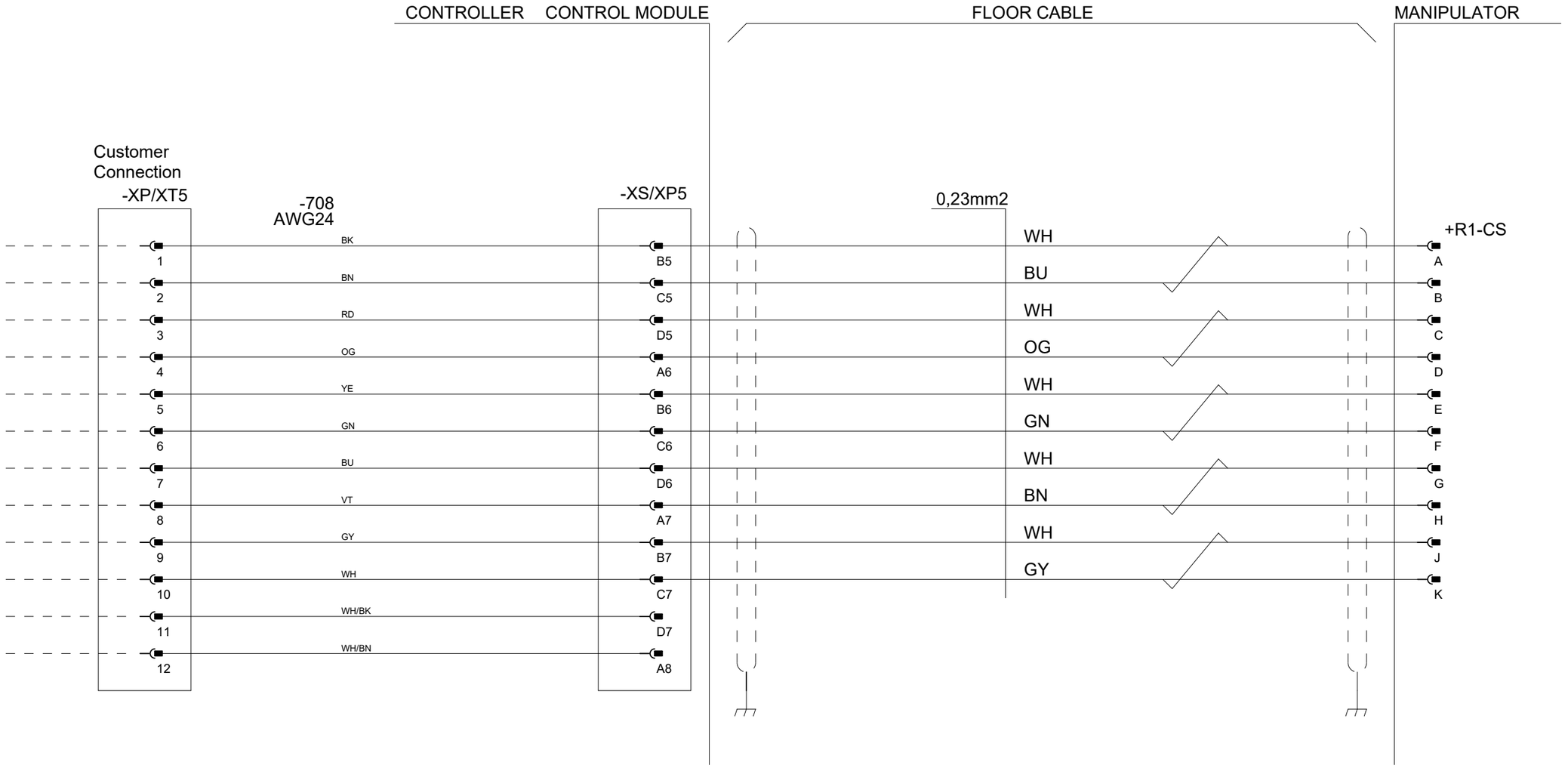

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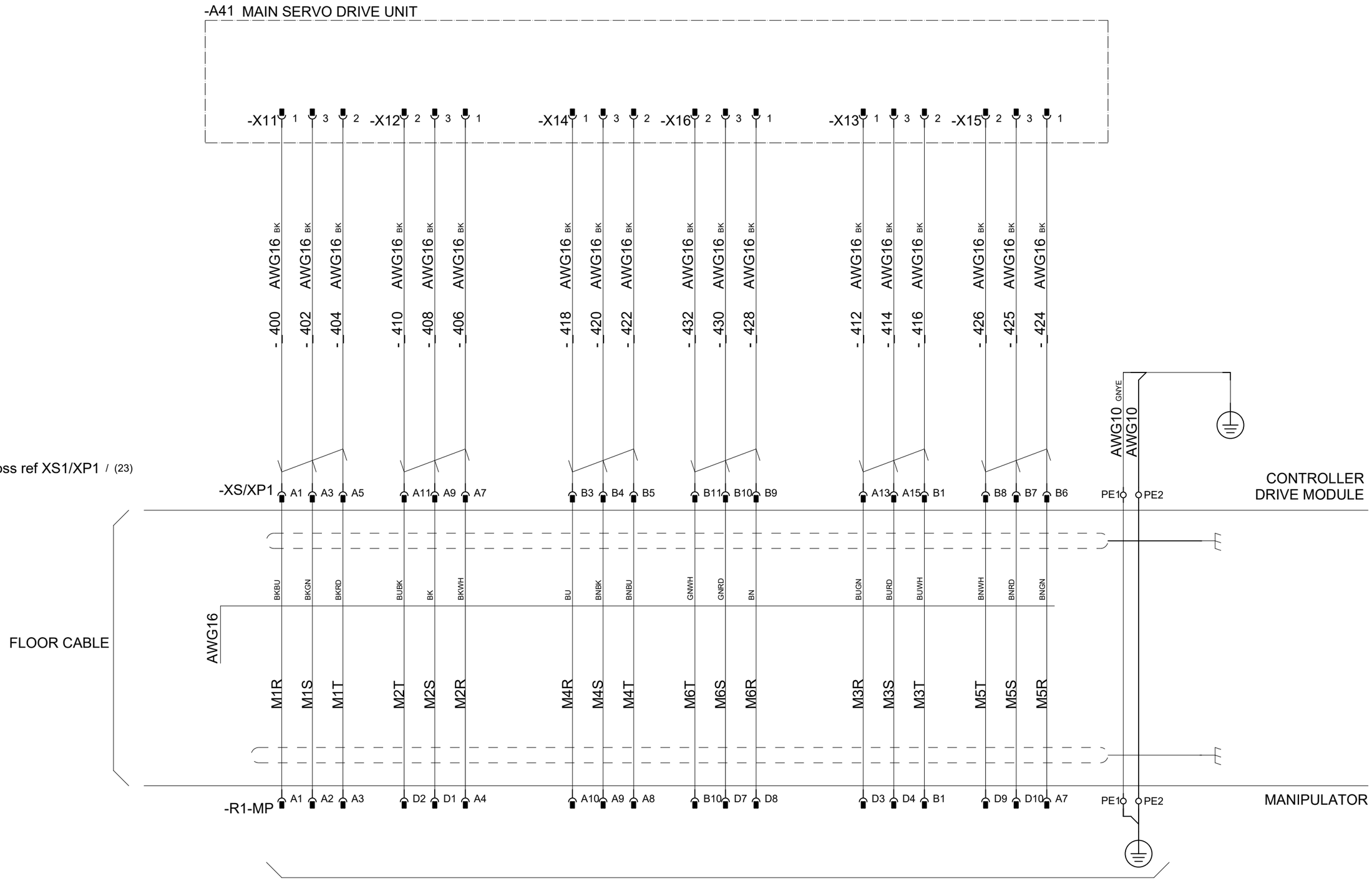

According to Manipulator circuit diagram 3HAC02803-3

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 1410	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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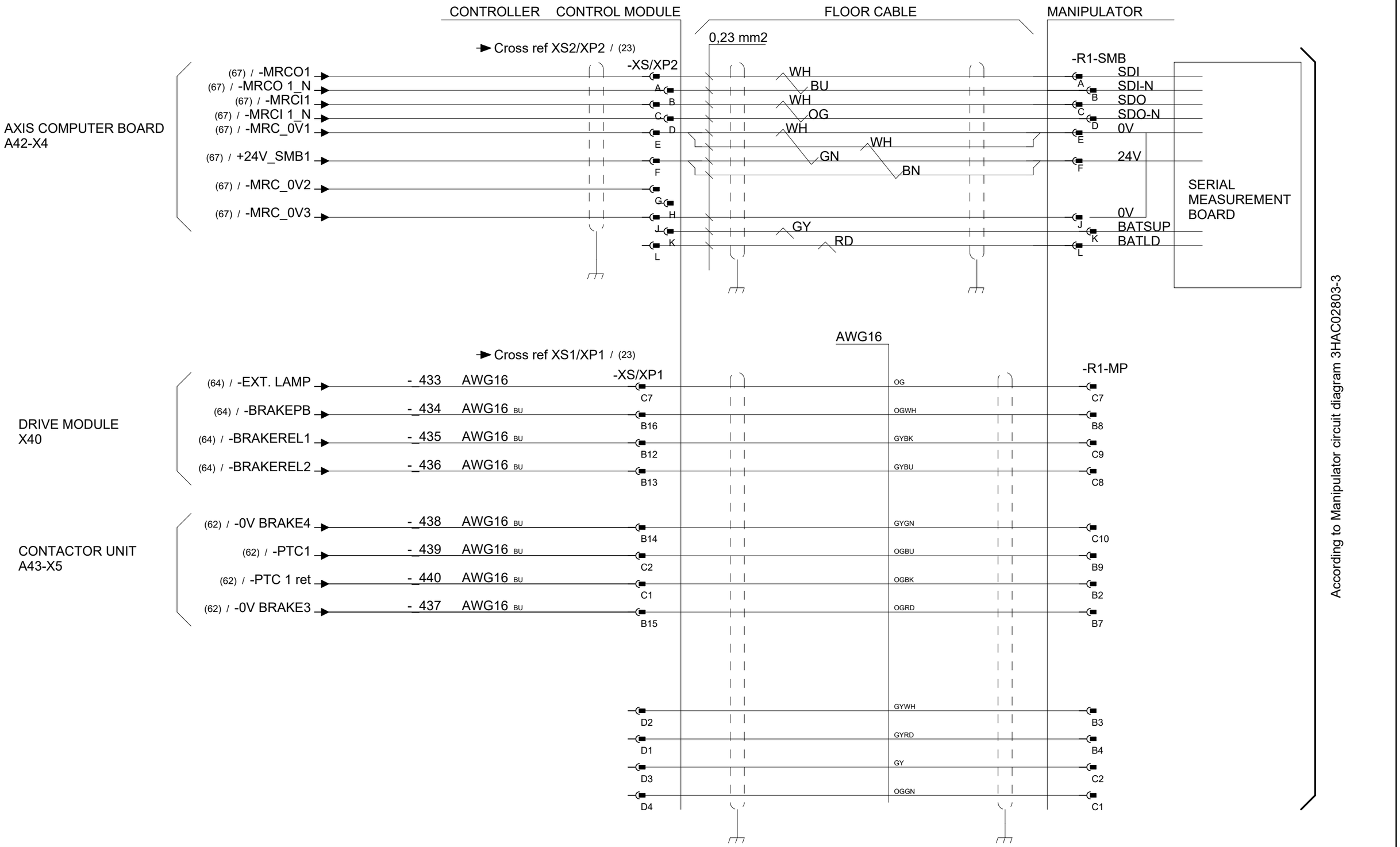

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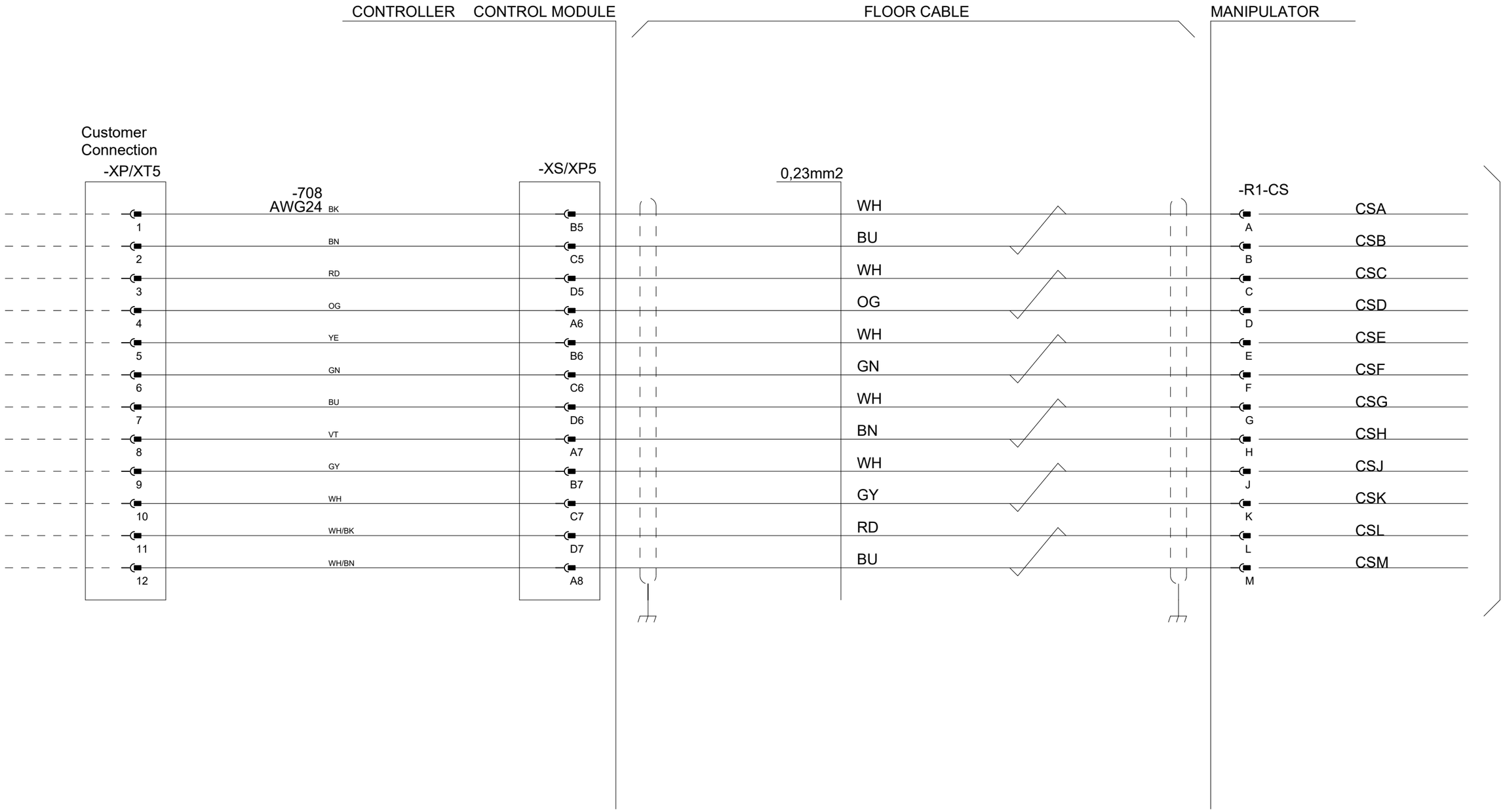

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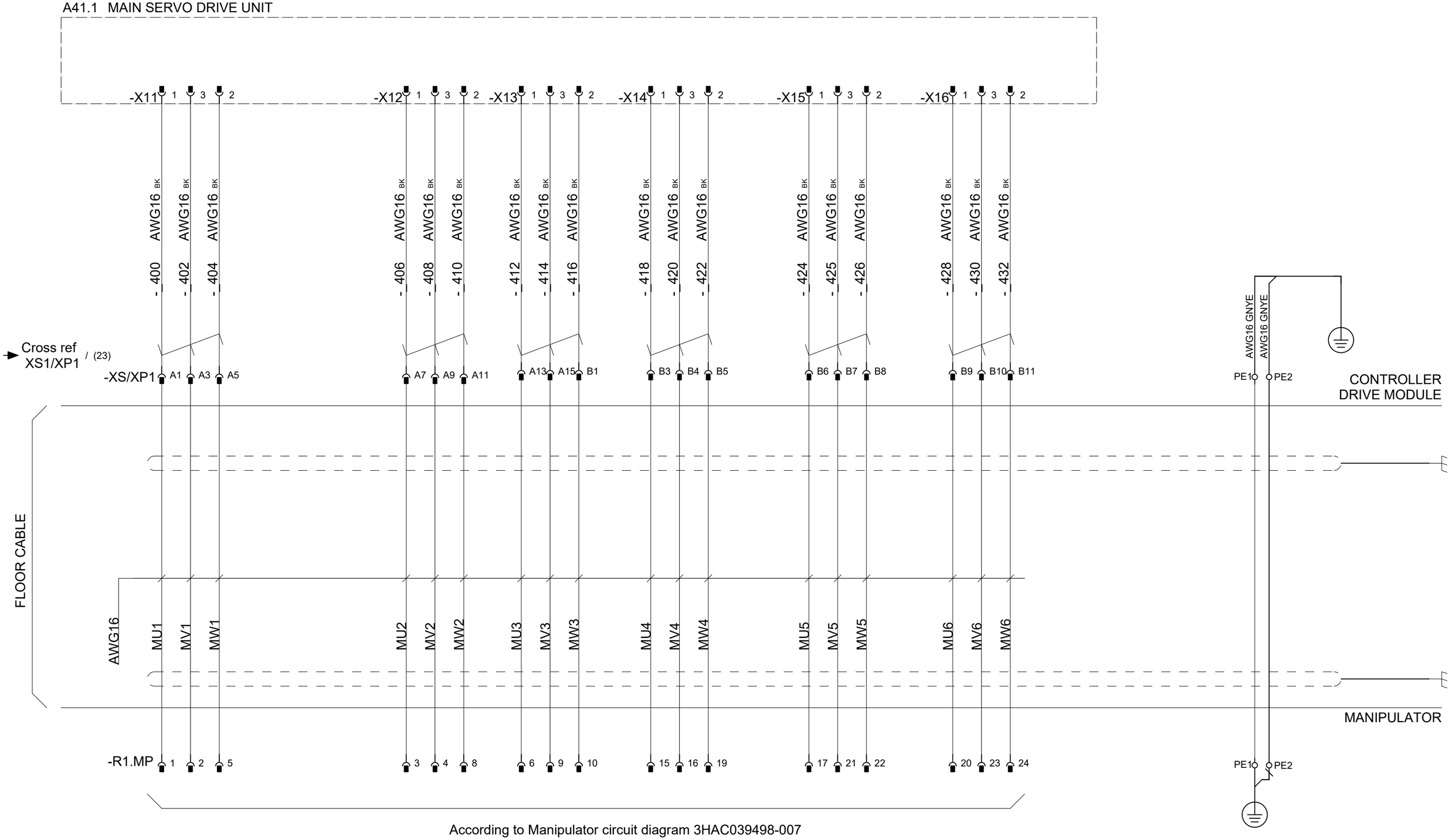
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31				

A41.1 MAIN SERVO DRIVE UNIT



According to Manipulator circuit diagram 3HAC039498-007

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 1520	Status: APPROVED	Plant: = Location: + Sublocation:+	
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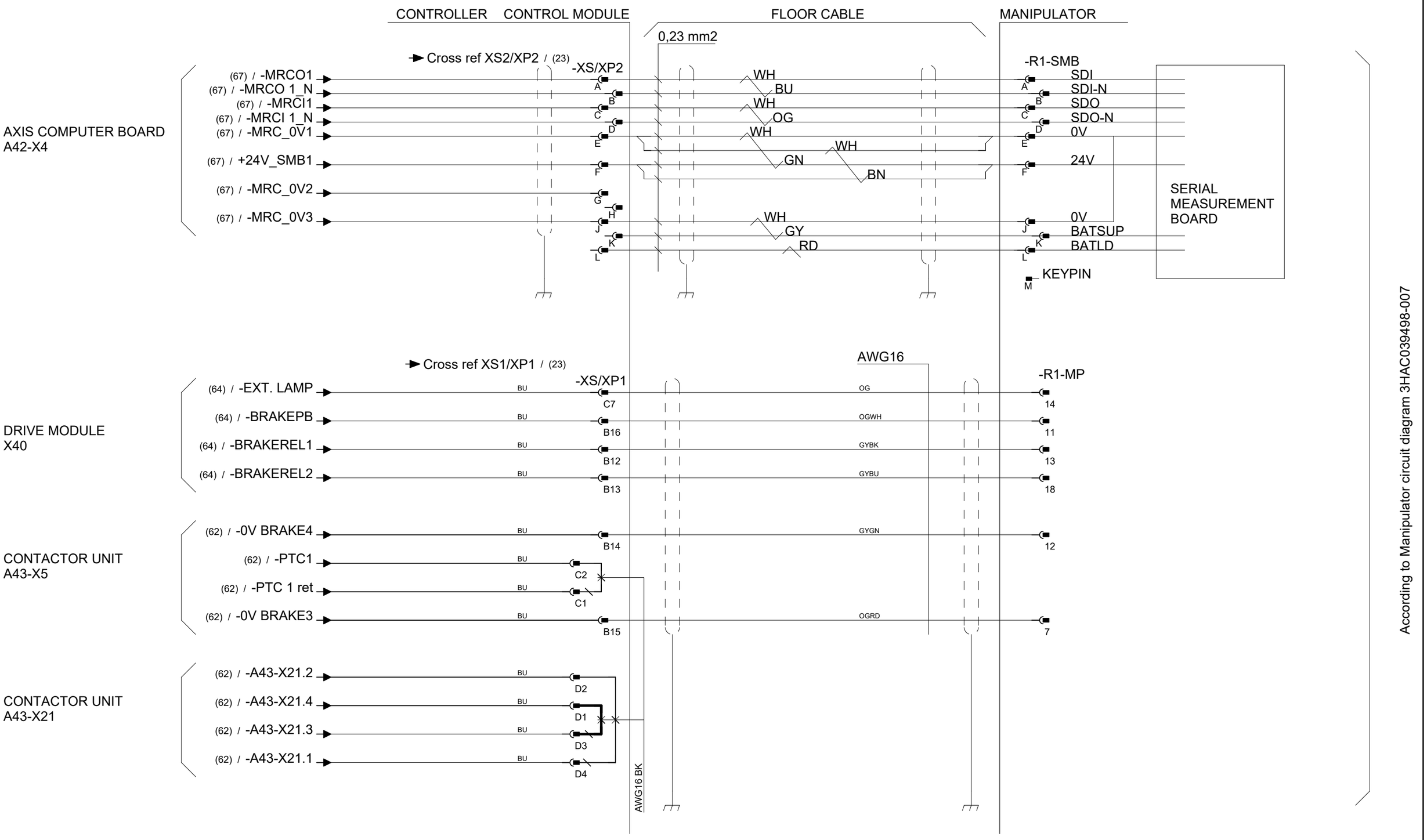
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31						



According to Manipulator circuit diagram 3HAC039498-007

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 1520	Status: APPROVED	Plant: = Location: + Sublocation: +
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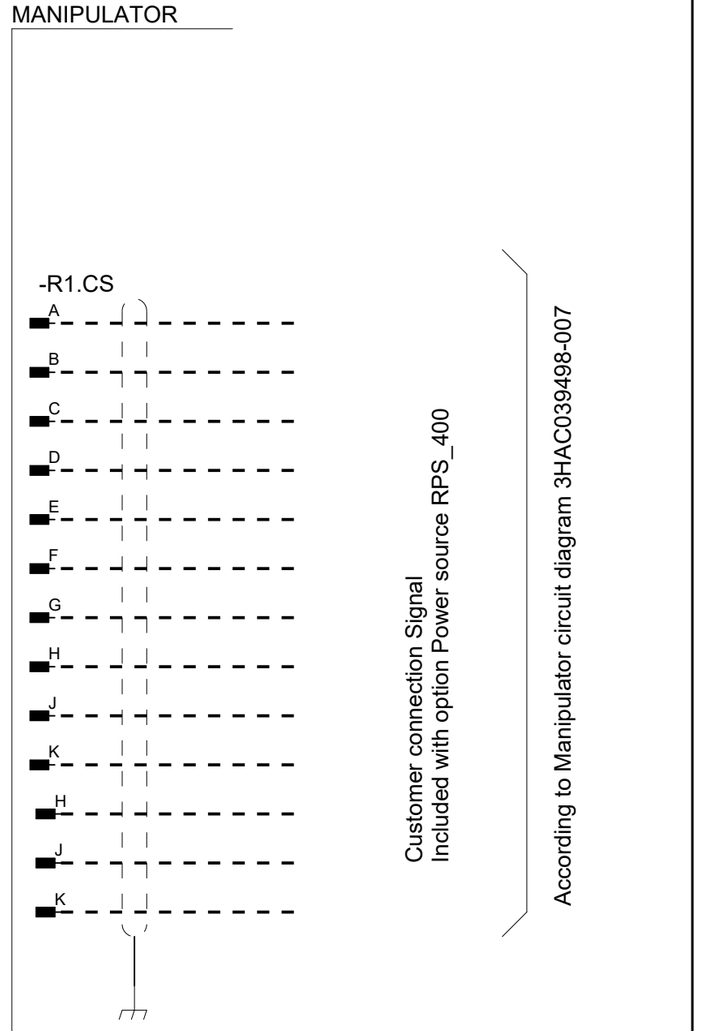
						Page 98 Next 99 Total 164



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Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 99 Next 100 Total 164

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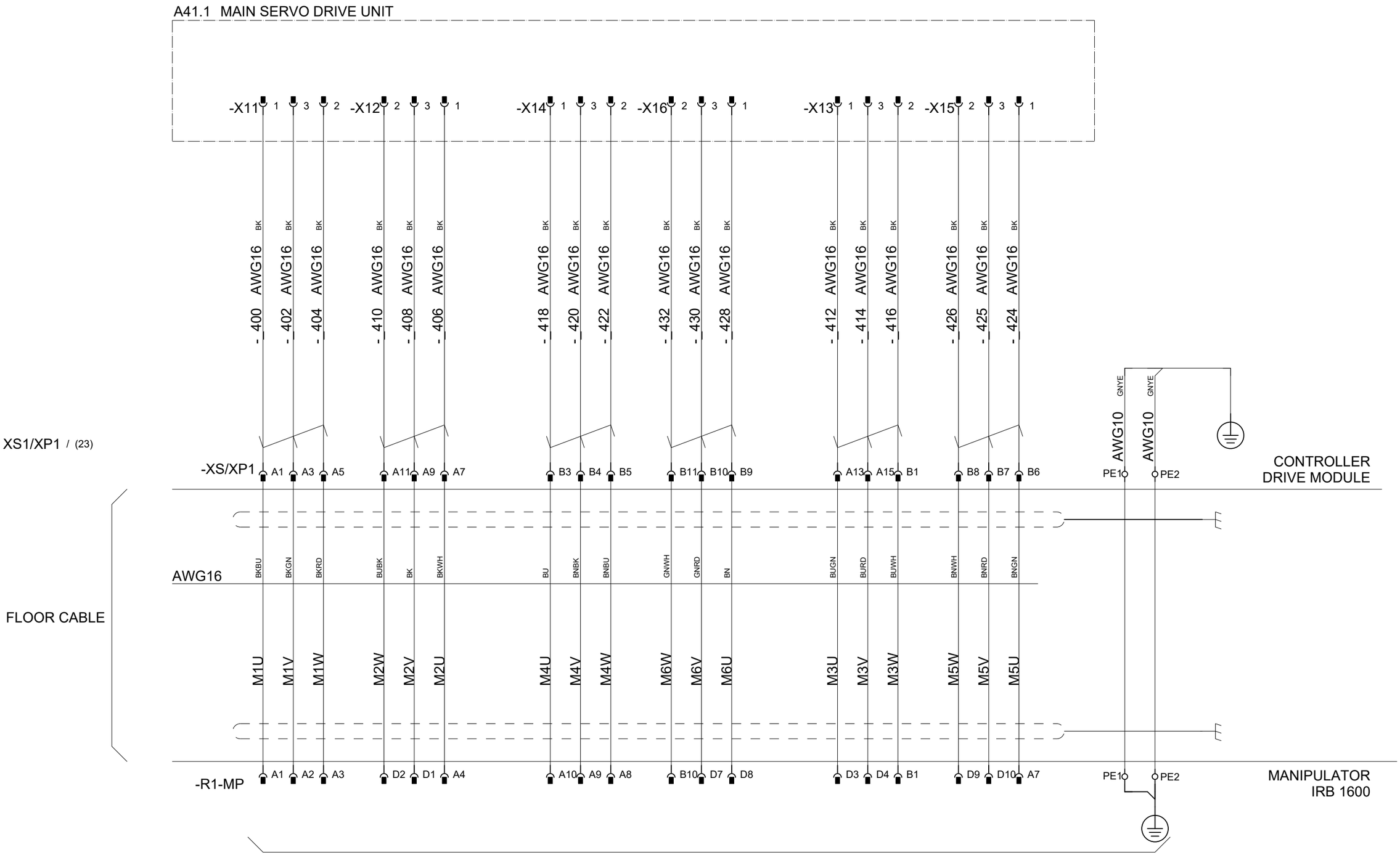

According to Manipulator circuit diagram 3HAC021351-003

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE UNIT IRB 1600/1660	Status: APPROVED	Plant: = Location: + Sublocation: +
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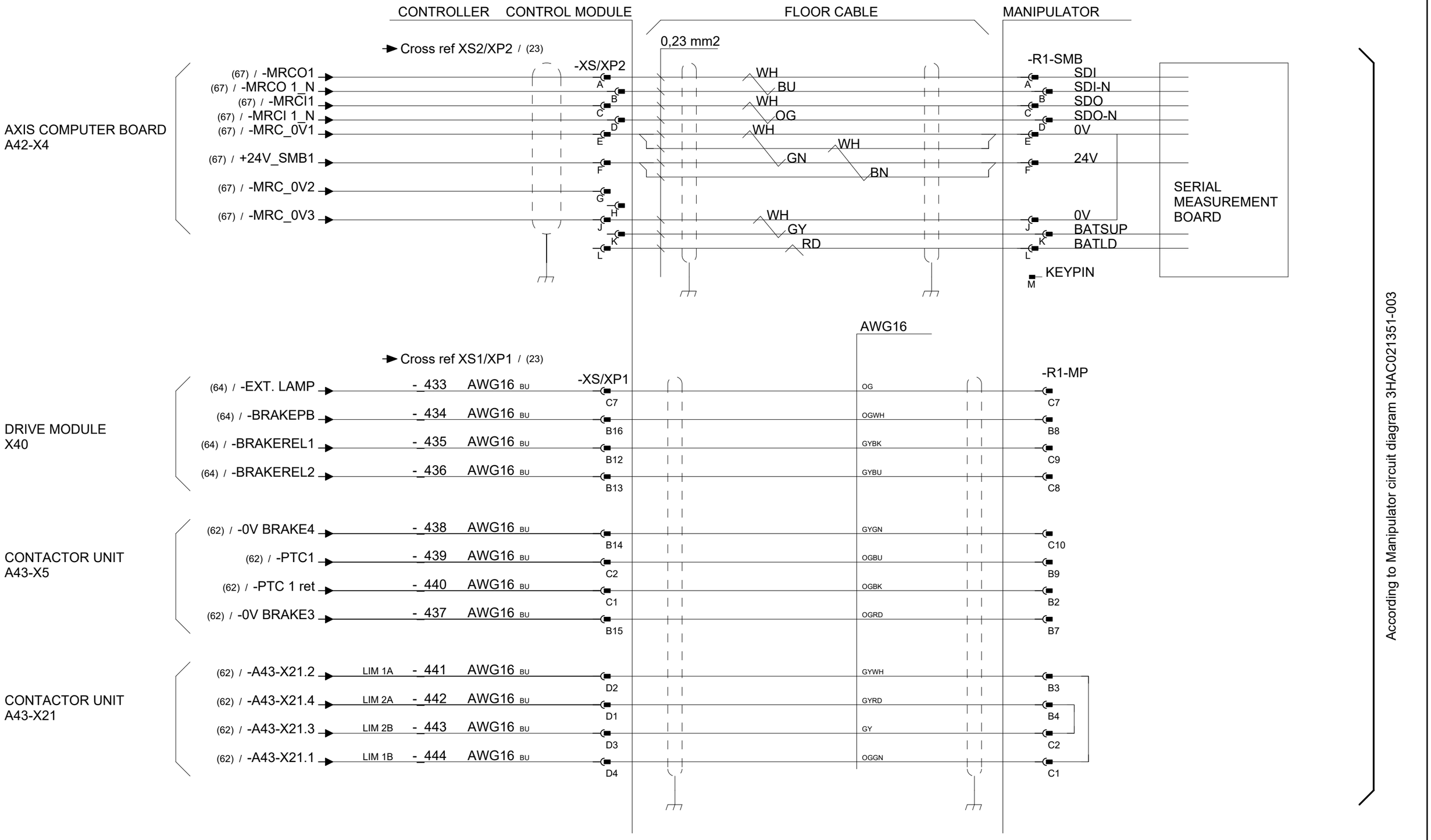
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31				Page 100 Next 101 Total 164



According to Manipulator circuit diagram 3HAC021351-003

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 1600/1660	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 101 Next 102 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					

CONTROLLER CONTROL MODULE | FLOOR CABLE | MANIPULATOR

Customer Connection

-XP/XT6 — -709 AWG24 — -XS/XP5 — AWG18 — -R1-CP/CS

1	BK	A1	RD	A1	CPA
2	BN	B1	BU	B1	CPB
3	RD	C1	GN	C1	CPC
4	OG	D1	YE	D1	CPD
5	YE	A2	WH	A2	CPE
6	GN	B2	BK	B2	CPF
7	BU	C2	BN	C2	CPJ
8	VT	D2	VT	D2	CPK
9	GY	A3	OG	A3	CPH
10	WH	B3	PK	B3	
11	WH/BK	C3	TQ	C3	
12	WH/BN	D3	GY	D3	

-XP/XT5.1 — -710 AWG24 — 0,23mm2

1	BK	B5	WH	B5	CSA
2	BN	C5	BU	C5	CSB
3	RD	D5	WH	D5	CSC
4	OG	A6	OG	A6	CSD
5	YE	B6	WH	B6	CSE
6	GN	C6	GN	C6	CSF
7	BU	D6	WH	D6	CSG
8	VT	A7	BN	A7	CSH
9	GY	B7	WH	B7	CSJ
10	WH	C7	GY	C7	CSK
11	WH/BK	D7	RD	D7	CSL
12	WH/BN	A8	BU	A8	CSM

-XP/XT5.2

13	WH/RD	B8	RD	B8	CSN
14	WH/OG	C8	OG	C8	CSP
15	WH/YE	D8	RD	D8	CSR
16	WH/GN	A9	GN	A9	CSS
17	WH/BU	B9	RD	B9	CST
18	WH/VT	C9	BN	C9	CSU
19	WH/GY	D9	RD	D9	CSV
20	BN/BK	A10	GY	A10	CSW
21	BN/RD	B10	BK	B10	CSX
22	BN/OG	C10	BU	C10	CSY
23	BN/YE	D10	WH	D10	CSZ

or PK
or Light GN
or RD/BK
or GN/BK
or OG/BK
or YE/BK

According to Manipulator circuit diagram 3HAC021351-003

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL SINGLE CABINET IRB 1600/1660	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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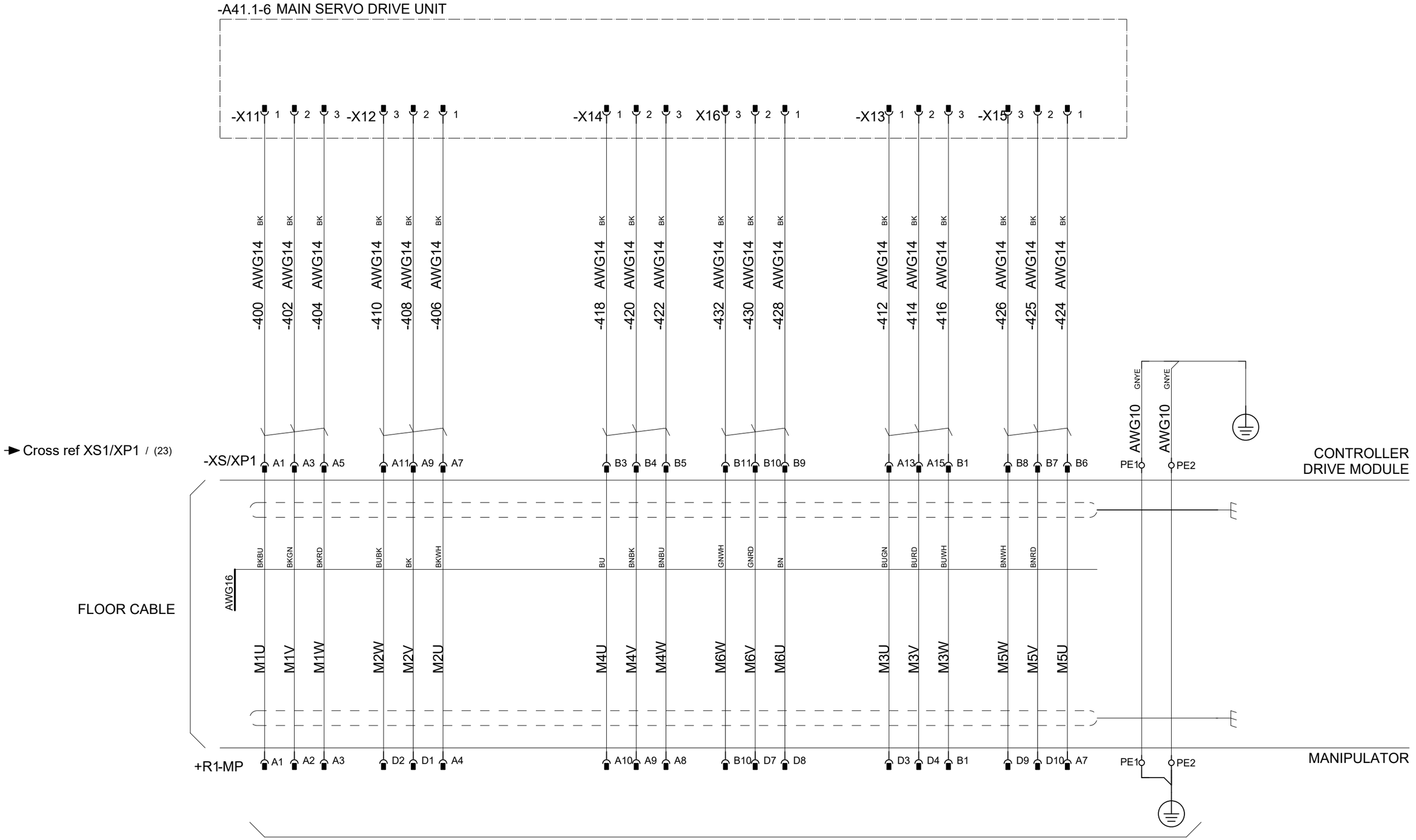

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE UNIT IRB 2400	Status: APPROVED	Plant: = Location: + Sublocation: +
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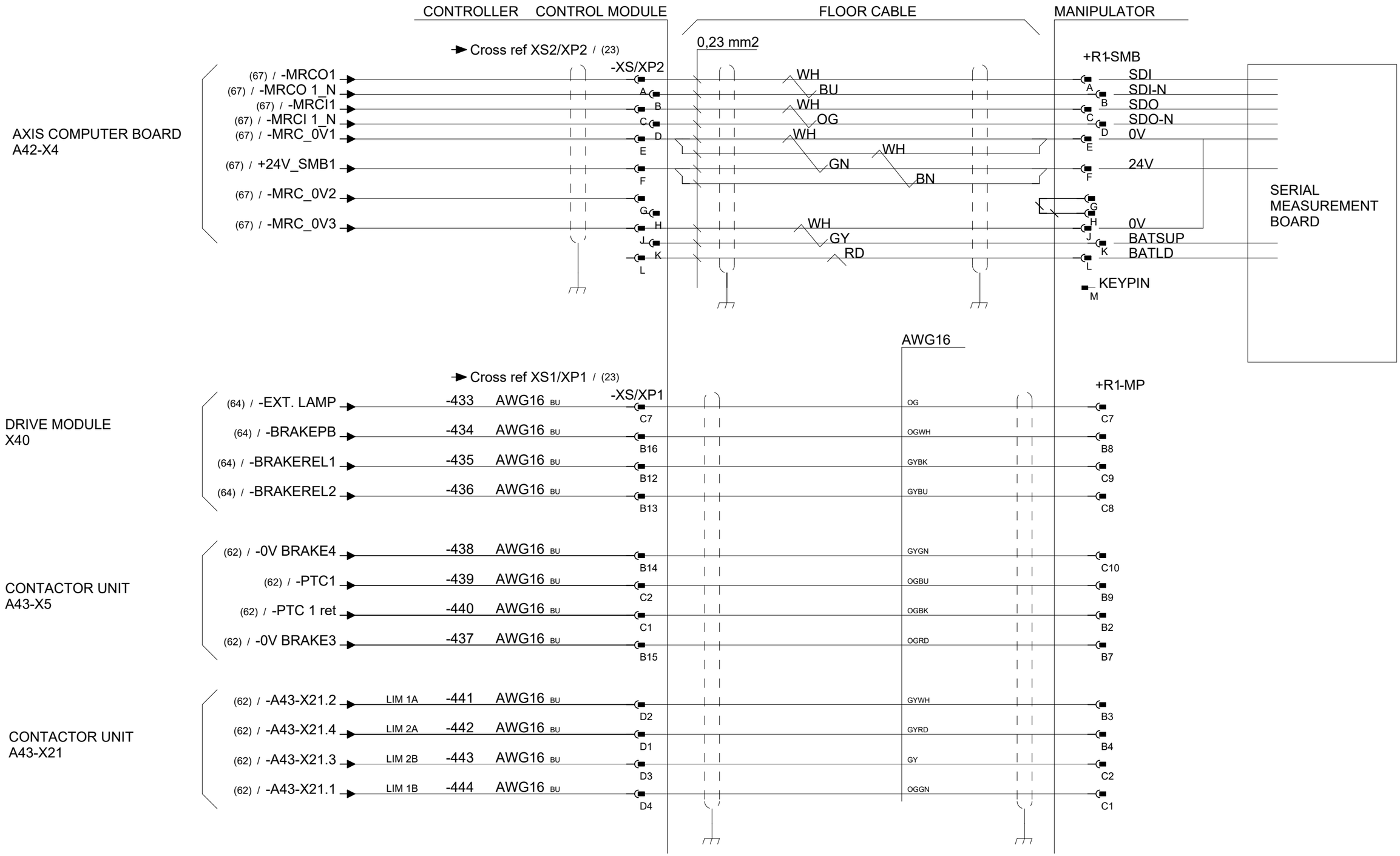

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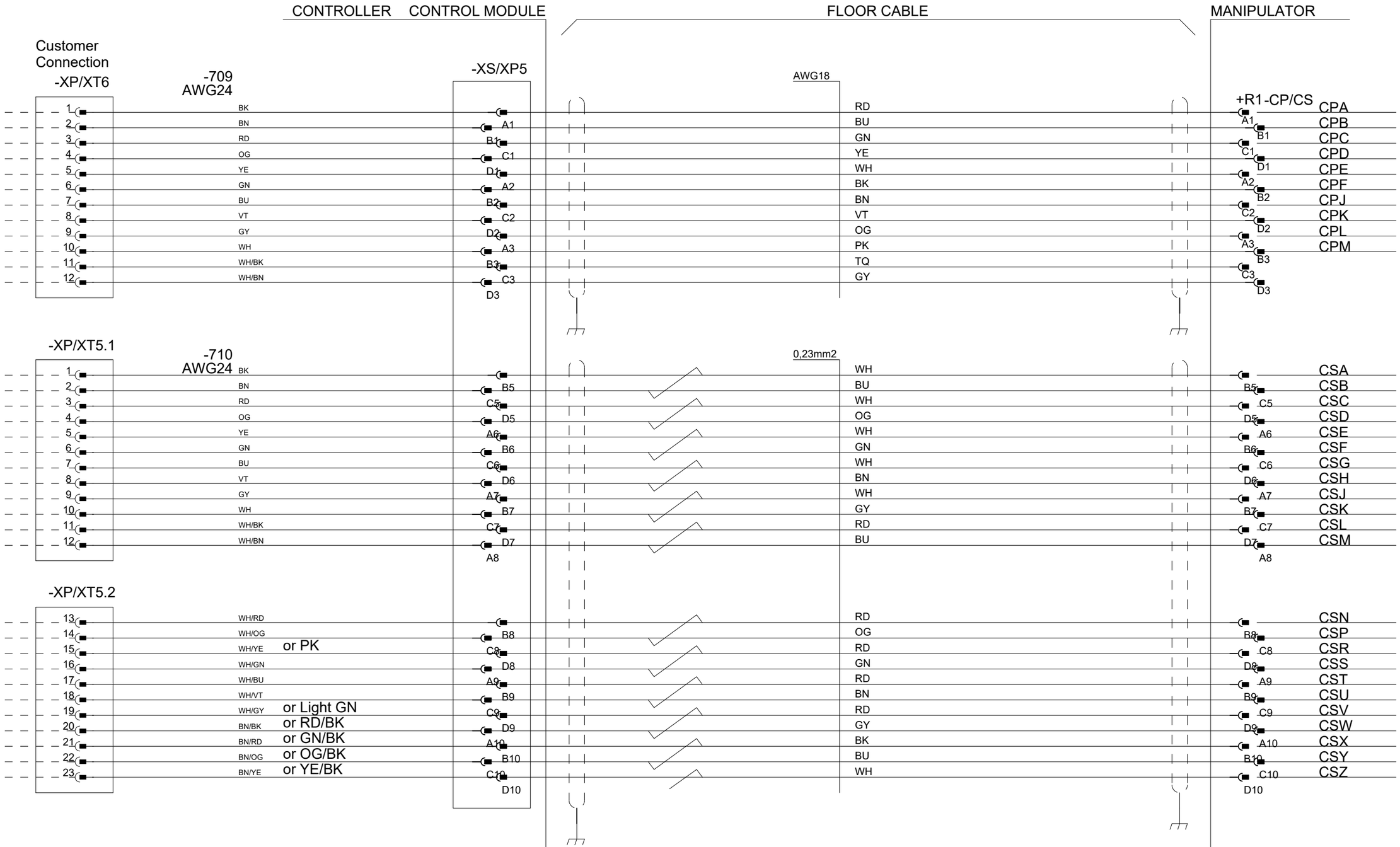
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31					Page 104 Next 105 Total 164



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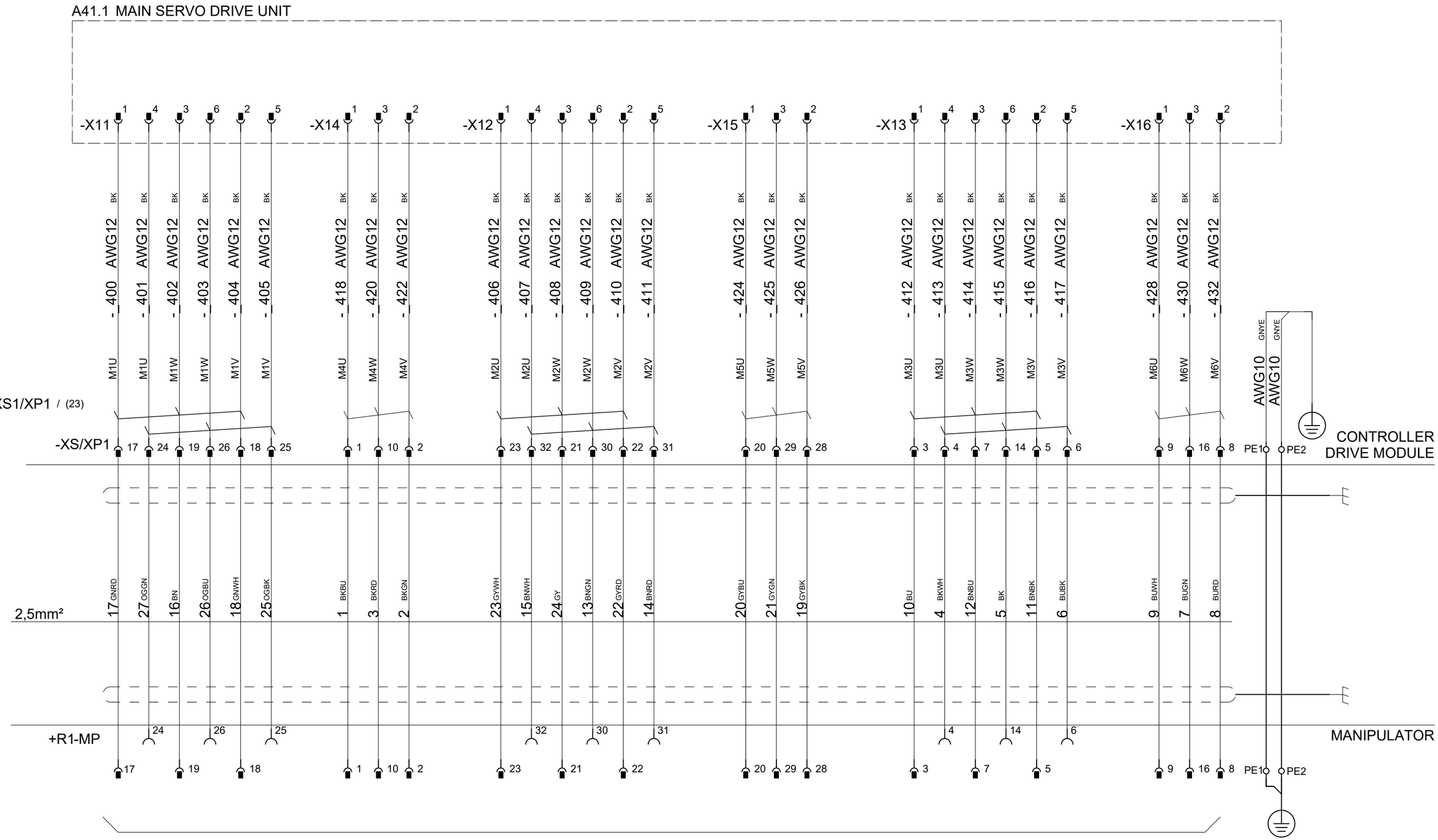
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 105 Next 106 Total 164



According to Manipulator circuit diagram 3HAC029570-007

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 2600	Status: APPROVED	Plant: = Location: + Sublocation: +
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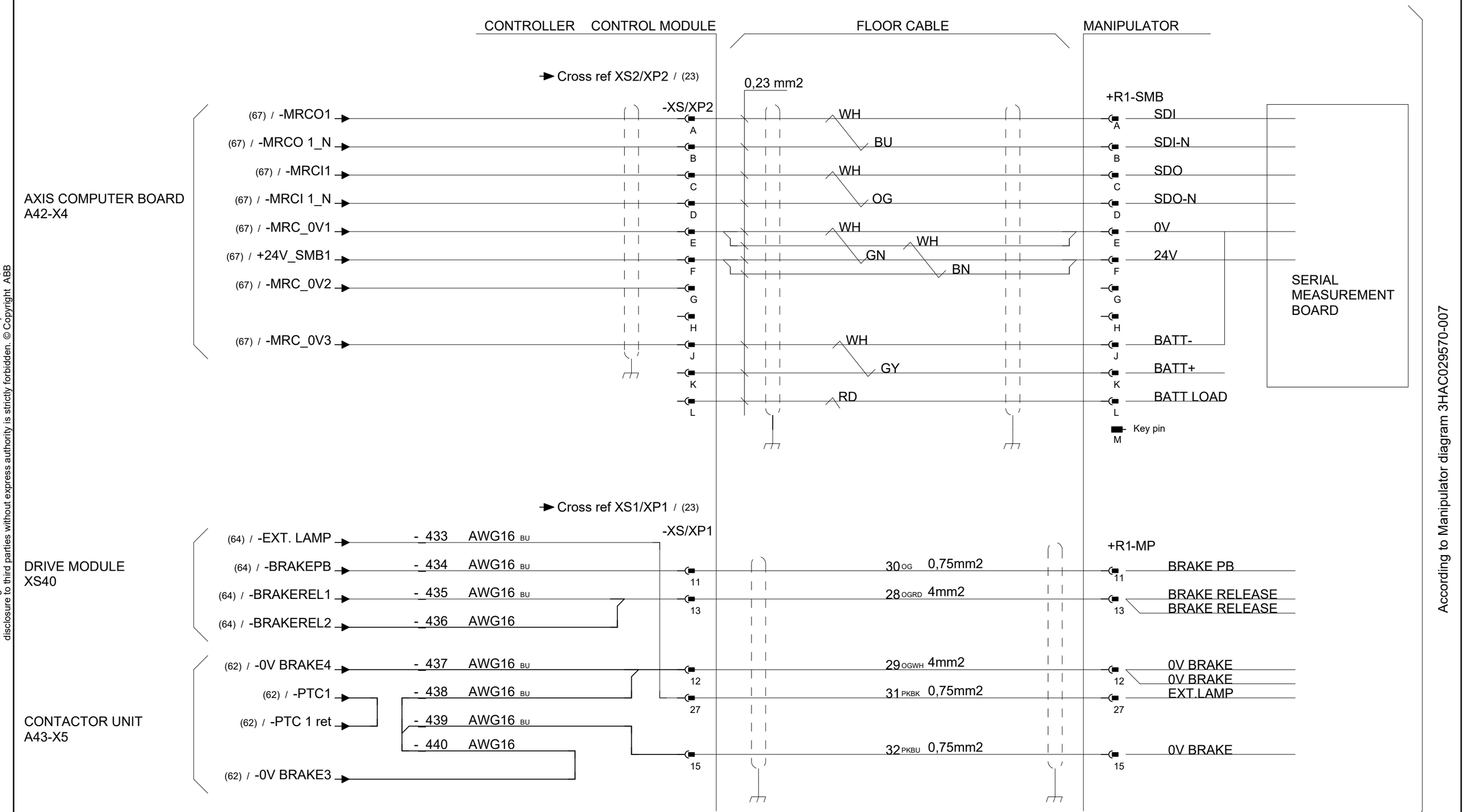

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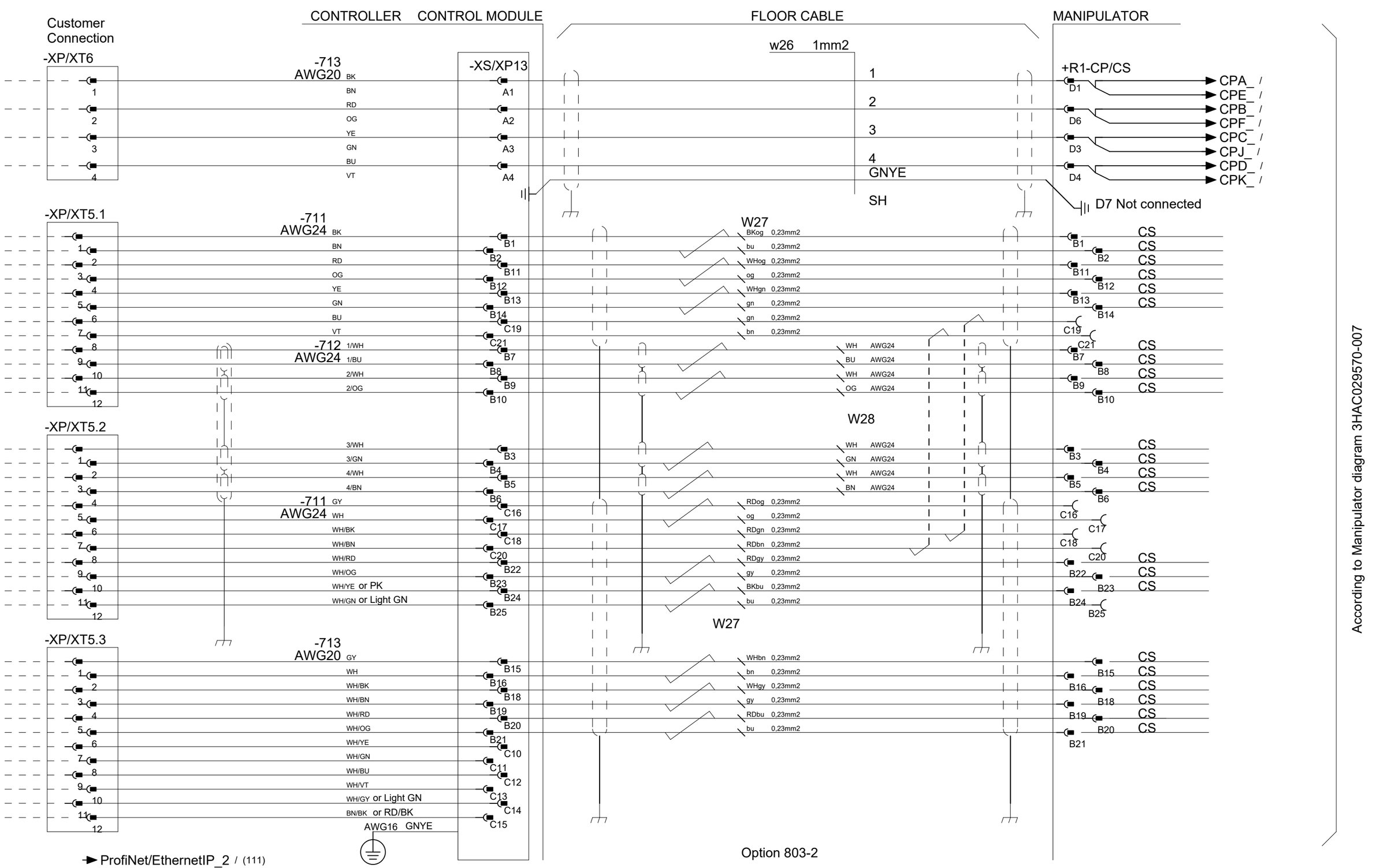
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



Latest revision:			ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL PROFINET IRB2600	Status: APPROVED	Plant: = Location: + Sublocation: +
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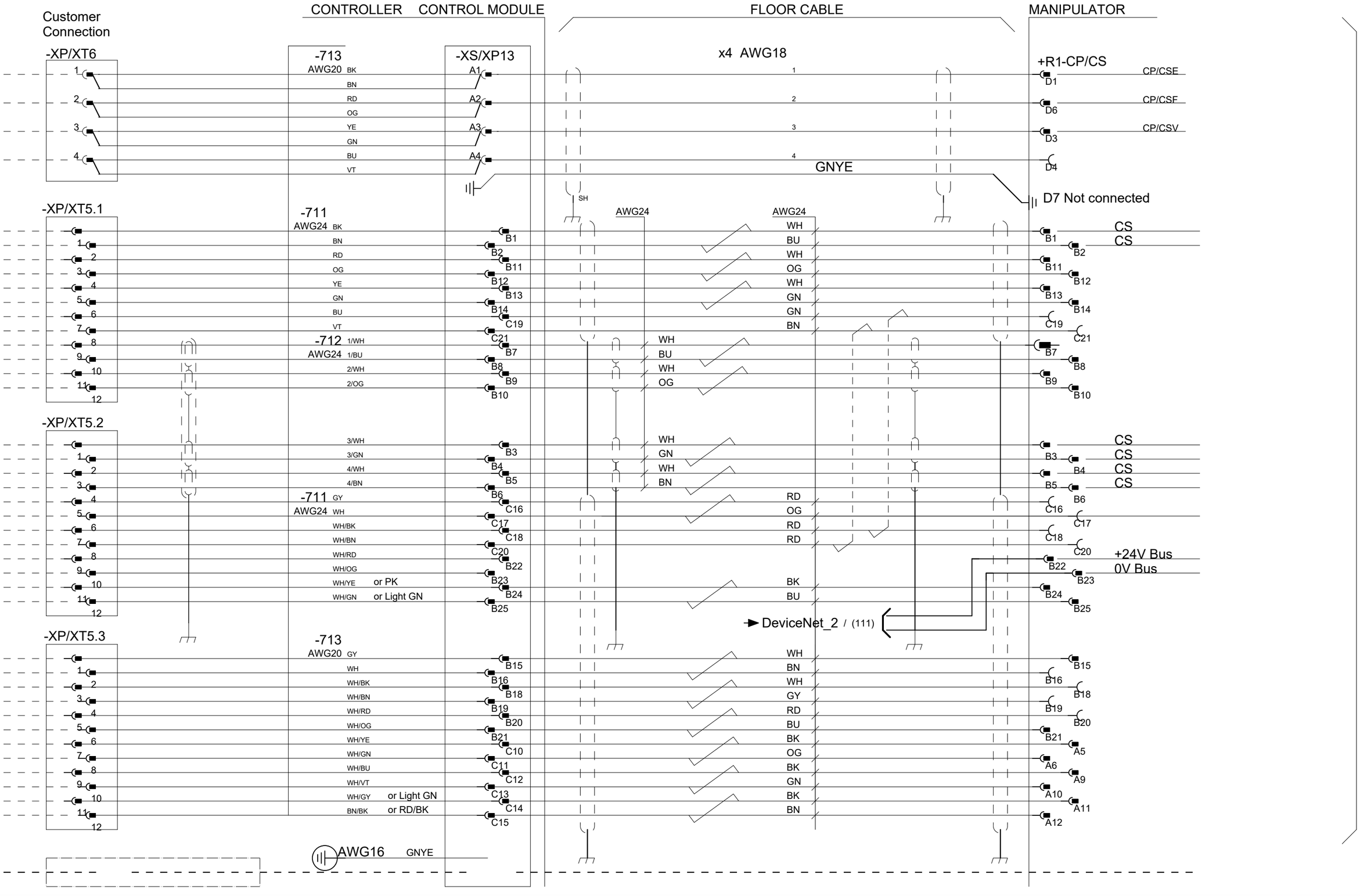
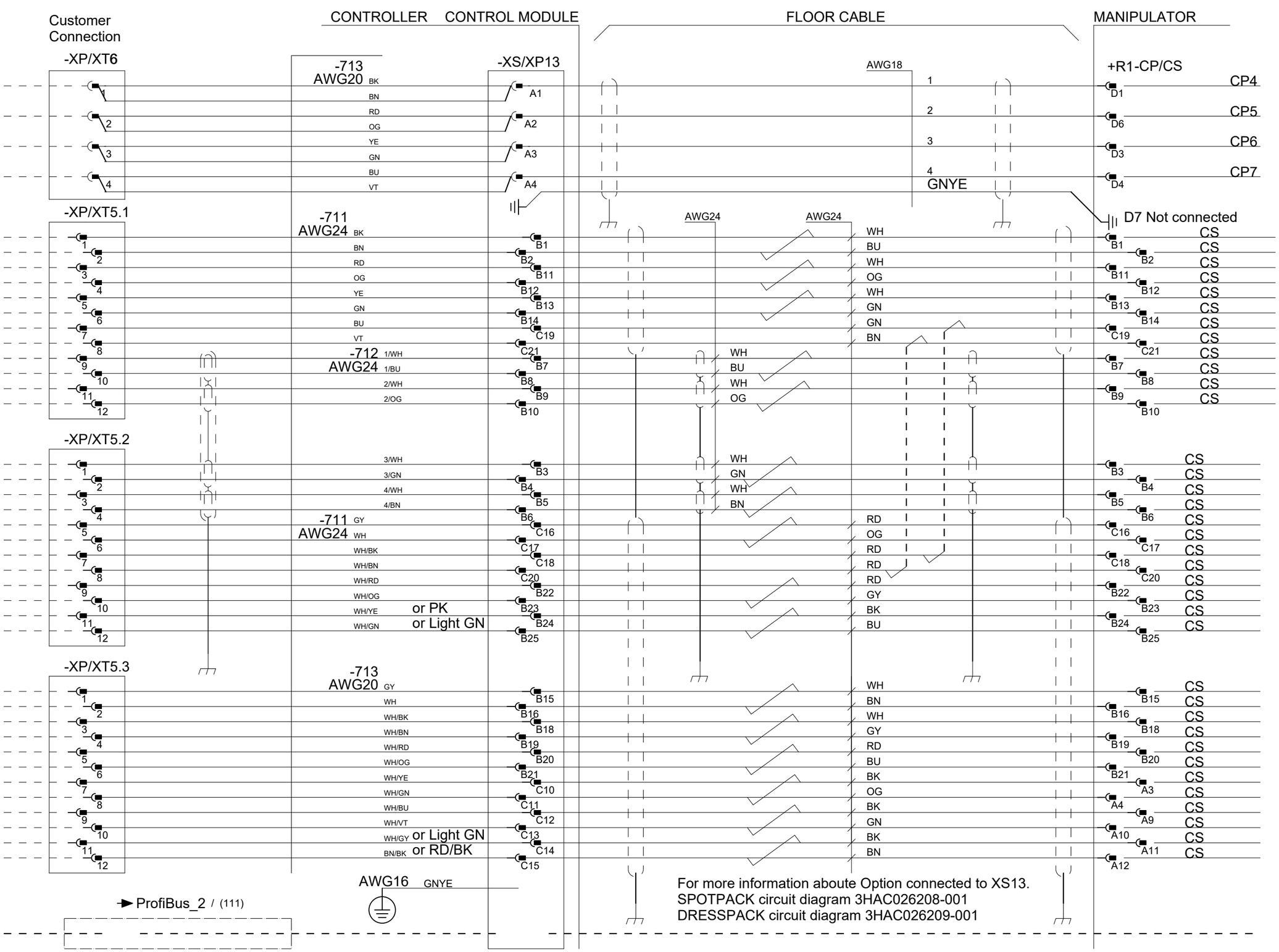
Prepared by, date:A Hägglund	Approved by, date:S Hällgren	2023-10-31					Page 108 Next 109 Total 164



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL DEVICE NET IRB2600	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17



Latest revision:			Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL PROFI BUS IRB 2600	Status: APPROVED	Plant: = Location: + Sublocation:+	
					Document no. 3HAC024480-011	Rev. Ind 17	Page 110 Next 111 Total 164
Prepared by, date:A Hägglund	Approved by, date:S Hällgren	2023-10-31					

CONTROLLER CONTROL MODULE | FLOOR CABLE | MANIPULATOR

OPTION : DEVICENET

Additional sheet

-A35

-707

1	2/BK	V-	-XS/XP13 F2	AWG22 BK / AWG24 BU	-R1.CP/CS B23 0V
2	1/BU	CAN_L	F4		A4 CAN_L
3	Bare wire	SHIELD			
4	1/WH	CAN_H	F3	WH	A3 CAN_H
5	2/RD	V+	F1	RD	B22 +24V CAN

(40) / A35

DeviceNet_2 / (109)

Profi/Ethernet

-A32

Option: 803-2

(23) / 5.TXRX+	XP9 1	YE			-R1.CBUS 1 TX+
(23) / 5.RXTX+	2	WH			2 RX+
(23) / 5.TXRX-	3	OG			3 TX-
(23) / 5.RXTX-	4	BU			4 RX-

AWG22

ProfiNet//Ethernet

ProfiNet/EthernetIP_2 / (108)

OPTION : PROFIBUS

Option: 803-4

Additional sheet

-A31

-(DP-M)1

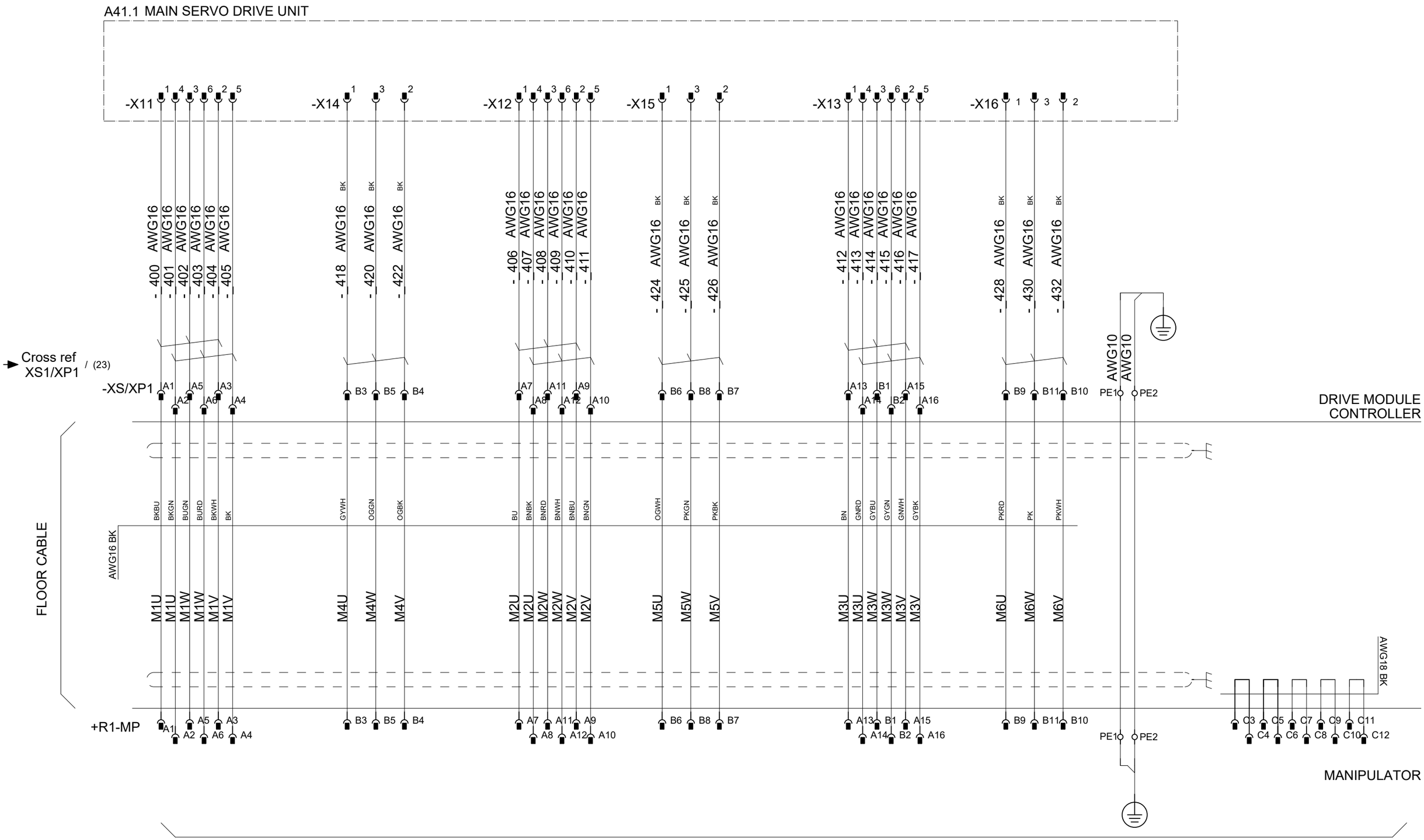
-709

(38) / A31_3TXDRXD	1B	1/RD 2	RXD/TXD-P	-XS/XP13 F5	AWG22 RD	-R1.CP/CS RXD/TXD-P
(38) / A31_3RXDTXD	1A	1/GN	RXD/TXD-N	F6	GN	A6 RXD/TXD-N

ProfiBus_2 / (110)

According to Manipulator diagram 3HAC029570-007

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D DevNet/PofiNet/Ethernet/Profibus addition to CP/CS IRB2600	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17



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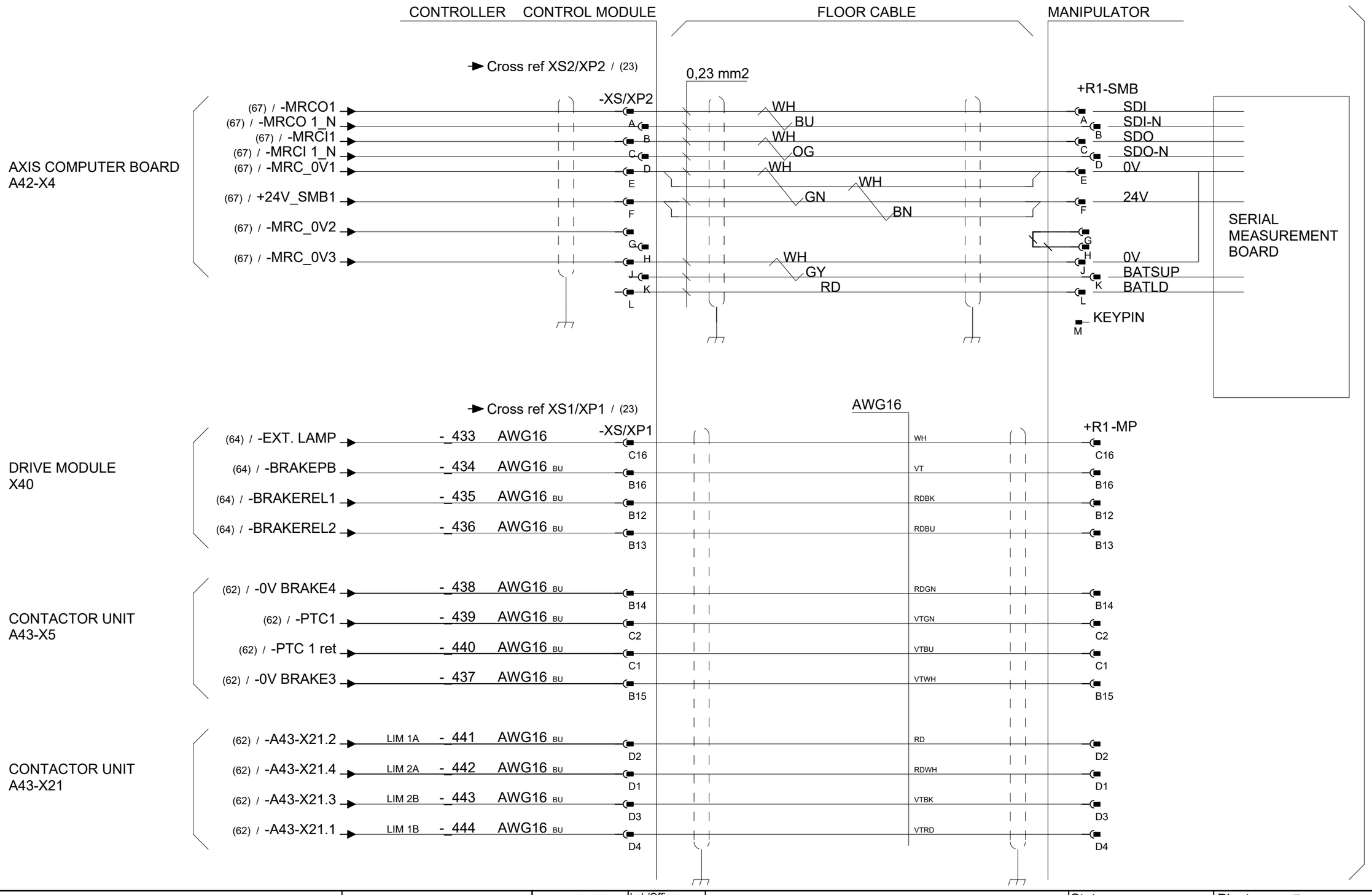

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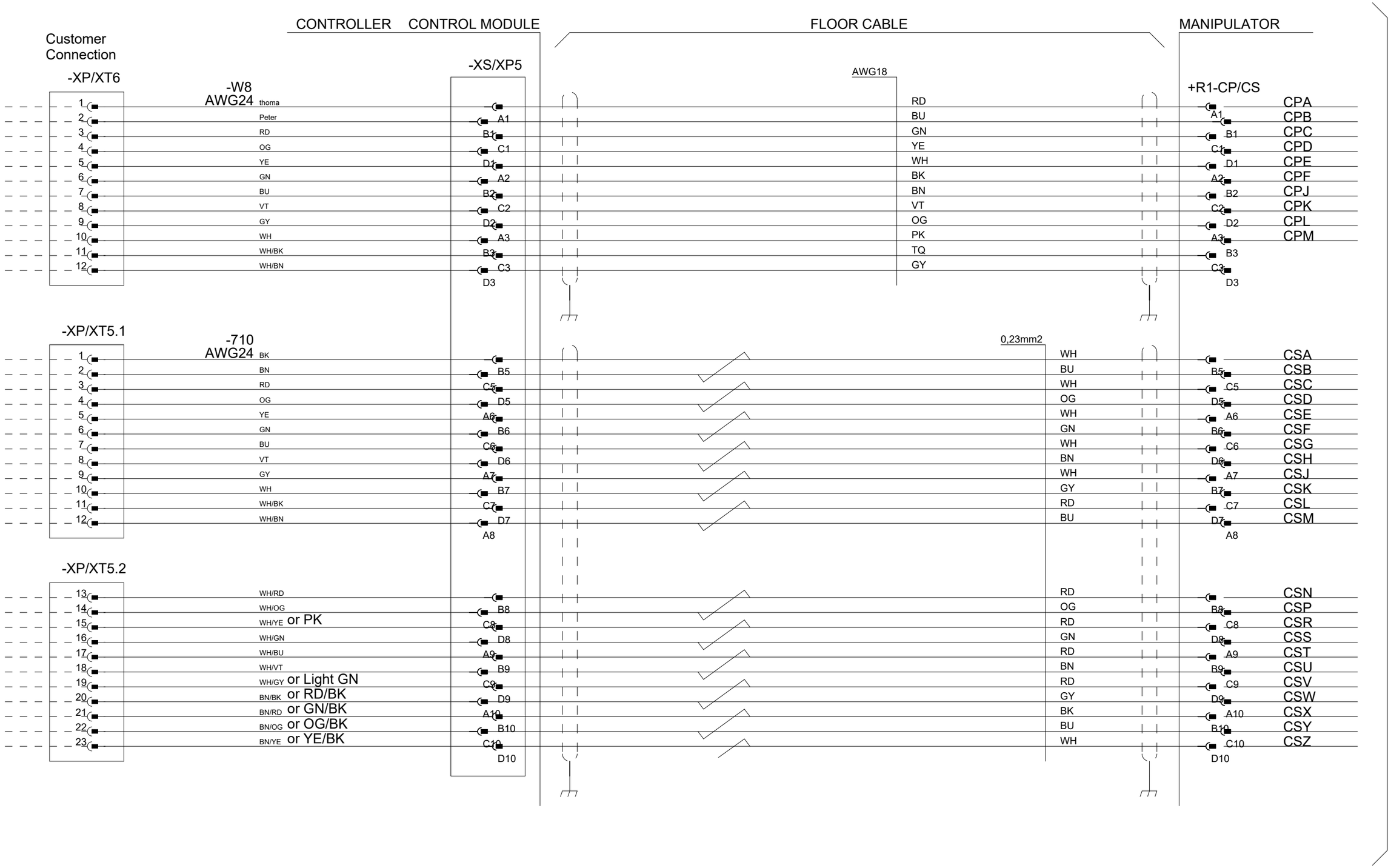
						Page 113 Next 114 Total 164



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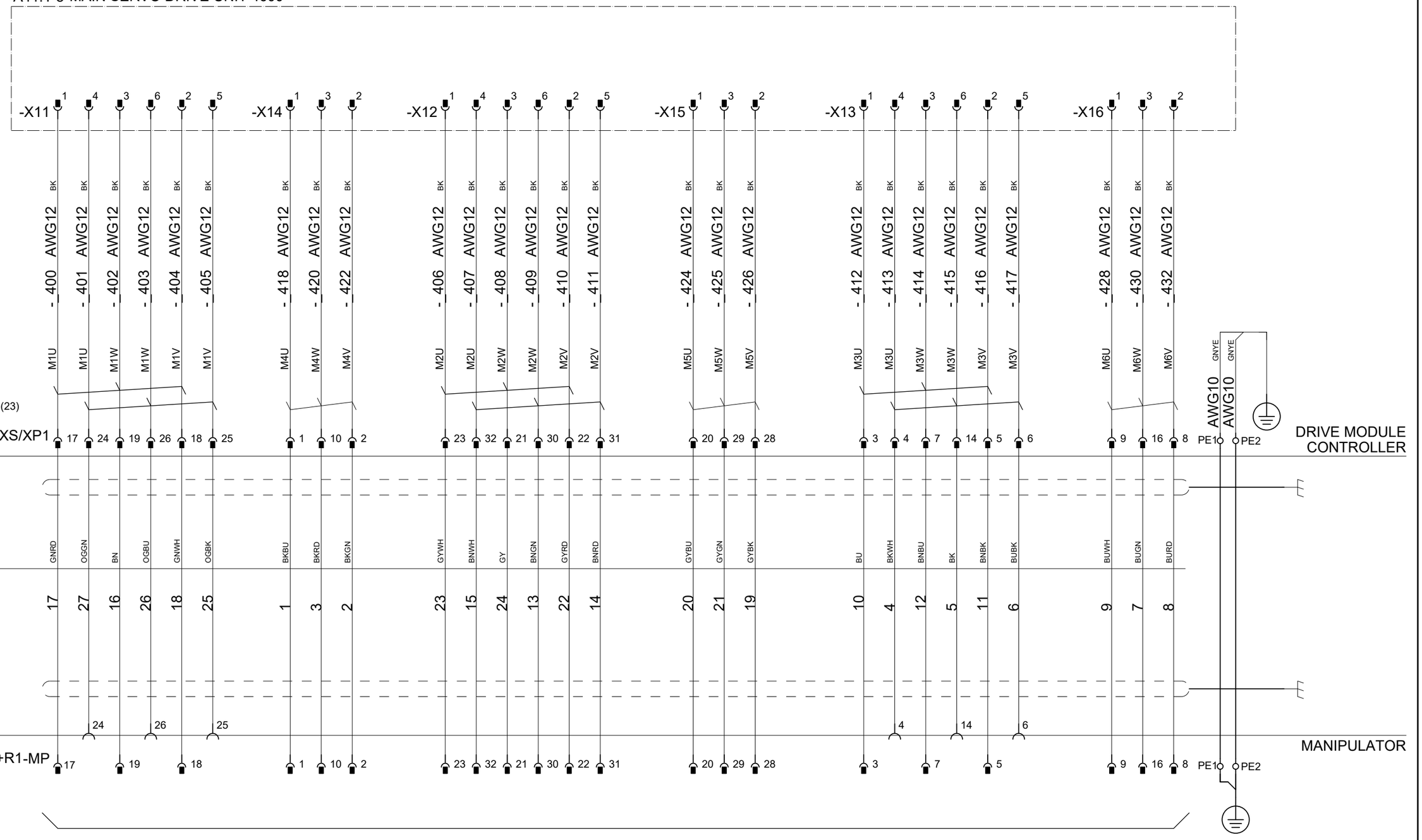
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 114 Next 115 Total 164

-A41.1-8 MAIN SERVO DRIVE UNIT 4600



According to Manipulator circuit diagram 3HAC029038-003

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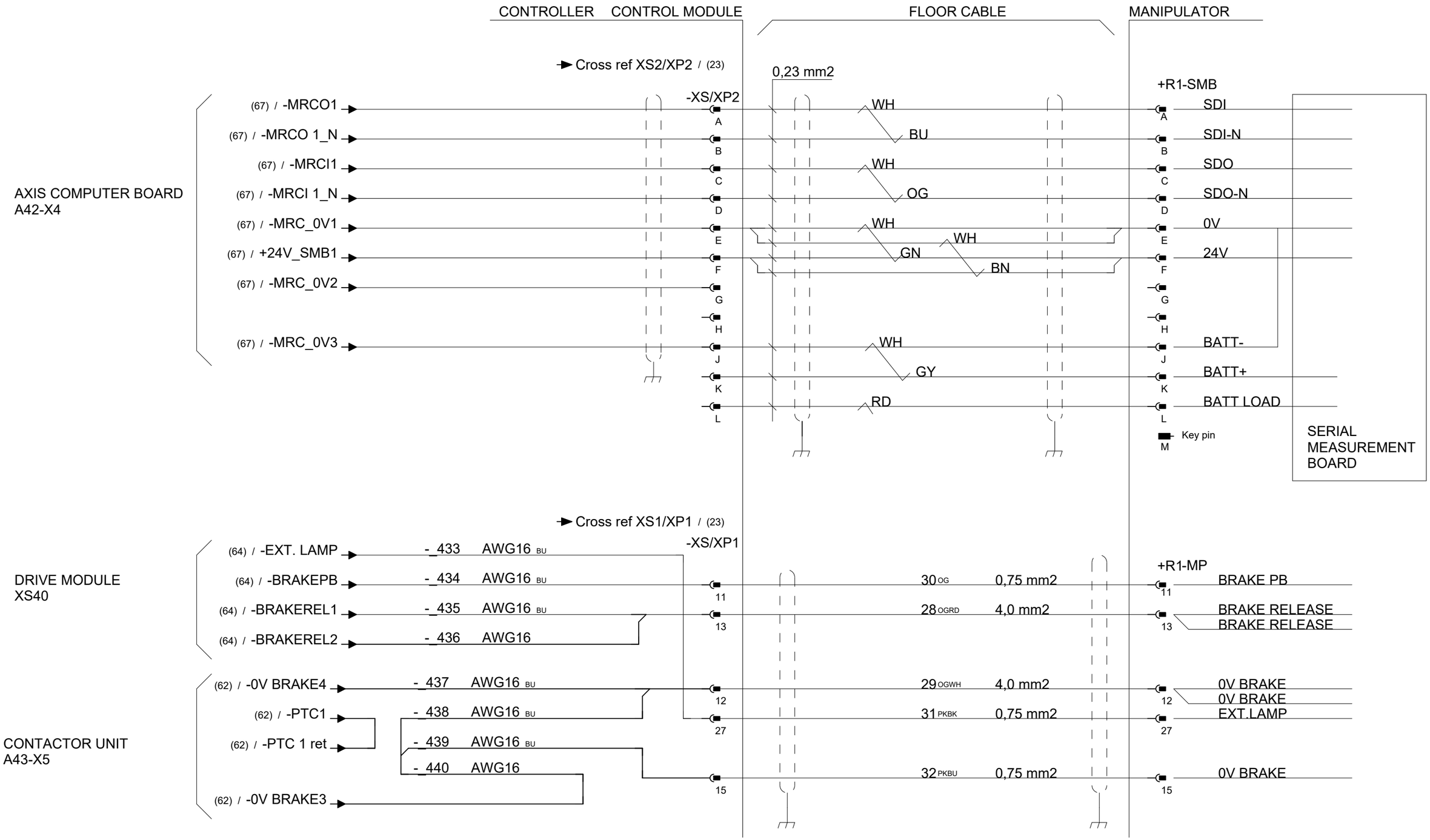
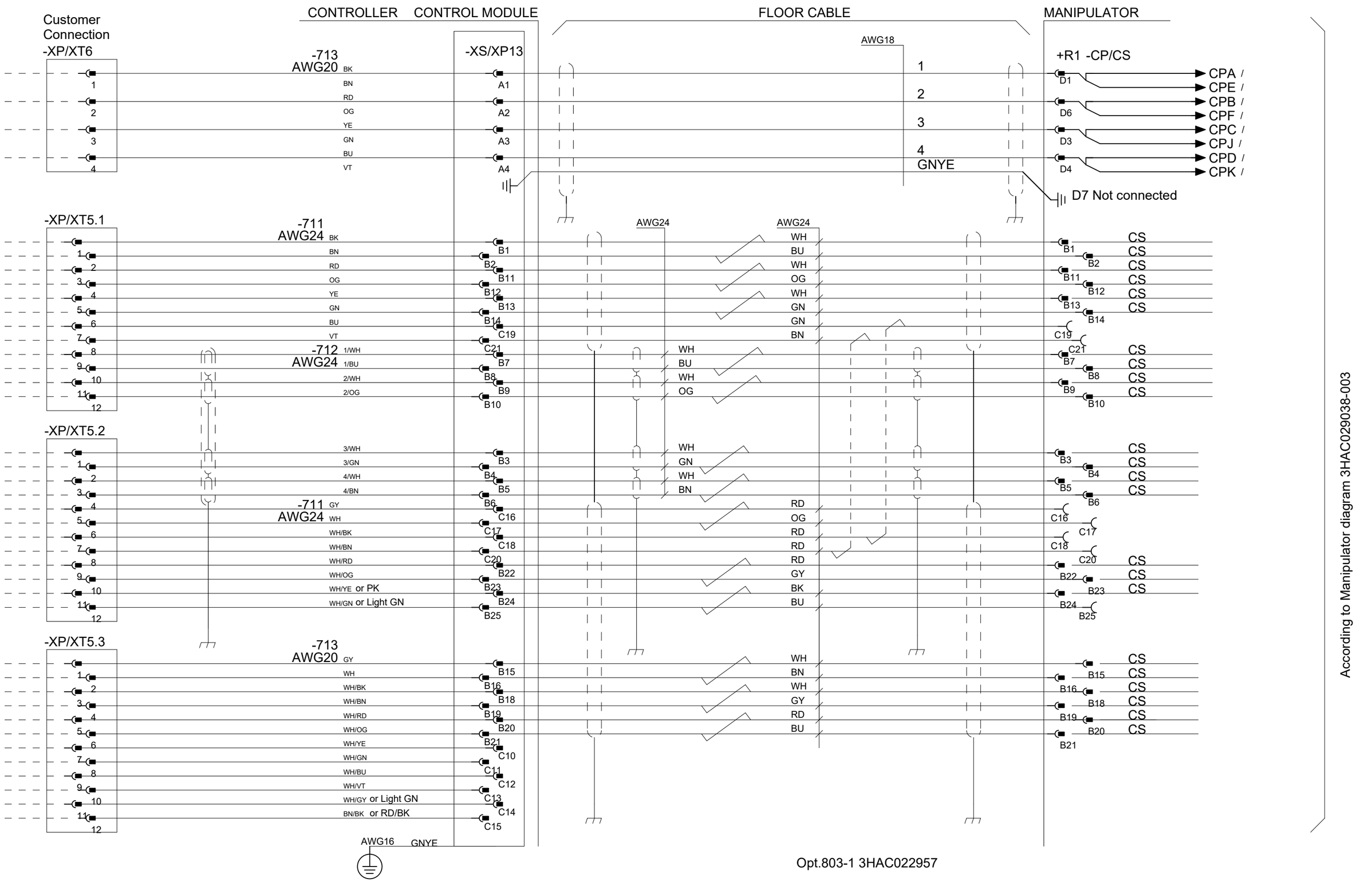


Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 4600	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 116 Next 117 Total 164



Opt.803-1 3HAC022957

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL IRB4600	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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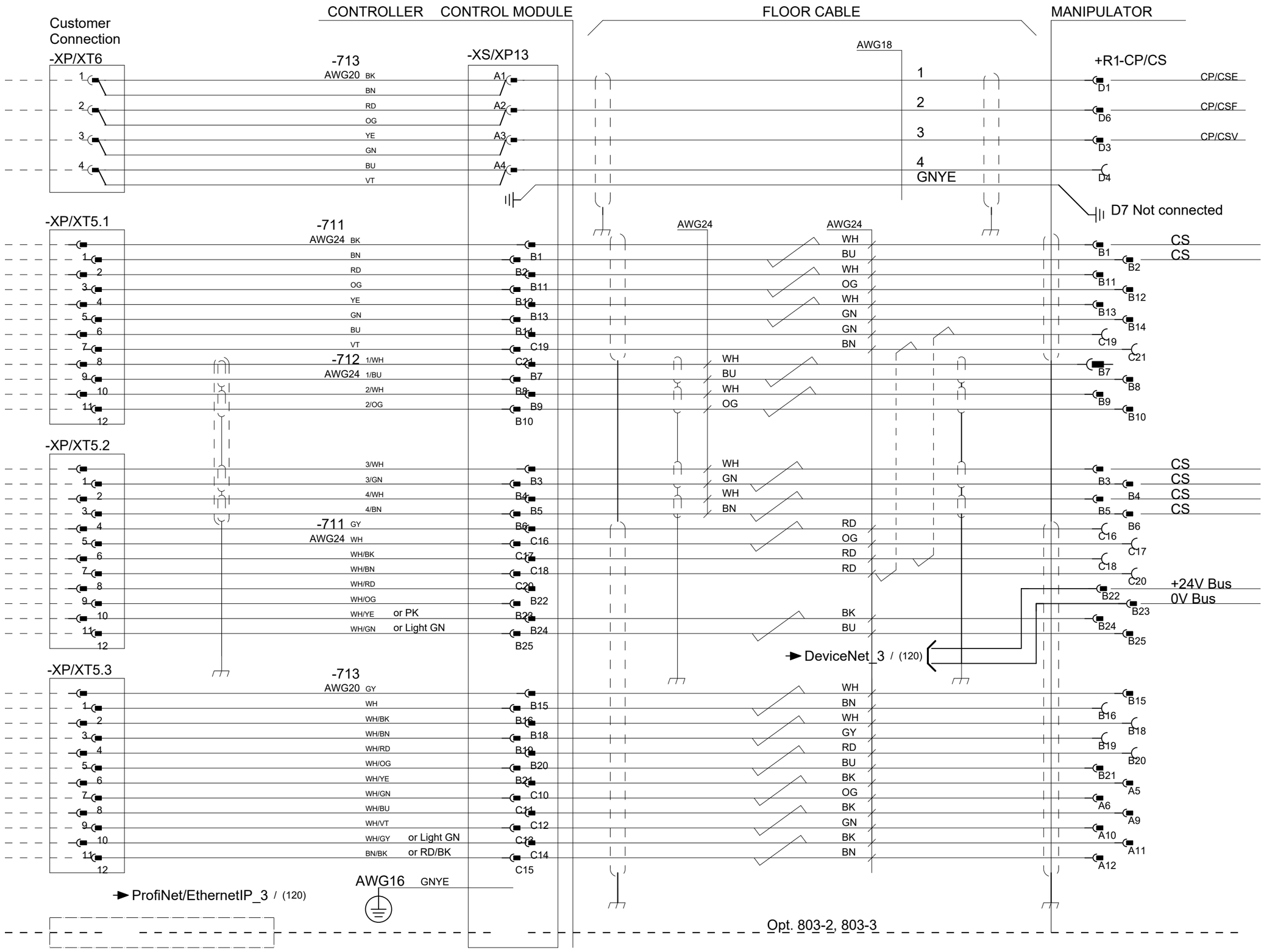

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL DEVICE NET & PROFINET/ETHERNET/IP IRB4600	Status: APPROVED	Plant: = Location: + Sublocation: +
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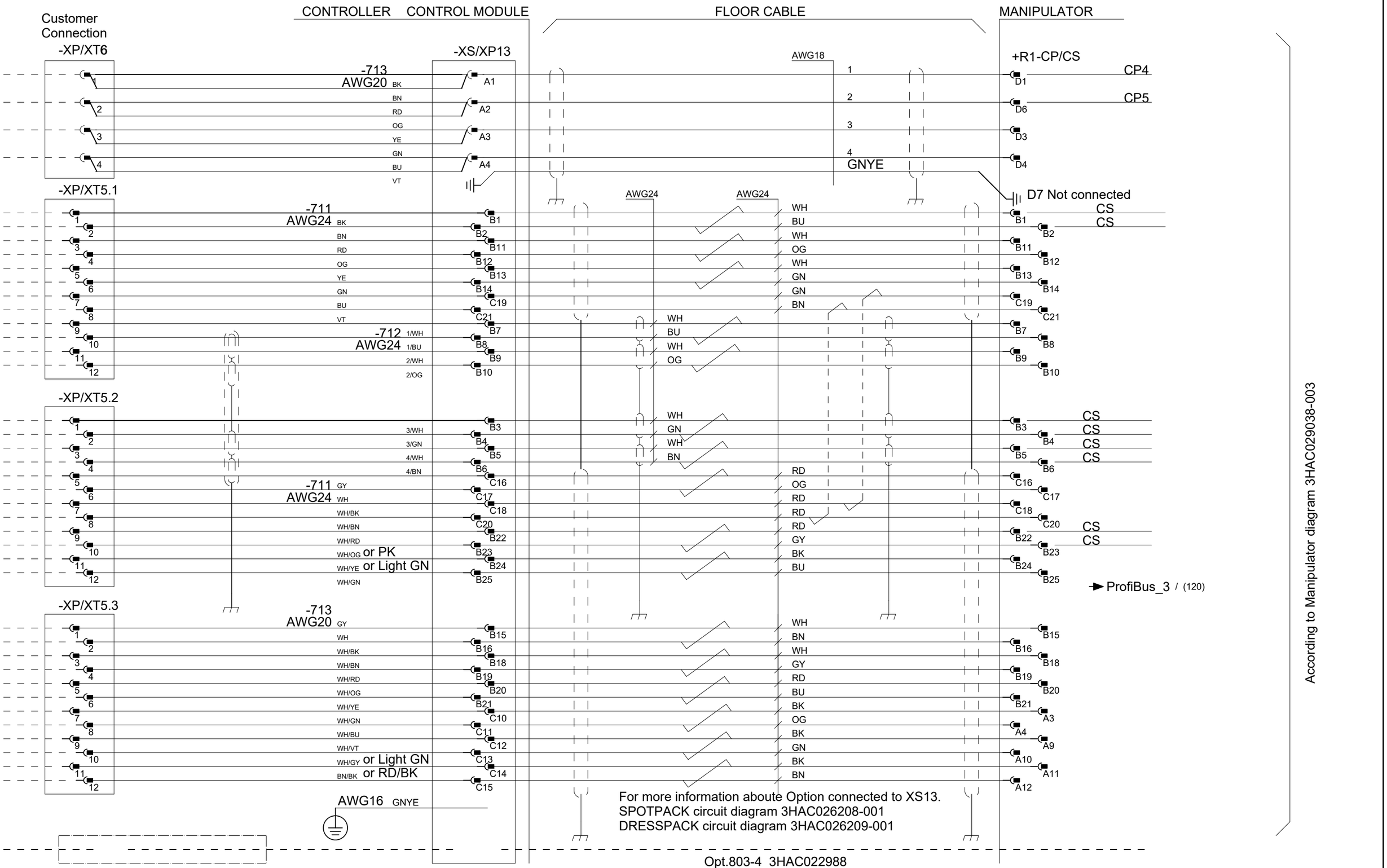

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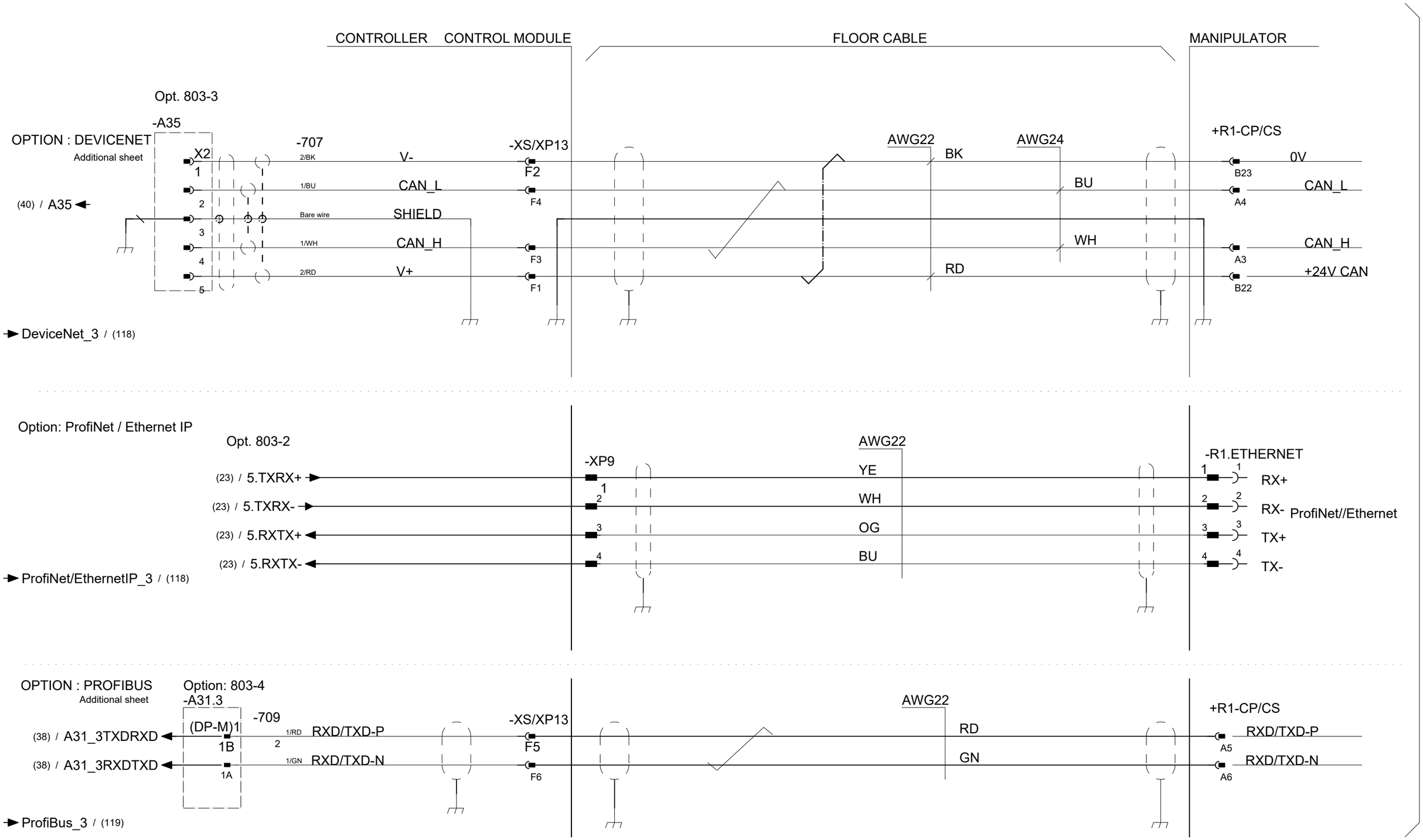
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



According to Manipulator diagram 3HAC029038-003

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D DevNet/ProfiNet/Ethernet/Profibus addition to CP/CS IRB4600	Status: APPROVED	Plant: = Location: + Sublocation: +
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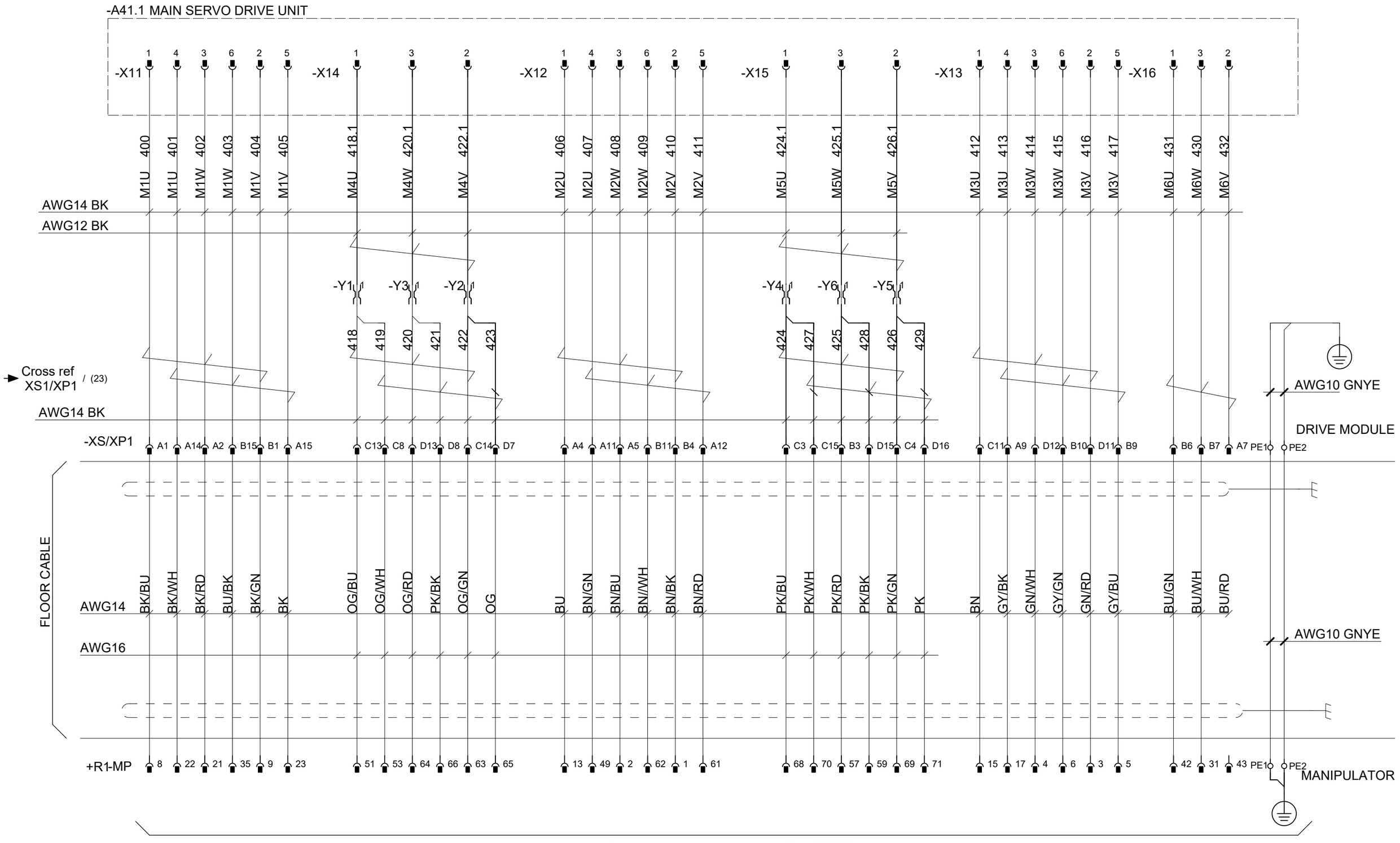
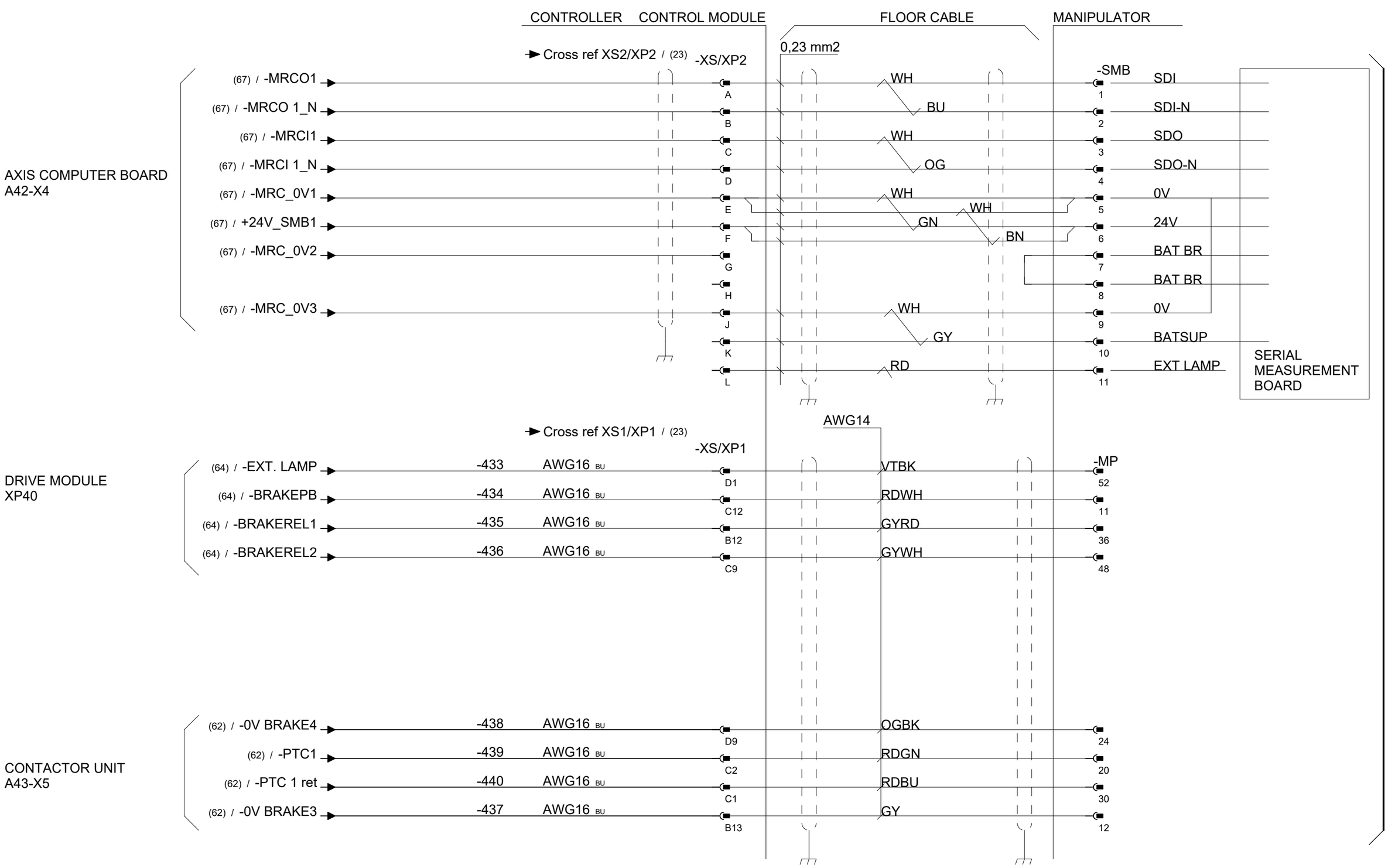
						Page 120 Next 120.1 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



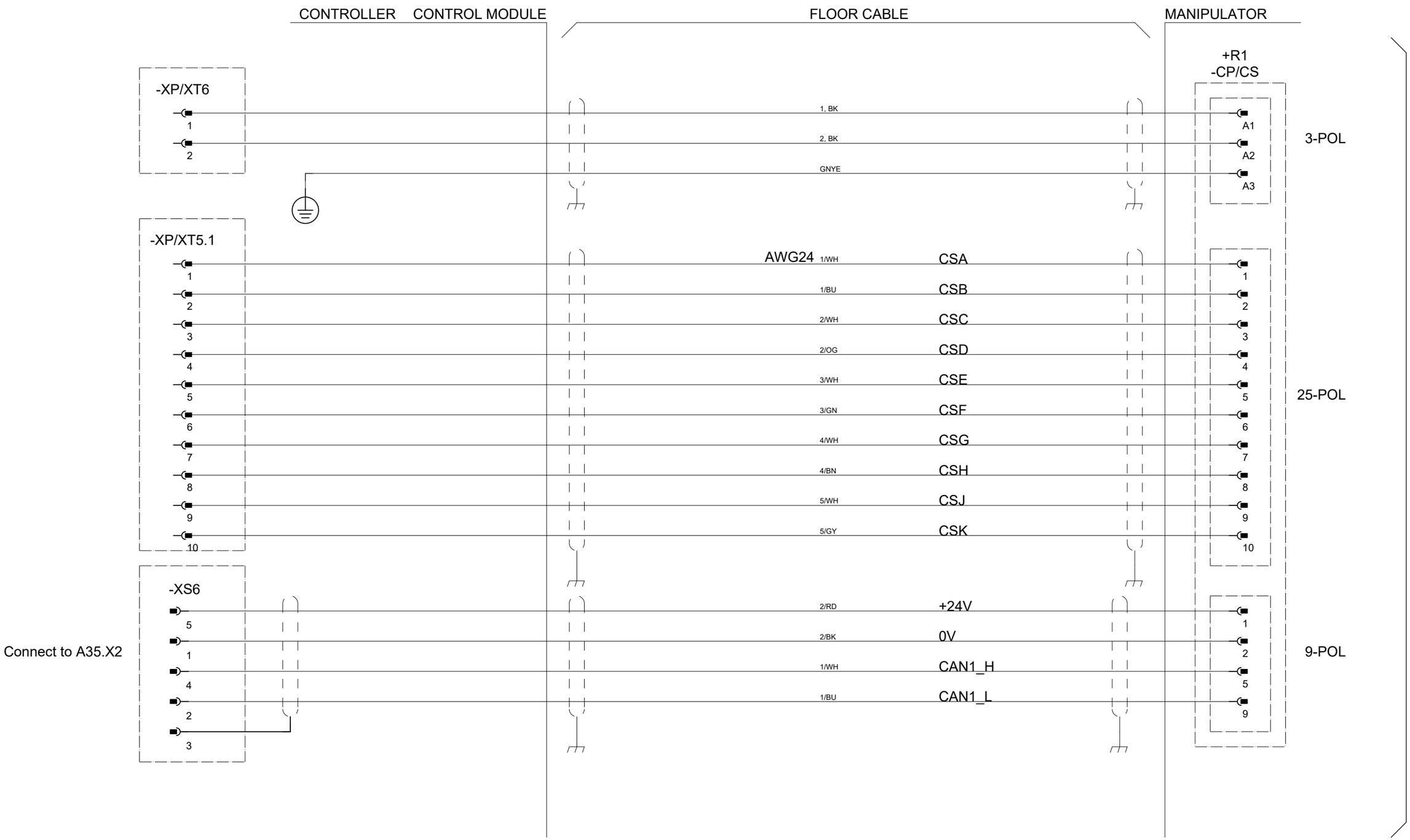
Referring to the circuit diagram 3HAC8935-1.

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 6400R	Status: APPROVED	Plant: = Location: + Sublocation: +
				Document no. 3HAC024480-011	Rev. Ind 17
					Page 120.1 Next 120.2 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31				



Referring to the circuit diagram 3HAC8935-1.

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 6400R	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 120.2 Next 120.3 Total 164



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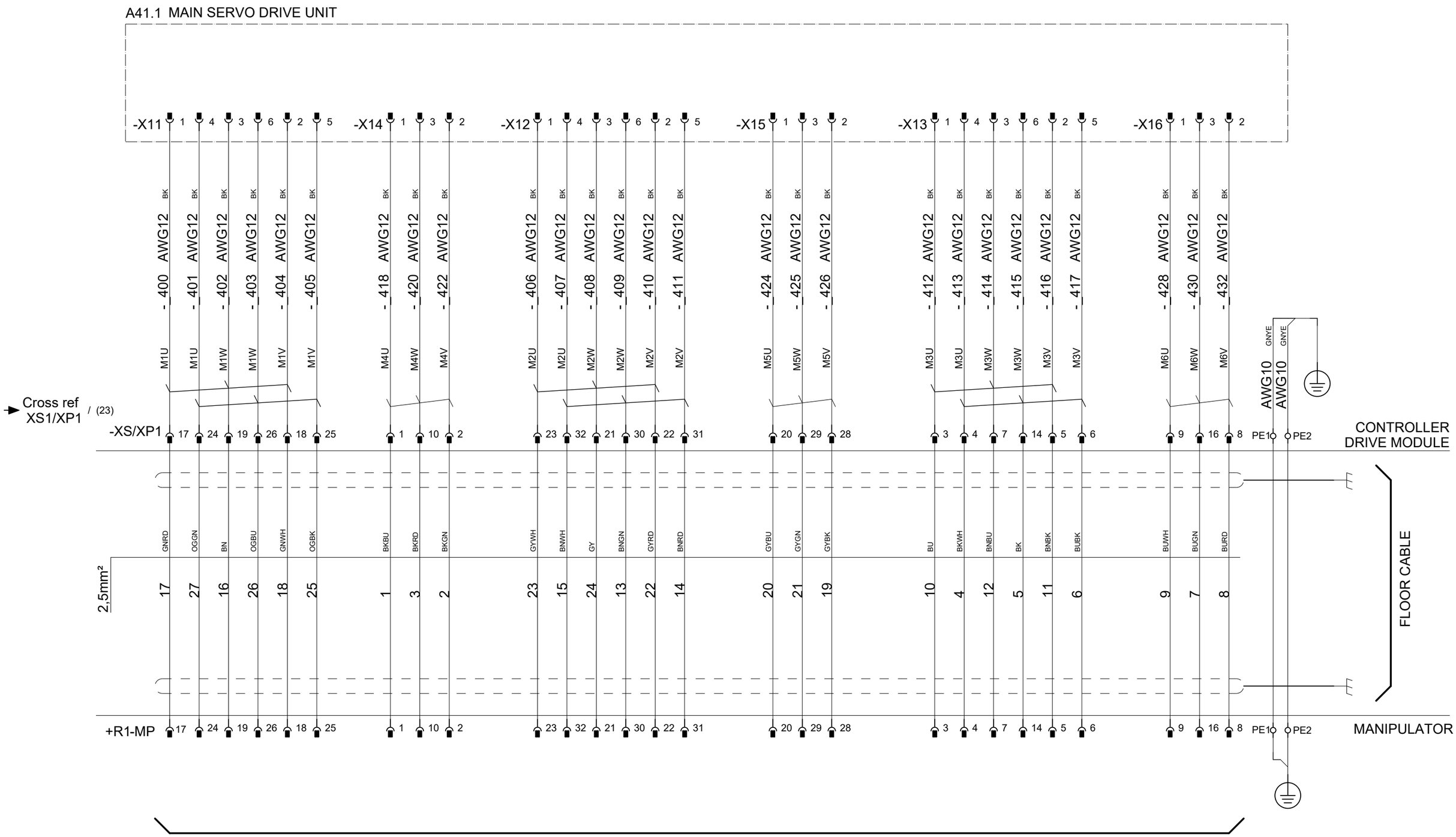

According to manipulator circuit diagram 3HAC043446-005

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 6700	Status: APPROVED	Plant: = Location: + Sublocation: +	
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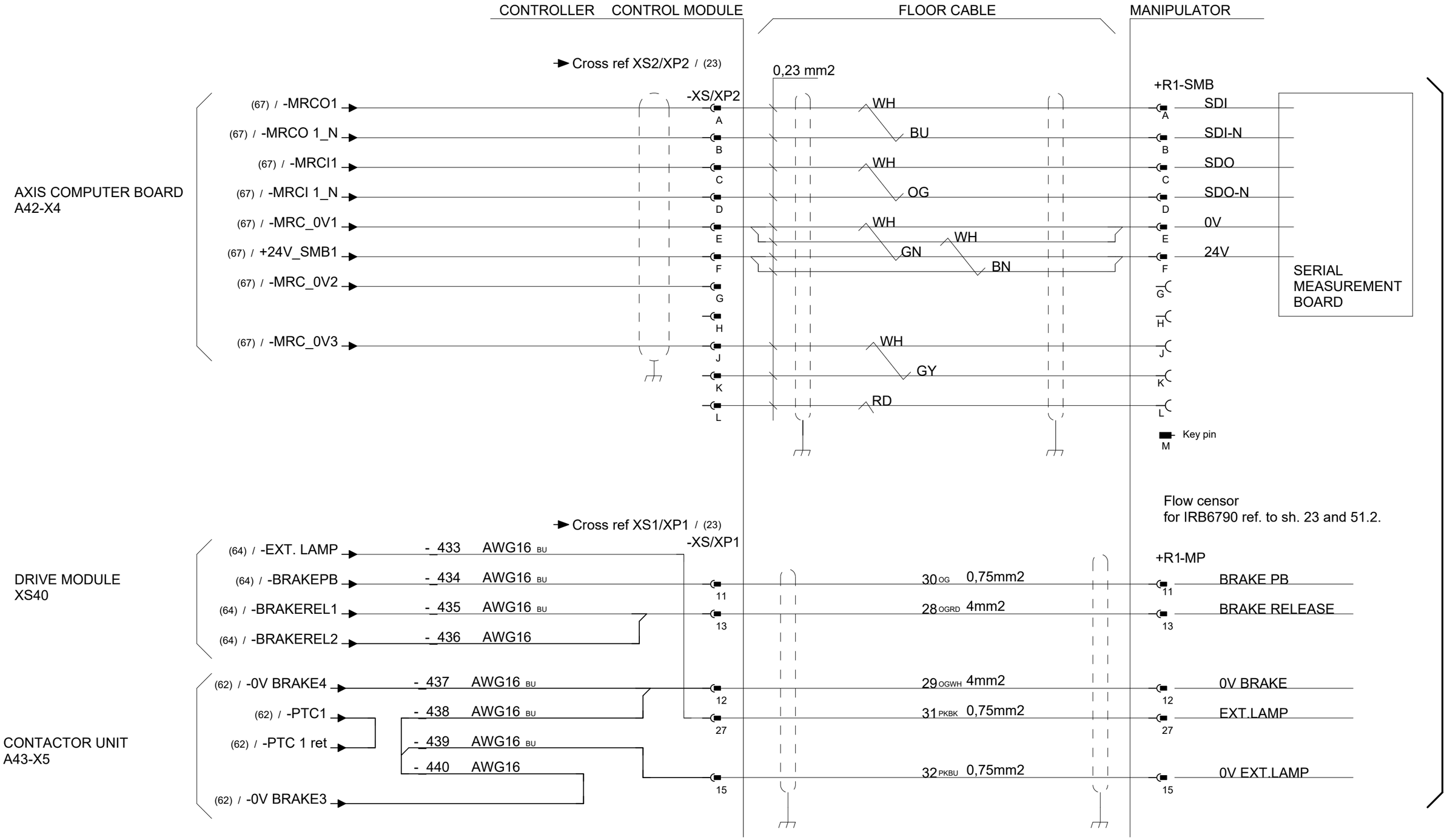
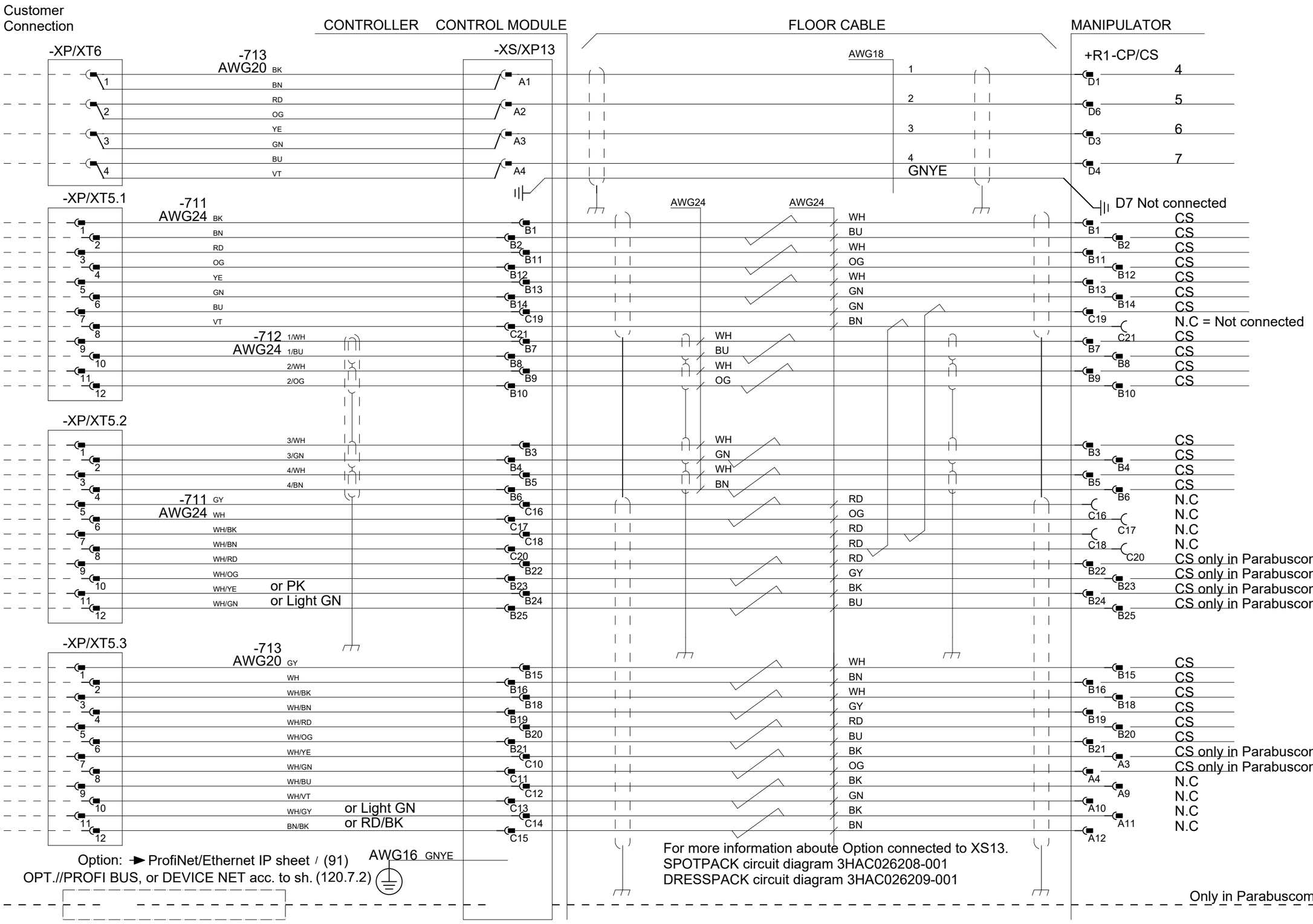
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					



According to manipulator circuit diagram 3HAC043446-005 r00

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 6700/6790	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 120.5 Next 120.6 Total 164



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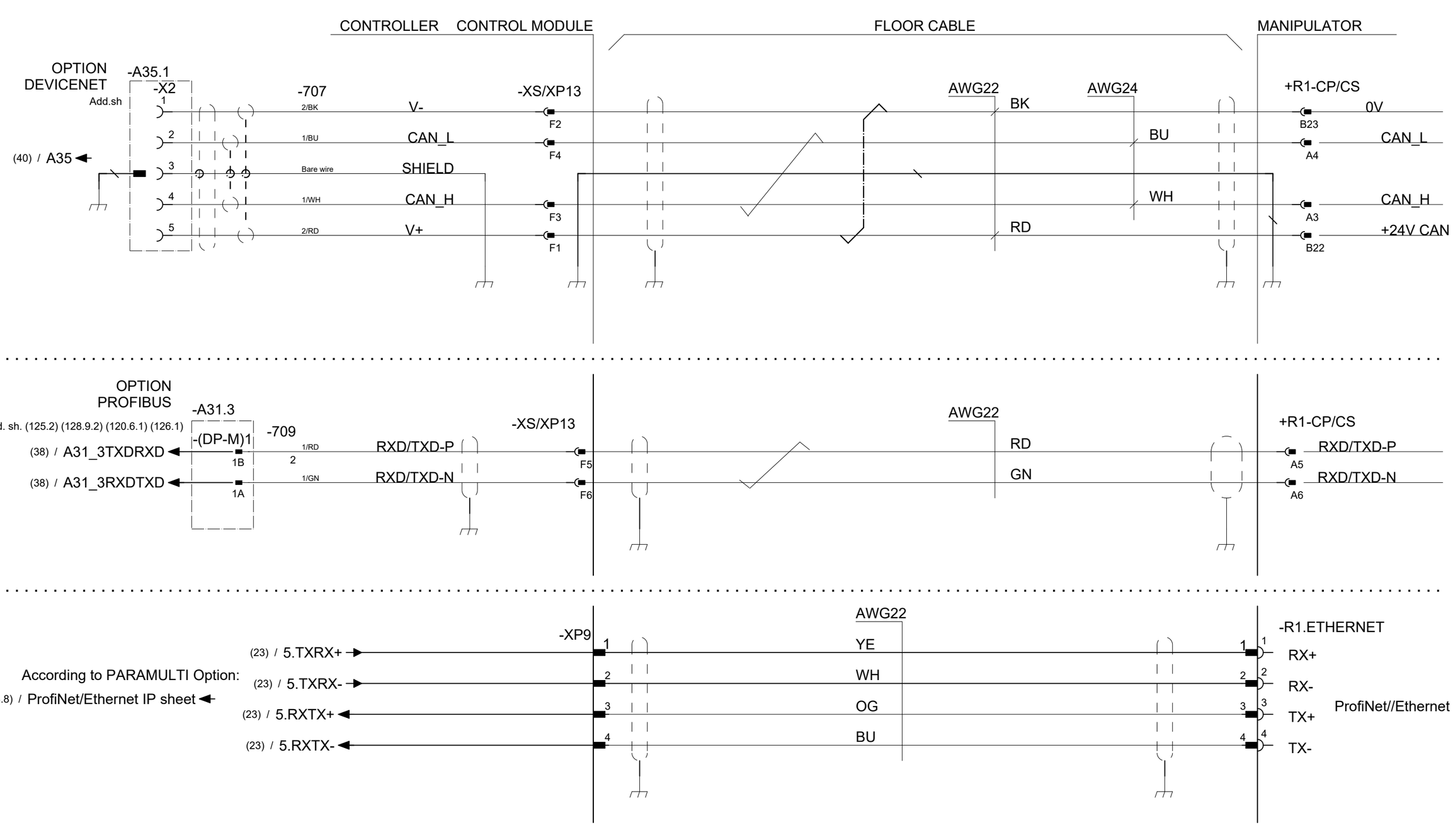
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
					Page 120.6 Next 120.7 Total 164



Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D DevNet//EtherNet//ProfiNet//PBUS ADDITION TO CP/CS IRB 6700	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17

-A41.1 MAIN SERVO DRIVE UNIT

-X11 1 4 3 6 2 5 | -X14 1 3 2 | -X12 1 4 3 6 2 5 | -X15 1 3 2 | -X13 1 4 3 6 2 5 | -X16 1 3 2

BK AWG12	- 400	- 401	- 402	- 403	- 404	- 405	- 418	- 420	- 422	- 406	- 407	- 408	- 409	- 410	- 411	- 424	- 425	- 426
	M1U	M1U	M1W	M1W	M1V	M1V	M4U	M4W	M4V	M2U	M2U	M2W	M2W	M2V	M2V	M5U	M5W	M5V
Cross ref XS1/XP1 / (23)	17	24	19	26	18	25	1	10	2	23	32	21	30	22	31	20	29	28
-XS/XP1	GNRD	OGGN	BN	OGBU	GNWH	OGBK	BKBU	BKRD	BKGN	GYWH	BNWH	GY	BNGN	GYRD	BNRD	GYBU	GYGN	GYBK
2,5mm²	17	27	16	26	18	25	1	3	2	23	15	24	13	22	14	20	21	19
+R1-MP	17	24	19	26	18	25	1	10	2	23	32	21	30	22	31	20	29	28

BK AWG12	- 412	- 413	- 414	- 415	- 416	- 417	- 428	- 430	- 432								
	M3U	M3U	M3W	M3W	M3V	M3V	M6U	M6W	M6V								
	3	4	7	14	5	6	9	16	8								
	BU	BKWH	BNBU	BK	BNBK	BUBK	BUWH	BUGN	BURD								
	10	4	12	5	11	6	9	7	8								
	3	4	7	14	5	6	9	16	8								

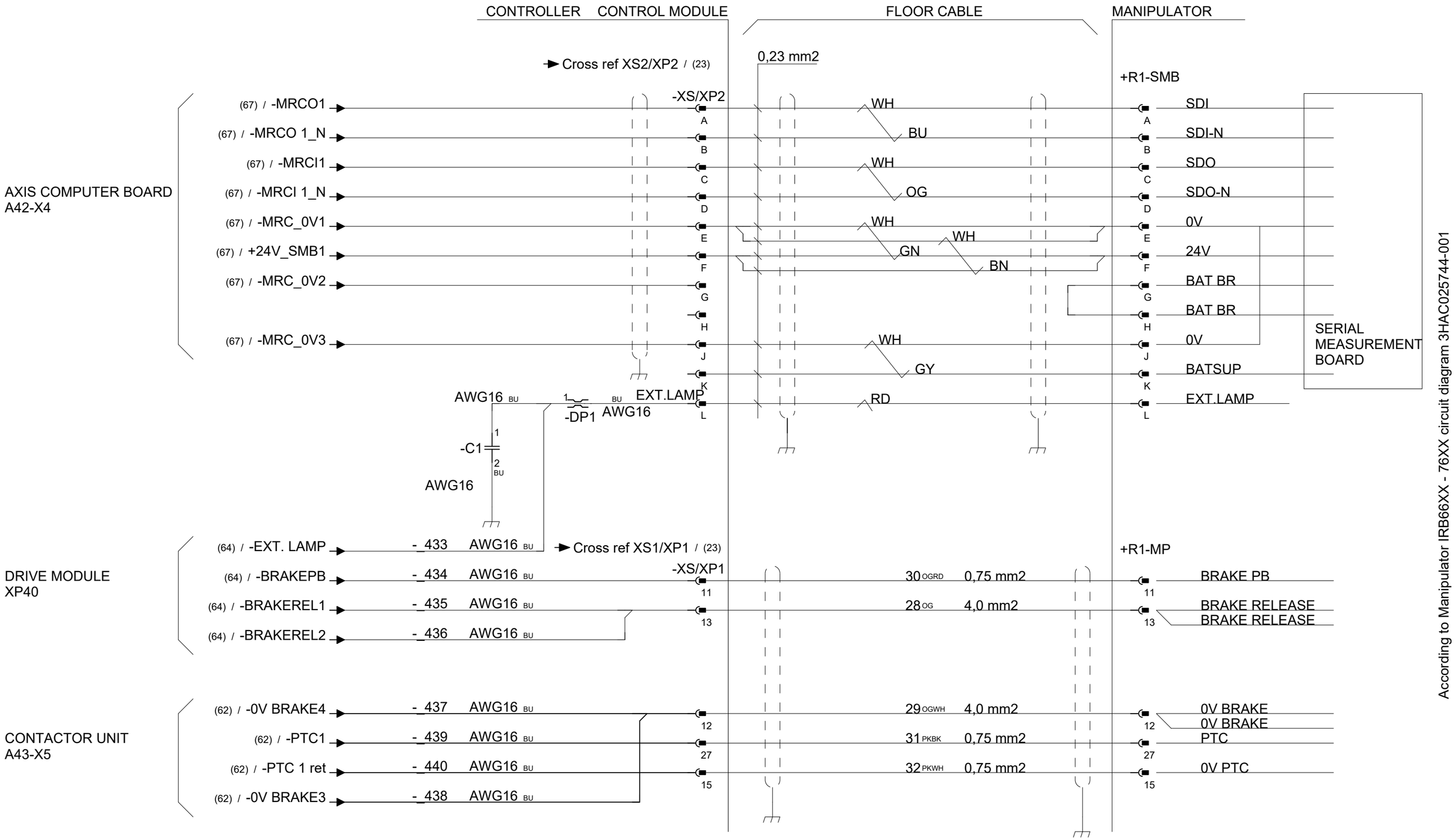
AWG10 GNYE — PE1 — PE2 — CONTROLLER DRIVE MODULE

AWG10 GNYE — PE1 — PE2 — MANIFOLDATOR

FLOOR CABLE

According to Manipulator IRB66XX - 76XX circuit diagram 3HAC025744-001

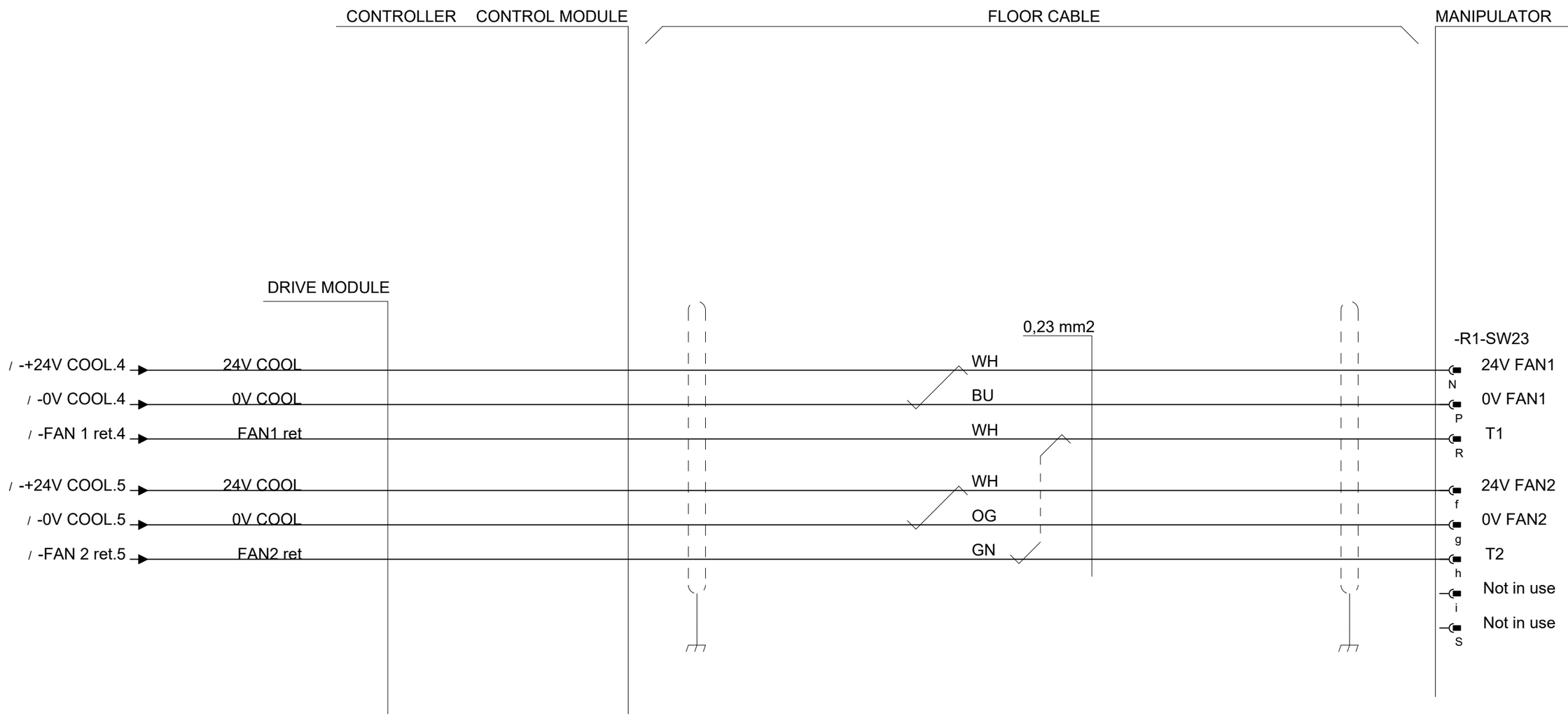
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM IRB 66xx - 76xx	Status: APPROVED	Plant: = Location: + Sublocation: +
				Document no. 3HAC024480-011	Rev. Ind 17
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31				Page 121 Next 122 Total 164



According to Manipulator IRB66XX - 76XX circuit diagram 3HAC025744-001

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CONTROL CABLE IRB 66xx - 76xx	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 122 Next 123 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					

1	2	3	4	5	6	7	8



Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D COOLING AXES 1/2 SINGLE CABINET IRB 6600 - 7600	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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CONTROLLER CONTROL MODULE | FLOOR CABLE | MANIPULATOR

Customer Connection

-XP/XT6

-713 AWG20 BK
BN
RD
OG
YE
GN
BU
VT

-XS/XP13 A1 A2 A3 A4

w26 1mm2
1
2
3
4 GNYE

+R1-CP/CS
D1 CP4
D6 CP5
D3 CP6
D4 CP7
D7 Not connected

SH

-XP/XT5.1

-711 AWG24 BK
BN
RD
OG
YE
GN
BU
VT

B1 B2 B11 B12 B13 B14 C19 C21 B7 B8 B9 B10

W27
BKog 0,23mm2
bu 0,23mm2
WHog 0,23mm2
og 0,23mm2
WHgn 0,23mm2
gn 0,23mm2
gn 0,23mm2
bn 0,23mm2

B1 B2 B11 B12 B13 B14 C19 C21 B7 B8 B9 B10 CS

-712 AWG24 1/WH
1/BU
2/WH
2/OG

W28
WH AWG24
BU AWG24
WH AWG24
OG AWG24

-XP/XT5.2

3/WH
3/GN
4/WH
4/BN

B3 B4 B5 B6 C16 C17 C18 C20 B22 B23 B24 B25

-711 AWG24 GY
WH
WH/BK
WH/BN
WH/RD
WH/OG
WH/YE or PK
WH/GN or Light GN

W28
WH AWG24
GN AWG24
WH AWG24
BN AWG24

RDog 0,23mm2
og 0,23mm2
RDgn 0,23mm2
RDbn 0,23mm2
RDgy 0,23mm2
gy 0,23mm2
BKbu 0,23mm2
bu 0,23mm2

B3 B4 B5 B6 C16 C17 C18 C20 B22 B23 B24 B25 CS

W27

-XP/XT5.3

-713 AWG20 GY
WH
WH/BK
WH/BN
WH/RD
WH/OG
WH/YE
WH/GN
WH/BU
WH/VT
WH/GY or Light GN
BN/BK or RD/BK

B15 B16 B18 B19 B20 B21 C10 C11 C12 C13 C14 C15

WHbn 0,23mm2
bn 0,23mm2
WHgy 0,23mm2
gy 0,23mm2
RDbu 0,23mm2
bu 0,23mm2

B15 B16 B18 B19 B20 B21 CS

AWG16 GNYE

For more information aboute Option connected to XS13.
SPOTPACK circuit diagram 3HAC026208-001
DRESSPACK circuit diagram 3HAC026209-001

According to Manipulator diagram 3HAC025744-001 and 3HAC13347-1

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL SINGLE CABINET IRB 6600 - 7600	Status: APPROVED	Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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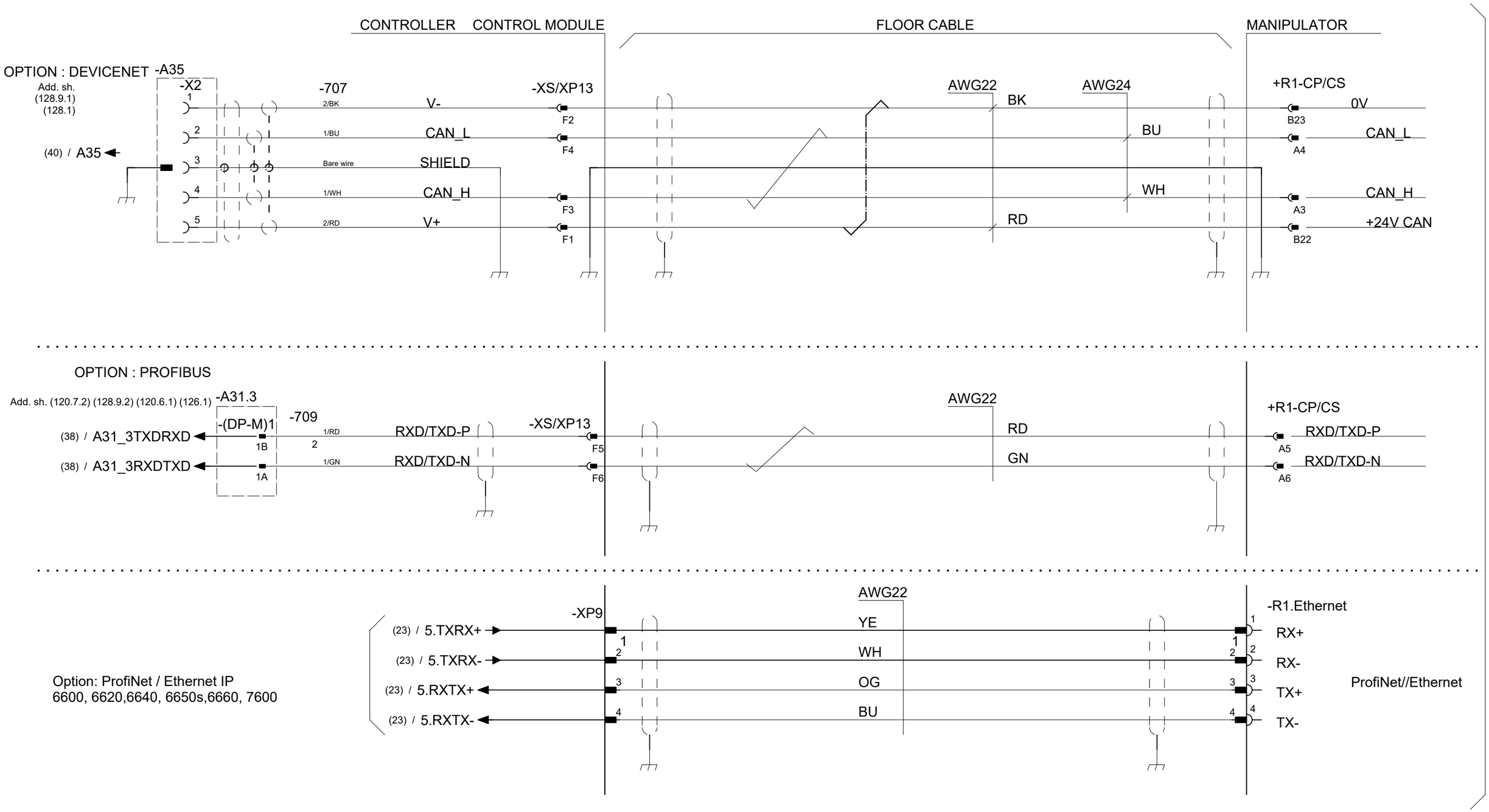

According to Manipulator diagram 3HAC025744-001 and 3HAC13347-1

Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D DevNet//EtherNet//ProfiNet//PBUS ADDITION TO CP/CS IRB 66xx - 7600	Status: APPROVED	Plant: = Location: + Sublocation: +	
				Document no. 3HAC024480-011	Rev. Ind 17	Page 125 Next 126 Total 164
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31					

CONTROLLER | CONTROL MODULE | FLOOR CABLE | MANIPULATOR

Customer Connection

-XP/XT6 — -713 AWG20 — -XS/XP13 — AWG18 — +R1-CP/CS

1	BK	A1	1	D1	CP4
2	BN	A2	2	D6	CP5
3	RD	A3	3	D3	CP6
4	OG	A4	4	D4	CP7
	YE		GNYE		D7 Not connected
	GN				
	BU				
	VT				

-XP/XT5.1 — -711 AWG24 — AWG24 — AWG24

1	BK	B1	WH	B1	CS
2	BN	B2	BU	B2	CS
3	RD	B11	WH	B11	CS
4	OG	B12	OG	B12	CS
5	YE	B13	WH	B13	CS
6	GN	B14	GN	B14	CS
7	BU	C19	GN	C19	CS
8	VT	C21	BN	C21	CS
9	-712 1/WH	B7	WH	B7	CS
10	AWG24 1/BU	B8	BU	B8	CS
11	2/WH	B9	WH	B9	CS
12	2/OG	B10	OG	B10	CS

-XP/XT5.2

1	3/WH	B3	WH	B3	CS
2	3/GN	B4	GN	B4	CS
3	4/WH	B5	WH	B5	CS
4	4/BN	B6	BN	B6	CS
5	-711 GY	C16	RD	C16	CS
6	AWG24 WH	C17	OG	C17	CS
7	WH/BK	C18	RD	C18	CS
8	WH/BN	C20	RD	C20	CS
9	WH/RD	B22	RD	B22	CS
10	WH/OG	B23	GY	B23	CS
11	WH/YE or PK	B24	BK	B24	CS
12	WH/GN or Light GN	B25	BU	B25	CS

-XP/XT5.3 — -713 AWG20

1	GY	B15	WH	B15	CS
2	WH	B16	BN	B16	CS
3	WH/BK	B18	WH	B18	CS
4	WH/BN	B19	GY	B19	CS
5	WH/RD	B20	RD	B20	CS
6	WH/OG	B21	BU	B21	CS
7	WH/YE	C10	BK	A3	CS
8	WH/GN	C11	OG	A4	CS
9	WH/BU	C12	BK	A9	CS
10	WH/VT	C13	GN	A10	CS
11	WH/GY or Light GN	C14	BK	A11	CS
12	BN/BK or RD/BK	C15	BN	A12	CS

AWG16 GNYE

OPTION //PROFIBUS acc. to (120.7.2)

For more information aboute Option connected to XS13.
SPOTPACK circuit diagram 3HAC026208-001
DRESSPACK circuit diagram 3HAC026209-001

According to Manipulator diagram 3HAC025744-001 and 3HAC13347-1

Latest revision:		ABB	Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D CUSTOMER POWER/SIGNAL SINGLE CABINET PROFI BUS IRB 6600 - 7600	Status: APPROVED
					Plant: = Location: + Sublocation:+
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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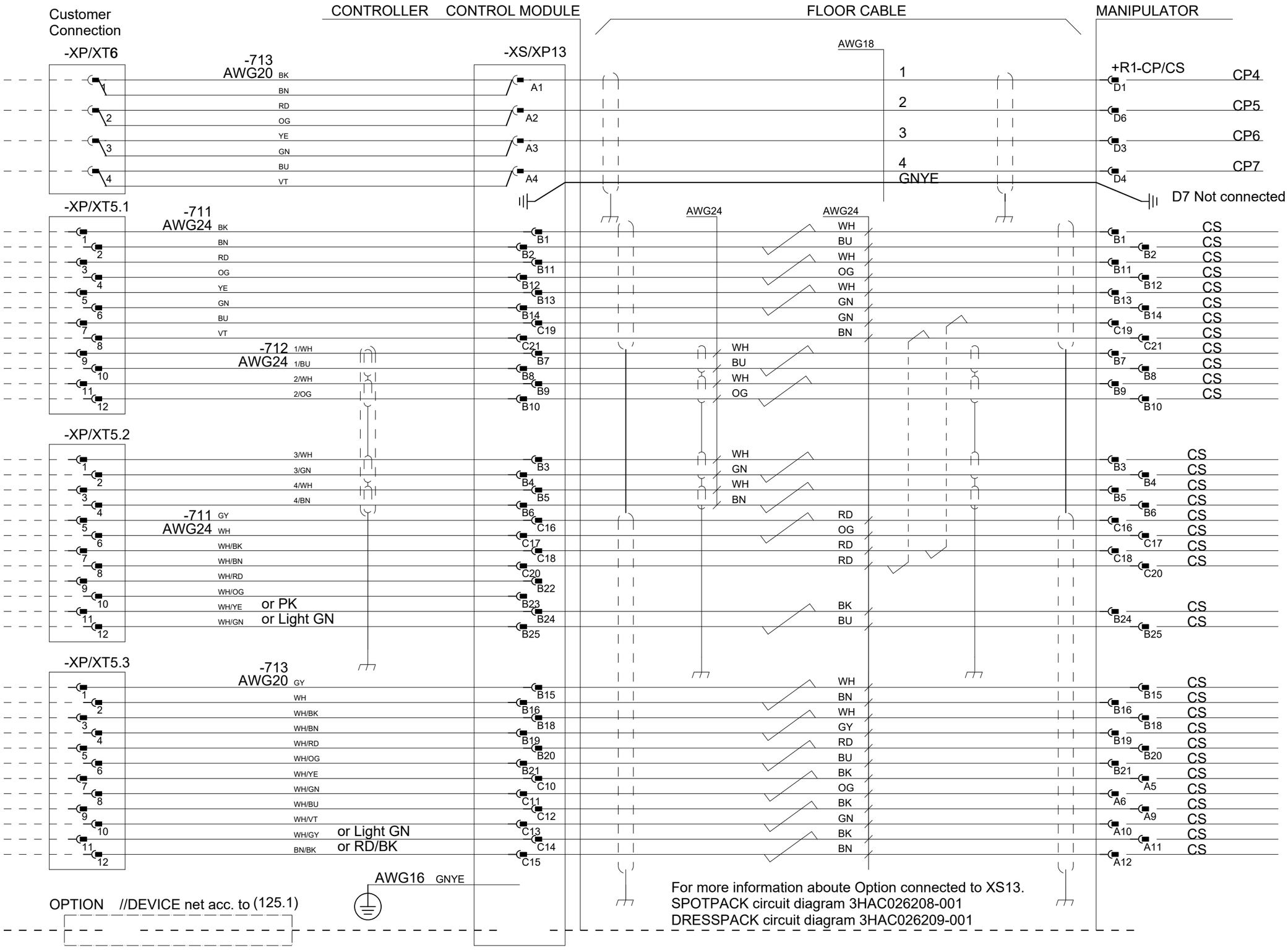

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Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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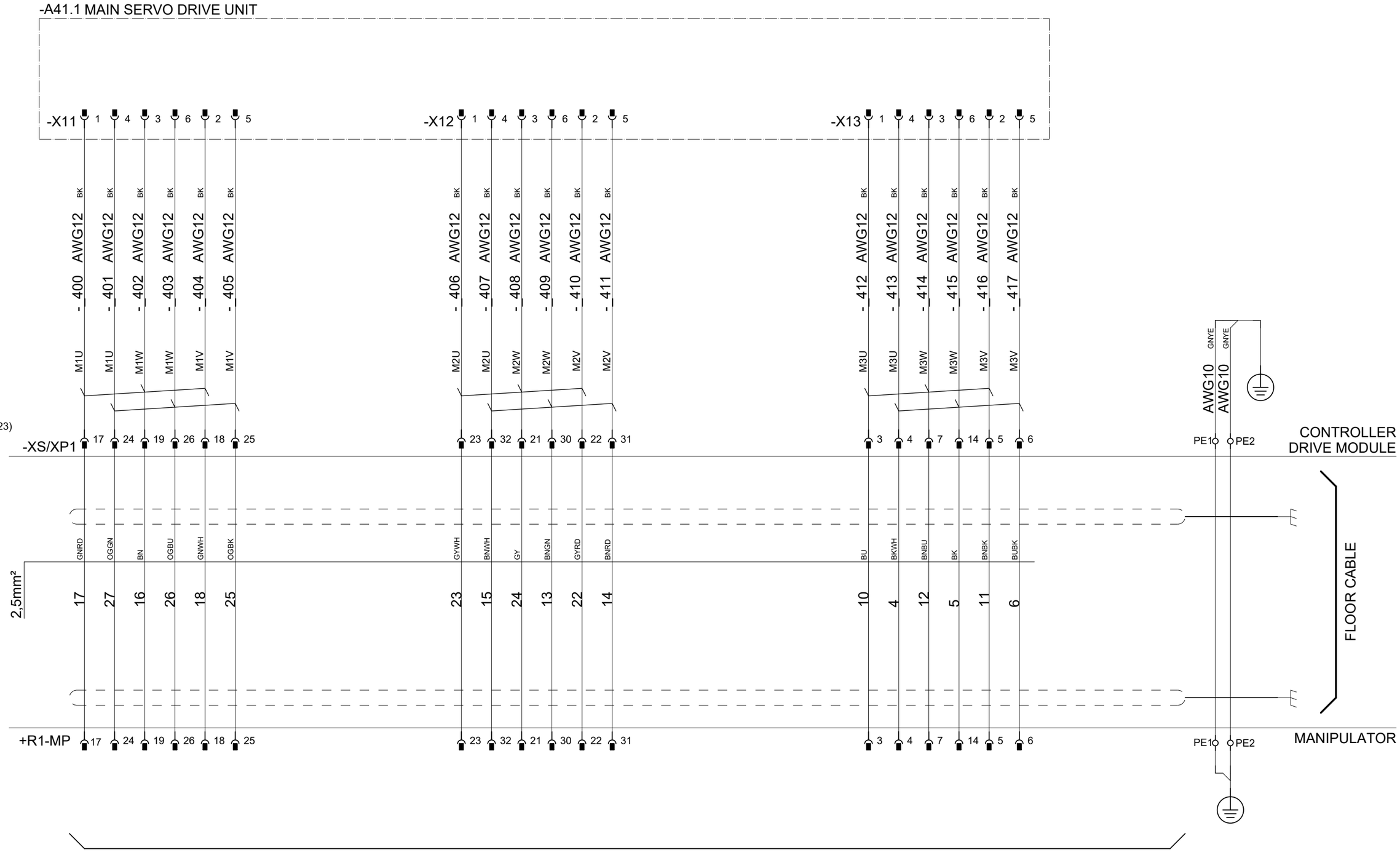
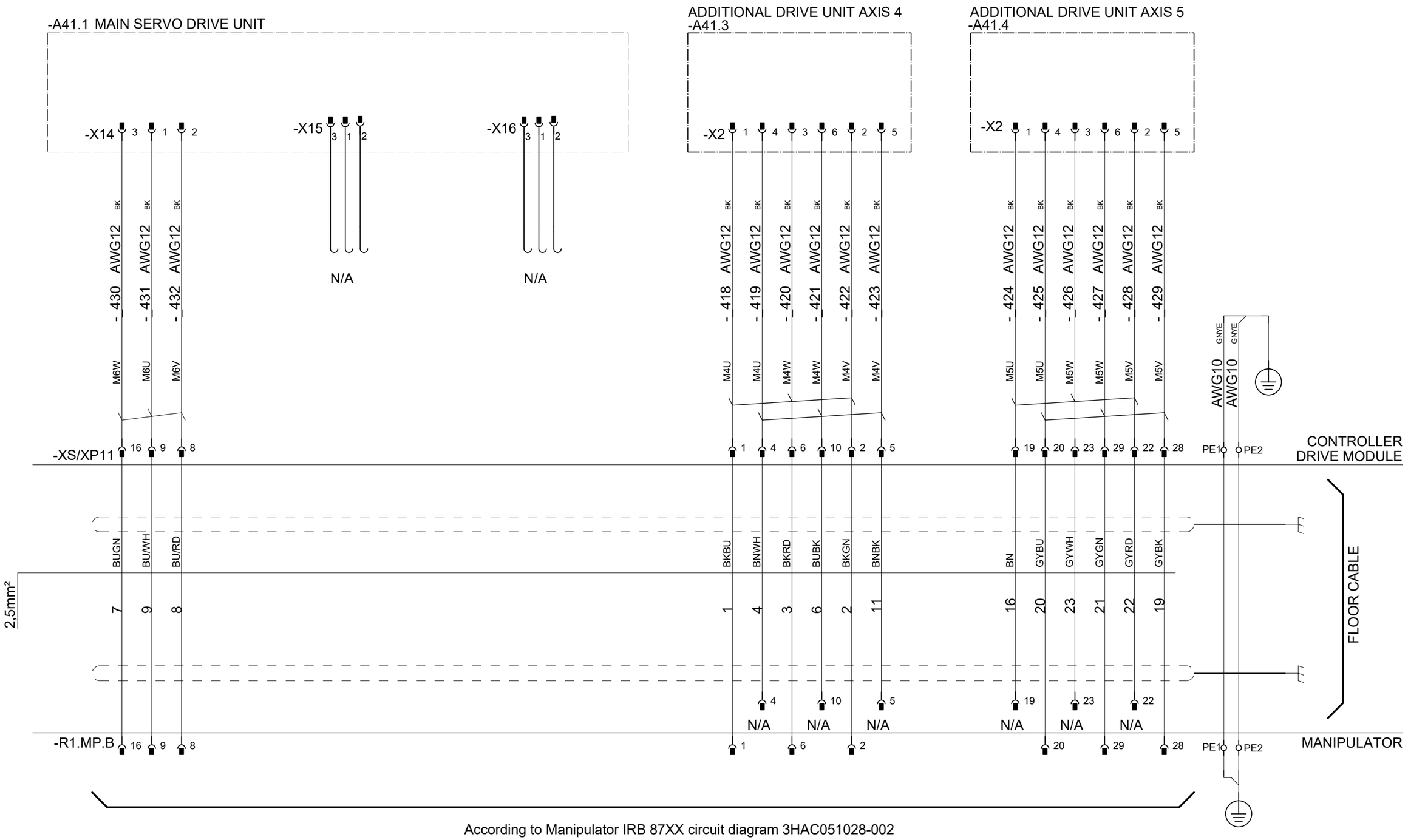


According to Manipulator IRB 87XX circuit diagram 3HAC051028-002

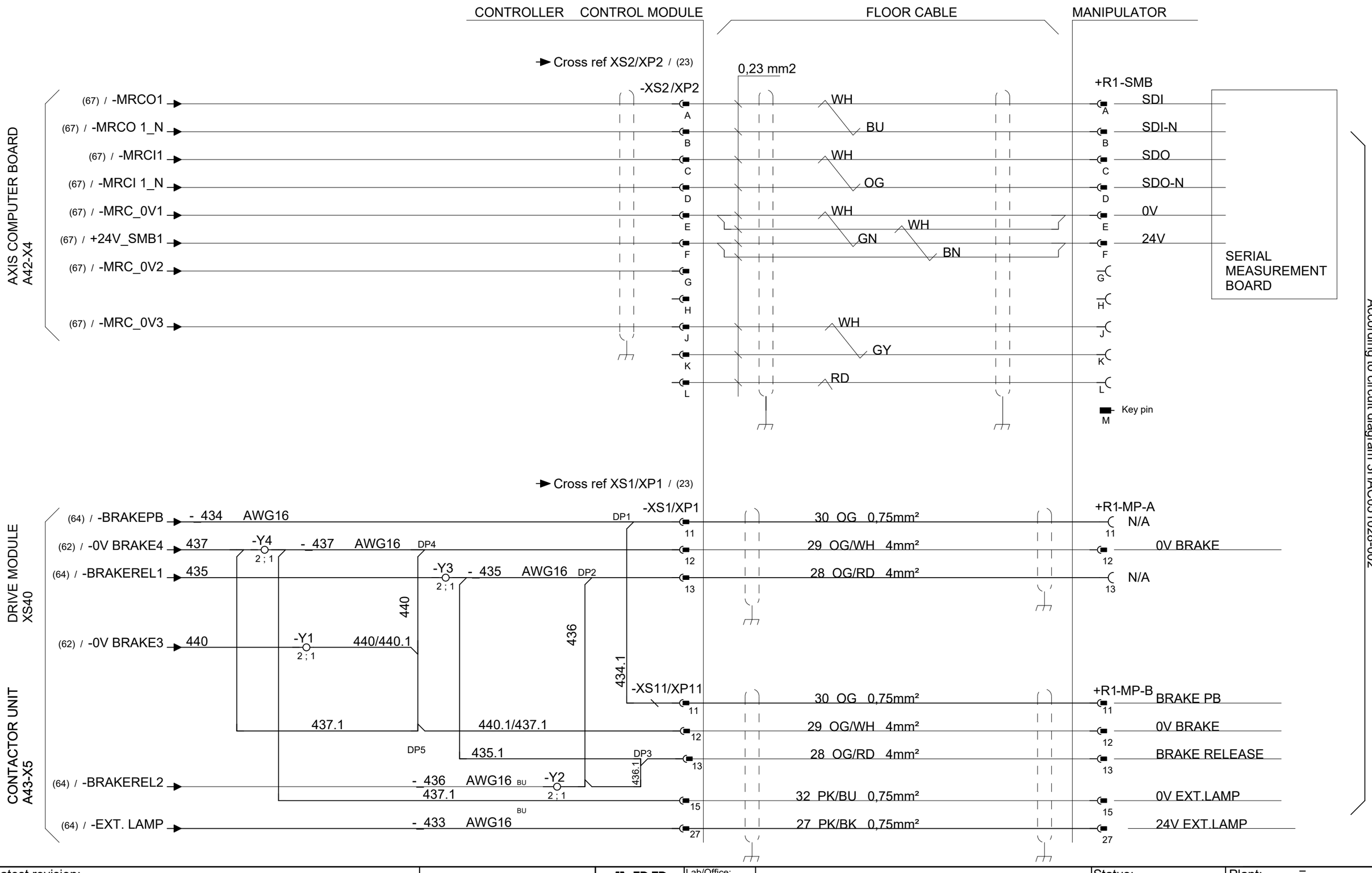
Latest revision:		ABB Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM AXES 1-3 IRB 87xx	Status: APPROVED	Plant: = Location: + Sublocation: +	
Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17	Page 128.5 Next 128.6 Total 164

Harness XP11-A41.1 3HAC050605
Harness XP1 and XP11- R1.MP_A and_B 3HAC026787



According to Manipulator IRB 87XX circuit diagram 3HAC051028-002

Latest revision:		Lab/Office: RA/RDP	IRC5 DESIGN Rel: 23:D SERVO DRIVE SYSTEM AXES 4-6 IRB 87xx	Status: APPROVED	Plant: = Location: + Sublocation: +
Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17



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Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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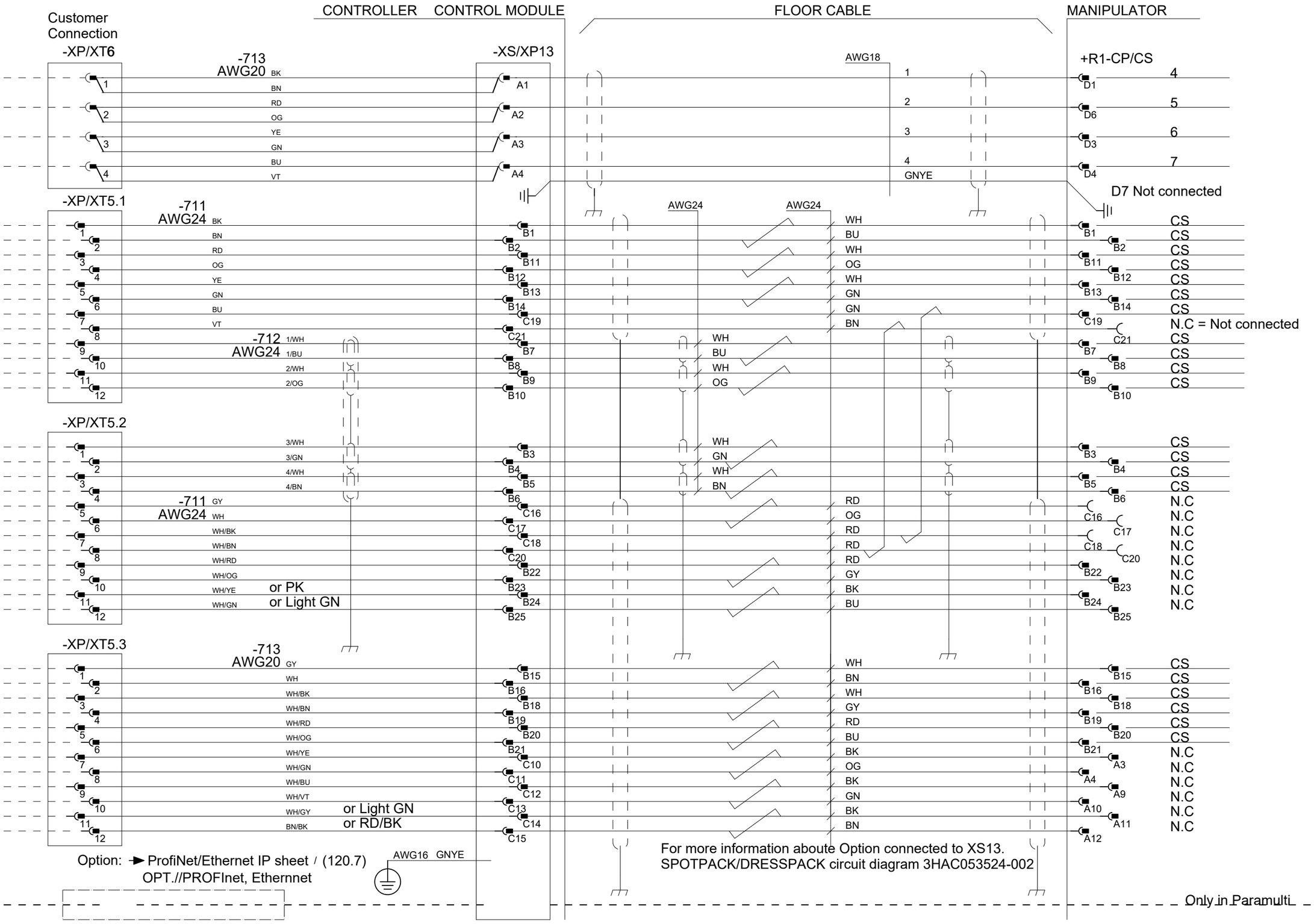

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Prepared by, date:A Hägglund	Approved by, date:S Hällgren 2023-10-31			Document no. 3HAC024480-011	Rev. Ind 17
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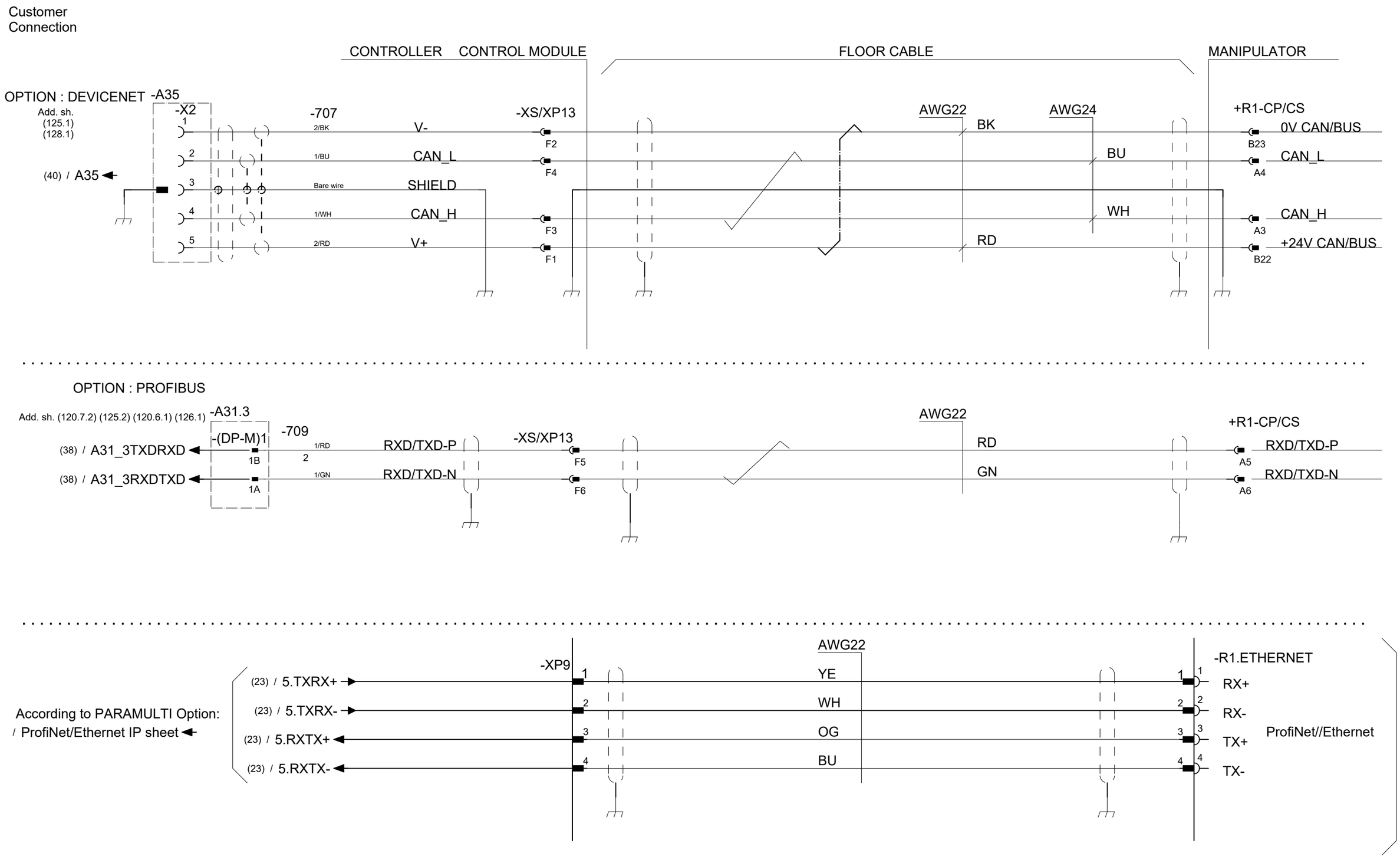

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Prepared by, date: A Hägglund	Approved by, date: S Hällgren 2023-10-31				