JSC "Energo-Pro Georgia"

Phone.

Company / customer	
Project description	
Job number	EPG2016_6
Commission	
Manufacturer (company)	JSC "Energo-Pro Georgia"
Path	
Project name	Tetritskaro_110-10
make	
Type	
Place of installation	
Responsible for project	Vlastimil Cada
Part feature	

Created on	23.08.2015			
Edit date	27.03.2017	by (short name)	VlCa Vlastimil Cada	Number of pages 39

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/3	Table of contents : =110kV+RTU/8 - =110kV+RTU/13		27.03.2017	VICa Vlastimil Cada	
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Cable overview

F10_001

Cable name	Source (from)	Target (to)	cable type	all conductors	Conductors used	Cross-section [mm]	Length [m]	function text	Graphical page of cable diagram
WL1000	=10kV+RTU.10kV-X1	=DC Cabin+220VDC-FQ21	NYY-J	4x	2	1,5	15		
WL1001	=10kV+RTU.10kV-X2	=10kV+K01-XDC2	JYTY	14x	9	1	9		
	=10kV+RTU.10kV-X6								
WL1002	=10kV+RTU.10kV-X2	=10kV+K02-XDC2	JYTY	14x	8	1	10		
	=10kV+RTU.10kV-X6	=10kV+K02-XDC3							
WL1003	=10kV+RTU.10kV-X2	=10kV+K03-XDC1	JYTY	14x	11	1	11		
	=10kV+RTU.10kV-X6	=10kV+K03-XDC8							
		=10kV+K03-XDC3							
WL1004	=10kV+RTU.10kV-X2	=10kV+K04-XDC1	JYTY	14x	11	1	12		
	=10kV+RTU.10kV-X6	=10kV+K04-XDC8							
		=10kV+K04-XDC3							
WL1005	=10kV+RTU.10kV-X2	=10kV+K05-XDC1	JYTY	14x	11	1	13		
	=10kV+RTU.10kV-X6	=10kV+K05-XDC8							
		=10kV+K05-XDC3							
WL1006	=10kV+RTU.10kV-X2	=10kV+K06-XDC1	JYTY	14x	11	1	15		
	=10kV+RTU.10kV-X6	=10kV+K06-XDC8							
		=10kV+K06-XDC3							
WL1007	=10kV+RTU.10kV-X2	=10kV+K07-XDC1	JYTY	14x	11	1	16		
	=10kV+RTU.10kV-X6	=10kV+K07-XDC8							
		=10kV+K07-XDC3							
WL1008	=10kV+RTU.10kV-X2	=10kV+K08-XDC2	JYTY	14x	7	1	17		
	=10kV+RTU.10kV-X6								
WL1009	=10kV+RTU.10kV-X3	=10kV+K01-XDC2	JYTY	14x	8	1	9		
WL1010	=10kV+RTU.10kV-X3	=10kV+K02-XDC2	JYTY	14x	4	1	10		
WL1011	=10kV+RTU.10kV-X3	=10kV+K03-XDC1	JYTY	14x	12	1	11		
WL1012	=10kV+RTU.10kV-X3	=10kV+K04-XDC1	JYTY	14x	12	1	12		
WL1013	=10kV+RTU.10kV-X3	=10kV+K05-XDC1	JYTY	14x	12	1	13		
WL1014	=10kV+RTU.10kV-X3	=10kV+K08-XDC2	JYTY	14x	8	1	17		
WL1015	=10kV+RTU.10kV-X3	=10kV+K06-XDC1	JYTY	14x	12	1	15		
WL1016	=10kV+RTU.10kV-X3	=10kV+K07-XDC1	JYTY	14x	11	1	16		
WL1017	=10kV+RTU.10kV-X4	=10kV+K05-XDI6	JYTY	7x	4	1	13		
WL11001	=110kV+RTU.110kV-X1	=DC Cabin+220VDC-FQ20	NYY-J	4x	2	1,5	10		
WL11002	=110kV+110.1-X601	=110kV+RTU.110kV-X2	JYTY	14x	10	1	10		
WL11003	=110kV+110.1-K31	=110kV+RTU.110kV-X2	JYTY	14x	11	1	10		
	=110kV+110.1-K32	=110kV+RTU.110kV-X6							
	=110kV+110.1-K33								
	=110kV+110.1-K34								
	=110kV+110.1-K36								
	=110kV+110.1-K37								
	=110kV+110.1-X220								
	=110kV+110.1-X601								
WL11004	=110kV+110.1-K38	=110kV+RTU.110kV-X2	JYTY	14x	13	1	10		
	=110kV+110.1-K39								
	=110kV+110.1-K41								
	=110kV+110.1-K42								
	=110kV+110.1-XTRIP								

Cable overview

F10_001

Cable name	Source (from)	Target (to)	cable type	all conductors	Conductors used	Cross-section [mm]	Length [m]	function text	Graphical page of cable diagram
	=110kV+110.1-X401								
	=110kV+110.1-X501								
WL11005	=110kV+110.1-X601	=110kV+RTU.110kV-X3	JYTY	14x	9	1	10		
WL11006	=110kV+110.1-X401	=110kV+RTU.110kV-X3	JYTY	14x	6	1	10		
WS1000	=10kV+RTU.10kV-A02	=10kV+10kV-W1	Part of antenna		3		5		
		=10kV+K01-AP1							
WS1001		=10kV+K05-B02	JYTY	7x	6	1	13		
	=10kV+RTU.10kV-X4	=10kV+K05-B01							
		=10kV+K05-B03							
WS1002		=10kV+K06-B11	JYTY	7x	6	1	15		
	=10kV+RTU.10kV-X4	=10kV+K06-B12							
		=10kV+K06-B10							
WS1003		=10kV+K07-B11	JYTY	7x	6	1	16		
	=10kV+RTU.10kV-X4	=10kV+K07-B12							
		=10kV+K07-B10							
WS1004		=10kV+K03-B11	JYTY	7x	6	1	13		
	=10kV+RTU.10kV-X4	=10kV+K03-B12							
		=10kV+K03-B10							
WS1005		=10kV+K04-B11	JYTY	7x	6	1	14		
	=10kV+RTU.10kV-X4	=10kV+K04-B12							
		=10kV+K04-B10							
WS1010			UTP 5e	4x2	0	0,5	9		
WS1011	=10kV+K01-AP1	=10kV+RTU.10kV-A02	UTP 5e	4x2	1	0,5	9		
WS11001	=110kV+RTU.110kV-A02	=110kV+110kV-W1	Part of antenna		1		5		
WS11002	=110kV+110.1-XCOM	=110kV+RTU.110kV-A02	UTP 5e	4x2	2	0,5	10		
WS11003		=110kV+RTU.110kV-A03	UTP 5e	4x2	1	0,5	10		
WS11005	=110kV+110.1-XV302	=110kV+RTU.110kV-X4	JYTY	7x	4	1	10		
WS11006	=110kV+RTU.110kV-X4	=110kV+110.1-B04	JYTY	7x	6	1	10		
		=110kV+110.1-B05							
		=110kV+110.1-B06							

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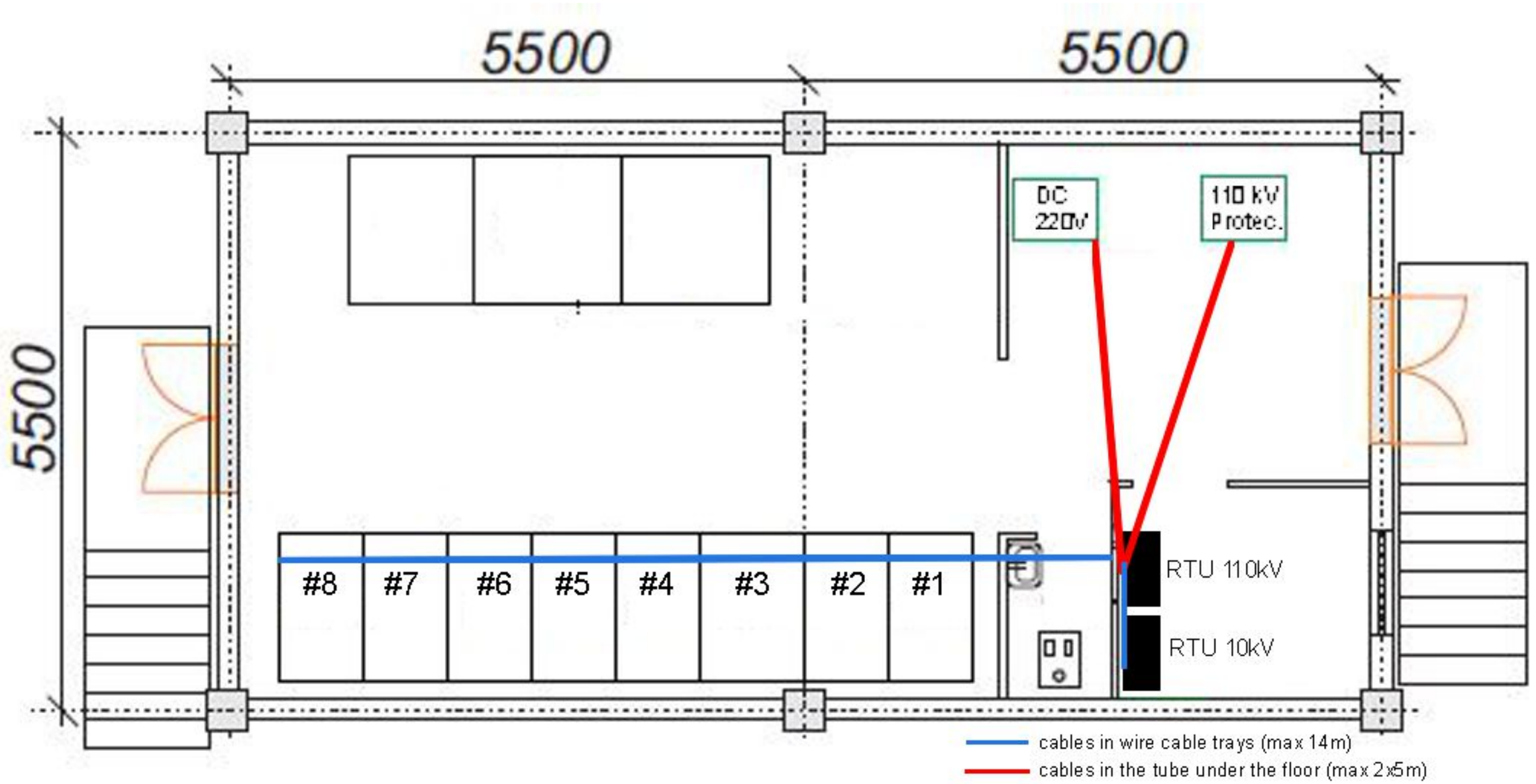

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=10kV/1

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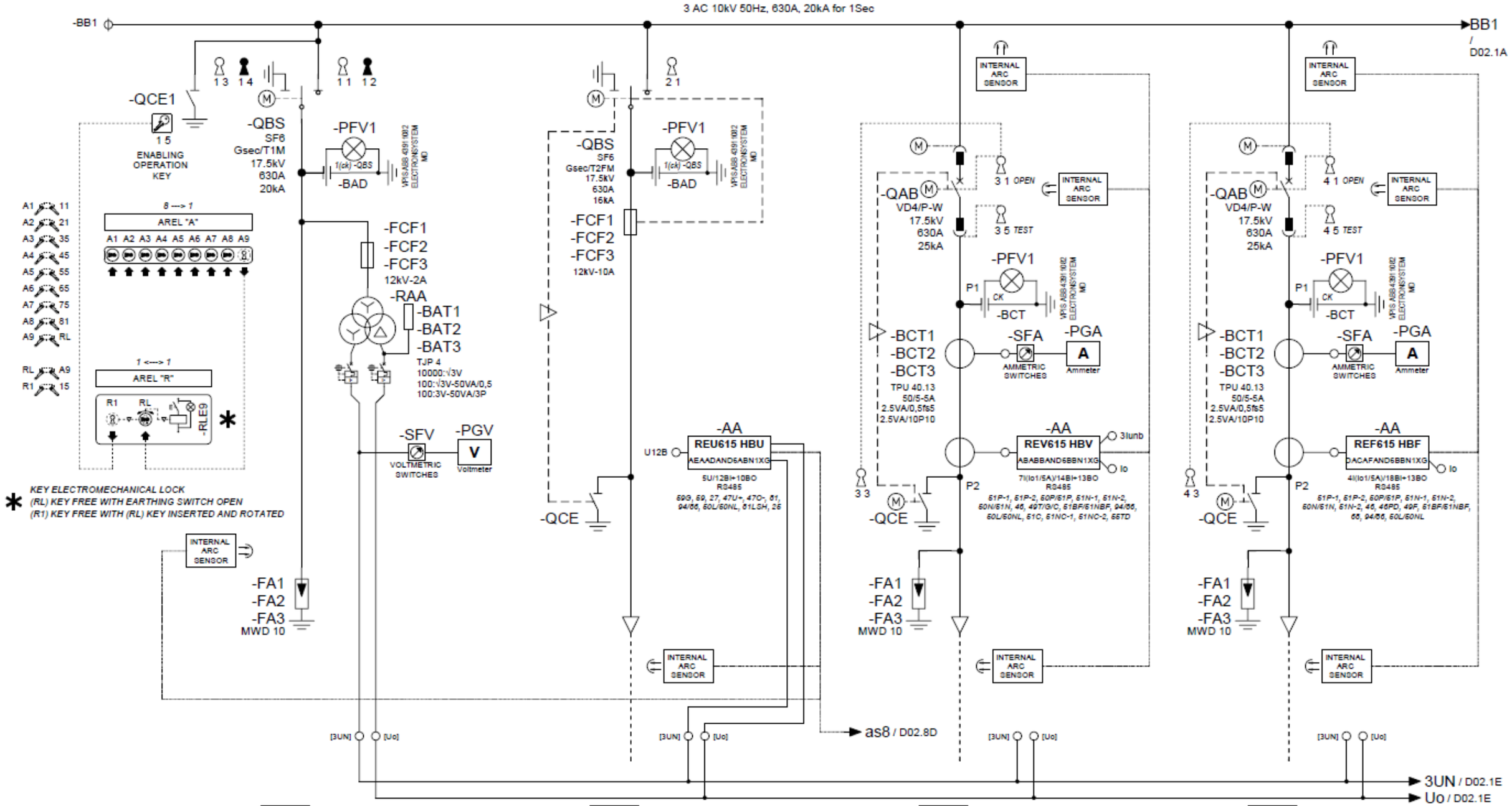

Customer Single-line diagram reference

	#7	#3	#1	#2
Unit Designation	=K01	=K02	=K03	=K04
Unit Type	SDC	SFC	WBC	WBC
Unit Description	MEASURE UNIT	AUXILIARY TRANSFORMER FEEDER 40 kVA	CAPACITORS FEEDER (750 kVARr)	EARTHING FEEDER (1000 kVA)
Circuit Diagram	1VCE002670T0101	1VCE002670T0102	1VCE002670T0103	1VCE002670T0104

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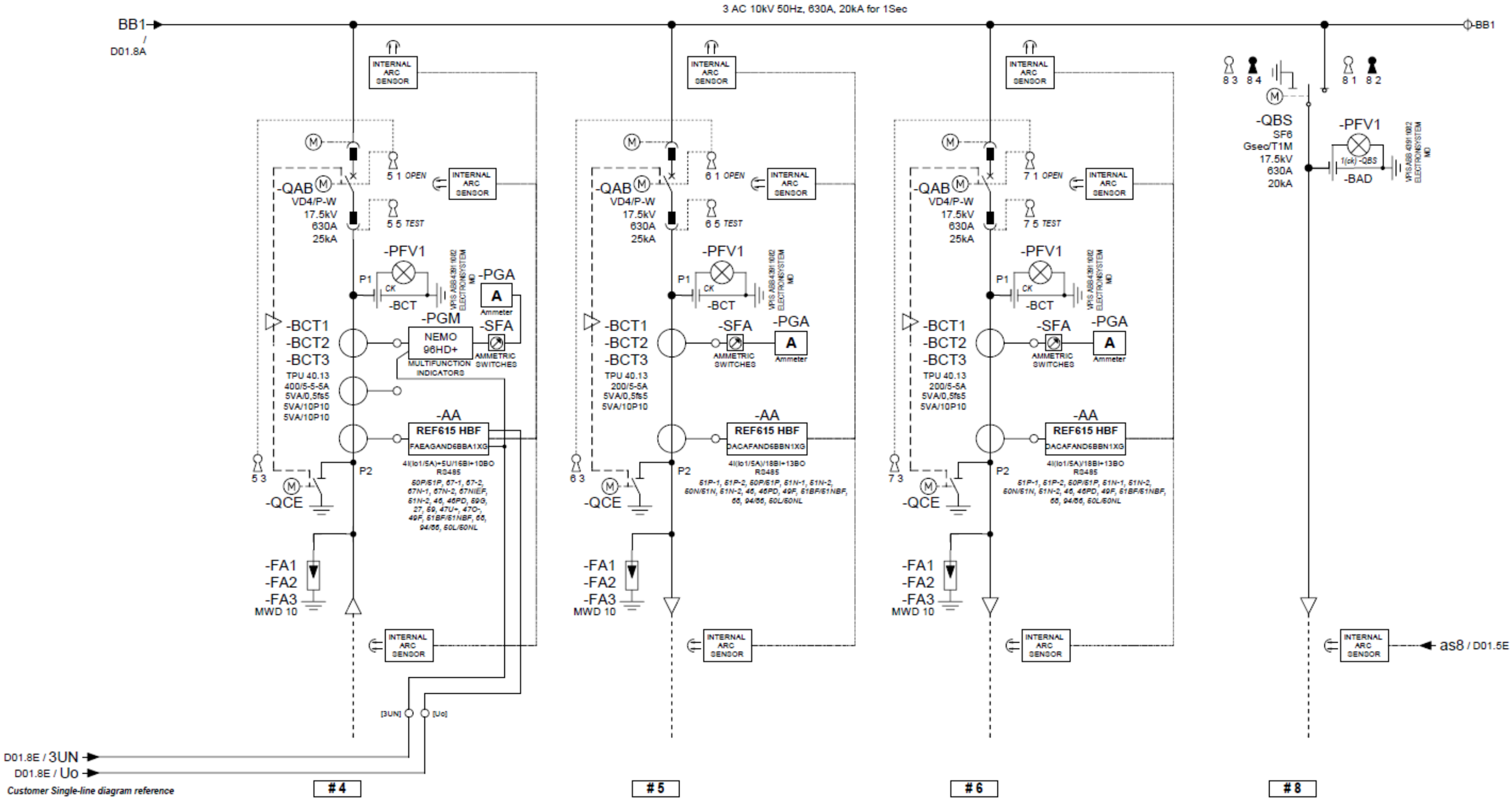

	# 4	# 5	# 6	# 8
Unit Designation	=K05	=K06	=K07	=K08
Unit Type	WBC	WBC	WBC	SDC
Unit Description	INCOMING LINE	FEEDER 1	FEEDER 2	SECTION SWITCH
Circuit Diagram	1VCE002670T0105	1VCE002670T0106	1VCE002670T0106	1VCE002670T0107

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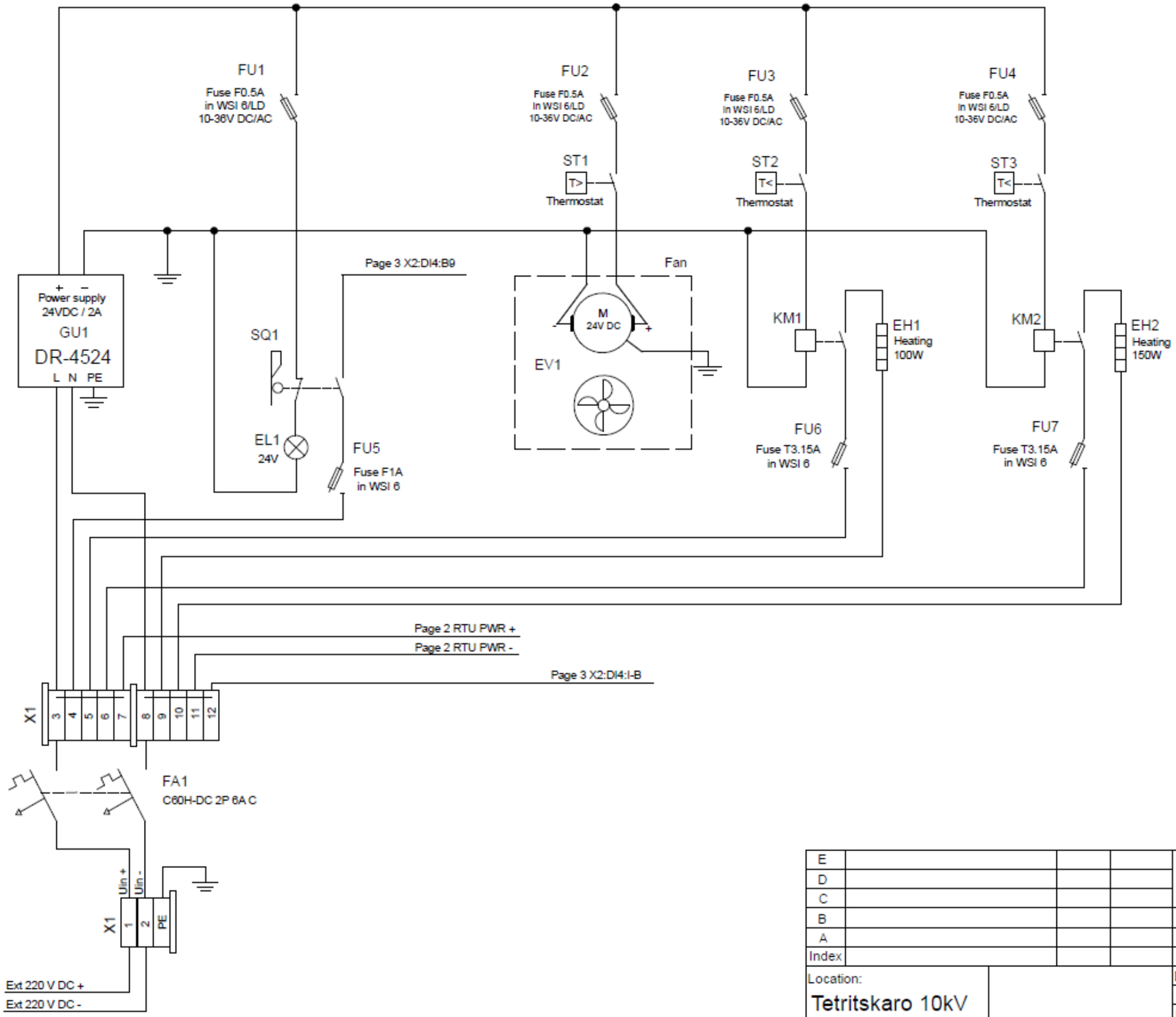

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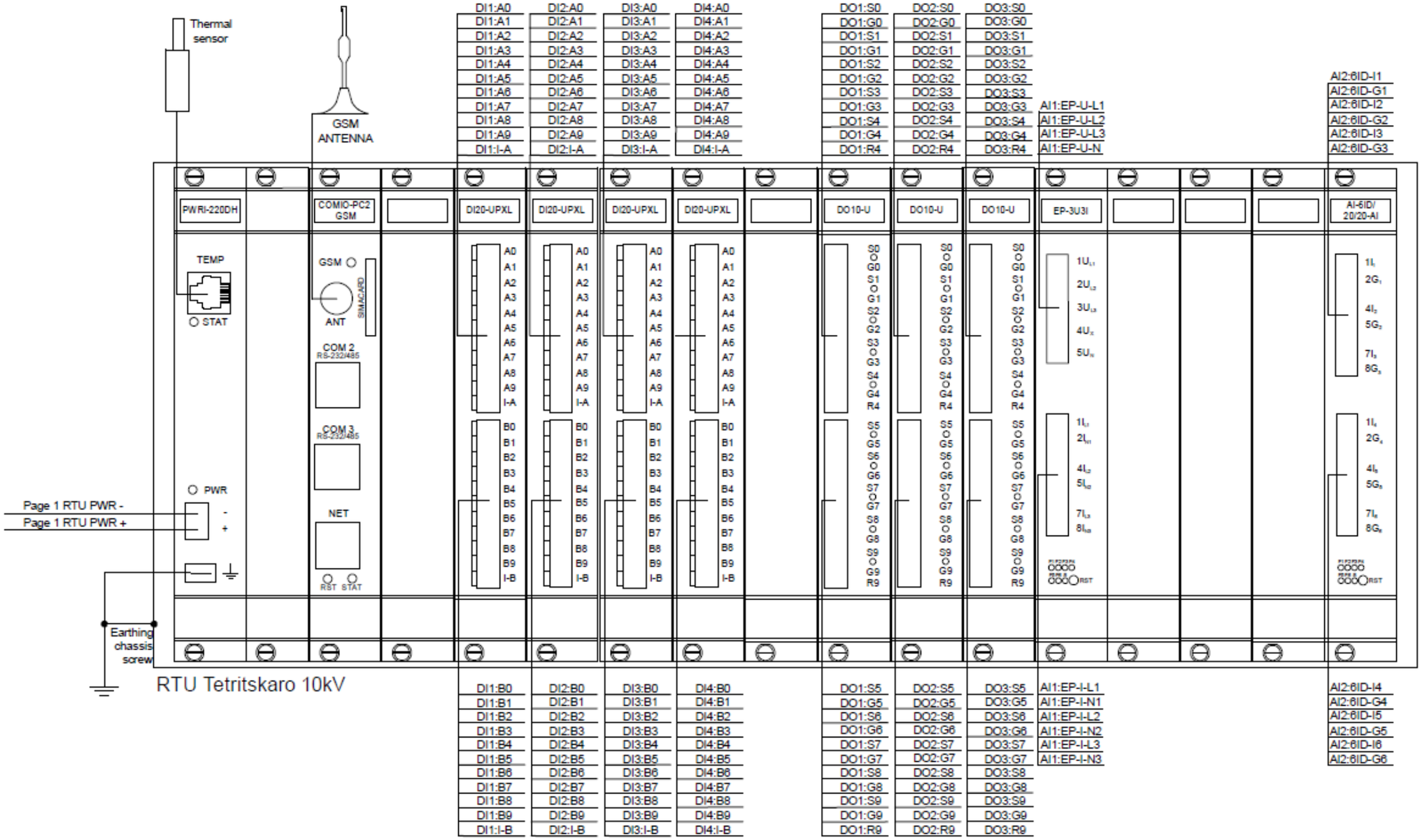

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ELVAC a.s.
Hasičská 53
700 30 Ostrava - Hrabůvka

Location: Tetritskaro 10kV

Date: 29.3.2016

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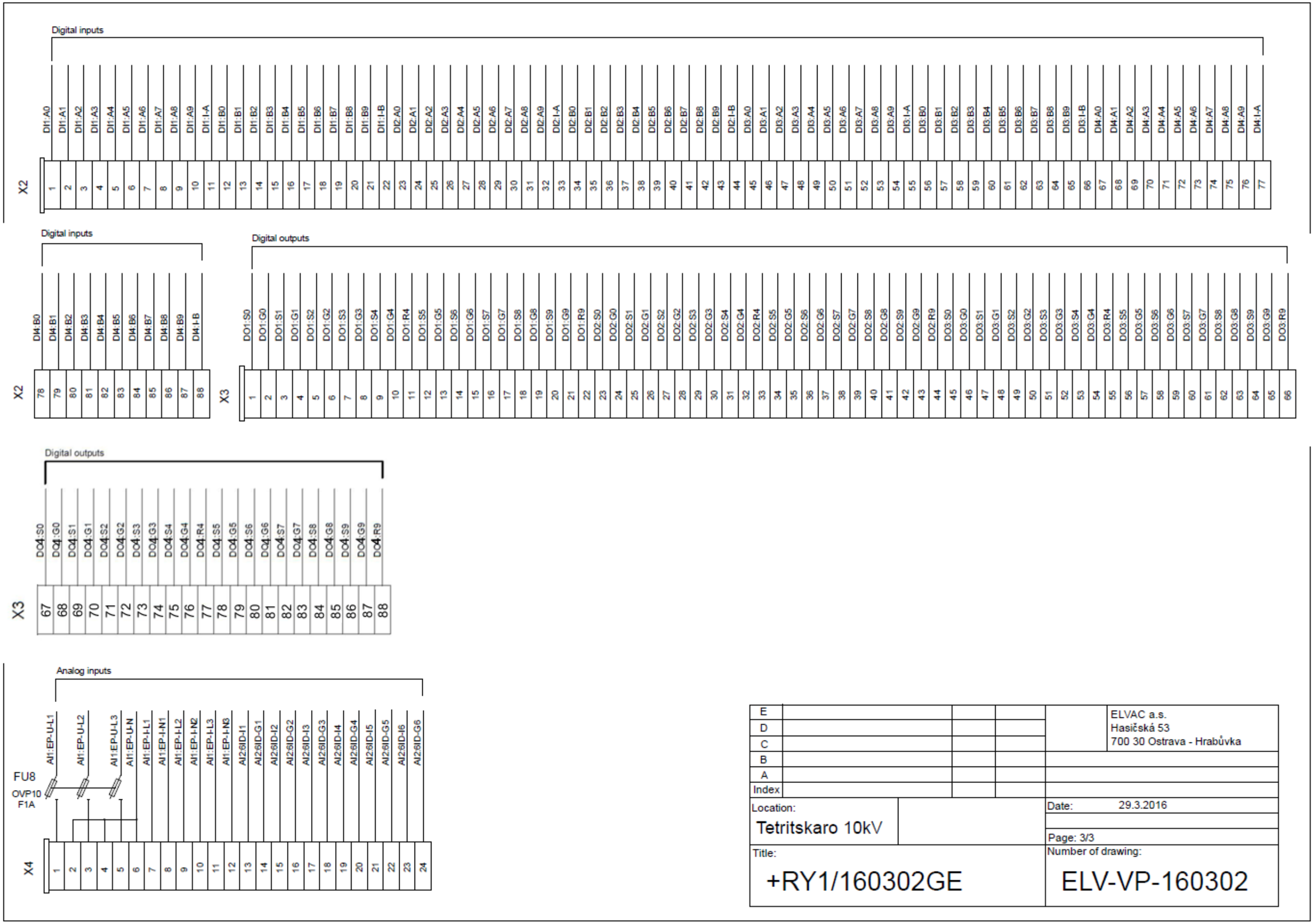

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ELVAC a.s.
Hasičská 53
700 30 Ostrava - Hrabůvka

Location: Tetritskaro 10kV

Date: 29.3.2016

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Title: +RY1/160302GE

Number of drawing: ELV-VP-160302

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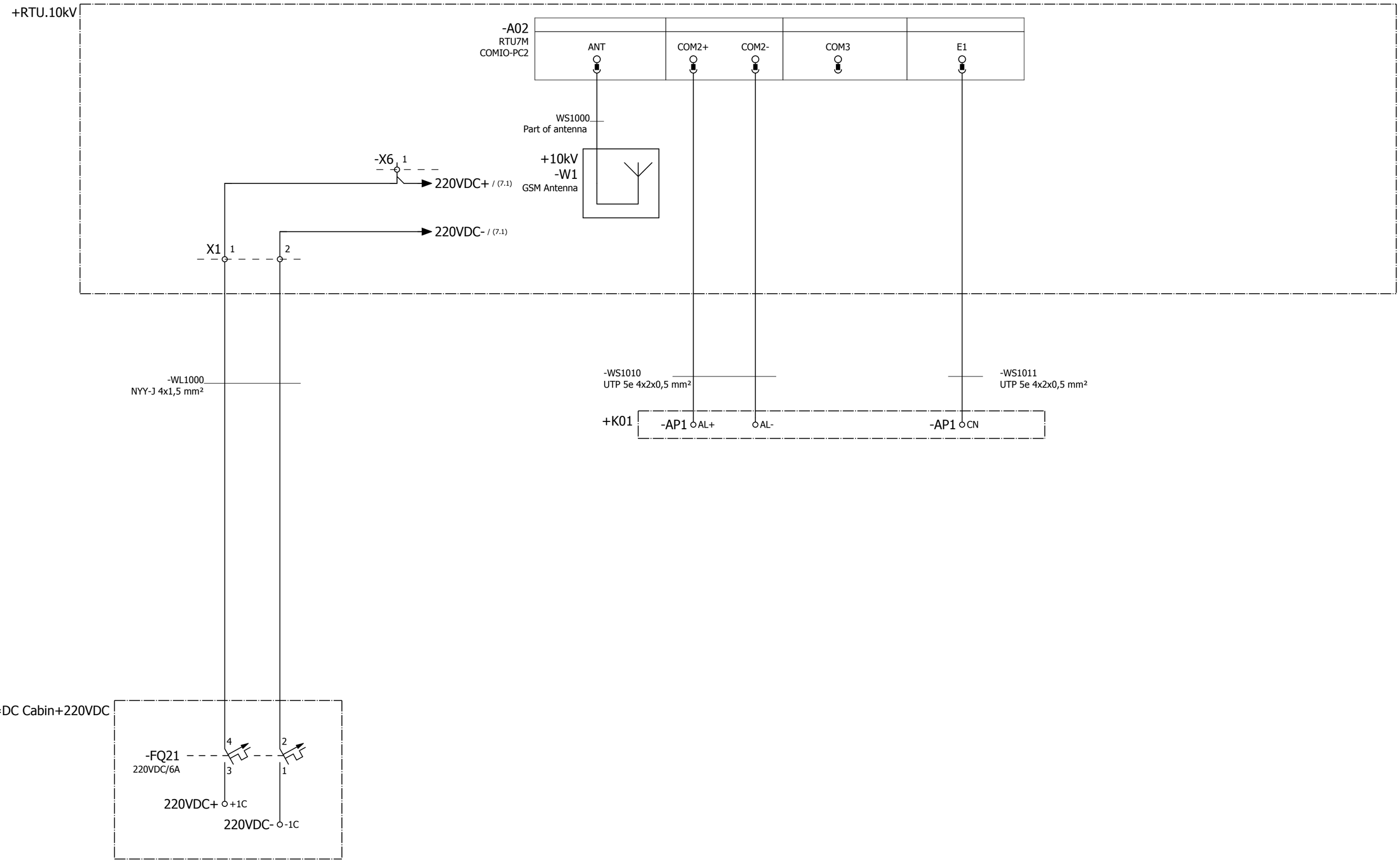

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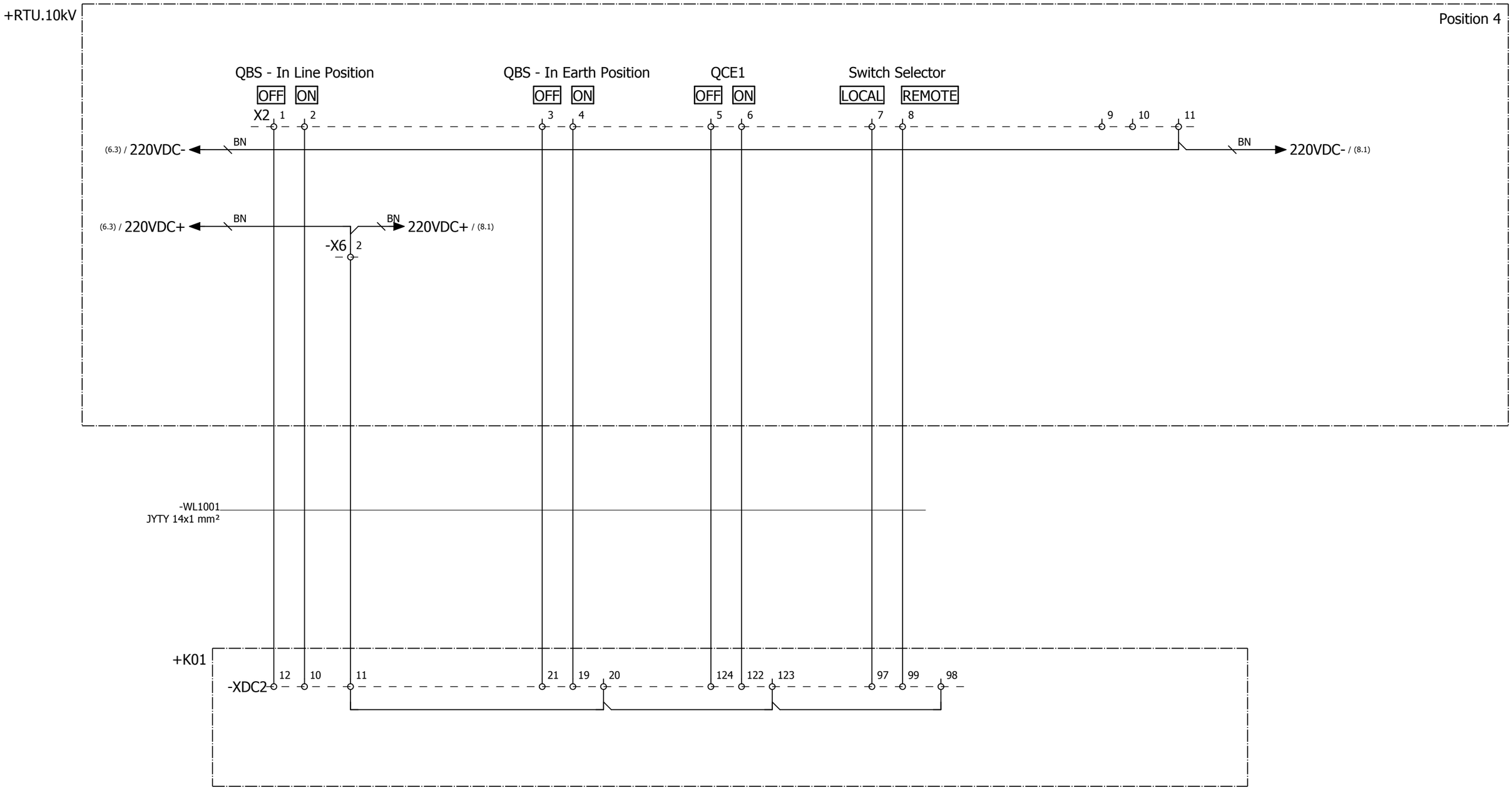

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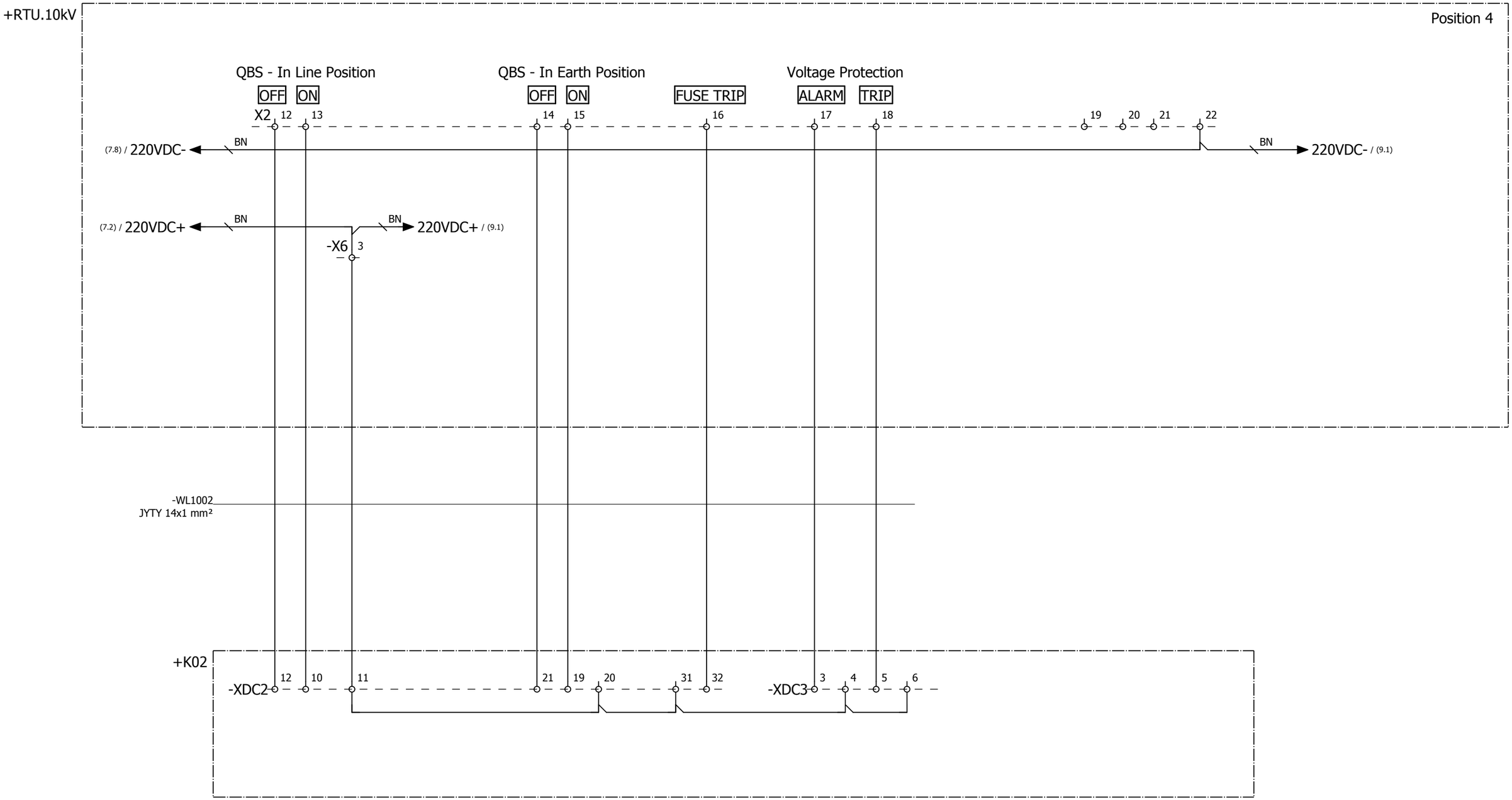

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+RTU.10kV

Position 5

CB
OFF ON
X2 23 24

Switch Selector
LOCAL REMOTE
29 30

QCE
OFF ON
25 26

Protection TRIP
Phase Earth
27 28

CB Truck Position
Test Servis
31 32 33

(8.8) / 220VDC- BN

BN 220VDC- / (10.1)

(8.2) / 220VDC+ BN

-X6 4

BN 220VDC+ / (10.1)

-WL1003
JYTY 14x1 mm²

+K03

-XDC1 59 61 60 62 97 99 98

-XDC8 1 11 2 12

-XDC3 3 4 5 6

-XDC1 52 53 55 56

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			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Digital inputs 3/8	= 10kV	
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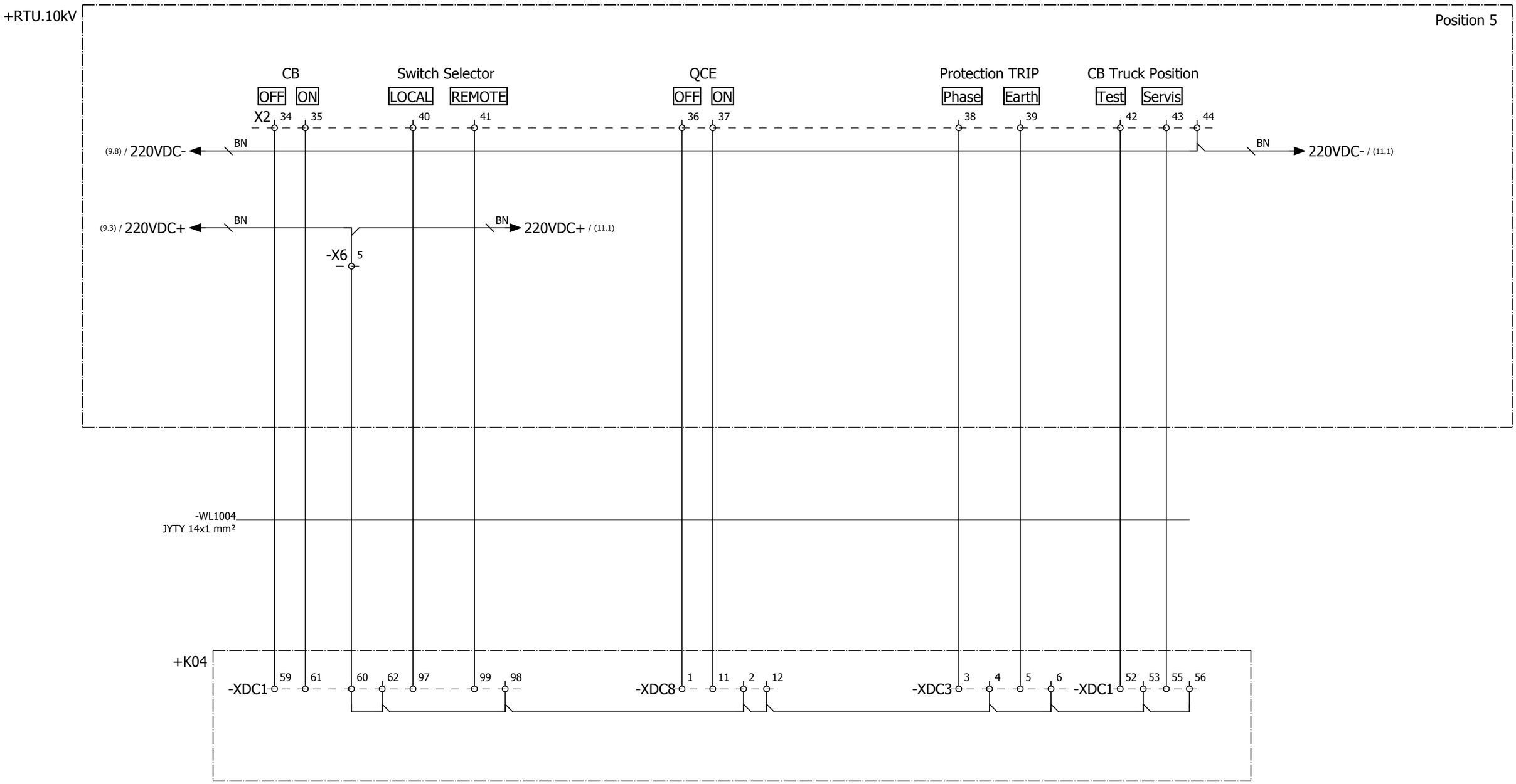

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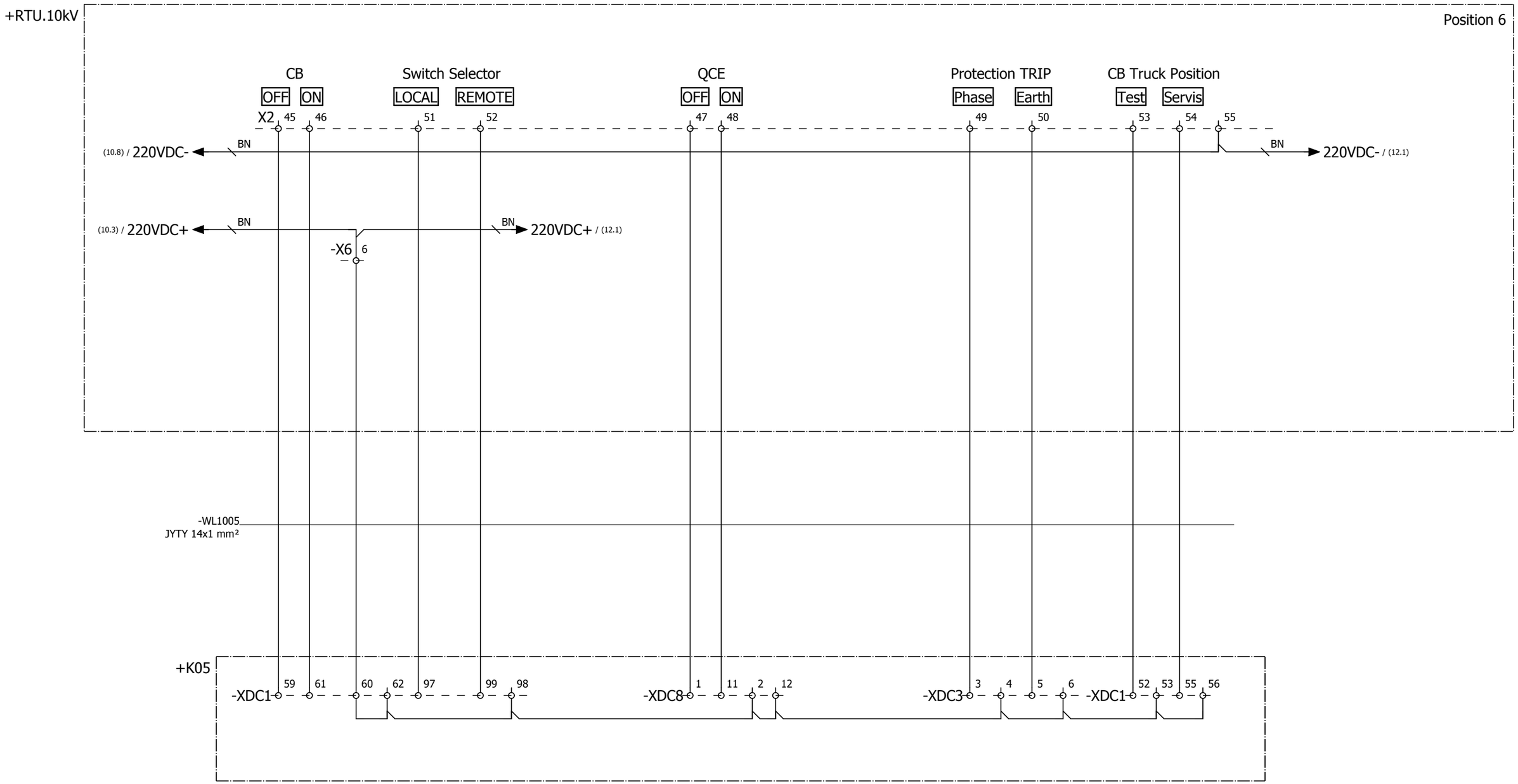

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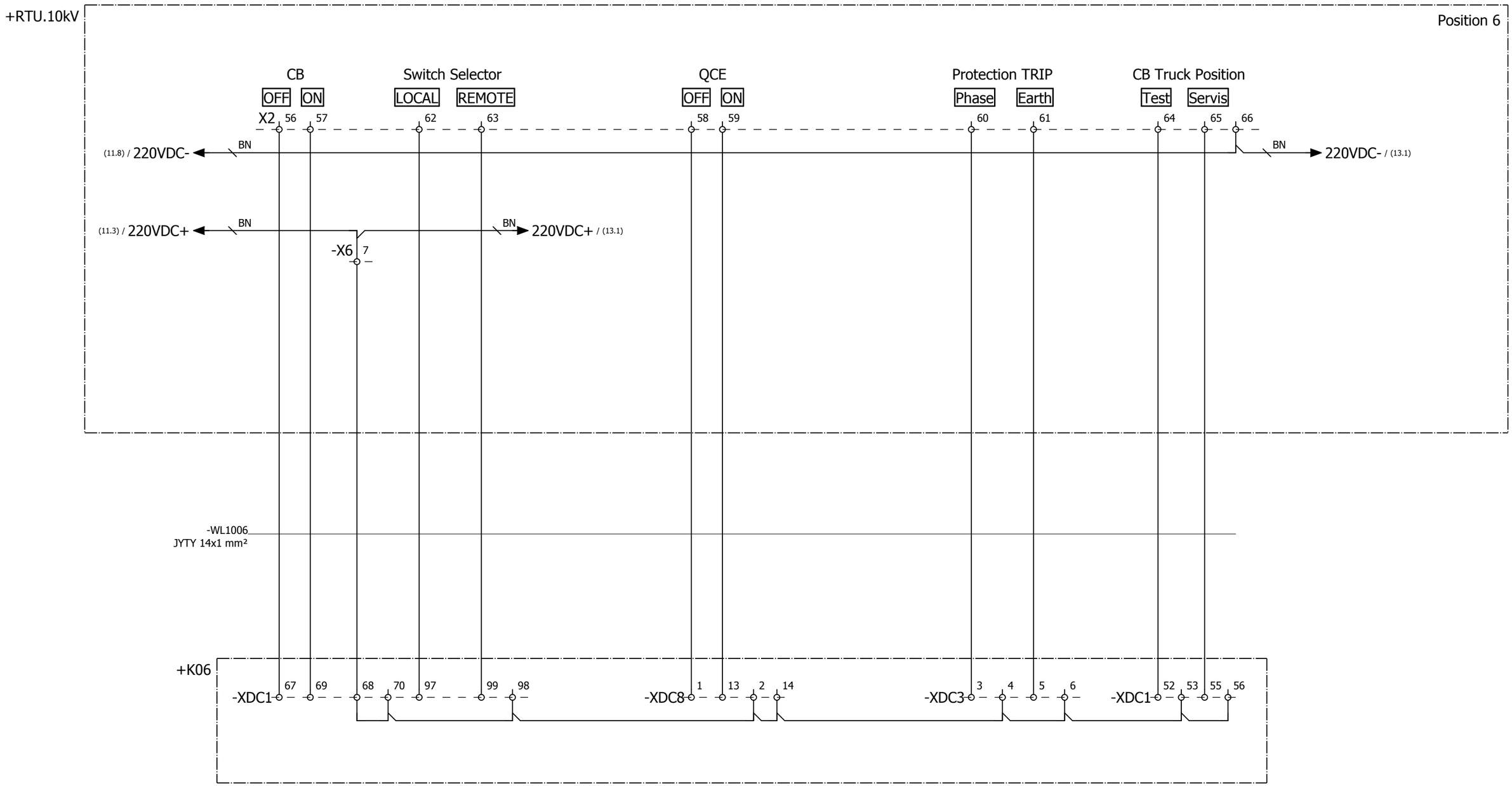

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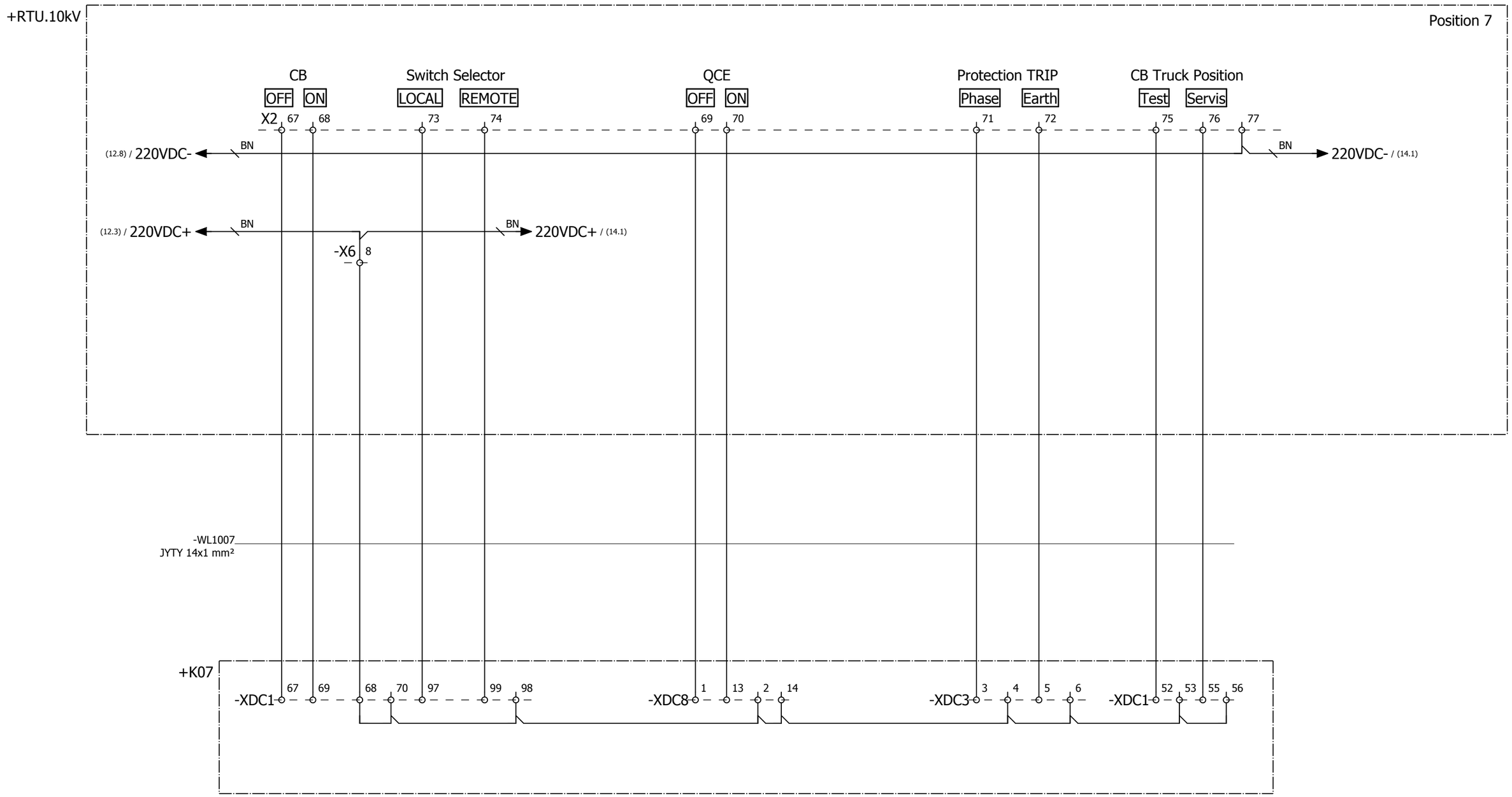

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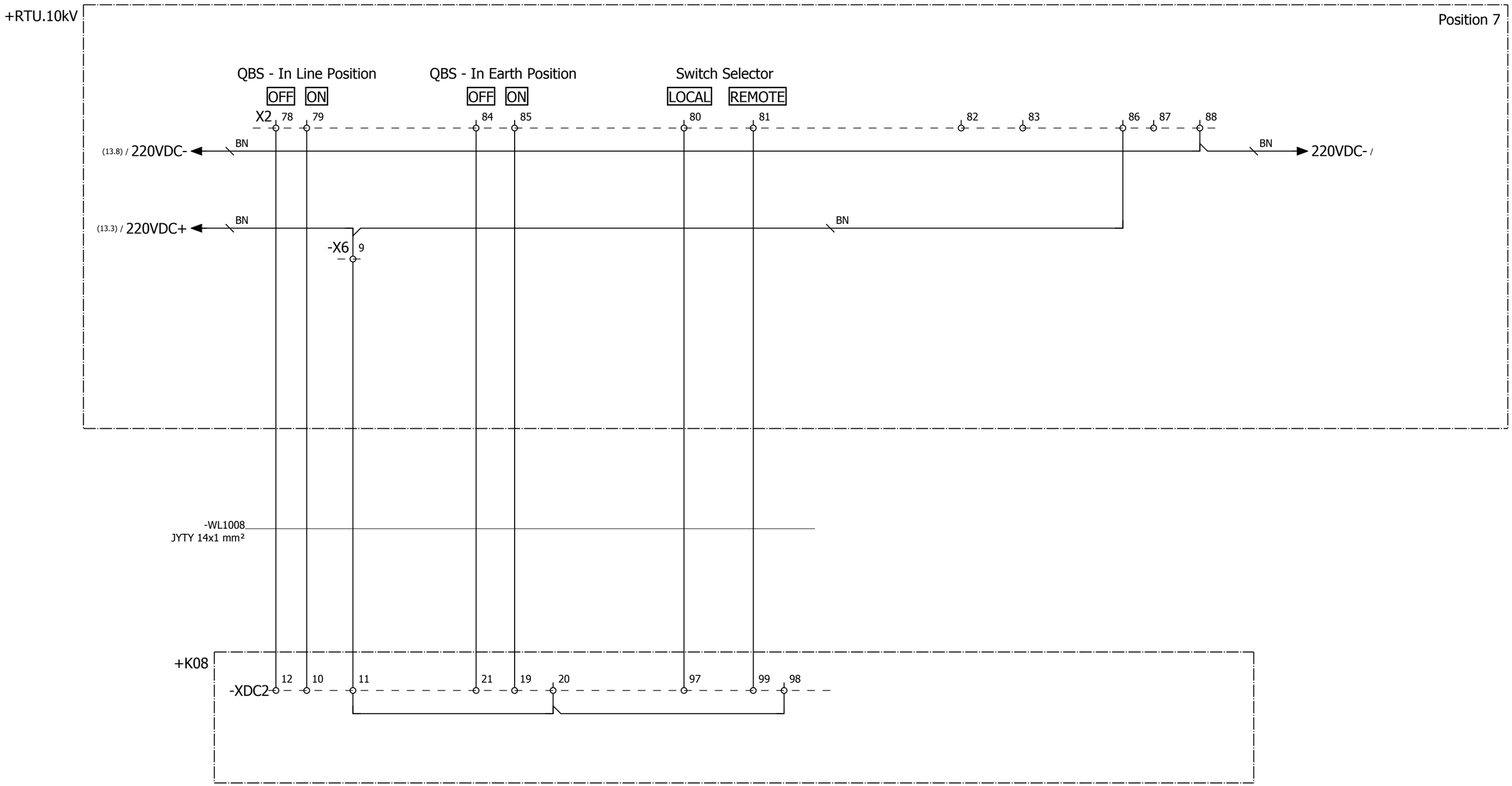
			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Digital inputs 7/8	= 10kV	
			Ed.	VICa Vlastimil Cada				+ +RTU	
			Appr					EPG2016_6	Page 13
Modification	Date	Name	Original		Replacement of / Replaced by				Page 39



			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Digital inputs 8/8	= 10kV	
			Ed.	VICa Vlastimil Cada				+ +RTU	
			Appr					EPG2016_6	Page 14
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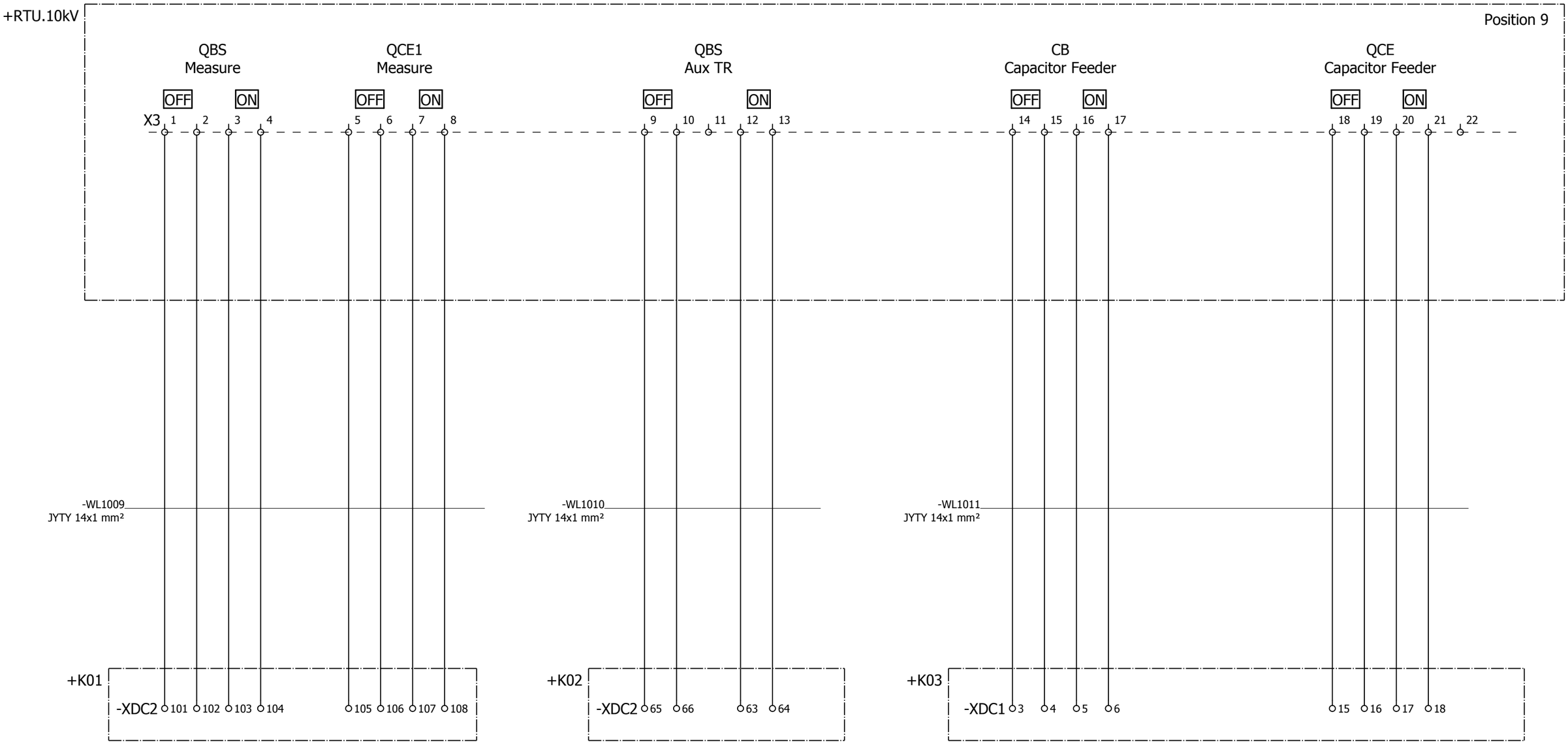

			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Digital outputs 1/4	= 10kV	
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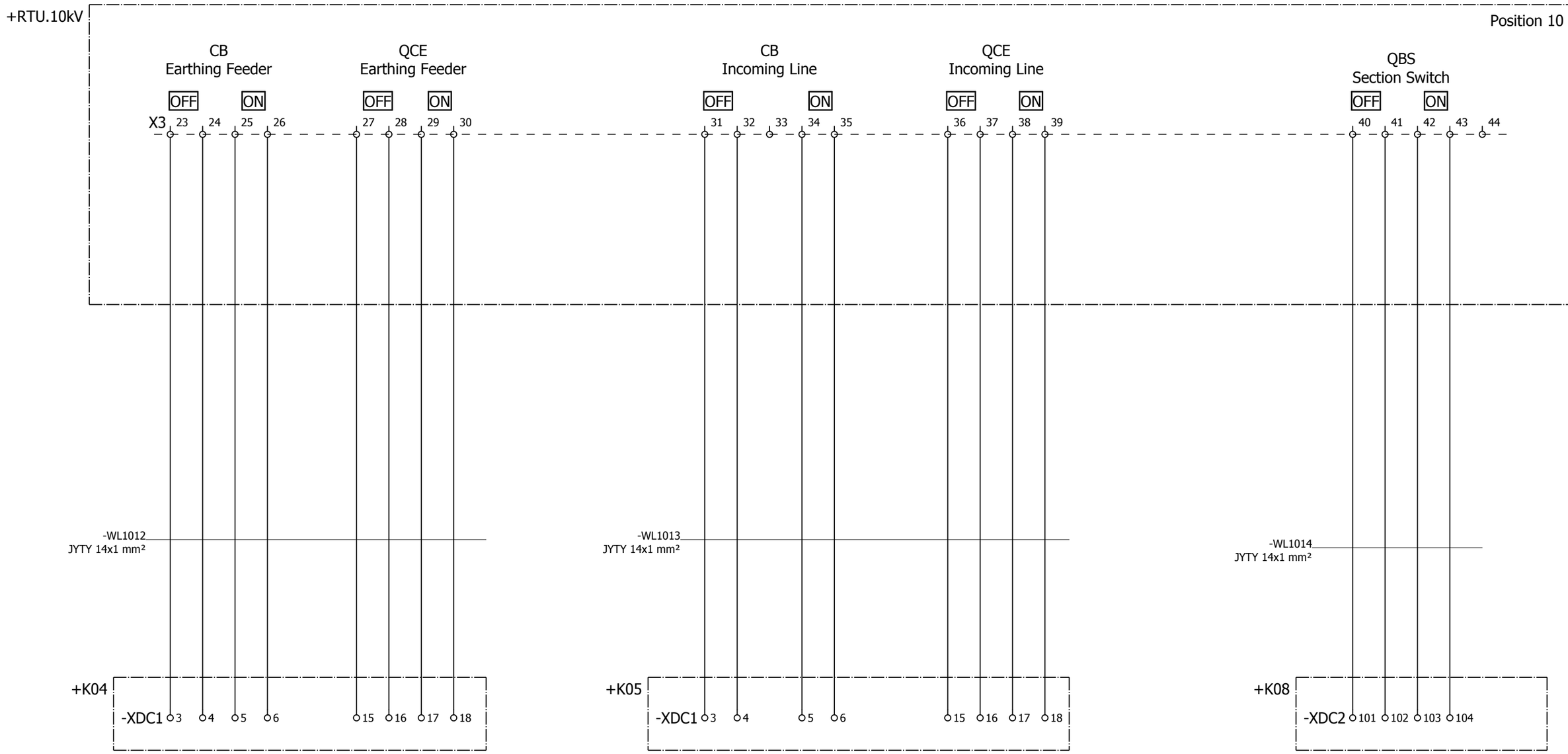
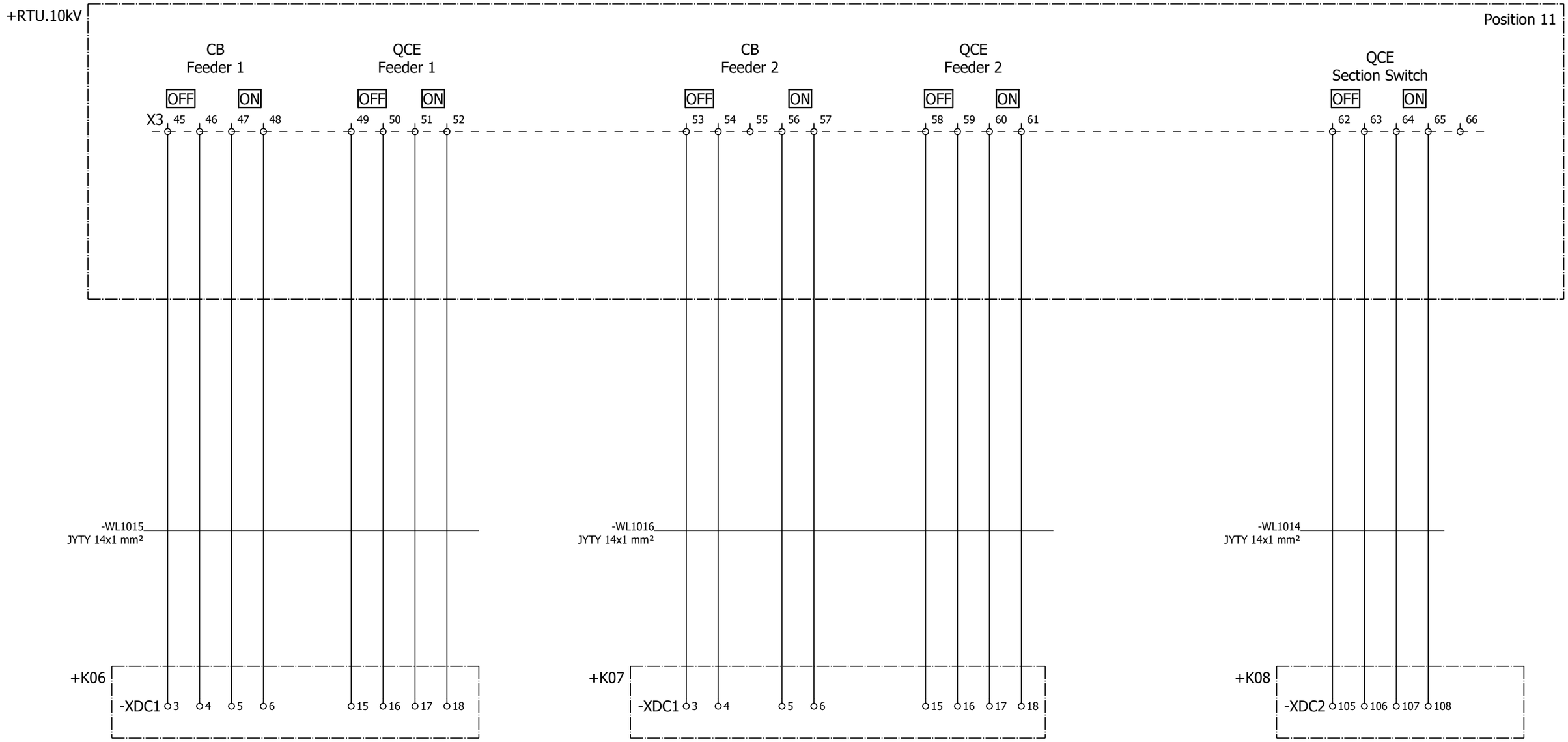
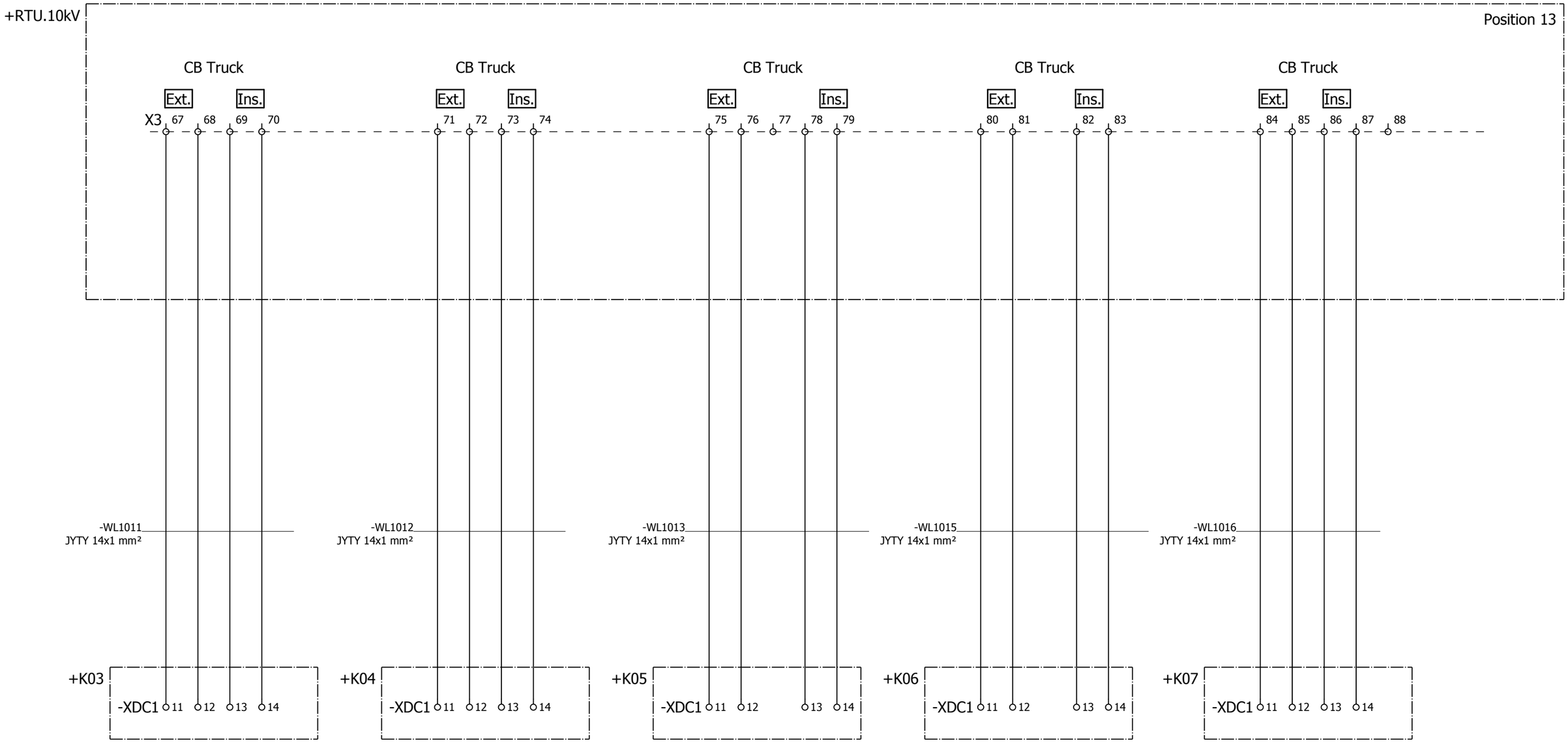
			Appr					EPG2016_6	Page 15
Modification	Date	Name	Original		Replacement of / Replaced by				Page 39



			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Digital outputs 2/4		= 10kV	
			Ed.	VICa Vlastimil Cada					+ +RTU	
			Appr						EPG2016_6	Page 16
Modification	Date	Name	Original		Replacement of	Replaced by				Page 39



			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Digital outputs 3/4	= 10kV	
			Ed.	VICa Vlastimil Cada				+ +RTU	
			Appr					EPG2016_6	Page 17
Modification	Date	Name	Original		Replacement of / Replaced by				Page 39



			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Digital outputs 4/4		= 10kV
			Ed.	VICa Vlastimil Cada					+ +RTU
			Appr					EPG2016_6	Page 18
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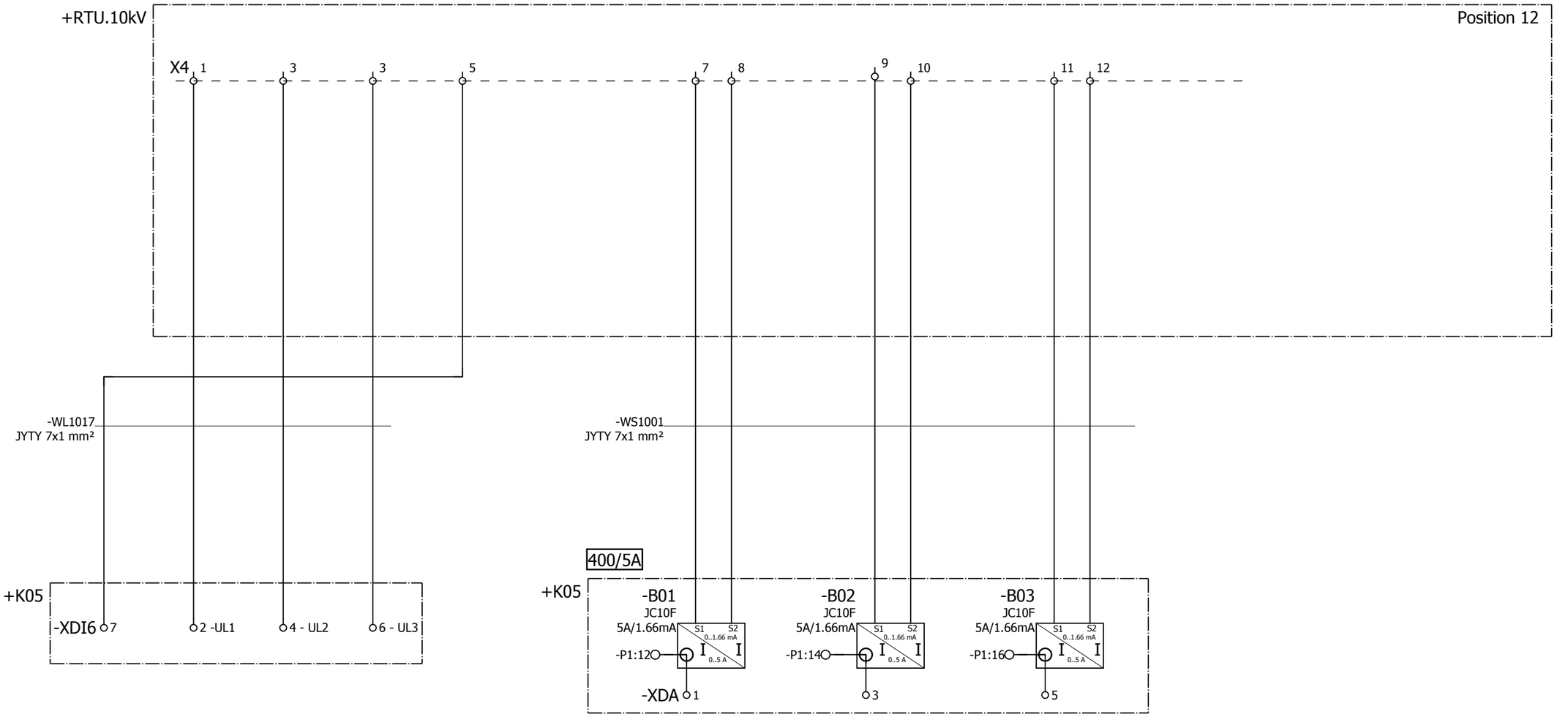

			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Analog inputs 1/2	= 10kV	
			Ed.	VICa Vlastimil Cada				+ +RTU	
			Appr					EPG2016_6	Page 19
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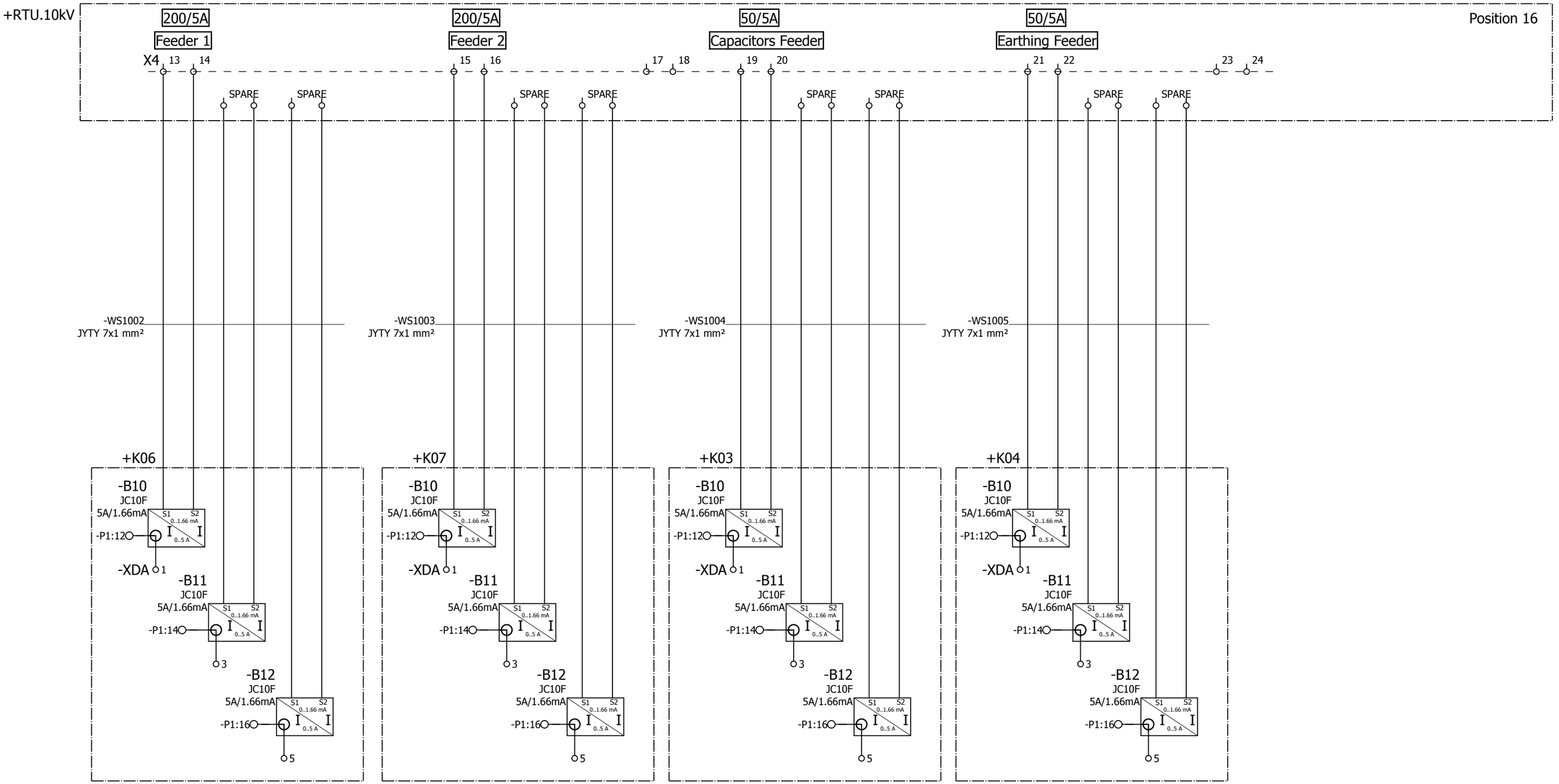

			Date	27.03.2017		JSC "Energo-Pro Georgia"	10kV RTU Analog inputs 2/2	= 10kV	
			Ed.	VICa Vlastimil Cada				+ +RTU	
			Appr					EPG2016_6	Page 20
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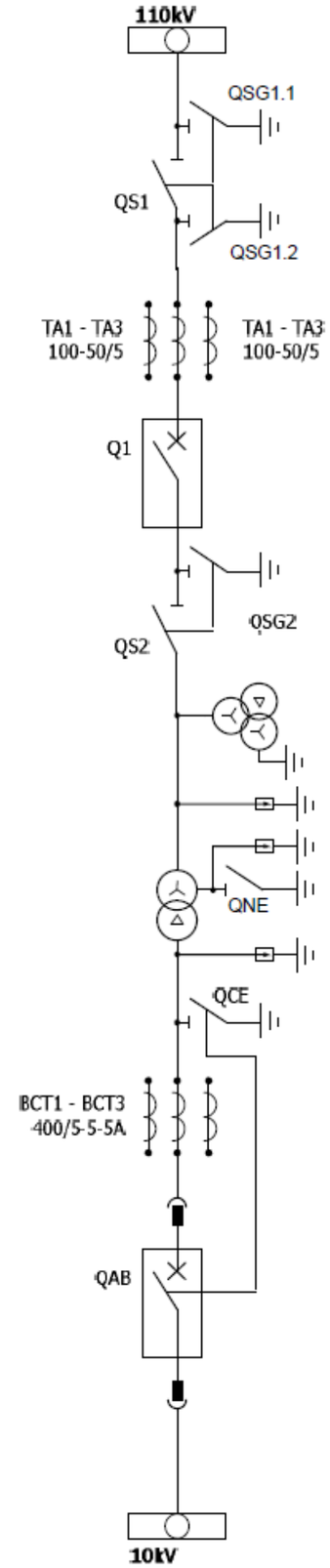
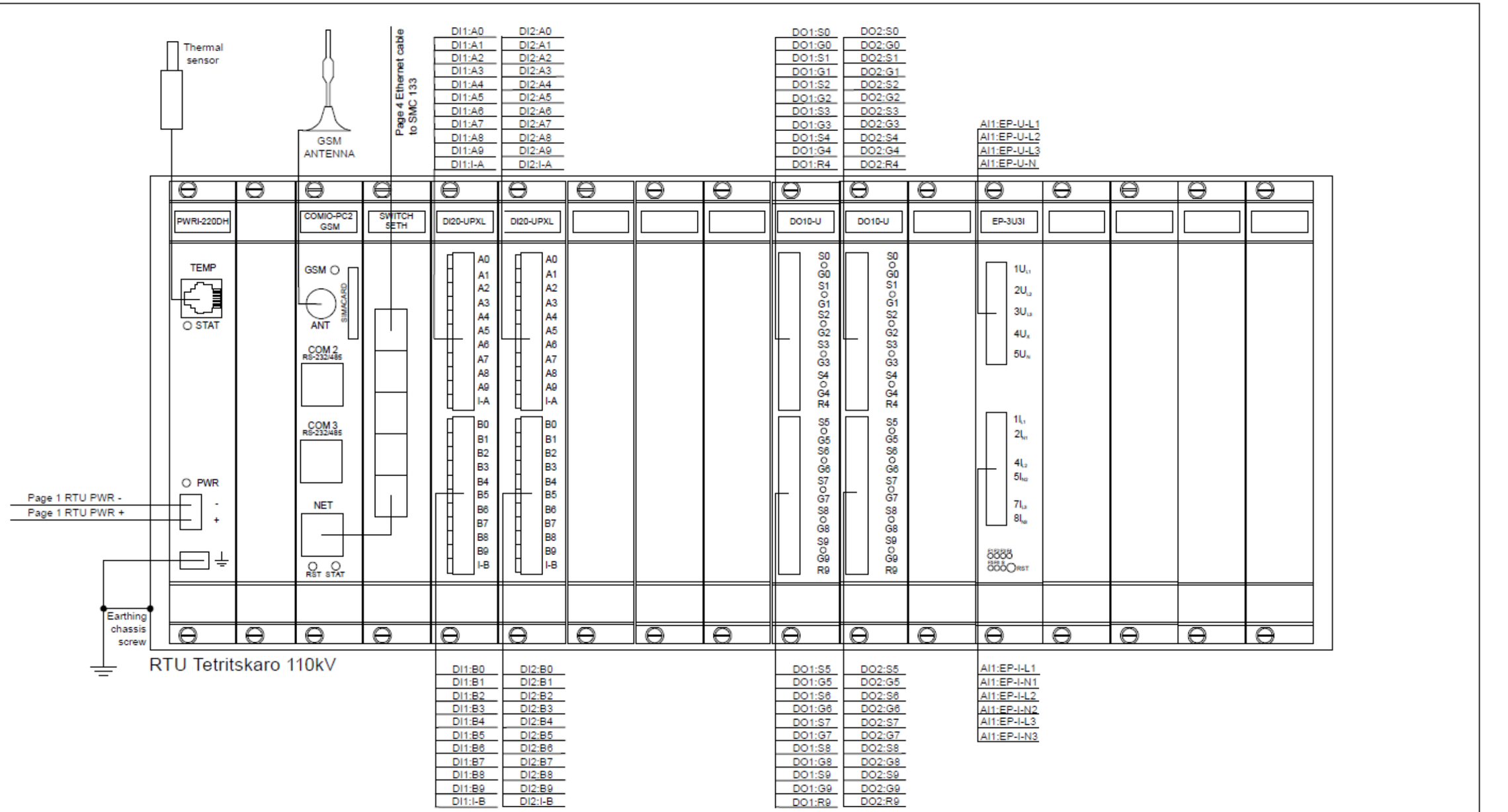
0	1	2	3	4	5	6	7	8	9



=10kV/20

2

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV Single-line diagram		= 110kV	
			Ed.	VICa Vlastimil Cada					+ RTU	
			Appr					EPG2016_6	Page	1
Modification	Date	Name	Original		Replacement of / Replaced by				Page	39



E				ELVAC a.s. Hasičská 53 700 30 Ostrava - Hrabůvka
D				
C				
B				
A				
Index				

Location: Tetritskaro 110kV	Date: 29.3.2016
	Page: 2/4
Title: +RY1/160301GE	Number of drawing: ELV-VP-160301

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Configuration		= 110kV
			Ed.	VICa Vlastimil Cada					+ RTU
			Appr					EPG2016_6	Page 2
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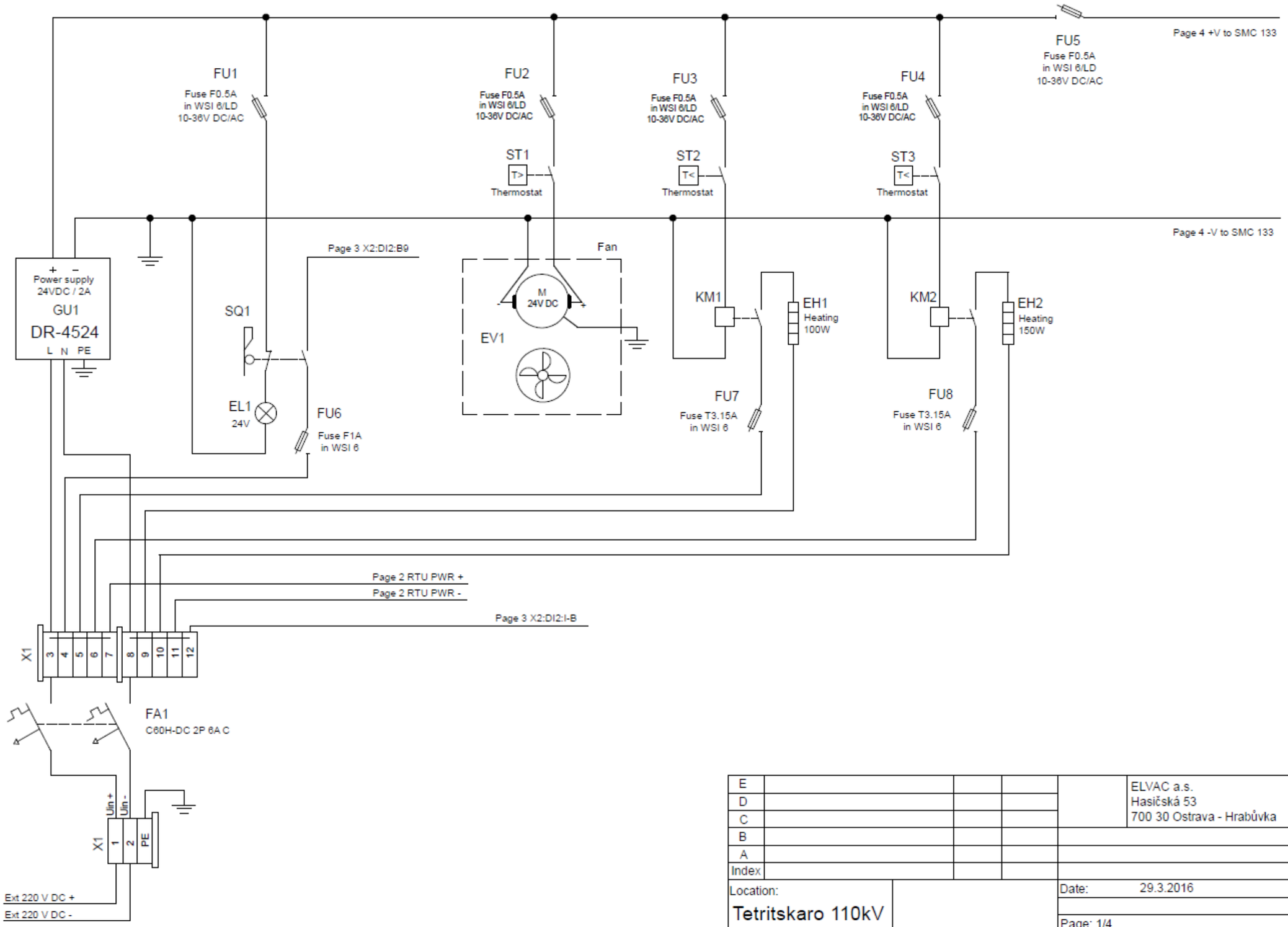
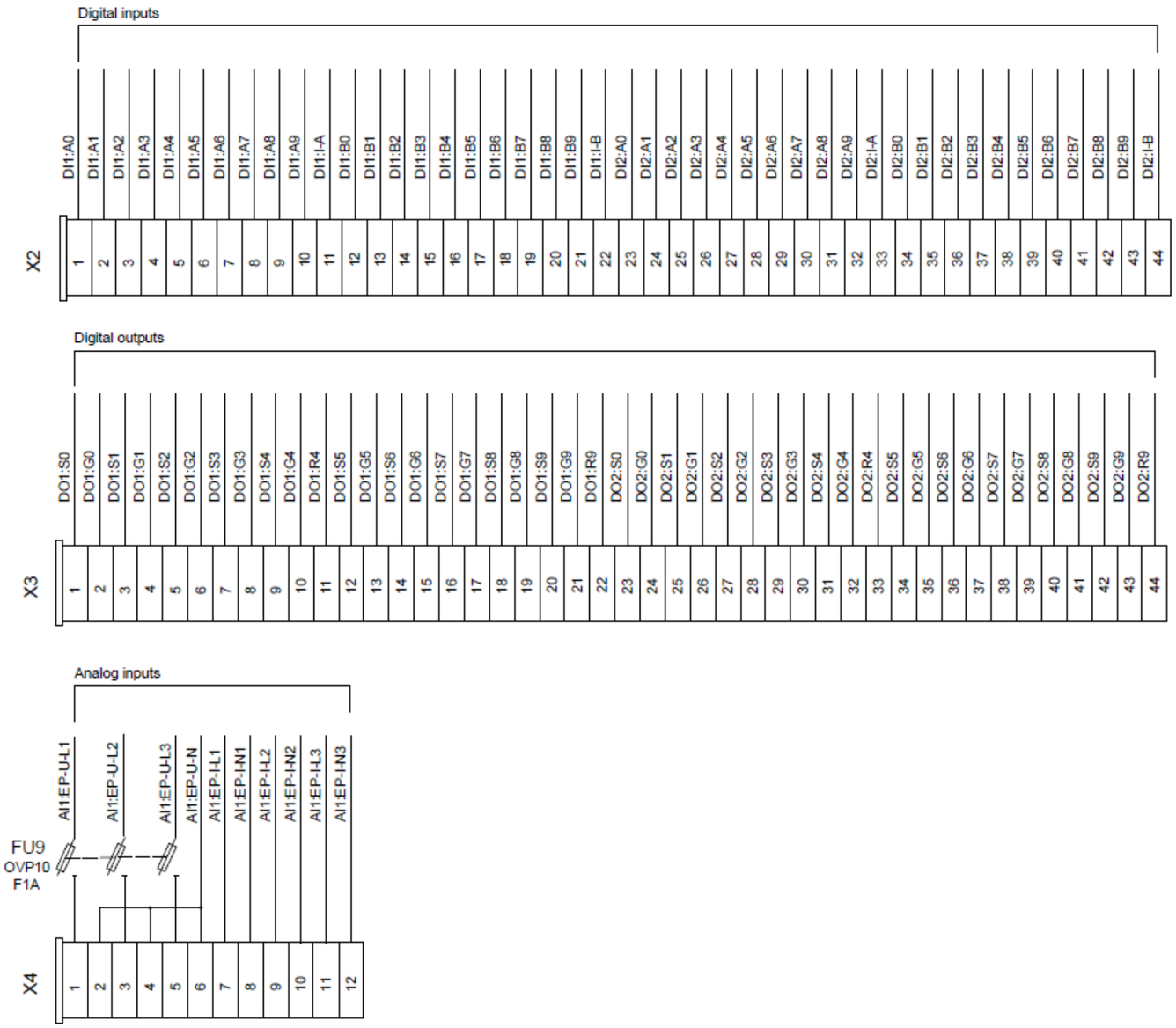


E				ELVAC a.s. Hasičská 53 700 30 Ostrava - Hrabůvka
D				
C				
B				
A				
Index				
Location: Tetritskaro 110kV			Date: 29.3.2016	
			Page: 1/4	
Title: +RY1/160301GE			Number of drawing: ELV-VP-160301	

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Power Supply		= 110kV
			Ed.	VICa Vlastimil Cada					+ RTU
			Appr					EPG2016_6	Page 3
Modification	Date	Name	Original		Replacement of	Replaced by			Page 39



E				ELVAC a.s. Hasičská 53 700 30 Ostrava - Hrabůvka
D				
C				
B				
A				
Index				
Location: Tetritskaro 110kV			Date: 29.3.2016	
			Page: 3/4	
Title: +RY1/160301GE			Number of drawing: ELV-VP-160301	

3 5

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Connection terminals 1	= 110kV	
			Ed.	VICa Vlastimil Cada				+ RTU	
			Appr					EPG2016_6	Page 4
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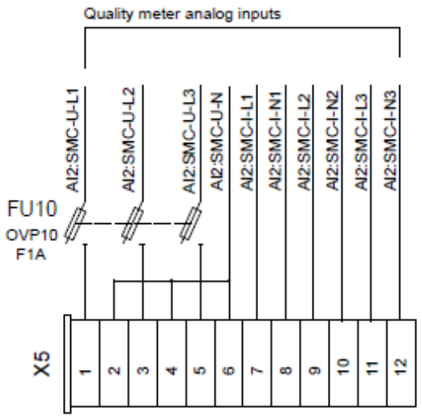

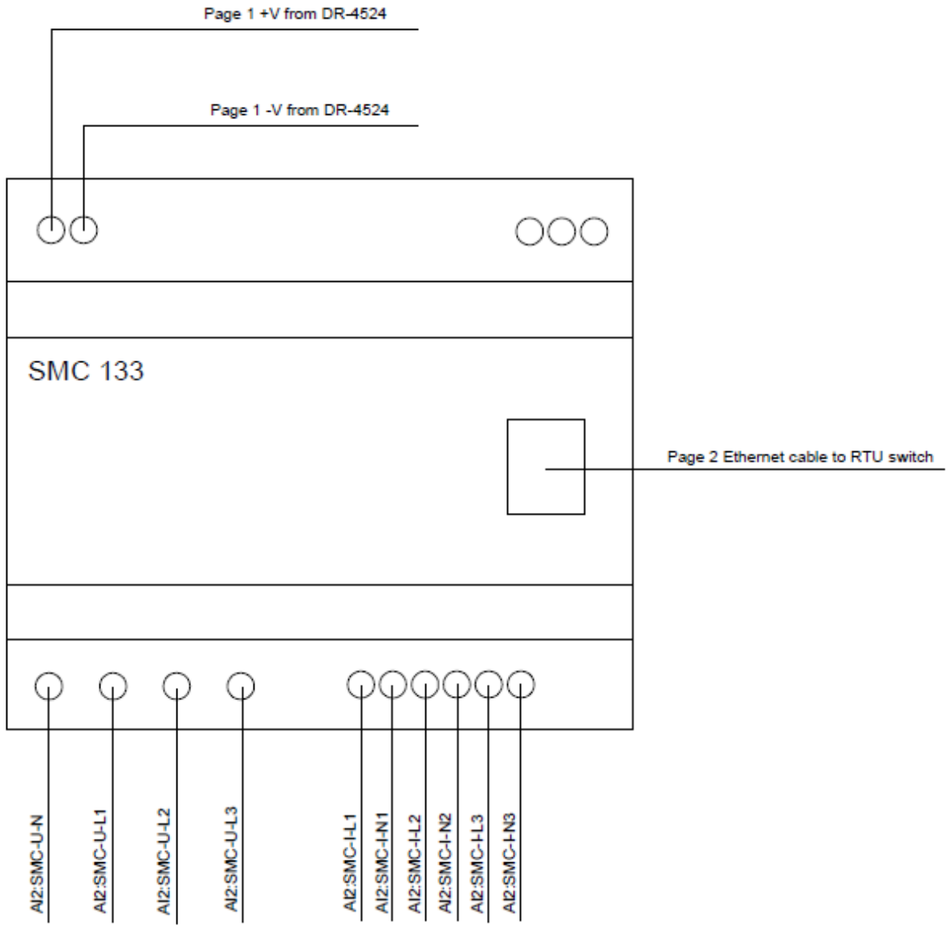

E				ELVAC a.s. Hasičská 53 700 30 Ostrava - Hrabůvka
D				
C				
B				
A				
Index				

Location: Tetritskaro 110kV	Date: 29.3.2016 Page: 4/4
Title: +RY1/160301GE	Number of drawing: ELV-VP-160301

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Connection terminals 2		= 110kV
			Ed.	VICa Vlastimil Cada					+ RTU
			Appr					EPG2016_6	Page 5
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+RTU.110kV

-A02
RTU7M
COMIO-PC2

ANT	COM2+	COM2-	COM3	COM4

WS11001
Part of antenna

WS11002
UTP 5e 4x2x0,5 mm²

+110kV
-W1
GSM Antenna

-A03
RTU7M
SWITCH5ETH

ETH1	ETH2	ETH3	ETH4	ETH5

-X6 1

BN → 220VDC+ / (8.2)

BN → 220VDC- / (7.2)

X1 1 2

-WL11001
NYY-J 4x1,5 mm²

WS11003
UTP 5e 4x2x0,5 mm²

+110.1 -XCOM 2 3

+110.1 ETH1

=DC Cabin+220VDC

-FQ20
220VDC/6A
4 3 2 1

220VDC+ +1C

220VDC- -1C

5 7

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Comunication connection		= 110kV
			Ed.	VICa Vlastimil Cada					+ RTU
			Appr					EPG2016_6	Page 6
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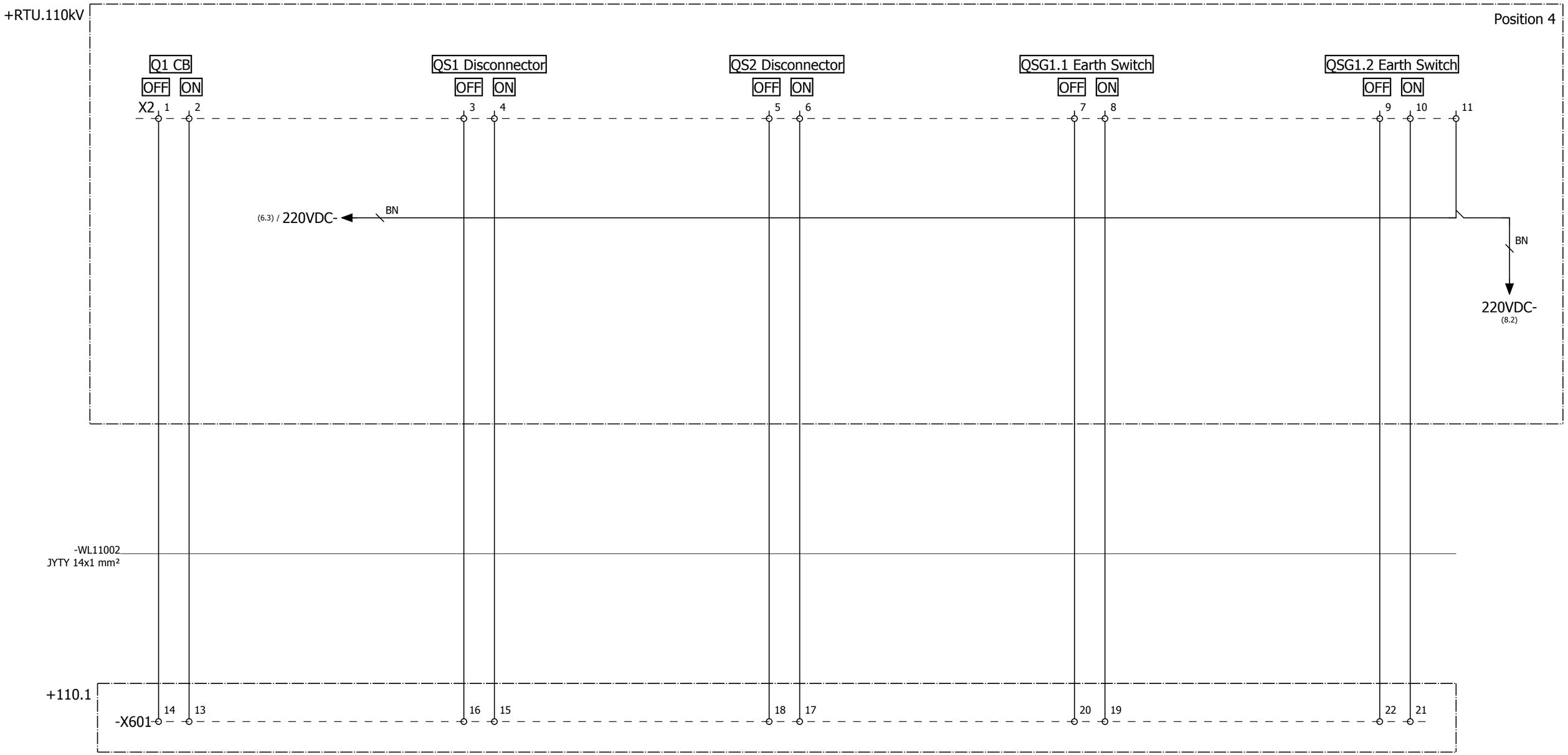

6 8

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Digital inputs 1/4	= 110kV	
			Ed.	VICa Vlastimil Cada				+ RTU	
			Appr					EPG2016_6	Page 7
Modification	Date	Name	Original		Replacement of	Replaced by			Page 39

+RTU.110kV

Position 4

QSG2 Earth Switch
OFF ON
X2 12 13

QNE - TR Winding Neutral Point Earth Swith
OFF ON
14 15

ALARM Temperature TR
16

TRIP Temperature TR
17

ALARM Buchholz
18

TRIP Buchholz
19

ALARM CB SF6
20

CB SF6 Operation Lockout
21 22

(7.9) / 220VDC- BN

BN
220VDC-
(9.1)

(6.3) / 220VDC+

220VDC+ / (10.7)

X6 2

-WL11003
JYTY 14x1 mm²

+110.1
-X601 24 23 26 25

+110.1
-X220 1

-K31 44 41 /33.3
-K32 44 41 /33.4
-K33 44 41 /33.6
-K34 44 41 /33.8
-K36 44 41 /33.11
-K37 44 41 /33.13

2 3 4 5 6 7

220VDC+ / (9.1)

7 9

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Digital inputs 2/4	= 110kV	
			Ed.	VICa Vlastimil Cada				+ RTU	
			Appr					EPG2016_6	Page 8
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+RTU.110kV

Position 5

CB Closing Lockout Drive

CB Protective Motor Switches

OLTC GAS Relay TRIP

TRIP From 10 kV BF

Trafo Pressure Relay TRIP

P642 CB TRIP Coil 1

P642 CB TRIP Coil 2

X2 23 24 25 26 27 28 29 30 31 32 33

(8.9) / 220VDC- BN

BN 220VDC- (10.1)

-WL11004
JYTY 14x1 mm²

+110.1

-K38 44 41 /33.15

-K39 44 41 /33.17

-K41 44 41 /33.20

-K42 44 41 /33.22

-X501 2 /33.23

X220 8 9 10 11

(8.9) / 220VDC+

+110.1

-XTRIP 6 8

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Digital inputs 3/4	= 110kV	
			Ed.	VICa Vlastimil Cada				+ RTU	
			Appr					EPG2016_6	Page 9
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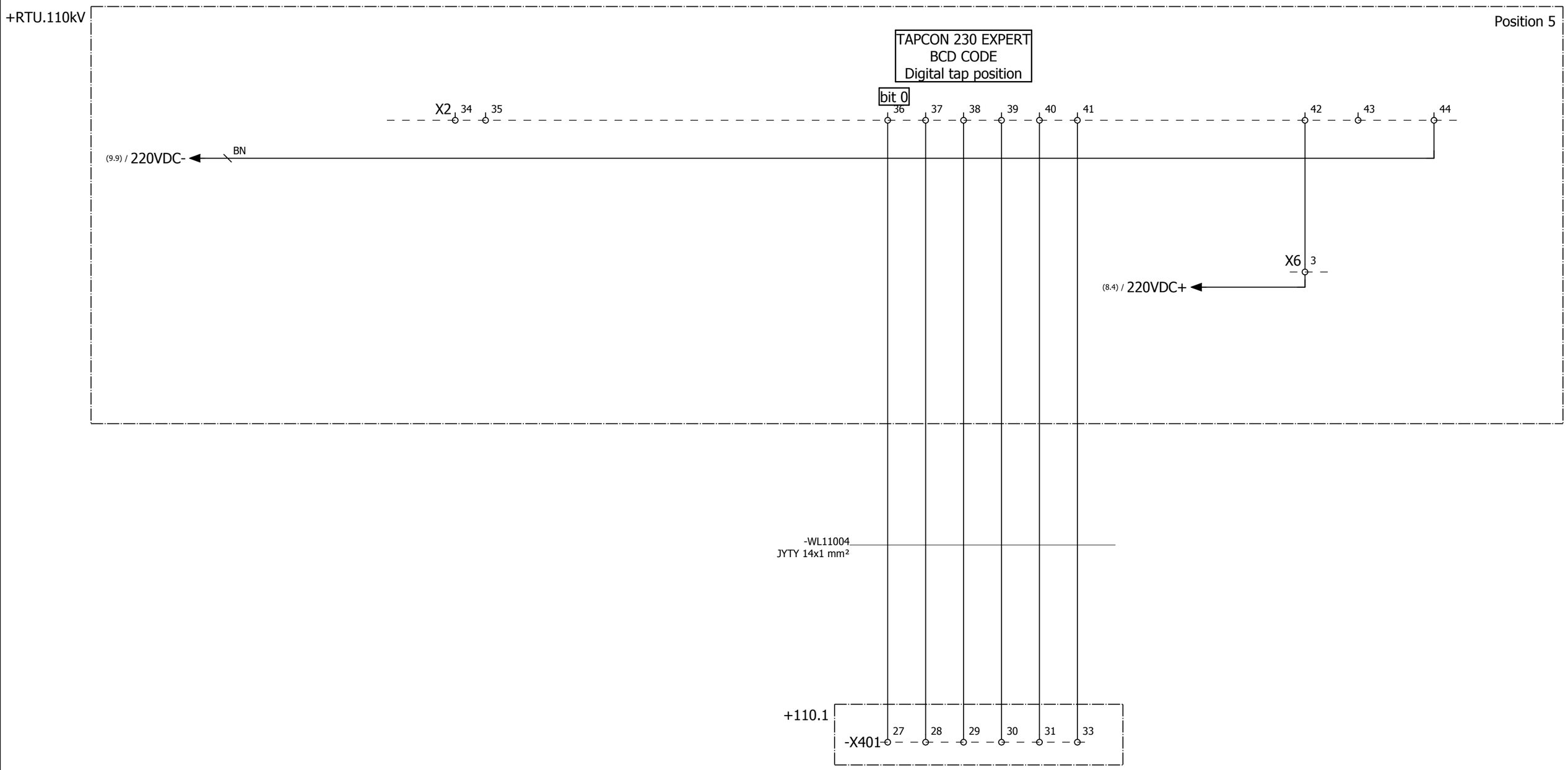

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Digital inputs 4/4		= 110kV
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			Appr					EPG2016_6	Page 10
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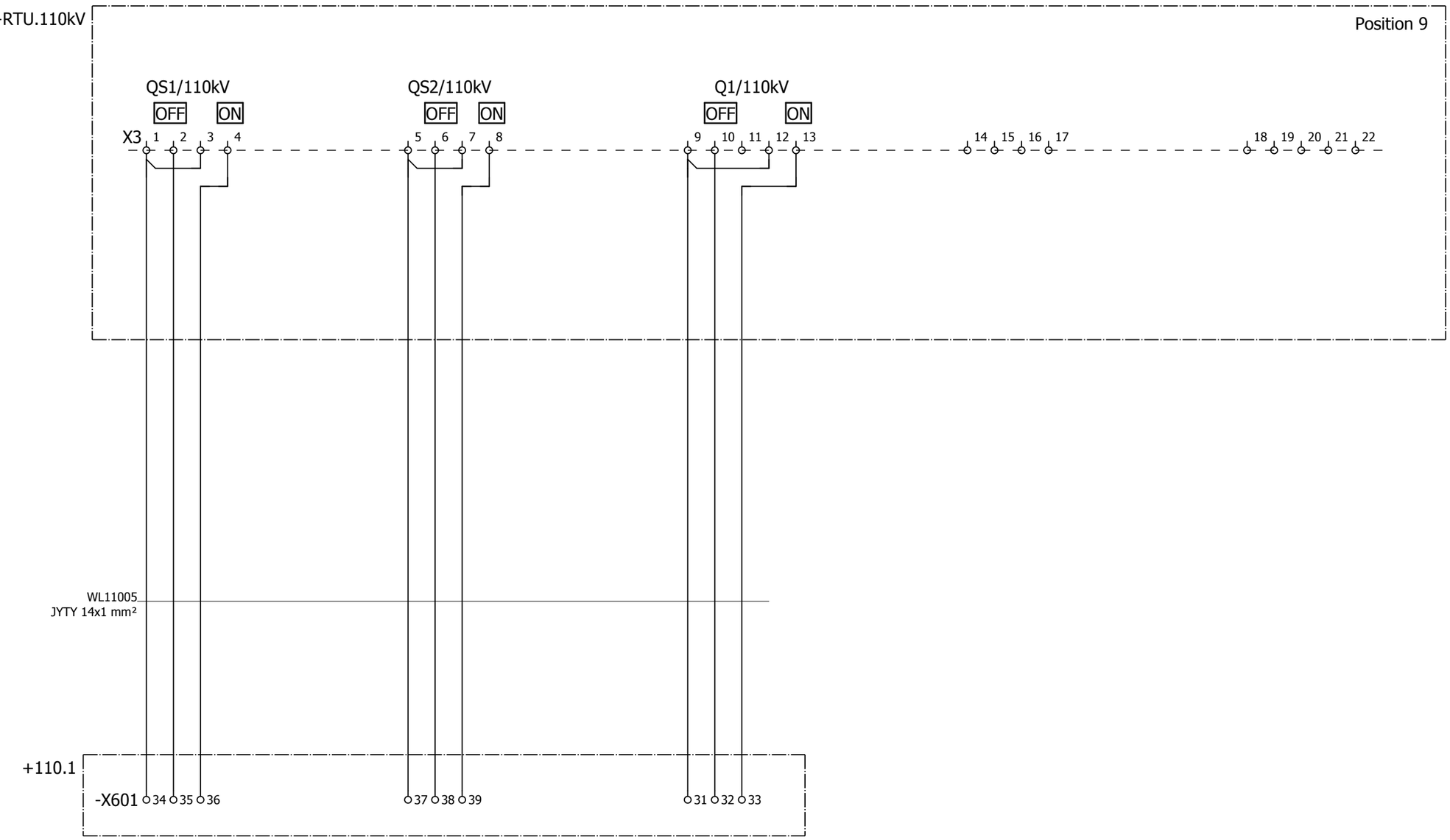

			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Digital outputs 1/2		= 110kV	
			Ed.	VICa Vlastimil Cada					+ RTU	
			Appr					EPG2016_6	Page	11
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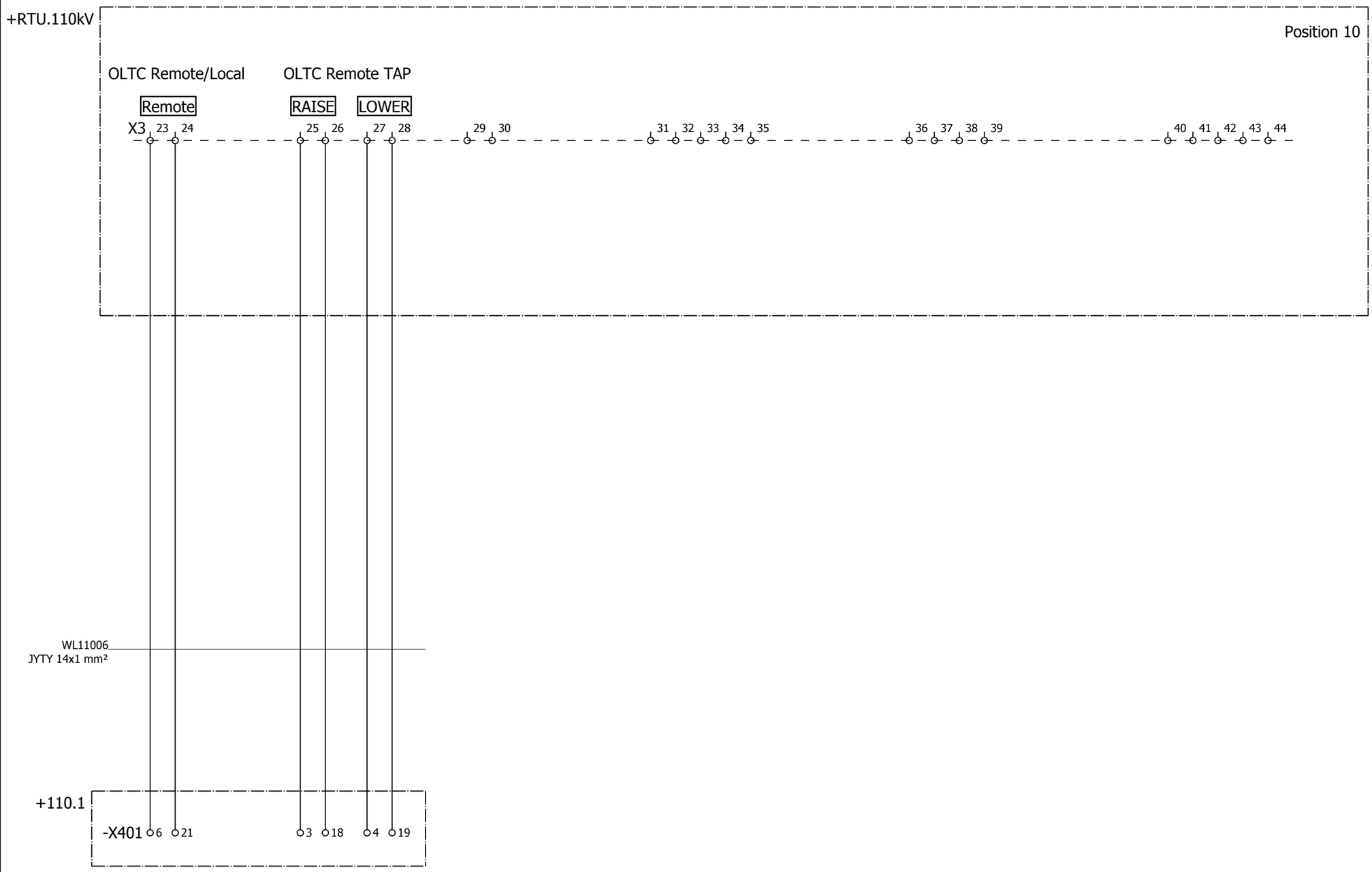

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			Ed.	VICa Vlastimil Cada				+ RTU	
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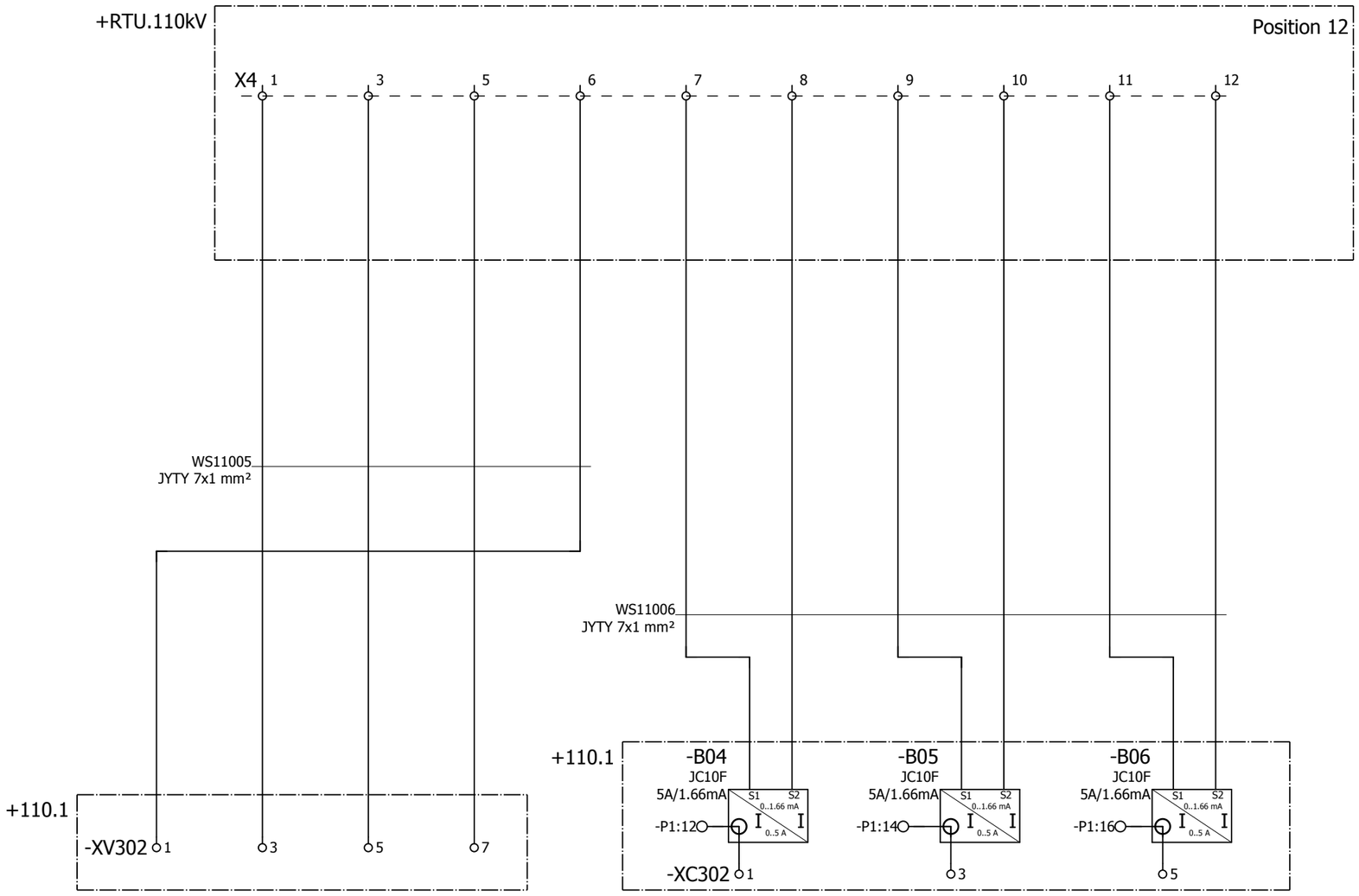

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			Date	27.03.2017		JSC "Energo-Pro Georgia"	110kV RTU Analog inputs 1/1	= 110kV	
			Ed.	VICa Vlastimil Cada				+ RTU	
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