






We reserve all rights in this document and in the information contained therein. Reproduction, use or disclosure to third parties without express authority is strictly forbidden.

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A	<div><div></div><div>ABB ELDS</div></div>							A																																																											
B	Project name			Issuer		1	11.12.2024	B																																																											
	HE Switzerland_Bonaduz			Mika Santala		0	07.11.2024																																																												
	Switchgear name			Telephone																																																															
	Switchgear option 2			+358503341175																																																															
C	Switchgear type		Customer		Fax			C																																																											
	ZX0.2 SBB		ABB Oy																																																																
	Project number		Quotation number		E-mail																																																														
	402170		OPP-24-7151808		mika.santala@fi.abb.com		Rev.		Date																																																										
D	<div><div>Switchgear drawings</div><div>33 kV Gas Insulated Medium Voltage Switchgear</div></div>				<div></div>				D																																																										
E	<div>Technical offer</div>								E																																																										
F									F																																																										
<table><tr><td>1</td><td></td><td>11.12.2024</td><td></td><td>Prepared</td><td>Mika Santala</td><td>Project name</td><td>HE Switzerland_Bonaduz</td><td>Customer</td><td>ABB Oy</td><td>Based on</td><td>Ref. designation = CDX +</td><td>Lang.</td><td>Scale</td></tr><tr><td>0</td><td></td><td>07.11.2024</td><td></td><td>Checked</td><td></td><td>Switchgear name</td><td>Switchgear option 2</td><td></td><td>ABB Oy</td><td>Document kind</td><td>Cover sheet</td><td>External doc. ID</td><td>EN</td></tr><tr><td></td><td></td><td></td><td></td><td>Approved</td><td></td><td></td><td></td><td></td><td>Resp. (division/department)</td><td>Title</td><td>General drawings</td><td>Document ID</td><td>DCC</td><td>Page</td><td>No. of pages</td></tr><tr><td>Rev.</td><td>Description</td><td>Date</td><td>Name</td><td>Date prep.</td><td>11.12.2024</td><td>Quotation number</td><td>OPP-24-7151808</td><td></td><td></td><td></td><td>Cover sheet</td><td></td><td>&EAA</td><td>A01</td><td>20</td></tr></table>								1		11.12.2024		Prepared	Mika Santala	Project name	HE Switzerland_Bonaduz	Customer	ABB Oy	Based on	Ref. designation = CDX +	Lang.	Scale	0		07.11.2024		Checked		Switchgear name	Switchgear option 2		ABB Oy	Document kind	Cover sheet	External doc. ID	EN					Approved					Resp. (division/department)	Title	General drawings	Document ID	DCC	Page	No. of pages	Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number	OPP-24-7151808				Cover sheet		&EAA	A01	20
1		11.12.2024		Prepared	Mika Santala	Project name	HE Switzerland_Bonaduz	Customer	ABB Oy	Based on	Ref. designation = CDX +	Lang.	Scale																																																						
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1	2	3	4	5	6	7	8																																																												

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1		2		3		4		5		6		7		8															
A	TABLE OF CONTENTS															A													
	PAGE NAME					DOCUMENT NAME																							
	=CDX/A01					Cover sheet																							
B	=CDX/A03					Table of contents										B													
	=CDX/B01					General product description																							
	=CDX/F01					Key of variants																							
	=CDX+SPEC/STD01					Technical specifications																							
	=CDX+SPEC/STD02					Technical specifications																							
	=CDX+SPEC/STD03					Technical specifications																							
	=CDX+SPEC/STD04					Technical specifications																							
	=CDX+SLD/SLD01					Single line diagram																							
	=CDX+TDL/TDL01					Typical details																							
	C	=CDX+TDL/TDL02					Typical details										C												
=CDX+TDL/TDL03					Typical details																								
=CDX+FVD/FVD01					Front view drawing																								
=CDX+FFD/FFD01					Foundation frames drawing																								
=CDX+FFDD/FFDD01					Foundation frames detailed drawing																								
=CDX+FFDD/FFDD02					Foundation frames detailed drawing																								
=CDX+LEG/LEG01					General protection legend																								
=CDX+LEG/LEG02					General protection legend																								
=CDX+LEG/LEG03					General switch legend																								
=CDX+LEG/LEG04					General symbol legend																								
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Rev.		Description		Date		Name		Date prep.		11.12.2024		Quotation number		OPP-24-7151808		ABB		General drawings		Table of contents				&EAB		A03		20	
1				2				3				4				5				6				7				8	

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GENERAL PRODUCT DESCRIPTION

ZX0.2 is a single busbar gas insulated switchgear (GIS) up to 36 kV and 31.5 kA, successfully arc fault type tested in accordance to IEC 62271-200 with IAC classification AFL or AFLR. It is designed for indoor installation and equipped with fixed mounted vacuum circuit-breakers which are serially connected to a three-position disconnector (alternatively load break switches with or without fuses can be applied up to 24 kV). Further details and options kindly refer to ABB technical catalogue (TK 503). The Panel Labels are self-adhesive and produced according to ABB Standard Design in white color and black letter.

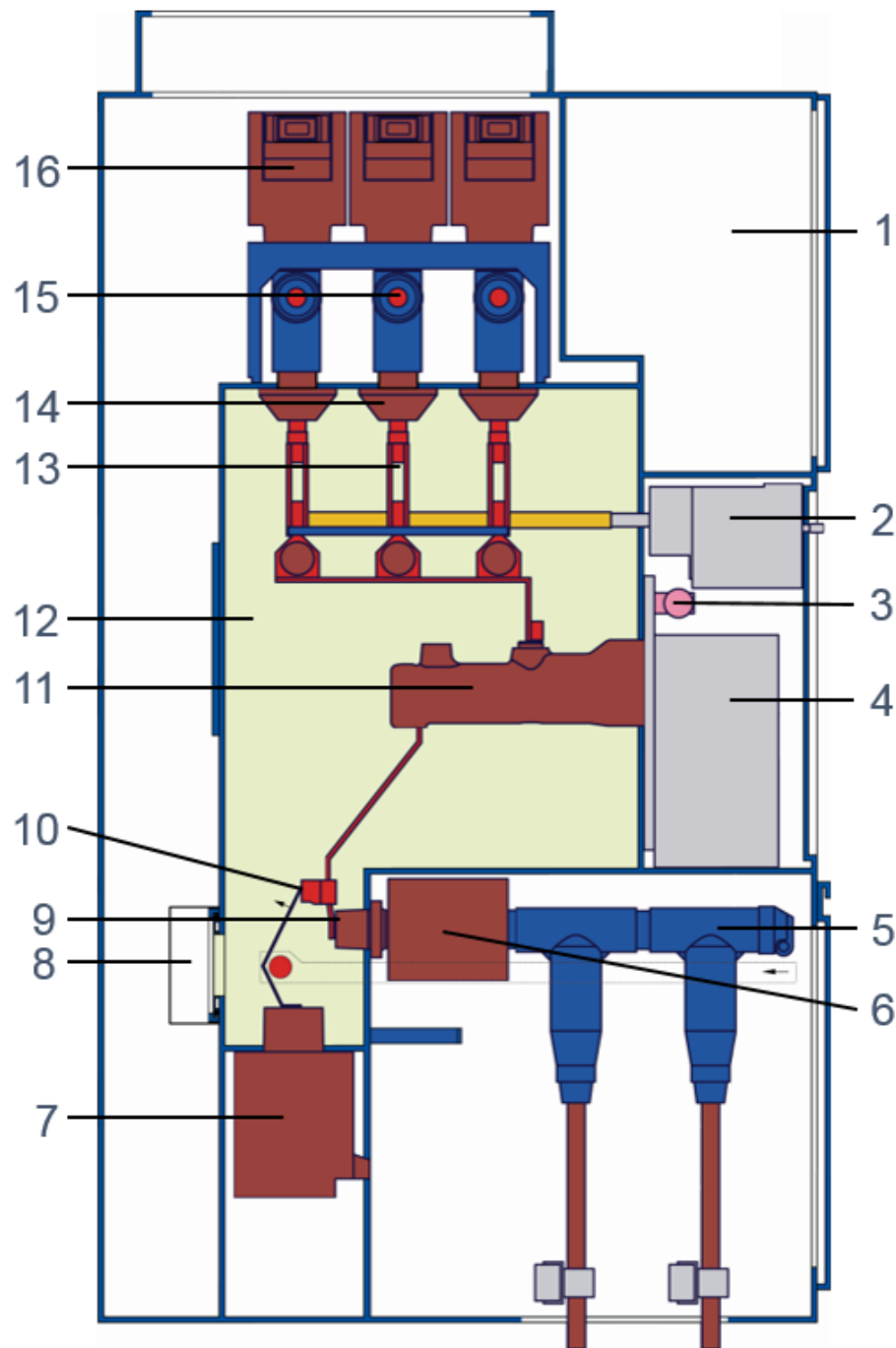
EXAMPLE

Outgoing 1250 A

Width: 600 mm
Height: 2400 mm
Depth: 1330 mm
Weight: ~ 900 kg

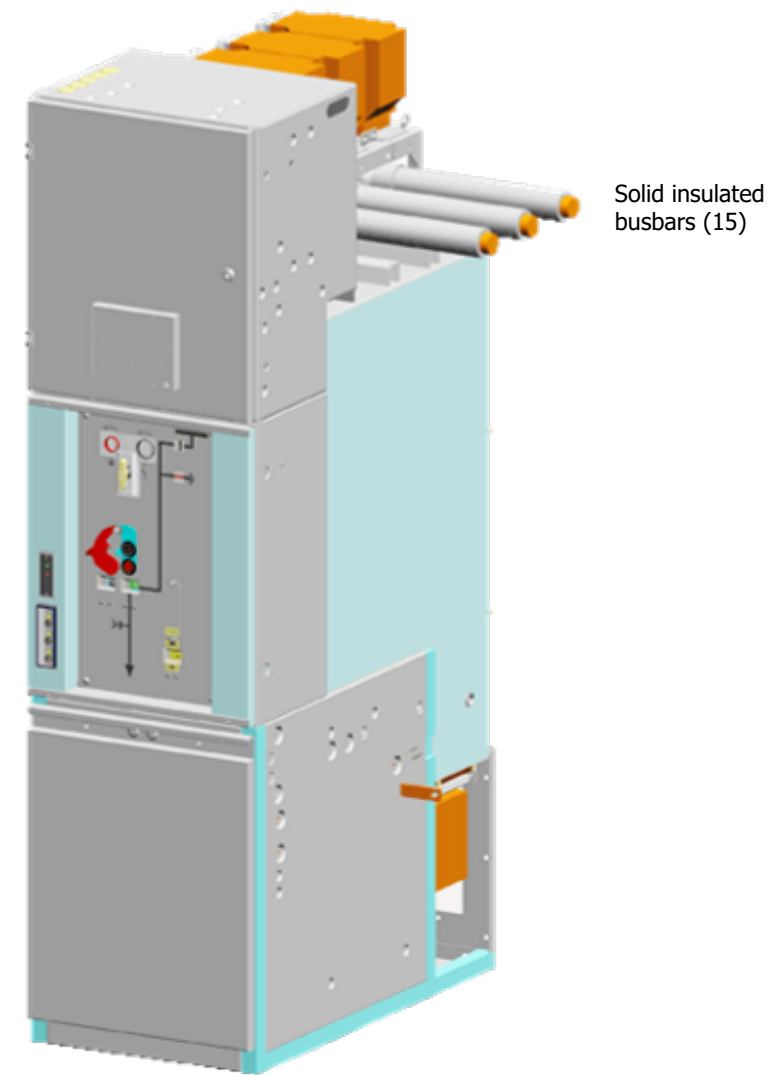
MAIN FEATURES


- Routine tested in ABB GIS factory including leakage test
- Gas will be filled in ABB GIS factory (no gas handling required at site)
- Power parts (gas compartments) are maintenance free for life time
- The average time for the erection of one panel type ZX0.2 takes 5-6 hours
- Very compact design (450 mm panel width is available for feeders with current of 630 A)
- Expected life time > 40 years with confirmed leakage rate < 0.1 % per year
- Vacuum circuit breakers equipped
- Panel by panel segregated gas compartments
- Stainless steel gas compartments are provided
- Wall mounted or free standing installation
- Pressure relief into the switchgear room or via duct to outside (on request, limitations may occur)
- Optionally digital version available using sensor technology instead of conventional instrument transformers
- The solid insulated bus bar is located outside of the gas compartments



- | | |
|------------------------------------------------------|------------------------------------------------------------|
| 1 Low voltage compartment | 9 Outer-cone cable bushing |
| 2 Three-position disconnector operating mechanism | 10 Voltage transformer disconnecting device |
| 3 Gas density sensor, filling valve | 11 Vacuum interrupter |
| 4 Circuit-breaker operating mechanism | 12 Panel module |
| 5 Cable plugs | 13 Three-position disconnector |
| 6 Ring type current transformer | 14 Cast resin bushing to busbar |
| 7 Voltage transformer, feeder measurement (optional) | 15 Solid insulated busbars located outside gas compartment |
| 8 Pressure relief disk | 16 Voltage transformer, busbar measurement (optional) |

With mimic diagram






1	11.12.2024		Prepared	Mika Santala	Project name HE Switzerland_Bonaduz Switchgear name Switchgear option 2	Customer ABB Oy		Based on	Ref. designation = CDX +			Lang.	Scale
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Rev.	Description	Date	Name	Date prep. 11.12.2024	Quotation number OPP-24-7151808			General product description			&EEC	B01	20

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1		2		3		4		5		6		7		8				
A	KEY OF VARIANTS															A		
	LABEL					NAME					CURRENT	WIDTH	WEIGHT	QUANTITY				
	Incoming feeder CB					H01					2000 A	1200 mm	2213 kg	1				
	Outgoing feeder CB					H02					630 A	600 mm	912 kg	1				
B	Outgoing feeder CB					H03;H04					630 A	600 mm	912 kg	2				
	QUANTITY OF PANELS : 4																	
C																C		
D																D		
E																E		
F																F		
1		2		3		4		5		6		7		8				
1		11.12.2024		Prepared	Mika Santala		Project name		HE Switzerland_Bonaduz		Customer		Based on		Ref. designation = CDX +		Lang.	Scale
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Rev.	Description	Date	Name	Date prep.	11.12.2024		Quotation number		OPP-24-7151808		ABB		Key of variants				DCC	Page
																	&EDB	F01
																		No. of pages
																		20

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A	<h2>SWITCHGEAR SPECIFICATIONS</h2>								A																																																																				
	Switchgear type:		ZX0.2 Wall mounting																																																																										
	Version:		Fully equipped																																																																										
	Number of cubicles:		4																																																																										
	Rated voltage:		36 kV																																																																										
	Service voltage:		33 kV																																																																										
	Rated frequency:		50 Hz																																																																										
	Power frequency withstand voltage:		70 kV																																																																										
	Impulse withstand voltage (BIL):		170 kV																																																																										
	Condition of partial discharge test:		1.1Un/1.1Un/V3 = 100/10pC																																																																										
B	Rated BB current:		2000 A						B																																																																				
	Rated short circuit current:		20 kA																																																																										
	Rated short circuit current duration:		..3s																																																																										
	Peak current:		50 kA																																																																										
	Internal arc classification (IAC):		20 kA 1s AFL																																																																										
	The IAC qualification relies on an ABB engineered pressure relief system.																																																																												
	Electrical arc sensor:		No																																																																										
	Pressure relief:		Left side via pressure reliefe duct to the outside																																																																										
	Partition class:		PM																																																																										
	Loss of service continuity:		LSC2																																																																										
C	Degree of protection for gas filled compartments:		IP65						C																																																																				
	Degree of protection - LV compartments:		IP3X																																																																										
	Operating pressure:		150 kPa																																																																										
	Will be reduced for transport by air freight																																																																												
	Insulation warning level:		140 kPa																																																																										
	Minimum functional level for insulation:		140 kPa																																																																										
	Tightness leakage rate:		< 0.1% p.a.																																																																										
	Sealed pressure system:		> 40 years																																																																										
	Seismic qualification:		Not applicable																																																																										
	Phase sequence:		L1, L2, L3 (Front to back, Left to right)																																																																										
D	Ambient temperature:		-5...40°C						D																																																																				
	Altitude:		<=1000 m																																																																										
	Installation conditions:		Indoor, clean and dry																																																																										
	Method of neutral point connection:		Solidly earthed neutral																																																																										
	Remote communication protocol:		IEC61850																																																																										
	Communication media:		Electrical																																																																										
	E	<h2>SECONDARY WIRING AND TERMINALS PARAMETERS</h2>								E																																																																			
Nominal voltage:		Standard (450/750 V) - Test voltage 2.5 kV																																																																											
Insulation of secondary wires:		Halogen free																																																																											
Material of cable ducts:		Halogen free ducts																																																																											
DC control circuit:		1.5 mm²	Black																																																																										
Current transformer circuit:		2.5 mm²	Black																																																																										
AC voltage circuit:		1.5 mm²	Black																																																																										
Supply circuit:		2.5 mm²	Black																																																																										
Earthing circuit:		4 mm²	Standard (Green/Yellow)																																																																										
Marking of wires:		Phoenix Marking hose																																																																											
F	Wire ends marking mode:		Device connection code						F																																																																				
	Terminal manufacturer:		Phoenix																																																																										
	Terminal manufacturer and types do not apply to internal wiring terminals																																																																												
	Customer terminals:		Screw connection																																																																										
	Current transformer terminals:		Screw connection																																																																										
	Voltage transformer terminals:		Screw connection																																																																										
	Supply terminals:		Screw connection																																																																										
	Protective earth (PE) terminals:		Screw connection																																																																										
	Spare terminals (customer terminals):		0%																																																																										
	Wiring harness:		Not included																																																																										
G	<h2>AUXILIARY VOLTAGES</h2>								G																																																																				
	Control and signalling circuits:		110 V DC																																																																										
	Circuit breaker spring charger motor:		110 V DC																																																																										
	Disconnecter/Earthing switch:		Not applicable																																																																										
	Second tripping coil:		110 V DC																																																																										
	Anticondensation heaters:		230 V AC																																																																										
	Lighting:		230 V AC																																																																										
	Incoming of auxiliary voltage:		Left																																																																										
			Bottom																																																																										
	Auxiliary voltage connections:		One connection per 15 panels																																																																										
H	<h2>SWITCHGEAR FUNCTIONS</h2>								H																																																																				
	No special functions																																																																												
I	<table><tr><td>1</td><td></td><td>11.12.2024</td><td></td><td>Prepared</td><td>Mika Santala</td><td>Project name</td><td colspan="2">HE Switzerland_Bonaduz</td><td>Customer</td><td colspan="2">Based on</td><td colspan="2">Ref. designation = CDX + SPEC</td><td>Lang.</td><td>Scale</td></tr><tr><td>0</td><td></td><td>07.11.2024</td><td></td><td>Checked</td><td></td><td>Switchgear name</td><td colspan="2">Switchgear option 2</td><td colspan="2">ABB Oy</td><td colspan="2">Document kind Technical specifications</td><td colspan="2">External doc. ID</td><td>EN</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td>Approved</td><td></td><td></td><td colspan="2"></td><td colspan="2">Resp. (division/department)</td><td colspan="2">Title General drawings</td><td colspan="2">Document ID</td><td>DCC</td><td>Page</td><td>No. of pages</td></tr><tr><td>Rev.</td><td>Description</td><td>Date</td><td>Name</td><td>Date prep.</td><td>11.12.2024</td><td colspan="2">Quotation number OPP-24-7151808</td><td colspan="2"></td><td colspan="2"></td><td colspan="2">Technical specifications</td><td>&EEC</td><td>STD01</td><td>20</td></tr></table>								1		11.12.2024		Prepared	Mika Santala	Project name	HE Switzerland_Bonaduz		Customer	Based on		Ref. designation = CDX + SPEC		Lang.	Scale	0		07.11.2024		Checked		Switchgear name	Switchgear option 2		ABB Oy		Document kind Technical specifications		External doc. ID		EN						Approved					Resp. (division/department)		Title General drawings		Document ID		DCC	Page	No. of pages	Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number OPP-24-7151808						Technical specifications		&EEC	STD01	20	I
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1		2		3		4		5		6		7		8	
A	<u>MECHANICAL DESIGN</u>														A
	Structure:		Gas compartments are of stainless steel, other compartments are of coated steel without further surface treatment. Panel doors and switchgear end covers are powder painted.												
	Insulation gas:		SF6												
B	Gas indication:		Indication on protection/control device												B
	Coating color (front):		RAL 7035												
	Coating color (side/rear):		Zinc-plated												
C	Foundation frames:		Fixing on intermediate floor system												C
	Tolerances:		Refer to foundation frames detailed diagram												
	<u>BUSBAR DESIGN</u>														
D	Busbar arrangement:		SBB												D
	Busbar extension:		Possible at both sides												
	Busbar insulation medium:		Solid insulated												
E	Busbar material:		Copper												E
	Busbar connections:		Silver plated												
	<u>LOCKING</u>														
F	LV compartment doors closing version:		Double bit key												F
	LV compartment doors padlock facility:		Not applicable												
	* Padlock option is prepared for 6mm padlock														
G	<u>LABELS</u>														G
	Switchgear rating plate language:		English												
	Devices on LV doors labels language:		German												
H	Devices on LV doors labels design:		OTH												H
	Devices on LV doors labels color:		White with black letter												
	Devices inside LV compartment labels language:		German												
I	Devices inside LV compartment labels design:		OTH												I
	Devices inside LV compartment labels color:		Yellow with black letter												
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HK															HK
HL															HL

Documentation language:	English
Secondary engineering tool:	EPLAN

Documents format: ☒ PDF

Detailed schematics mode: ☐ Per panel

Documents format: ▪ PDF ▪ DWG

Detailed schematics mode: Per panel

- List of contents
- Single line diagram
- Front view
- Floor frame per typical with cut outs
- Civil work drawing with dimension for room
- General technical specification GIS
- Packing list with unit size/ weight
- Pressure relief scheme or duct drawing
- Installation scheme for assembly
- Schematic diagram with material BOM list
- Time schedule
- Factory project team introduction
- TK - technical catalogue for engineering
- Instruction manual switchgear & breaker
- Instruction manual protection relays
- Relay software for programming/ setting
- Instruction manual gas handling SF6

- GIS factory routine test reports
- CT/ VT routine test reports
- FAT report (only, if ordered)
- Painting procedure

Available on request:

- Spare part list
- Storage procedure
- ITP (inspection test plan)
- Guidelines for packing
- Pressure calculation
- Heat loss dissipation data
- AC/DC load

ABB wishes to highlight that values of dimensions and weights provided herein are preliminary and may change after final design preparation, based on final scope of supply and installation details of the switchgear. As a consequence, provided values of dimensions and weights are NOT to be considered as final but only for standard reference purposes.

ACCORDINGLY, YOU EXPRESSLY ACKNOWLEDGE AND AGREE THAT VALUES OF DIMENSIONS AND WEIGHTS PROVIDED HEREIN ARE NEITHER FINAL NOR BINDING AND THAT THE RESULT OF THEIR USE IS NEITHER FEASIBLE NOR ACCURATE NOR ERROR FREE.

ZX0.2 complies with the following relevant IEC standards:

1. IEC 60376, Specification and acceptance of new sulfur hexafluoride (SF6)
2. IEC 62271-1 High-voltage switchgear and controlgear-Part 1: Common specifications
3. IEC 62271-100 High voltage switchgear and controlgear-Part 100: High voltage alternating-current circuit-breakers
4. IEC62271-102 High-voltage switchgear and controlgear - Alternating current disconnectors and earthing switches
5. IEC 62271-200 High voltage switchgear and controlgear-Part 200: AC metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to 52kV

1	11.12.2024		Prepared	Mika Santala	Project name	Customer		Based on		Ref. designation = CDX + SPEC		Lang.	Scale		
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			Approved		Switchgear name					Switchgear option 2		Title		General drawings	
Rev.	Description	Date	Name	Date prep. 11.12.2024	Quotation number	OPP-24-7151808		Resp. (division/department)		Technical specifications		&EEC		STD03	20

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A

SCOPE OF FAT

FAT TYPE

Type II: Functionality inspection - 1 day

- Check of front view (assembly finish, dimensions, door layouts etc.)
- Check of current and voltage transformer data (ratios, accuracies)

Following tests will be performed on max. 1 panel per variant and max. 4 variants in total:

- Check of wiring (execution and labels, secondary equipment acc. to schematics)
- Completeness of loose material
- Basic functions of circuit breaker, disconnecter and earthing switch (ON/OFF)
- Basic panel interlockings (circuit breaker - disconnecter - earthing switch) as far as applicable
- IED (protection relay) trippings and measurements as far as applicable

B

C

FAT OPTIONS

Option 1:

Not applicable

Option 2:

Not applicable

C


D

D

E

E

F

1		11.12.2024		Prepared	Mika Santala	Project name HE Switzerland_Bonaduz	Customer ABB Oy		Based on		Ref. designation = CDX + SPEC		Lang. EN	Scale	
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Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number OPP-24-7151808				General drawings Technical specifications		&EEC STD04		20	

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Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number	OPP-24-7151808											

TYPICAL: Incoming feeder CB H01

Not applicable

RELAYS

No equipment

1		11.12.2024		Prepared	Mika Santala	Project name HE Switzerland_Bonaduz	Customer ABB Oy		Based on		Ref. designation = CDX + TDL			Lang.	Scale
0		07.11.2024		Checked					Switchgear name Switchgear option 2	Document kind Typical details		External doc. ID			EN
				Approved				Resp. (division/department)		Title General drawings Typical details		Document ID		DCC &EPA	Page TDL01
Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number	OPP-24-7151808								

TYPICAL: Outgoing feeder CB H02

- (01) Gas density sensor GMDX100e 150kPa w/o Ith limitation
- (01) Set of miniature circuit breakers - 60/110V DC
- (01) Set of terminals and accessories - standard
- (01) Set of indicator signal lights
- (01) Set of push buttons
- (01) Set of lighting status indicator
- (01) Set of auxiliary relays
- (01) Set of miniature circuit breakers - 110/127/230V AC
- (01) Mounting and wiring of a protection / control relay (type approved by DEABB)

provided by the customer free of charge

Not applicable

RELAYS

ADDITIONAL EQUIPMENT

No equipment

1		11.12.2024		Prepared	Mika Santala	Project name HE Switzerland_Bonaduz Switchgear name Switchgear option 2	Customer ABB Oy		Based on		Ref. designation = CDX + TDL		Lang.	Scale
0		07.11.2024		Checked					Document kind		Typical details		External doc. ID	
				Approved			 Resp. (division/department)		Title		Document ID		DCC	Page
Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number			OPP-24-7151808				&EPA	TDL02

TYPICAL: Outgoing feeder CB H03, H04

- (01) Gas density sensor GMDX100e 150kPa w/o Ith limitation
- (01) Set of miniature circuit breakers - 60/110V DC
- (01) Set of terminals and accessories - standard
- (01) Set of indicator signal lights
- (01) Set of push buttons
- (01) Set of lighting status indicator
- (01) Set of auxiliary relays
- (01) Set of miniature circuit breakers - 110/127/230V AC
- (01) Mounting and wiring of a protection / control relay (type approved by DEABB)

provided by the customer free of charge

Not applicable

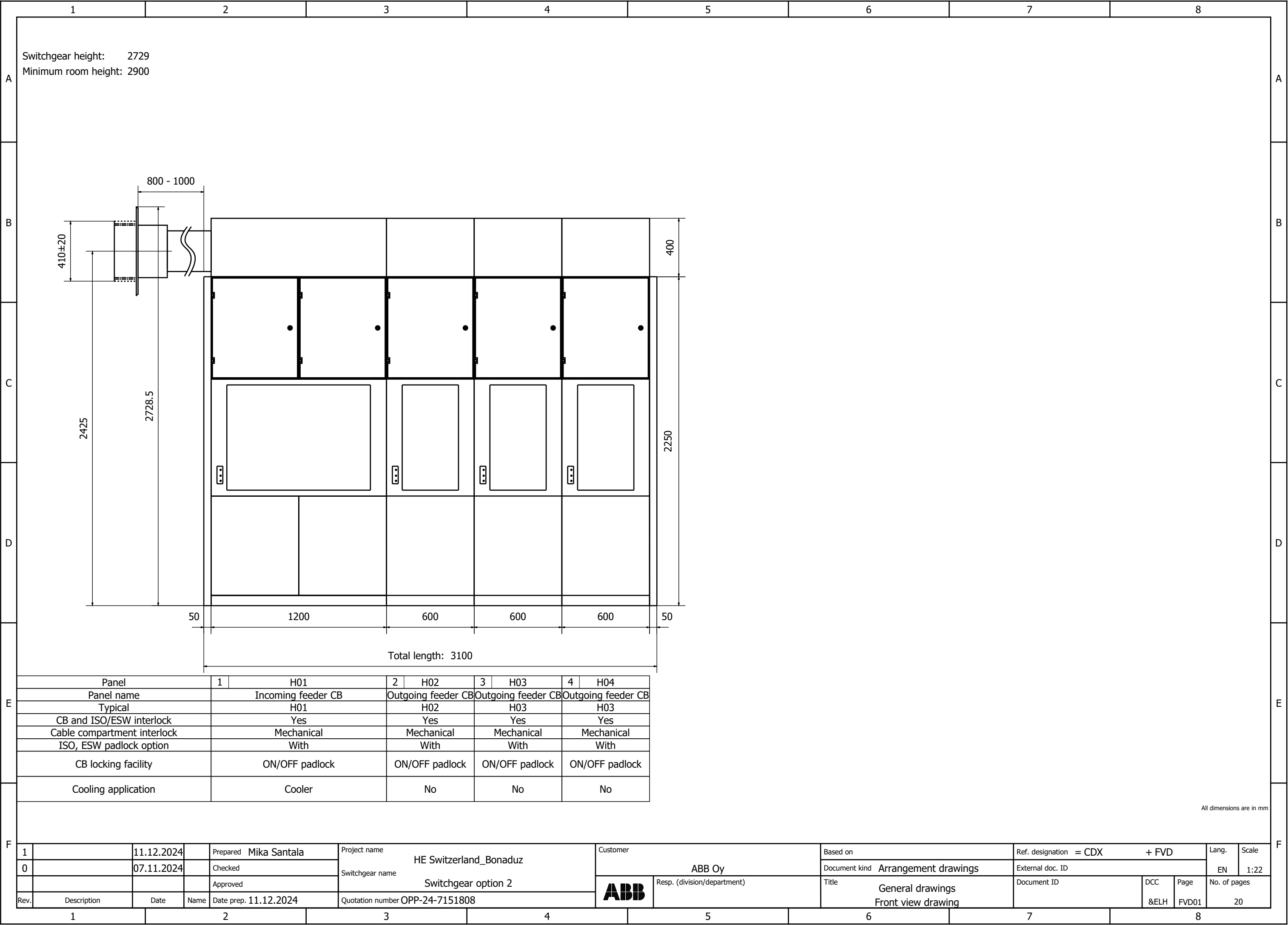
RELAYS

ADDITIONAL EQUIPMENT

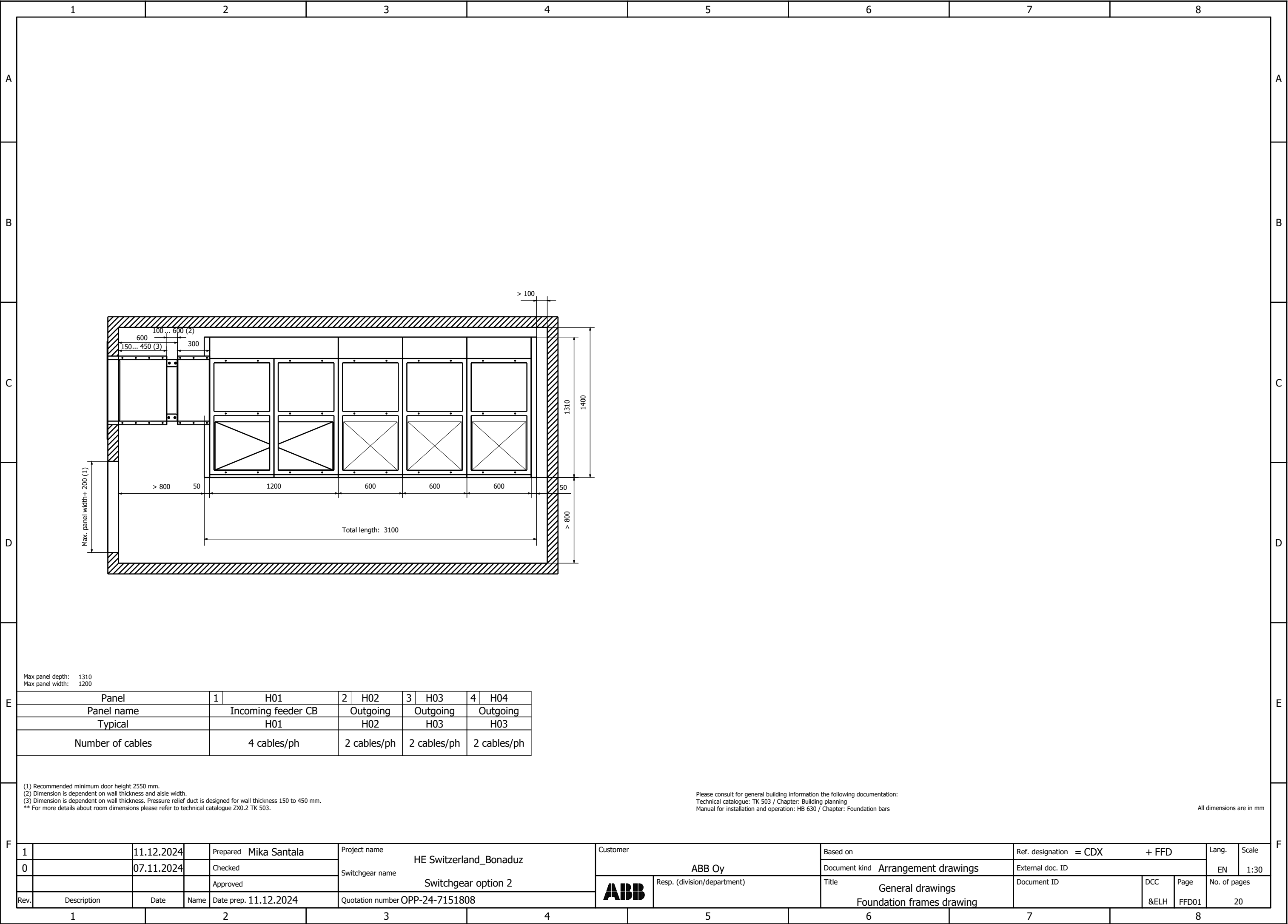
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1		11.12.2024		Prepared	Mika Santala	Project name HE Switzerland_Bonaduz Switchgear name Switchgear option 2	Customer ABB Oy		Based on		Ref. designation = CDX + TDL		Lang.	Scale
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				Approved			 Resp. (division/department)		Title		Document ID		DCC	Page
Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number			OPP-24-7151808				&EPA	TDL03

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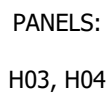


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1		11.12.2024		Prepared	Mika Santala	Project name HE Switzerland_Bonaduz Switchgear name Switchgear option 2 Quotation number OPP-24-7151808	Customer ABB Oy Resp. (division/department)		Based on		Ref. designation = CDX + FFDD		Lang.	Scale																																																												
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Rev.	Description	Date	Name	Date prep.	11.12.2024																																																																					

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All dimensions are in mm

1	11.12.2024		Prepared	Mika Santala	Project name HE Switzerland_Bonaduz Switchgear name Switchgear option 2	Customer ABB Oy		Based on	Ref. designation = CDX + FFDD			Lang.	Scale
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			Approved			 Resp. (division/department)	Title General drawings Foundation frames detailed drawing		Document ID	DCC	Page	No. of pages	
Rev.	Description	Date	Name	Date prep. 11.12.2024	Quotation number OPP-24-7151808						&ELH		

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1		2		3		4		5		6		7		8						
A	GENERAL PROTECTION FUNCTIONS LEGEND															A				
	Code		DESCRIPTION			Code		DESCRIPTION			Code		DESCRIPTION							
	1 <-> 0 CB (1)		Circuit Breaker 1 (2 state inputs / 2 control outputs)			46M		Negative-sequence overcurrent protection			55ITHD		Shunt capacitor bank switching resonance protection, current based							
	1 <-> 0 CB (2)		Circuit Breaker 2 (2 state inputs / 2 control outputs)			46PD		Phase discontinuity protection			55U		Underpower factor protection							
	1 <-> 0 DC		Disconnecter (2 state inputs / 2 control outputs)			46R		Phase-reversal protection			59		Three-phase overvoltage protection							
	21 (21P, 21N)		Distance protection			47		Three-phase positive/negative sequence voltage protection			59.S1		Three-phase overvoltage variation protection							
B	21FL		Fault locator			48,14		Motor startup supervision			59G		Residual overvoltage protection			B				
	21G		Three-phase underimpedance protection			49,66,48,50TDLR		Motor start-up supervision			59G/59N		Residual overvoltage protection							
	21LAL		Local acceleration logic			49F		Three-phase thermal overload protection (feeders + cables)			59NS		Negative-sequence overvoltage protection							
	21NY		Admittance-based earth-fault protection			49M		Three-phase thermal overload protection for motors			59NU		Compensated neutral unbalance voltage protection							
	21P,21N		Distance protection			49T		Three-phase thermal overload protection (transformers)			59PS		Positive-sequence overvoltage protection							
	21YN		Admittance-based earth-fault protection			49T/G/C		Three-phase thermal overload protection, two time constants			60		Fuse failure supervision							
C	24		Overexcitation protection			50,51		Three-phase non-directional overcurrent protection			60N		Current unbalance protection for shunt capacitor banks			C				
	25		Synchrocheck			50BF		Circuit breaker failure protection			60P		Three-phase current unbalance protection for shunt capacitor banks							
	27		Three-phase undervoltage protection			50G/50N		Non-directional earth-fault protection, instantaneous stage			64R		Rotor earth-fault protection (injection method)							
	27PS		Positive-sequence undervoltage protection			50N, 51N (or 50G, 51G)		Non-directional earth-fault protection			64TN		Third harmonic-based stator earth-fault protection							
	27RT		Low voltage ride through protection			50P		Three-phase non-directional overcurrent protection, instantaneous stage			66		Motor start counter							
	32N		Wattmetric based earth-fault protection			50P/51P_3		Three-independent-phase non-directional overcurrent protection			67		Three-phase directional overcurrent							
D	32O/32R		Reverse power/Directional overpower protection			50TDJAM		Motor load jam protection			67-1_3 / 67-2_3		Directional three-independent-phase directional overcurrent protection			D				
	32Q		Directional reactive power undervoltage protection			51,37,86C		Three-phase overload protection for shunt capacitor banks			67G/N-1 51G/N-1		Directional earth-fault protection, low stage							
	32Q,27		Directional reactive power undervoltage protection			51BF/51NBF		Circuit breaker failure protection			67G/N-1 51G/N-2		Directional earth-fault protection, high stage							
	32R/32O		Reverse power/directional overpower protection			51G/51N-1		Non-directional earth-fault protection, low stage			67N		Directional earth-fault protection							
	32U		Three-phase directional underpower protection			51G/51N-2		Non-directional earth-fault protection, high stage			67NIEF		Directional earth-fault sensitive							
	37		Three-phase non-directional undercurrent protection			51LR		Motor load jam protection			67N-TC		Neutral power directional element							
E	3I		Three-phase current			51NH		Harmonics-based earth-fault protection			67NTEF/NIEF		Transient/intermittent earth-fault protection			E				
	3I (B)		Three-phase current, B stage			51NHA		Harmonics based earth-fault protection			67NYH		Multifrequency admittance-based earth-fault protection							
	3Upp		Three-phase voltage measurement (phase-to-phase)			51P-1		Three-phase non-directional overcurrent protection, low stage			67P/51P-1		Three-phase directional overcurrent protection, low stage							
	40		Three-phase underexcitation protection			51P-2		Three-phase non-directional overcurrent protection, high stage			67P/51P-2		Three-phase directional overcurrent protection, high stage							
	46		Negative-sequence overcurrent protection			51V		Voltage dependent overcurrent protection			67P-TC		Three-phase power directional element							
F																F				
	1		11.12.2024		Prepared	Mika Santala		Project name		HE Switzerland_Bonaduz		Customer		Based on			Ref. designation = CDX + LEG		Lang.	Scale
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	Rev.	Description	Date	Name	Date prep.	11.12.2024		Quotation number		OPP-24-7151808		ABB		General protection legend				DCC	Page	No. of pages
																		&EDB	LEG01	20
1		2		3		4		5		6		7		8						

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GENERAL PROTECTION FUNCTIONS LEGEND																			
A	Code		DESCRIPTION			Code		DESCRIPTION			Code		DESCRIPTION						
	67Q		Directional negative-sequence overcurrent protection			87NHI		High-impedance based restricted earth-fault protection			CBCM (1)		CB electric wear 1						
B	67YN		Multifrequency admittance-based earth-fault			87NL		Low-impedance stabilised restricted earth-fault protection			CBCM (2)		CB electric wear 2						
	68		Three-phase current inrush detection			87NLI		Numerical stabilized low-impedance restricted earth- fault protection			DREC		Disturbance recorder						
	68HB		Three-phase inrush detector			87T		Transformer differential protection for two-winding transformers			f		Frequency						
	69		Local/remote switch interface - by HMI			87T3		Stabilized and instantaneous differential protection for two- or three-winding transformers			FLOC		Fault locator						
C	74 TCS		Trip-circuit supervision			94/86		Master trip			HIZ		High-impedance fault detection						
	78PS		Out-of-step protection with double blinders			ADD1		Synchronous machine add-on package			I1, I2, I0		Sequence current						
	78VS		Voltage vector shift protection			ADD2		3-winding power transformer add-on package			In		Neutral current						
	79		Autoreclosing			AFD		Arc protection			In (B)		Neutral current, B stage						
D	81		Frequency protection			APP1		Feeder earth fault protection extension package			LOADPROF		Load profile record						
	81LSH		Load shedding			APP2		Feeder fault locator package			MAP		Multipurpose protection						
	81U,81O		Underfrequency/overfrequency protection incl. rate of change			APP3		Line distance protection package			MCS 3I		Current circuit supervision						
	85 21CREV,WEI		Current reversal and weak-end infeed logic			APP4		Line differential protection package			OPTM		Runtime counter for machines and devices						
E	85 21SCHLGC		Scheme communication logic			APP5		Shunt capacitor protection package			P, E		Three-phase power and energy (incl. cos j)						
	85 67G/N CREV,WEI		Current reversal and weak-end infeed logic for residual overcurrent			APP6		Interconnection protection package			SOTF		Automatic switch-onto-fault logic						
	85 67G/N SCHLGC		Communication logic for residual overcurrent			APP7		Machine protection package			TCM		Trip circuit supervision						
	86		Electrically latched lockout - by IED			APP8		Power Transformer protection package			U<>		Station battery voltage						
F	87		High-impedance busbar differential protection			APP9		Busbar protection package			U1, U2, U0		Sequence voltage						
	87_A		High-impedance differential protection for phase A			APP10		OLTC control package (automatic voltage regulator)			Vn		Residual voltage measurement						
	87_B		High-impedance differential protection for phase B			APP11		Generator autosynchronizer package											
	87_C		High-impedance differential protection for phase C			APP12		Network autosynchronizer package											
G	87G,87M		High-impedance/flux-balance based differential protection for motors/generators			APP13		Petersen coil control package											
	87HIM		High-impedance or flux-balance based differential protection			BST		Binary signal transfer											
	87L		Line differential protection with inzone power transformer			CBCM		Gas pressure supervision											
	87M		Stabilized three-phase differential protection for motors			CBCM		Spring charging control 1											
H	87M/87G		Stabilized and instantaneous differential protection for machines			CBCM		Breaker travel time 1											
	87NH		High-impedance based restricted earth-fault protection			CBCM		CB Scheduled maintenance											
I	1		11.12.2024		Prepared	Mika Santala		Project name		HE Switzerland_Bonaduz		Customer		Based on		Ref. designation = CDX + LEG		Lang.	Scale
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					Approved							Resp. (division/department)		Title		General drawings		Document ID	No. of pages
	Rev.	Description	Date	Name	Date prep.	11.12.2024		Quotation number		OPP-24-7151808		ABB		General protection legend		&EDB		LEG02	20
1		2		3		4		5		6		7		8					

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CIRCUIT BREAKER LEGEND																THREE POSITION SWITCH LEGEND																LOAD SWITCH LEGEND															
IEC/VDE		DESCRIPTION				IEC/VDE		DESCRIPTION				IEC/VDE		DESCRIPTION																																	
MAS/M0		Charging motor for spring mechanism				MAD/M1		Drive motor				MAS/Q0M0		Motor drive																																	
BGS1/S1		Auxiliary switch on spring charging mechanism				BGI15/S15		Microswitch to detect switch position "disconnector OFF"				BGI1/Q0S3		Auxiliary switch "switch disconnector ON/OFF"																																	
MBO1/Y2		Shunt release OFF				BGI16/S16		Microswitch to detect switch position "disconnector ON"				BGI2/Q0S4		Auxiliary switch "switch disconnector ON/OFF"																																	
MBC/Y3		Shunt release ON				BGE57/S57		Microswitch to detect switch position "earthing switch OFF"				BGI3/Q0S13		Auxiliary switch "switch disconnector ON/OFF"																																	
BGB1/S3		Auxiliary switch "CB ON/OFF"				BGE58/S58		Microswitch to detect switch position "earthing switch ON"				BGI4/Q0S14		Auxiliary switch "switch disconnector ON/OFF"																																	
BGB2/S4		Auxiliary switch "CB ON/OFF"				BGI1		Auxiliary switch "disconnector ON/OFF"				BGE1/Q8S1		Auxiliary switch "earthing switch ON/OFF"																																	
BGB3/S5		Auxiliary switch "CB ON/OFF"				BGI11/S11		Auxiliary switch "disconnector OFF"				BGE2/Q8S2		Auxiliary switch "earthing switch ON/OFF"																																	
KFN/K0		Anti-pumping device				BGI12/S12		Auxiliary switch "disconnector ON"				BGE3/Q8S11		Auxiliary switch "earthing switch ON/OFF"																																	
RLE1/Y1		Blocking magnet "CB ON"				BGE5		Auxiliary switch "earthing switch ON/OFF"				BGE4/Q8S12		Auxiliary switch "earthing switch ON/OFF"																																	
BGL1/S2		Auxiliary switch for blocking magnet				BGE51/S51		Auxiliary switch "earthing switch OFF"				BGS1/Q0S1		Limit switch for motor control of switch disconnector																																	
BGB4/S7		Auxiliary switch for fault signal (impulse time 35 ms)				BGE52/S52		Auxiliary switch "earthing switch ON"				BGS2/Q0S2		Limit switch for motor control of switch disconnector																																	
MBU/Y4		Undervoltage release				BGL1/S151		Auxiliary switch on cover plate				MIO1/Q0Y2		Shunt release OFF																																	
MBO3/Y7		Indirect overcurrent release				BGL2/S152		Auxiliary switch on cover plate				RLE4/Q0Y1		Blocking magnet "switch disconnector"																																	
MBO2/Y9		2nd shunt release OFF				RLE1/Y1		Blocking magnet "disconnector"				RLE3/Q8Y1		Blocking magnet "earthing switch"																																	
						RLE5/Y5		Blocking magnet "earthing switch"				BGL3/Q8S5		Auxiliary switch for blocking magnet earthing switch																																	
						RLE11/Y11		Blocking magnet "CB OFF" button				BGL4/Q0S5		Auxiliary switch for blocking magnet switch disconnector																																	
						BGL3/S153		Microswitch for access blocking of "CB OFF" button				BGL5/Q8S151		Auxiliary switch "selector slide position earthing switch"																																	
						BGL4/S154		Microswitch for access blocking of "CB OFF" button				BGL6/Q0S151		Auxiliary switch "selector slide position disconnector"																																	
						BGE3.1,3.2,3.3/B5E1,2,3		Reed contacts to detect the switch position "earthing switch ON"				BGF/F1S1		Auxiliary switch "HV HRC fuse blown"																																	
												FCF/F1		HV HRC fuse																																	

	1	2	3	4	5	6	7	8																																																																																															
A	<div>GENERAL SYMBOL LEGEND</div>								A																																																																																														
	SYMBOL		DESCRIPTION		SYMBOL		DESCRIPTION																																																																																																
B			Fixed voltage transformer				Normally-closed disconnecting device with earthing position																																																																																																
			Pluggable voltage transformer				Circuit breaker with motorized spring charging																																																																																																
C			Phase current transformer				Cable socket size 2																																																																																																
			Neutral current transformer				Capacitive divider for voltage indicator																																																																																																
			Three-position switch (hand-operated/motorized)				Surge arrester																																																																																																
D			Three-position load break switch (hand-operated/motorized)				Current sensor																																																																																																
			Fuse				Voltage sensor																																																																																																
E			Earthing switch																																																																																																				
F	<table><tr><td>1</td><td></td><td>11.12.2024</td><td></td><td>Prepared</td><td>Mika Santala</td><td>Project name</td><td colspan="2">HE Switzerland_Bonaduz</td><td>Customer</td><td colspan="2">ABB Oy</td><td>Based on</td><td colspan="2">Ref. designation = CDX + LEG</td><td>Lang.</td><td>Scale</td></tr><tr><td>0</td><td></td><td>07.11.2024</td><td></td><td>Checked</td><td></td><td>Switchgear name</td><td colspan="2">Switchgear option 2</td><td></td><td colspan="2">Resp. (division/department)</td><td>Document kind</td><td colspan="2">Designation system</td><td colspan="2">External doc. ID</td><td>EN</td><td></td></tr><tr><td></td><td></td><td></td><td></td><td>Approved</td><td></td><td></td><td colspan="2"></td><td></td><td colspan="2"></td><td>Title</td><td colspan="2">General drawings General symbol legend</td><td>Document ID</td><td>DCC &EDB</td><td>Page LEG04</td><td>No. of pages 20</td></tr><tr><td>Rev.</td><td>Description</td><td>Date</td><td>Name</td><td>Date prep.</td><td>11.12.2024</td><td>Quotation number</td><td colspan="2">OPP-24-7151808</td><td colspan="10"></td></tr><tr><td colspan="2">1</td><td colspan="2">2</td><td colspan="2">3</td><td colspan="2">4</td><td colspan="2">5</td><td colspan="2">6</td><td colspan="2">7</td><td colspan="2">8</td></tr></table>												1		11.12.2024		Prepared	Mika Santala	Project name	HE Switzerland_Bonaduz		Customer	ABB Oy		Based on	Ref. designation = CDX + LEG		Lang.	Scale	0		07.11.2024		Checked		Switchgear name	Switchgear option 2			Resp. (division/department)		Document kind	Designation system		External doc. ID		EN						Approved								Title	General drawings General symbol legend		Document ID	DCC &EDB	Page LEG04	No. of pages 20	Rev.	Description	Date	Name	Date prep.	11.12.2024	Quotation number	OPP-24-7151808												1		2		3		4		5		6		7		8		F
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