

A



Electrification Distribution Solutions

UniSec

AIS Medium Voltage Systems

B

CUSTOMER : **SINELEC Spa**

ORDER : **8230003230** ITEM : **20000**

PROJECT : **ALFU_231109114121_002**


SWITCHGEAR NAME : **CABINA DI CONSEGNA SUD HBC**

DOCUMENT : **General Arrangement Drawings**

D

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Based on	Title COVER SHEET	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
	General Arrangement Drawings	Approved Uff. Ing.	Ref. designation	Lang en
	Project name SINELEC Spa ALFU_231109114121_002	 ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0002	Page A01
			Cont A03	

1

2

3

4

5

6

7

8

F

REVISION LIST				
INDEX REV	DESCRIPTION	DATE	PREPARED	APPROVED
A	FIRST ISSUE	09/11/2023	Gen. autom.	Uff. Ing.
B				
C				
D				
E				
F				
G				
H				
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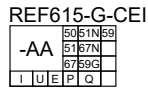
Based on	Title	INDEX OF SHEETS	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		General Arrangement Drawings	Approved	Uff. Ing.	Ref. designation			Lang	en
	Project name	SINELEC Spa	ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0002			Page	A03	
		ALFU_231109114121_002					Cont	A10	

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A	REFERENCE DESIGNATION OF OBJECTS IN ELECTRICAL DOCUMENTS								
	(IN COMPLIANCE WITH STANDARD IEC 81346-2 AND ABB TECHNICAL STANDARD 2NBA000001)								
B	DESIGNATION	DESCRIPTION			-PFV2	VOLTAGE INDICATOR ON BUSBAR SIDE			
	-AA	MULTIFUNCTION UNIT (CENTRAL UNIT)			-PGA	AMMETERS			
	-BAR	VOLTAGE PROTECTION RELAY			-PGF	FREQUENCYMETERS			
	-BAS1,2,3	VOLTAGE SENSORS			-PGI	HUMAN MACHINE INTERFACE			
	-BAT1,2,3	VOLTAGE TRANSFORMERS			-PGJ	ACTIVE ENERGY METERS			
	-BAT4,5,6	ADDITIONAL VOLTAGE TRANSFORMERS			-PGK	REACTIVE ENERGY METERS			
	-BCD	DIFFERENTIAL PROTECTIVE RELAY			-PGM	MULTIFUNCTION INDICATORS			
	-BCF	FEEDER PROTECTION RELAY			-PGQ	VARMETERS			
	-BCG	GENERATOR PROTECTION RELAY			-PGV	VOLTMETERS			
	-BCM	MOTOR PROTECTION RELAY			-PGW	WATTMETERS			
C	-BCN	NEUTRAL (RESIDUAL) CURRENT TRANSFORMER			-QAB	CIRCUIT-BREAKERS			
	-BCP	TRANSFORMER PROTECTION RELAY			-QAC	CONTACTORS FOR POWER			
	-BCR	CURRENT PROTECTION RELAY			-QAM	MOTOR STARTERS			
	-BCS1,2,3	CURRENT SENSORS			-QAV	VARIABLE SPEED DRIVES (VSD)			
	-BCT1,2,3	CURRENT TRANSFORMERS			-QBD	DISCONNECTORS			
	-BCT4,5,6	ADDITIONAL CURRENT TRANSFORMERS			-QBF	FUSE SWITCH			
	-BCT7,8,9	ADDITIONAL CURRENT TRANSFORMERS			-QBH	MANUAL CIRCUIT-BREAKERS			
	-BCZ	DISTANCE PROTECTION RELAY			-QBS	SWITCH-DISCONNECTORS			
	-BEF	FREQUENCY PROTECTION RELAY			-QCE	EARTHING SWITCH			
	-BER	SUPERVISION RELAYS			-RAA	FERRO-RESONANCE DUMPING RESISTOR			
D	-BES	SYNCHRONIZING RELAY			-RB	UNINTERRUPTIBLE POWER SUPPLIES (UPS)			
	-BPS4	GAS DENSITY SENSOR			-RLE1	ELECTROMECHANICAL LOCK PREVENTING CIRCUIT-BREAKER CLOSING			
	-BET	THERMAL PROTECTION RELAY			-RLE2	ELECTROMECHANICAL LOCK PREVENTING TRUCK RACKING-IN/OUT			
	-BUS1,2,3	COMBINED CURRENT AND VOLTAGE SENSORS			-RLE3	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF EARTHING SWITCH			
	-FA1,2,3	SURGE ARRESTERS			-RLE4	ELECTROMECHANICAL LOCK PREVENTING THE DOOR OPENING OPERATION			
	-FCF1,2,3	MEDIUM VOLTAGE FUSES			-RLE5	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF LINE SWITCH			
	-GA	GENERATORS			-RLE8	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF BUSBAR EARTHING SWITCH			
	-KFL	LOCKOUT RELAY			-SFA	AMMETRIC SWITCHES			
	-KFU	CONCENTRATOR			-SFV	VOLTMETRIC SWITCHES			
	-KZA	NETWORK SWITCHES (COMMUNICATION)			-TA	POWER TRANSFORMERS			
E	-MAD	MOTOR FOR ELECTRICAL OPERATION OF SWITCH-DISCONNECTOR -QBS			-TFM	AMBIENT TEMPERATURE SENSOR			
	-MAE	MOTOR FOR ELECTRICAL OPERATION OF EARTHING SWITCH -QCE			-TFT1,2,3	TEMPERATURE SENSORS			
	-MAS	MOTOR FOR CIRCUIT-BREAKER SPRINGS CHARGING			-TFT4,5,6	ADDITIONAL TEMPERATURE SENSORS			
	-MAT	MOTOR FOR ELECTRICAL OPERATION OF TRUCK RACKING-IN/OUT			-TFT7,8,9	ADDITIONAL TEMPERATURE SENSORS			
	-MBC	CLOSING RELEASE OF CIRCUIT-BREAKER			-XDM	SEALABLE TERMINAL BLOCK FOR MEASUREMENT			
	-MBC4	CLOSING RELEASE OF SWITCH-DISCONNECTOR -QBS							
	-MBO1	FIRST OPENING RELEASE OF CIRCUIT-BREAKER							
	-MBO2	SECOND OPENING RELEASE OF CIRCUIT-BREAKER							
	-MBO3	OPENING SOLENOID FOR OVERCURRENT RELEASE OF CIRCUIT-BREAKER							
	-MBO4	OPENING RELEASE OF SWITCH-DISCONNECTOR -QBS							
F	-MBU	UNDERVOLTAGE RELEASE OF CIRCUIT-BREAKER							
	-MBU4	UNDERVOLTAGE RELEASE OF SWITCH-DISCONNECTOR -QBS							
	-PFV	VOLTAGE INDICATORS							
	-PFV1	VOLTAGE INDICATOR ON FEEDER SIDE							
Based on		Title		Prepared		Project No./Item		Revision	
		REFERENCE DESIGNATIONS		Gen. autom.		8230003230		20000	
		General Arrangement Drawings		Approved		Ref. designation		Lang	
		Project name		SINELEC Spa		Doc. No.		Page	
		ALFU_231109114121_002		ABB Electrification Distribution Solutions		1VCE029616T0002		A10	
								Cont	
								C01	
1		2		3		4		5	
6		7		8					

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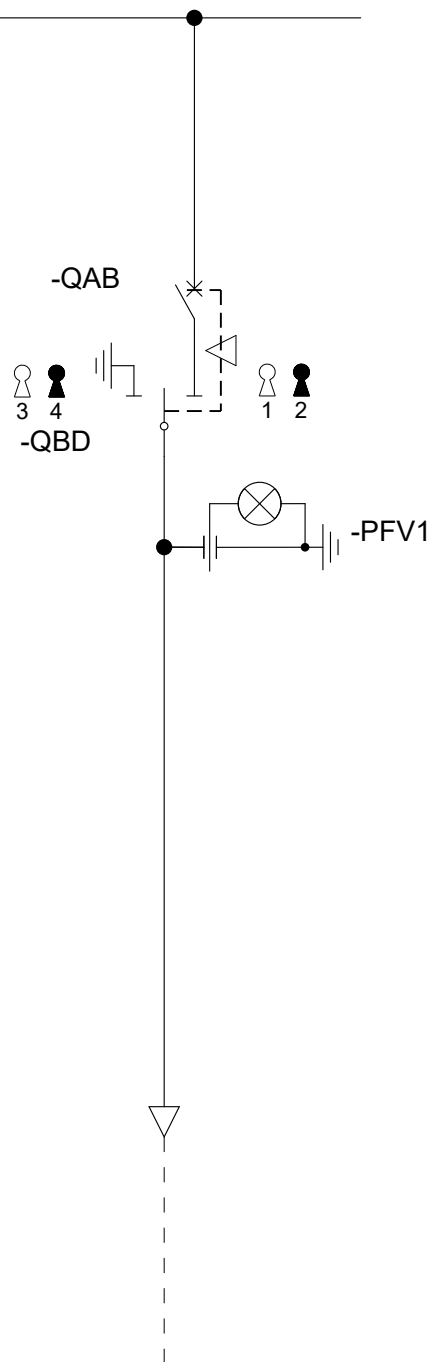
	1	2	3	4	5	6	7	8	
A	CHARACTERISTICS (IN COMPLIANCE WITH STANDARD IEC 62271-200)				NOTES				A
B	SWITCHGEAR VERSION = COMPLETE				COLOUR OF FRONT DOORS = RAL 7035				B
	RATED VOLTAGE (Un) = 24 kV				SIDEWALLS PAINTED = NO SIDES = LEFT				
	OPERATING VOLTAGE = 23 kV				AUTOMATION AND CONTROL				
	RATED FREQUENCY (fr) = 50 Hz								
C	RATED LIGHTNING IMPULSE WITHSTAND VOLTAGE (Up) = 125 kV				ETHERNET COMMUNICATION PROTOCOL = IEC61850 - Modbus TCP				C
	RATED POWER FREQUENCY WITHSTAND VOLTAGE (Ud) = 50 kV				SERIAL COMMUNICATION PROTOCOL = Modbus				
	RATED CURRENT OF MAIN BUSBARS (Ir) = 630 A				IEC61850 EDITION = 2.0				
	RATED SHORT-TIME WITHSTAND CURRENT (Ik) = 16 kA				COMMUNICATION MEDIA = Ethernet - RS-485				
D	RATED PEAK WITHSTAND CURRENT (Ip) = 40 kA				SUPPLIED IMPLEMENTS				D
	RATED DURATION OF SHORT CIRCUIT (tk) = 1 s								
	INTERNAL ARC CLASSIFICATION (IAC) = AFLR				MIMIC DIAGRAM				
	ARC TEST CURRENT (Ia) = 16 kA x 1s				COUPLE OF SIDES CLOSING				
E	AMBIENT CONDITION = NORMAL				BOTTOM CLOSURE				E
	AMBIENT AIR TEMPERATURE = -5°C...+40°C				ISOLATOR OPERATING LEVER				
	DEGREE OF PROTECTION (OPERATION SEATS EXCLUDED) = IP3X								
	DEGREE OF PROTECTION WITH OPEN DOORS = IP2X								
F	RATED SUPPLY VOLTAGE OF CONTROL AND SIGNALLING CIRCUITS (Ua) = 230VAC								F
	RATED SUPPLY VOLTAGE OF SPRING CHARGING MOTOR (Ua) = 230VAC								
	RATED SUPPLY VOLTAGE OF LIGHTING AND HEATING CIRCUITS (Ua) = 230VAC								
	RATED VOLTAGE OF LOW VOLTAGE CONDUCTORS (Uo/U) = 450/750V								
F	TYPE OF CABLE FOR LOW VOLTAGE CONDUCTORS = PVC								
	CROSS-SECTION OF CONDUCTORS FOR VOLTAGE CIRCUITS = 1.5 mm²								
	CROSS-SECTION OF OTHER CONDUCTORS (CONTROL AND SIGNALLING CIRCUITS) = 1 mm²								
	CROSS-SECTION OF CONDUCTORS FOR INTERCONNECTIONS = 2.5 mm²								
F	CROSS-SECTION OF CONDUCTORS FOR INTERCONNECTIONS OF SUPPLY VOLTAGE = 4 mm²								
Based on		Title			Prepared		Project No./Item		Revision
		GENERAL CHARACTERISTICS			Gen. autom.		8230003230 20000		A
		General Arrangement Drawings			Approved		Ref. designation		Lang
		Project name			ABB Electrification Distribution Solutions		Doc. No. 1VCE029616T0002		Page
		SINELEC Spa							C01
		ALFU_231109114121_002							Cont
	1	2	3	4	5	6	7	8	



Based on	Title SINGLE LINE DIAGRAM	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
	General Arrangement Drawings	Approved Uff. Ing.	Ref. designation	Lang en
	Project name SINELEC Spa ALFU_231109114121_002	ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0002	Page D01 Cont E01

- OPENING CIRCUIT BREAKER
- PUT THE KEY INTO THE OPERATING SEAT OF THE SWITCH-DISCONNECTOR
- SWITCH-DISCONNECTOR OPENING
- REMOVE THE KEY
- PUT THE KEY INTO THE EARTH OPERATING SEAT OF THE SWITCH-DISCONNECTOR
- SWITCH-DISCONNECTOR CLOSING IN THE EARTHING POSITION
- REMOVE THE KEY
- OPEN THE DOOR OF MEDIUM VOLTAGE COMPARTIMENT

—REPEAT THE OPERATION OF "PUTTING OUT OF SERVICE" IN OPPOSITE SEQUENCE




	KEY	MATRIX
➡	-QBD ...2	
⬅	-QBD ...1	
➡	-QBD ...3	
⬅	-QBD ...4	

Panel = H01

 = KEY FREE WITH APPARATUS IN OPEN POSITION

 = KEY FREE WITH APPARATUS IN CLOSED POSITION

Based on	KEY INTERLOCKING	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A	
	General Arrangement Drawings	Approved	Uff. Ing.	Ref. designation				Lang	en
	Project name	 ABB Electrification Distribution Solutions		Doc. No.	1VCE029616T0002			Page	E01
	ALFU_231109114121_002			Cont				E02	



-PFV1

- PUT THE KEY INTO THE OPERATING SEAT OF THE SWITCH-DISCONNECTOR
- SWITCH-DISCONNECTOR OPENING
- REMOVE THE KEY
- PUT THE KEY INTO THE EARTH OPERATING SEAT OF THE SWITCH-DISCONNECTOR
- SWITCH-DISCONNECTOR CLOSING IN THE EARTHING POSITION
- REMOVE THE KEY
- OPEN THE DOOR OF MEDIUM VOLTAGE COMPARTIMENT

—REPEAT THE OPERATION OF "PUTTING OUT OF SERVICE" IN OPPOSITE SEQUENCE

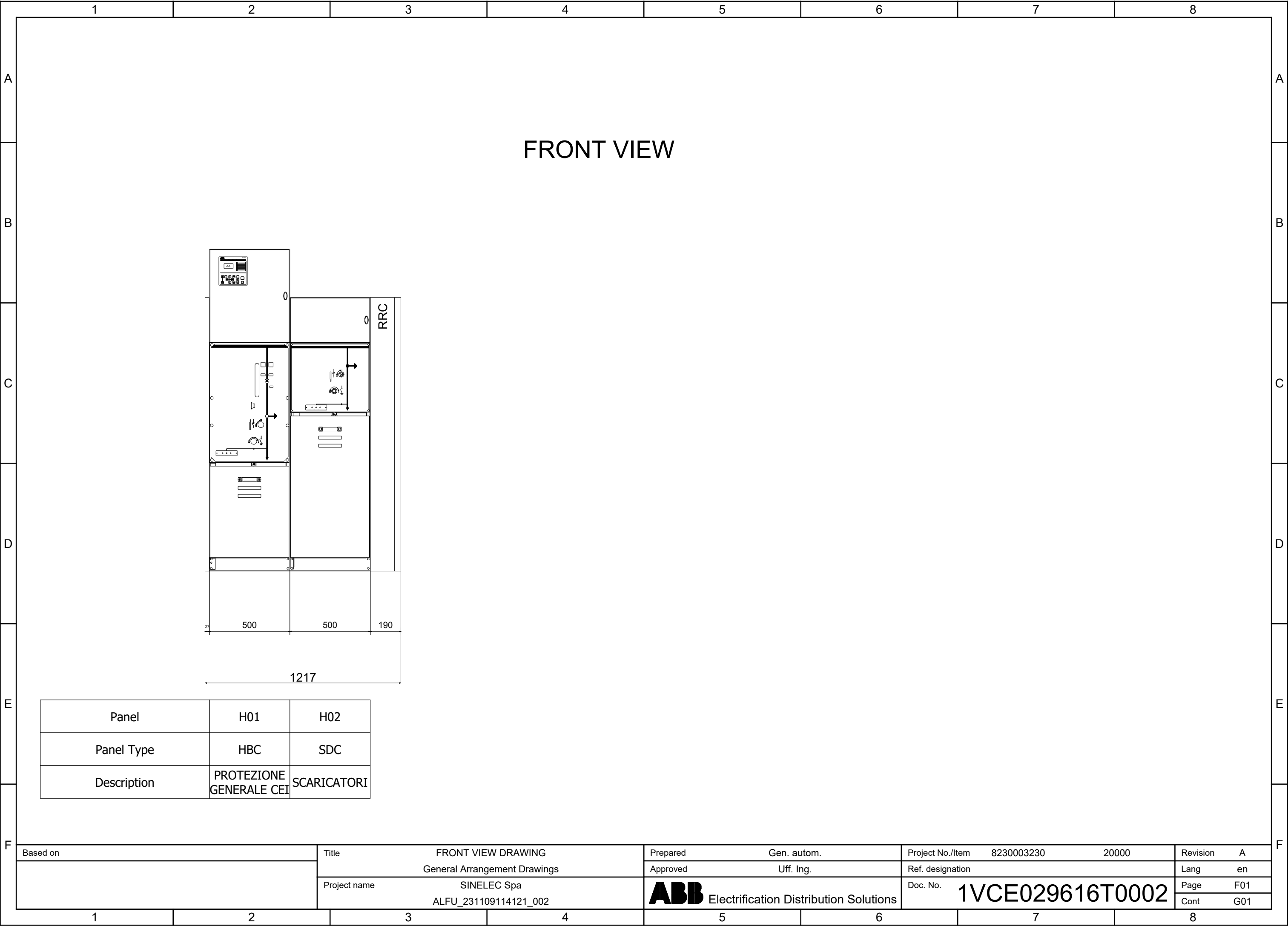
🔑 = KEY FREE WITH APPARATUS IN OPEN POSITION

🔒 = KEY FREE WITH APPARATUS IN CLOSED POSITION

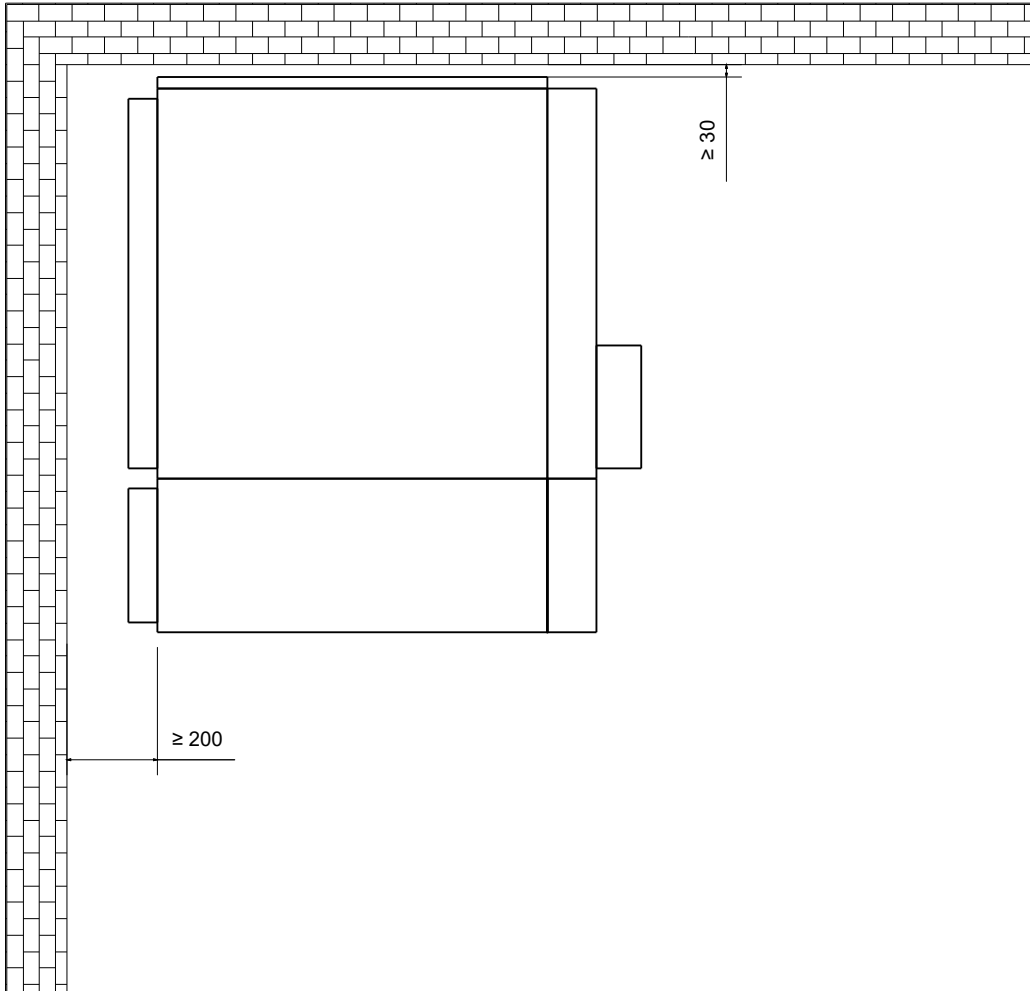
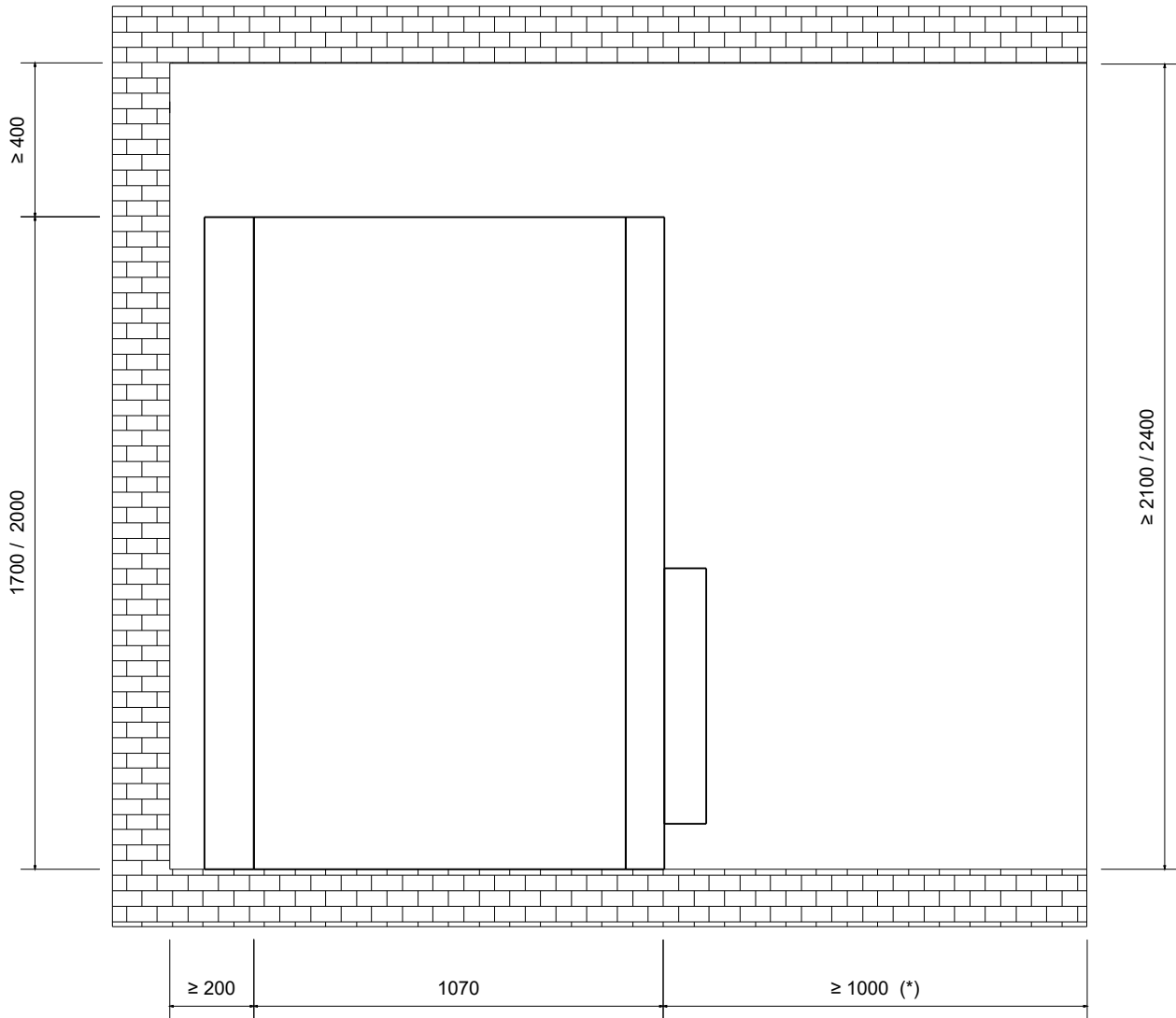
ABB Electrification Distribution Solutions

Doc. No. 1VCE029616T0002

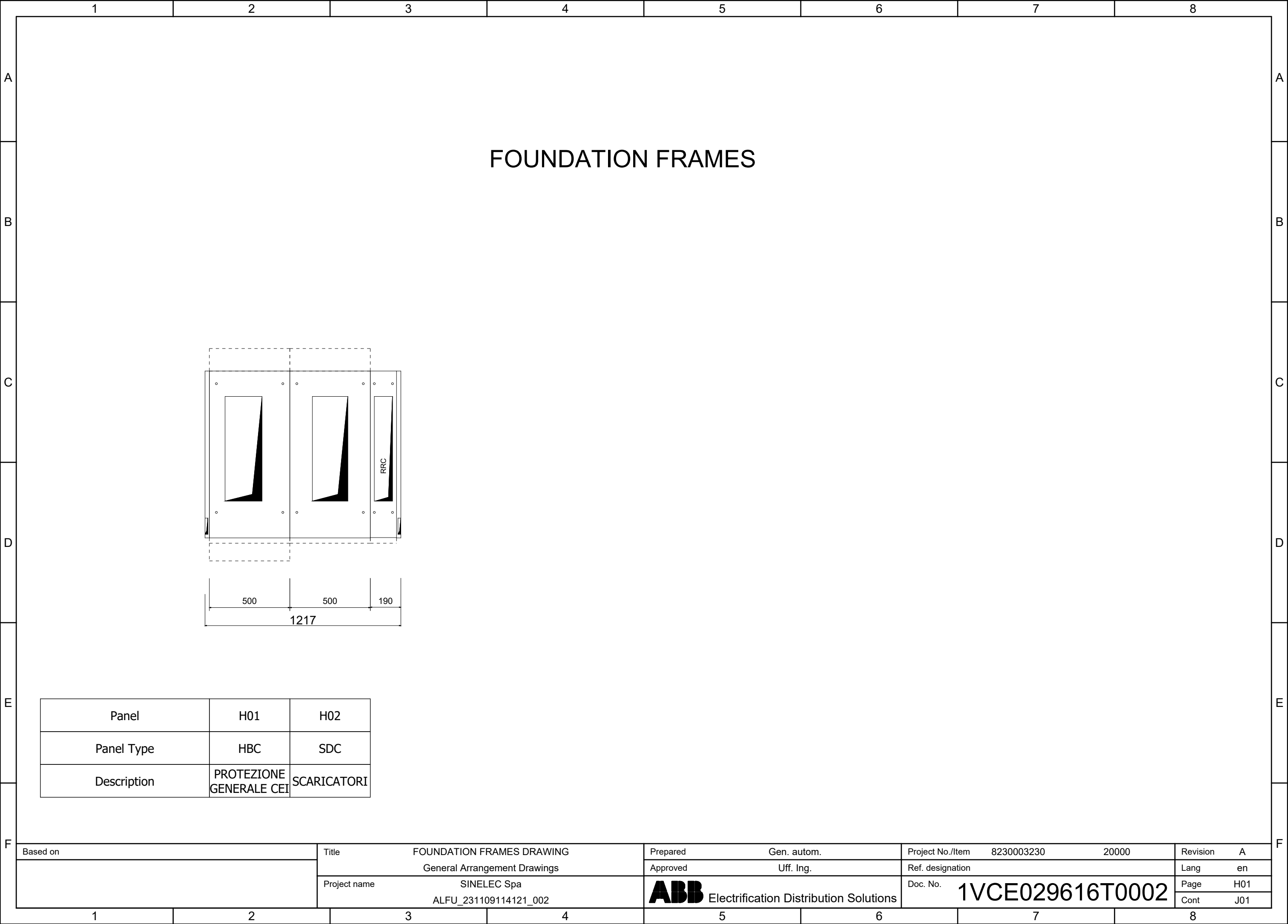
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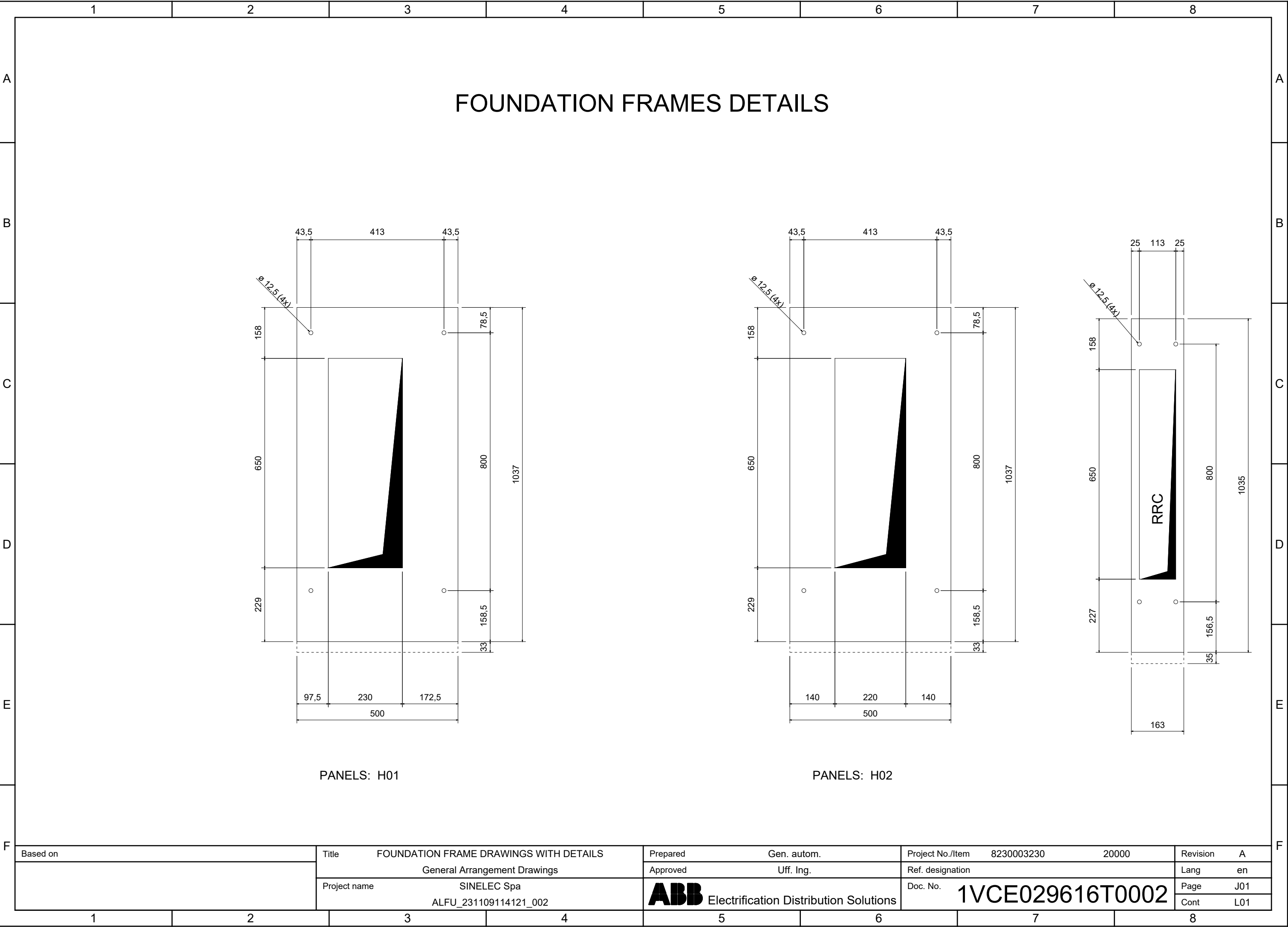
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1		2		3		4		5		6		7		8	
RULES FOR INSTALLATION IN THE ROOM															
MINIMUM DISTANCES TO BE RESPECTED DURING INSTALLATION															
<div><div></div><div></div></div>															
(*) 1300 mm at least for units with circuit-breaker															
<div><div>- IAC A-FLR SOLUTION UP TO 16kA 1sec WITH FILTERS</div><div>- NO ACCESS RESTRICTIONS TO THE SWG ROOM WHILE SWG IS IN SERVICE</div></div>															
Based on		Title				Prepared				Project No./Item				Revision	
		General Arrangement Drawings				Uff. Ing.				Ref. designation				Lang	
		Project name				Doc. No.				1VCE029616T0002				Page	
		ALFU_231109114121_002				ABB Electrification Distribution Solutions								Cont	
1		2		3		4		5		6		7		8	

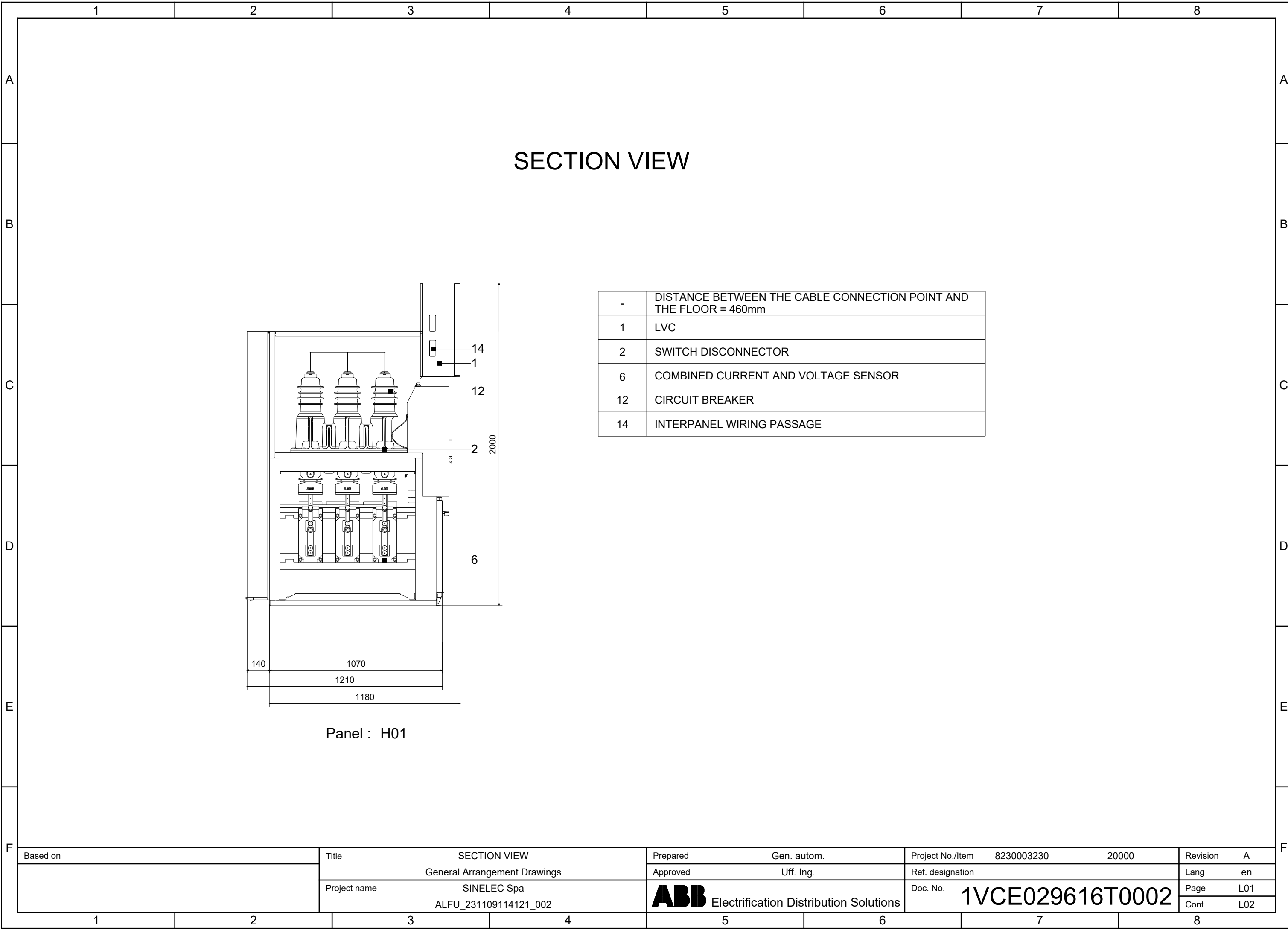
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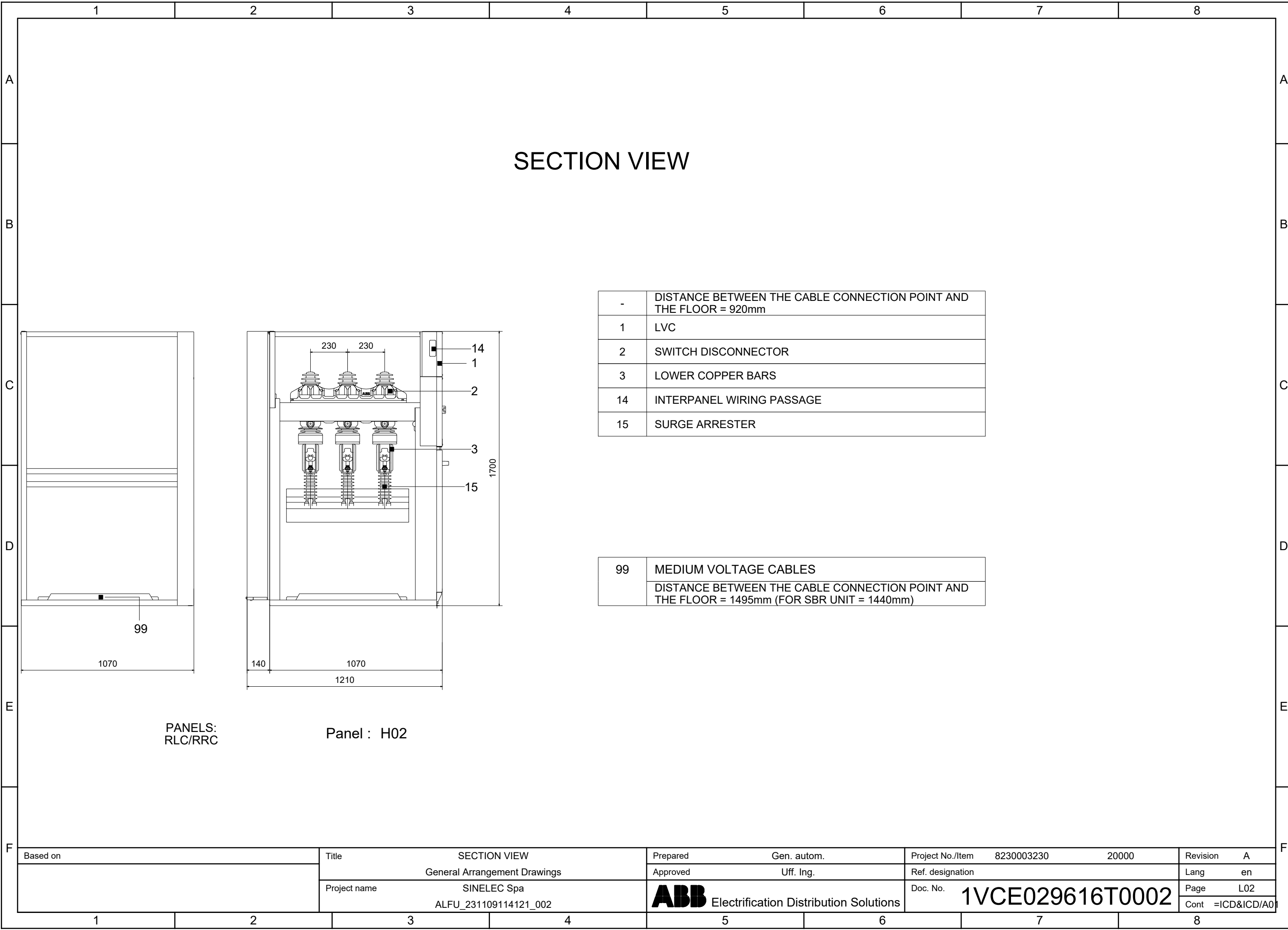
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Panel : H01

Based on	Title SECTION VIEW General Arrangement Drawings	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		Approved	Uff. Ing.	Ref. designation			Lang	en
		ABB Electrification Distribution Solutions		Doc. No.	1VCE029616T0002		Page	L01
							Cont	L02

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SECTION VIEW

-	DISTANCE BETWEEN THE CABLE CONNECTION POINT AND THE FLOOR = 920mm
1	LVC
2	SWITCH DISCONNECTOR
3	LOWER COPPER BARS
14	INTERPANEL WIRING PASSAGE
15	SURGE ARRESTER

99	MEDIUM VOLTAGE CABLES
	DISTANCE BETWEEN THE CABLE CONNECTION POINT AND THE FLOOR = 1495mm (FOR SBR UNIT = 1440mm)

PANELS:
RLC/RRC

Panel : H02

Based on	Title SECTION VIEW General Arrangement Drawings	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
		Approved Uff. Ing.	Ref. designation	Lang en
	Project name SINELEC Spa ALFU_231109114121_002	ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0002	Page L02
				Cont =ICD&ICD/A01

A



Electrification Distribution Solutions

UniSec

AIS Medium Voltage Systems

B

CUSTOMER : **SINELEC Spa**

ORDER : **8230003230** ITEM : **20000**

C

PROJECT : **ALFU_231109114121_002**

SWITCHGEAR NAME : **ALFU_231109114121_002**

D

DOCUMENT : **Interconnections**


E

F

Based on	TitleCOVER SHEET	PreparedGen. autom.	Project No./Item823000323020000	RevisionA
	Interconnections	ApprovedUff. Ing.	Ref. designation	Langen
	Project nameSINELEC Spa	ABB Electrification Distribution Solutions	Doc. No.1VCE029616T0401	PageA01
	ALFU_231109114121_002			ContA03

F

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	1	2	3	4	5	6	7	8																																																																				
A	<div>INDEX OF SHEETS</div> <table><thead><tr><th>SHEET</th><th>DESCRIPTION</th><th>REVISION</th></tr></thead><tbody><tr><td>A01</td><td>COVER SHEET</td><td>A</td></tr><tr><td>A03</td><td>INDEX OF SHEETS</td><td>A</td></tr><tr><td>Q01</td><td>INTERCONNECTION DIAGRAM</td><td>A</td></tr></tbody></table>				SHEET	DESCRIPTION	REVISION	A01	COVER SHEET	A	A03	INDEX OF SHEETS	A	Q01	INTERCONNECTION DIAGRAM	A	<div>REVISION LIST</div> <table><thead><tr><th>INDEX REV</th><th>DESCRIPTION</th><th>DATE</th><th>PREPARED</th><th>APPROVED</th></tr></thead><tbody><tr><td>A</td><td>FIRST ISSUE</td><td>09/11/2023</td><td>Gen. autom.</td><td>Uff. Ing.</td></tr><tr><td>B</td><td></td><td></td><td></td><td></td></tr><tr><td>C</td><td></td><td></td><td></td><td></td></tr><tr><td>D</td><td></td><td></td><td></td><td></td></tr><tr><td>E</td><td></td><td></td><td></td><td></td></tr><tr><td>F</td><td></td><td></td><td></td><td></td></tr><tr><td>G</td><td></td><td></td><td></td><td></td></tr><tr><td>H</td><td></td><td></td><td></td><td></td></tr><tr><td>I</td><td></td><td></td><td></td><td></td></tr><tr><td>L</td><td></td><td></td><td></td><td></td></tr></tbody></table>				INDEX REV	DESCRIPTION	DATE	PREPARED	APPROVED	A	FIRST ISSUE	09/11/2023	Gen. autom.	Uff. Ing.	B					C					D					E					F					G					H					I					L					A
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D					<div>STANDARD REFERENCES</div> <div><p>THIS DRAWING IS IN COMPLIANCE WITH THE FOLLOWING INTERNATIONAL STANDARDS:</p><ul style="list-style-type: none">- IEC 60617: GRAPHICAL SYMBOLS FOR DIAGRAMS- IEC 61082: PREPARATION OF DOCUMENTS USED IN ELECTROTECHNOLOGY- IEC 81346: STRUCTURING PRINCIPLES AND REFERENCE DESIGNATIONS<p>THE DIAGRAM INDICATES COMPONENTS HAVING A MOVABLE PART IN THE FOLLOWING POSITION OR OPERATIONAL STATE (IEC 61082-1 7.4.4.1):</p><ul style="list-style-type: none">- C.BREAKER OR CONTACTOR IN OPEN (OFF) AND SERVICE POSITION- DISCONNECTORS AND EARTHING SWITCH IN OPEN POSITION- WITHDRAWABLE VOLTAGE TRANSFORMERS IN CONNECTED POSITION- CLOSING SPRINGS OF C.BREAKER IN DISCHARGED POSITION- CONNECTOR OF C.BREAKER AUXILIARY CIRCUITS IN CONNECTED POSITION- CIRCUITS IN DE-ENERGIZED STATE- RELAYS IN NON-ACTUATED STATE- GAS PRESSURE AT RATED SERVICE VALUE- FUSES NOT OPERATED- DOORS AND PRESSURE RELIEF FLAPS IN CLOSED POSITION- UNDERVOLTAGE RELEASE NOT EXCLUDED MECHANICALLY</div>				D																																																																			
E									E																																																																			
F	<table><tr><td>Based on</td><td>Title</td></tr><tr><td></td><td>INDEX OF SHEETS</td></tr><tr><td></td><td>Interconnections</td></tr><tr><td></td><td>Project name</td></tr><tr><td></td><td>SINELEC Spa</td></tr><tr><td></td><td>ALFU_231109114121_002</td></tr></table>		Based on	Title		INDEX OF SHEETS		Interconnections		Project name		SINELEC Spa		ALFU_231109114121_002	<table><tr><td>Prepared</td><td>Gen. autom.</td></tr><tr><td>Approved</td><td>Uff. Ing.</td></tr></table> <div> Electrification Distribution Solutions</div>		Prepared	Gen. autom.	Approved	Uff. Ing.	<table><tr><td>Project No./Item</td><td>8230003230</td><td>20000</td><td>Revision</td><td>A</td></tr><tr><td>Ref. designation</td><td colspan="3"></td><td>Lang</td><td>en</td></tr><tr><td>Doc. No.</td><td colspan="3">1VCE029616T0401</td><td>Page</td><td>A03</td></tr><tr><td></td><td colspan="3"></td><td>Cont</td><td>Q01</td></tr></table>		Project No./Item	8230003230	20000	Revision	A	Ref. designation				Lang	en	Doc. No.	1VCE029616T0401			Page	A03					Cont	Q01	F																														
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Doc. No.	1VCE029616T0401			Page	A03																																																																							
				Cont	Q01																																																																							
	1	2	3	4	5	6	7	8																																																																				

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1		2		3		4		5		6		7		8																	
A	COLOUR	CROSS SECTION [mm²]		H01	H02											A															
B	bk	4		<div>-XDI1 1 2 ○ ○</div>		AUXILIARY POWER SUPPLY 230VAC AUXILIARY CIRCUITS										B															
	bk	4		<div>3 4 ○ ○</div>																											
	bk	4		<div>-XDI2 1 2 ○ ○</div>		AUXILIARY POWER SUPPLY 230VAC CIRCUIT BREAKER SPRING CHARGING MOTOR											C														
	bk	4		<div>3 4 ○ ○</div>																											
C	bk	4		<div>-XDI4 1 2 ○ ○</div>	<div>-XDI4 1 2 ○ ○</div>	AUXILIARY POWER SUPPLY 230VAC HEATING AND LIGHTING										D															
	bk	4		<div>3 4 ○ ○</div>	<div>3 4 ○ ○</div>																										
D																E															
E																F															
F	Based on			Title			INTERCONNECTION DIAGRAM			Prepared			Gen. autom.			Project No./Item			8230003230			20000			Revision			A			F
							Interconnections			Approved			Uff. Ing.			Ref. designation						Lang			en						
				Project name			SINELEC Spa			ABB Electrification Distribution Solutions			Doc. No.			1VCE029616T0401			Page			Q01									
				ALFU_231109114121_002			Cont												=H01&CD/A01												
1			2			3			4			5			6			7			8										



Electrification Distribution Solutions

UniSec

AIS Medium Voltage Systems

CUSTOMER : **SINELEC Spa**

ORDER : **8230003230**


ITEM : **20000**

PROJECT : **ALFU_231109114121_002**

SWITCHGEAR NAME : **CABINA DI CONSEGNA SUD HBC**

DOCUMENT : **Circuit Diagram**

DESIGNATION OF UNIT : **H01** TYPE OF UNIT : **HBC**

Based on	Title	COVER SHEET	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	SINELEC Spa	 ABB Electrification Distribution Solutions		Doc. No.	1VCE029616T0103		Page	A01
		ALFU 231109114121 002						Cont	A03


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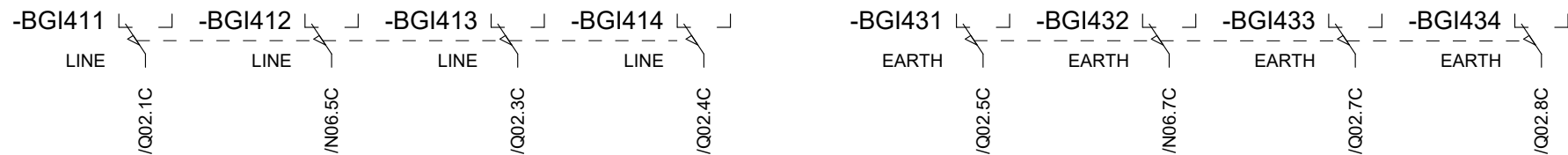
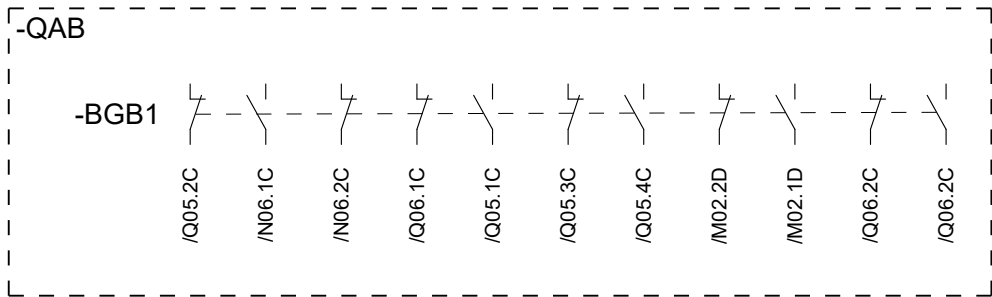
A	INDEX OF SHEETS				REVISION LIST									
	SHEET	DESCRIPTION		REVISION	INDEX REV	DESCRIPTION	DATE	PREPARED	APPROVED					
B	A01	COVER SHEET		A	A	FIRST ISSUE	09/11/2023	Gen. autom.	Uff. Ing.					
	A03	INDEX OF SHEETS		A	B									
	A10	REFERENCE DESIGNATIONS		A	C									
	A11	REFERENCE DESIGNATIONS		A	D									
	C01	MAIN CIRCUITS		A	E									
	C02	MAIN CIRCUITS		A	F									
	C04	MAIN CIRCUITS		A	G									
	D01	DISTRIBUTION OF AUXILIARY CIRCUITS		A	H									
	G02	DISTRIBUTION OF AUXILIARY CIRCUITS		A	I									
	M02	CONTROL CIRCUITS		A	L									
C	N01	CONTROL CIRCUITS		A										
	N02	CONTROL CIRCUITS		A										
	N05	CONTROL CIRCUITS		A										
	N06	CONTROL CIRCUITS		A										
	Q02	AVAILABLE CONTACTS		A										
	Q04	AVAILABLE CONTACTS		A										
	Q05	AVAILABLE CONTACTS		A										
	Q06	AVAILABLE CONTACTS		A										
	Q07	AVAILABLE CONTACTS		A										
	U01	COMUNICATION CIRCUITS		A										
D	X01	TERMINAL BLOCKS		A										
	X02	TERMINAL BLOCKS		A										
	X03	TERMINAL BLOCKS		A										
	X04	TERMINAL BLOCKS		A										
	X05	TERMINAL BLOCKS		A										
	X06	TERMINAL BLOCKS		A										
	X07	TERMINAL BLOCKS		A										
	X08	TERMINAL BLOCKS		A										
	X09	TERMINAL BLOCKS		A										
	X10	TERMINAL BLOCKS		A										
E	X11	TERMINAL BLOCKS		A										
	X12	TERMINAL BLOCKS		A										
	X13	TERMINAL BLOCKS		A										
	Z01	PARTS LIST		A										
	Z02	PARTS LIST		A										
	Z10	MV DEVICES CHARACTERISTICS		A										
F	Based on		Title		Prepared		Project No./Item		Revision					
			INDEX OF SHEETS		Gen. autom.		8230003230		20000					
			Circuit Diagram		Approved		Uff. Ing.		Ref. designation					
			Project name		SINELEC Spa		Doc. No.		1VCE029616T0103					
		ALFU_231109114121_002		ABB Electrification Distribution Solutions				Page						
								A03						
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A	REFERENCE DESIGNATION OF OBJECTS IN ELECTRICAL DOCUMENTS				-BX1		UNIT WITH SENSORS FOR DETECTION OF INTERNAL ARCING	
	(IN COMPLIANCE WITH STANDARD IEC 81346-2 AND ABB TECHNICAL STANDARD 2NBA000001)				-BX2		ADDITIONAL CURRENT SENSING UNIT FOR DETECTION OF INTERNAL ARCING	
B	DESIGNATION		DESCRIPTION		-BUS...		COMBINED CURRENT AND VOLTAGE SENSOR	
	-AA		MULTIFUNCTION UNIT (CENTRAL UNIT)		-CA		CAPACITORS	
C	-BAD...		CAPACITIVE VOLTAGE DIVIDER		-EA1		LIGHTING LAMP LOCATED IN L.V. INSTRUMENT COMPARTMENT	
	-BAR		VOLTAGE PROTECTION RELAY		-EA2		LIGHTING LAMP LOCATED IN CABLE COMPARTMENT	
D	-BAS...		VOLTAGE SENSOR LOCATED ON PHASE L1		-EA4		LIGHTING LAMP LOCATED IN CIRCUIT BREAKER COMPARTIMENT	
	-BAT...		VOLTAGE TRANSFORMER LOCATED ON PHASE L1		-EB1		HEATER LOCATED IN CABLE COMPARTMENT	
E	-BCN		NEUTRAL (RESIDUAL) CURRENT TRANSFORMER		-FA...		SURGE ARRESTER	
	-BCR		CURRENT PROTECTION RELAY		-FCD		FUSE-DISCONNECTORS FOR PROTECTION OF AUXILIARY CIRCUITS	
F	-BCS...		CURRENT SENSOR LOCATED ON PHASE L1		-FCF...		MEDIUM VOLTAGE FUSE	
	-BCT...		CURRENT TRANSFORMER LOCATED ON PHASE L1		-FCM1		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF SPRINGS CHARGING MOTOR ON MAIN CIRCUIT-BREAKER	
A	-BD4		DENSITY SWITCH OF SWITCH-DISCONNECTOR		-FCM2		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CONTROL CIRCUITS	
	-BER		SUPERVISION RELAYS		-FCM3		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CIRCUIT FOR CONTACTOR	
B	-BES		SYNCHRONIZING RELAY		-FCM4		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CIRCUITS OF MOTOR FOR SWITCH-DISCONNECTOR OPERATION	
	-BET		THERMAL PROTECTION RELAY		-FCM5		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF AUXILIARY CIRCUITS IN ALTERNATING CURRENT	
C	-BGB1...4		POSITION SWITCHES OF CIRCUIT-BREAKER OR CONTACTOR		-FCM6...		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF BROKEN DELTA SECONDARY CIRCUITS OF VOLTAGE TRANSFORMERS	
	-BGB5		POSITION SWITCH OF CIRCUIT-BREAKER SIGNALLING UNDERVOLTAGE RELEASE ENERGIZED		-FCM7...		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF STAR CONNECTION SECONDARY CIRCUITS OF VOLTAGE TRANSFORMERS, FIRST WINDING	
D	-BGB6		POSITION SWITCH OF CIRCUIT-BREAKER SIGNALLING UNDERVOLTAGE RELEASE EXCLUDED MECHANICALLY		-FCM8...		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF STAR CONNECTION SECONDARY CIRCUITS OF VOLTAGE TRANSFORMERS, SECOND WINDING	
	-BGD2		POSITION SWITCH OF CABLE COMPARTMENT DOOR		-FCM9		MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CIRCUITS OF PROTECTION RELAYS OR MULTIFUNCION UNITS	
E	-BGE1...		POSITION SWITCHES SIGNALLING EARTHING SWITCH -QCE IN OPEN POSITION		-KFA1		AUXILIARY RELAY SIGNALLING LOW GAS PRESSURE	
	-BGE2...		POSITION SWITCHES SIGNALLING EARTHING SWITCH -QCE IN CLOSED POSITION		-KFA2		AUXILIARY RELAY SIGNALLING INSUFFICIENT GAS PRESSURE	
F	-BGE3		POSITION SWITCHES OF EARTHING SWITCH OPERATION ACTUATED BY ELECTRIC MOTOR		-KFA3...9		AUXILIARY RELAYS OR CONTACTORS	
	-BGE4...		POSITION SWITCHES FOR ELECTRICAL OPERATION LOCK OF IN CASE OF MANUAL OPERATION OF EARTHING SWITCH		-KFC...		CLOSING RELAYS OR CONTACTORS	
A	-BGF1		POSITION SWITCHES OF MEDIUM VOLTAGE FUSES		-KFI		INTEGRATED CIRCUITS	
	-BGF2		POSITION SWITCH OF MEDIUM VOLTAGE FUSES FOR ACTUATOR DRIVE CONTROL CIRCUIT OF SWITCH-DISCONNECTOR		-KFL		LOCKOUT RELAY	
B	-BGI7		POSITION SWITCH SIGNALLING DICONNECTOR (OR SWITCH-DISCONNECTOR) -QBD NOT IN MANUAL OPERATION		-KFO...		OPENING RELAYS OR CONTACTORS	
	-BGI41...		POSITION SWITCHES SIGNALLING SWITCH-DISCONNECTOR -QBS CLOSED IN FEEDER POSITION		-KFP		PROGRAMMABLE LOGIC CONTROLLERS (PLC)	
C	-BGI43...		POSITION SWITCHES SIGNALLING SWITCH-DISCONNECTOR -QBS CLOSED IN EARTH POSITION		-KFS		SYNCHRONIZING DEVICES	
	-BGK		POSITION SWITCH OF KEY LOCK		-KFT...		AUXILIARY TIME RELAYS, DELAY ELEMENTS	
D	-BGL3		POSITION SWITCH OF ELECTROMECHANICAL LOCK -RLE3		-KFU		CONTROL UNIT	
	-BGS1, 2		POSITION SWITCHES OF CIRCUIT-BREAKER SPRINGS		-KZA		NETWORK SWITCHES (COMMUNICATION)	
E	-BGS6...8		POSITION SWITCHES OF THE SPRINGS OF SWITCH-DISCONNECTOR FOR CONTROL CIRCUITS OF THE MOTOR OPERATOR		-MAD		MOTOR FOR ELECTRICAL OPERATION OF SWITCH-DISCONNECTOR -QBS	
	-BGT1		POSITION SWITCHES ON TRUCK SIGNALLING TRUCK IN SERVICE POSITION		-MAE		MOTOR FOR ELECTRICAL OPERATION OF EARTHING SWITCH -QCE	
F	-BGT2		POSITION SWITCHES ON TRUCK SIGNALLING TRUCK IN TEST POSITION		-MAS		MOTOR FOR CIRCUIT-BREAKER SPRINGS CHARGING	
	-BGT3		POSITION SWITCH ON TRUCK SIGNALLING TRUCK NOT IN ISOLATING TRAVEL POSITION		-MAT		MOTOR FOR ELECTRICAL OPERATION OF TRUCK RACKING-IN/OUT	
A	-BGT4		POSITION SWITCHES ON SWITCHGEAR SIGNALLING TRUCK IN SERVICE POSITION		-MBC		CLOSING RELEASE OF CIRCUIT-BREAKER	
	-BGT5		POSITION SWITCHES ON SWITCHGEAR SIGNALLING TRUCK IN TEST POSITION		-MBC4		CLOSING RELEASE OF SWITCH-DISCONNECTOR -QBS	
B	-BM		HYGROSTAT		-MBO1		FIRST OPENING RELEASE OF CIRCUIT-BREAKER	
	-BPS		PRESSURE SWITCH LOCATED ON CIRCUIT-BREAKER		-MBO2		SECOND OPENING RELEASE OF CIRCUIT-BREAKER	
C	-BPS4		PRESSURE SWITCH OF SWITCH-DISCONNECTOR		-MBO3		OPENING SOLENOID FOR OVERCURRENT RELEASE OF CIRCUIT-BREAKER	
	-BR		FLAME DETECTORS, SMOKE DETECTORS		-MBO4		OPENING RELEASE OF SWITCH-DISCONNECTOR -QBS	
D	-BT		THERMOSTAT		-MBU		UNDERVOLTAGE RELEASE OF CIRCUIT-BREAKER	
					-MBU4		UNDERVOLTAGE RELEASE OF SWITCH-DISCONNECTOR -QBS	
E					-PFB		BLUE SIGNAL LAMPS	
					-PFF		FLAG RELAYS	
F					-PFG		GREEN SIGNAL LAMPS	
					-PFR		RED SIGNAL LAMPS	
A					-PFS		SHORT CIRCUIT INDICATORS	
B								
C								
D								
E								
F								

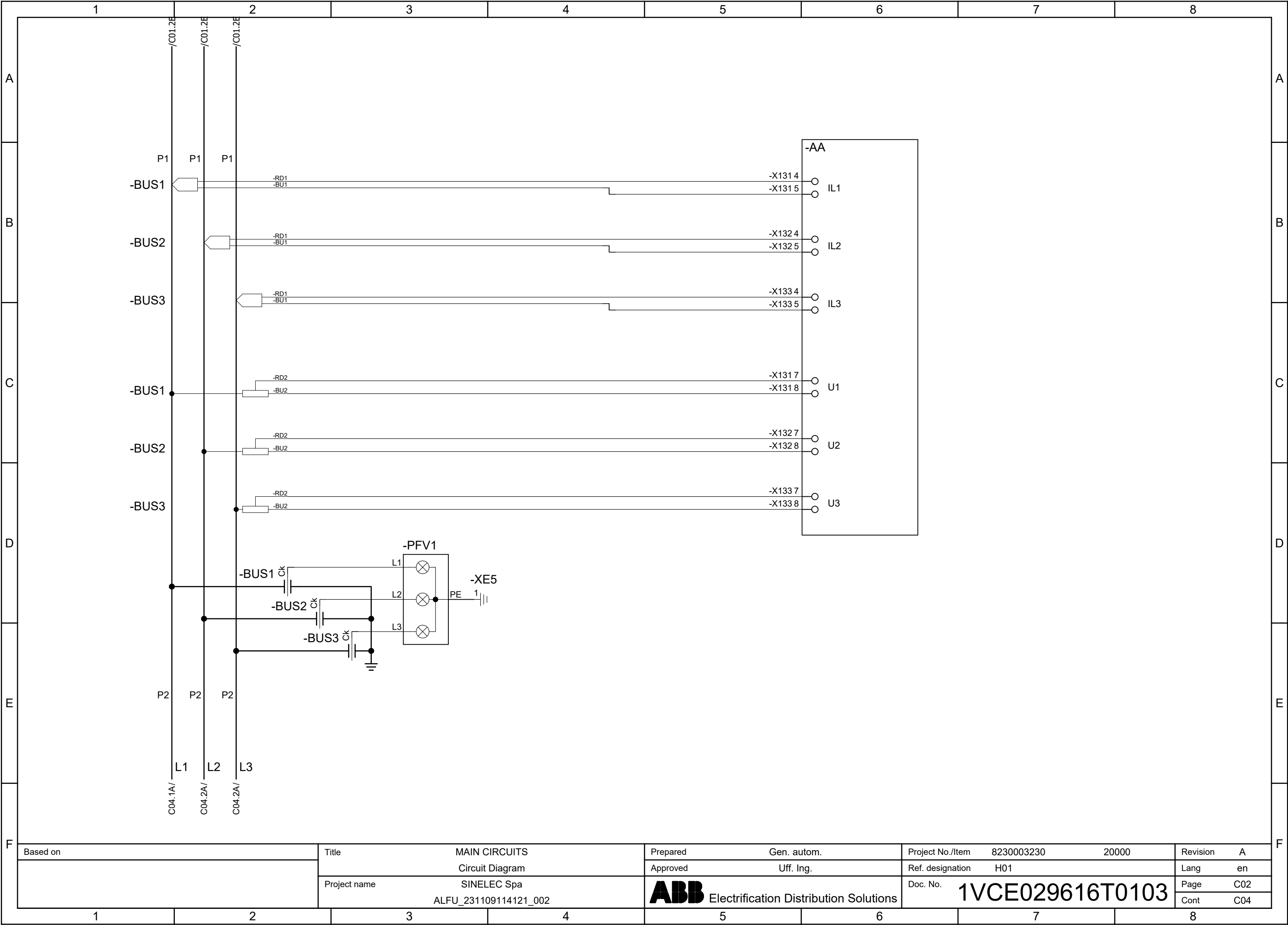
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A	-PFV1	VOLTAGE INDICATOR ON FEEDER SIDE			-TFM	MULTIFUNCTION TRANSDUCERS						
	-PFV2	VOLTAGE INDICATOR ON BUSBAR SIDE			-TFP	POWER-FACTOR TRANSDUCERS						
	-PFW	WHITE SIGNAL LAMPS			-TFQ	REACTIVE POWER TRANSDUCERS						
	-PFX	CROSS INDICATORS, ELECTROMECHANICAL INDICATORS			-TFS	SIGNAL CONVERTERS						
	-PFY	YELLOW SIGNAL LAMPS			-TFT...	TEMPERATURE SENSORS						
	-PGA	AMMETERS			-TFV	VOLTAGE TRANSDUCERS						
	-PGC	COUNTERS			-WF...	DATA BUS						
	-PGF	FREQUENCYMETERS			-XDA	TERMINAL BLOCK FOR CIRCUITS OF CURRENT TRANSFORMERS						
	-PGH	HOURMETERS			-XDB	CONNECTOR FOR ISOLATION OF CIRCUIT-BREAKER						
	-PGI	PROTECTION AND CONTROL UNIT: HUMAN MACHINE INTERFACE			-XDB1,2	TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF CIRCUIT-BREAKER						
	-PGJ	ACTIVE ENERGY METERS			-XDB10...89	CONNECTOR FOR CIRCUIT-BREAKER INTERNAL CIRCUITS						
	-PGK	REACTIVE ENERGY METERS			-XDB9...	CONNECTOR FOR INTERNAL CIRCUITS						
	-PGM	MULTIFUNCTION INDICATORS			-XDC	CUSTOMER TERMINAL BLOCK						
	-PGP	POWER-FACTOR METERS			-XDC1, 8	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF CIRCUIT BREAKER						
	-PGQ	VARMETERS			-XDC2	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF SWITCH-DISCONNECTOR						
	-PGS	SYNCHRONOSCOPES			-XDC3	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF PROTECTION RELAY AND MULTIFUNCTION UNIT						
	-PGV	VOLTMETERS										
	-PGW	WATTMETERS			-XDC4	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF VOLTAGE TRANSFORMERS						
	B	-PJ	ACOUSTICAL SIGNAL DEVICES (BELLS, SIRENS)			-XDC5...	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CONTACTS OF MINIATURE CIRCUIT-BREAKERS					
		-QAB	CIRCUIT-BREAKERS			-XDC6	CUSTOMER TERMINAL BLOCK FOR PRESSURE OR DENSITY SWITCH OF SWITCH-DISCONNECTOR					
-QAC		CONTACTORS (FOR POWER)										
-QBD		DISCONNECTORS			-XDC7	CUSTOMER TERMINAL BLOCK FOR GAS PRESSURE SIGNALLING CONTACTS OF CIRCUIT BREAKER						
-QBM...		MINIATURE SWITCH-DISCONNECTORS			-XDE	TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF EARTHING SWITCH -QCE						
-QBS		SWITCH-DISCONNECTORS			-XDH	TERMINAL BLOCK FOR AUXILIARY CIRCUITS IN ALTERNATING CURRENT						
-QCE...		EARTHING SWITCH			-XDH1	TERMINAL BLOCK FOR CIRCUITS OF ELECTROMECHANICAL LOCK PREVENTING THE DOOR OPENING OPERATION						
-RAA...		FERRO-RESONANCE DUMPING RESISTOR			-XDI	TERMINAL BLOCK FOR INTERCONNECTION (CONNECTION BETWEEN PANELS)						
-RAD...		DIODES			-XDI1	TERMINAL BLOCK FOR INTERCONNECTIONS OF CONTROL CIRCUITS						
-RAR		RESISTORS			-XDI2	TERMINAL BLOCK FOR INTERCONNECTIONS OF CIRCUITS OF MOTOR FOR CIRCUIT-BREAKER SPRINGS CHARGING						
C	-RF	FILTERS			-XDI3	TERMINAL BLOCK FOR INTERCONNECTIONS OF CIRCUITS OF MOTOR FOR SWITCH-DISCONNECTOR ELECTRICAL OPERATION						
	-RLE1	ELECTROMECHANICAL LOCK PREVENTING CIRCUIT-BREAKER CLOSING			-XDI4	TERMINAL BLOCK FOR INTERCONNECTIONS OF AUXILIARY CIRCUITS IN ALTERNATING CURRENT						
	-RLE2	ELECTROMECHANICAL LOCK PREVENTING TRUCK RACKING-IN/OUT			-XDI5	TERMINAL BLOCK FOR INTERCONNECTIONS OF ABILITY ELECTROMECHANICAL LOCK OPERATION OF EARTHING SWITCH						
	-RLE3, 8	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF EARTHING SWITCH			-XDI6	TERMINAL BLOCK FOR INTERCONNECTIONS OF VOLTAGE CIRCUITS						
	-RLE4	ELECTROMECHANICAL LOCK PREVENTING THE DOOR OPENING OPERATION			-XDI7	TERMINAL BLOCK FOR INTERCONNECTIONS OF MOD-BUS CIRCUITS						
	-RLE5	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF LINE SWITCH			-XDI8	TERMINAL BLOCK FOR INTERCONNECTIONS OF CURRENT CIRCUITS						
	-SFA	AMMETRIC SWITCHES			-XDI9	TERMINAL BLOCK FOR INTERCONNECTIONS OF SPECIAL CIRCUITS						
	-SFC...	CONTROL SWITCHES, CLOSING PUSH-BUTTONS			-XDI10	TERMINAL BLOCK FOR INTERCONNECTIONS OF ABILITY ELECTROMECHANICAL LOCK OPERATION OF LINE SWITCH						
	-SFM	MOTOR CONTROL PUSH-BUTTON			-XDI11	TERMINAL BLOCK FOR INTERCONNECTIONS OF ELECTROMECHANICAL LOCK OPERATION OF EARTHING SWITCH TOP APP.						
	-SFO...	OPENING PUSH-BUTTONS			-XDM	SEALABLE TERMINAL BLOCK FOR MEASUREMENT						
D	-SFR	RESET PUSH-BUTTONS			-XDS	SOCKET OUTLETS						
	-SFS...	SELECTOR SWITCHES			-XDT	TERMINAL BLOCK FOR POSITION CONTACTS OF TRUCK						
	-SFT	TEST PUSH-BUTTONS			-XDV	TERMINAL BLOCK FOR CIRCUITS OF VOLTAGE TRANSFORMERS						
	-SFU...	UNLOCKING PUSH-BUTTONS			-XDV1...	CONNECTOR FOR CIRCUITS OF VOLTAGE TRANSFORMERS						
	-SFV	VOLTMETRIC SWITCHES			-XDV4...	CONNECTOR FOR CIRCUITS OF FERRO-RESONANCE DUMPING RESISTOR						
	-TA	POWER TRANSFORMERS			-XDX...	SUPPORT TERMINAL BLOCKS						
	-TB	CONVERTER			-XE...	EARTHING TERMINAL BLOCK						
	-TFA	ACTIVE POWER TRANSDUCERS										
	-TFC	CURRENT TRANSDUCERS										
	-TFF	FREQUENCY TRANSDUCERS										
E	-TFJ	ACTIVE ENERGY TRANSDUCERS										
	-TFK	REACTIVE ENERGY TRANSDUCERS										
	Based on		Title		Prepared		Gen. autom.		Project No./Item		Revision	
			Circuit Diagram		Approved		Uff. Ing.		Ref. designation		Lang	
F			Project name		 Electrification Distribution Solutions		Doc. No.		1VCE029616T0103		Page	
	ALFU_231109114121_002		A11									
			C01									



Based on	Title MAIN CIRCUITS	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
	Circuit Diagram	Approved Uff. Ing.	Ref. designation H01	Lang en
	Project name SINELEC Spa ALFU_231109114121_002	ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0103	Page C01 Cont C02

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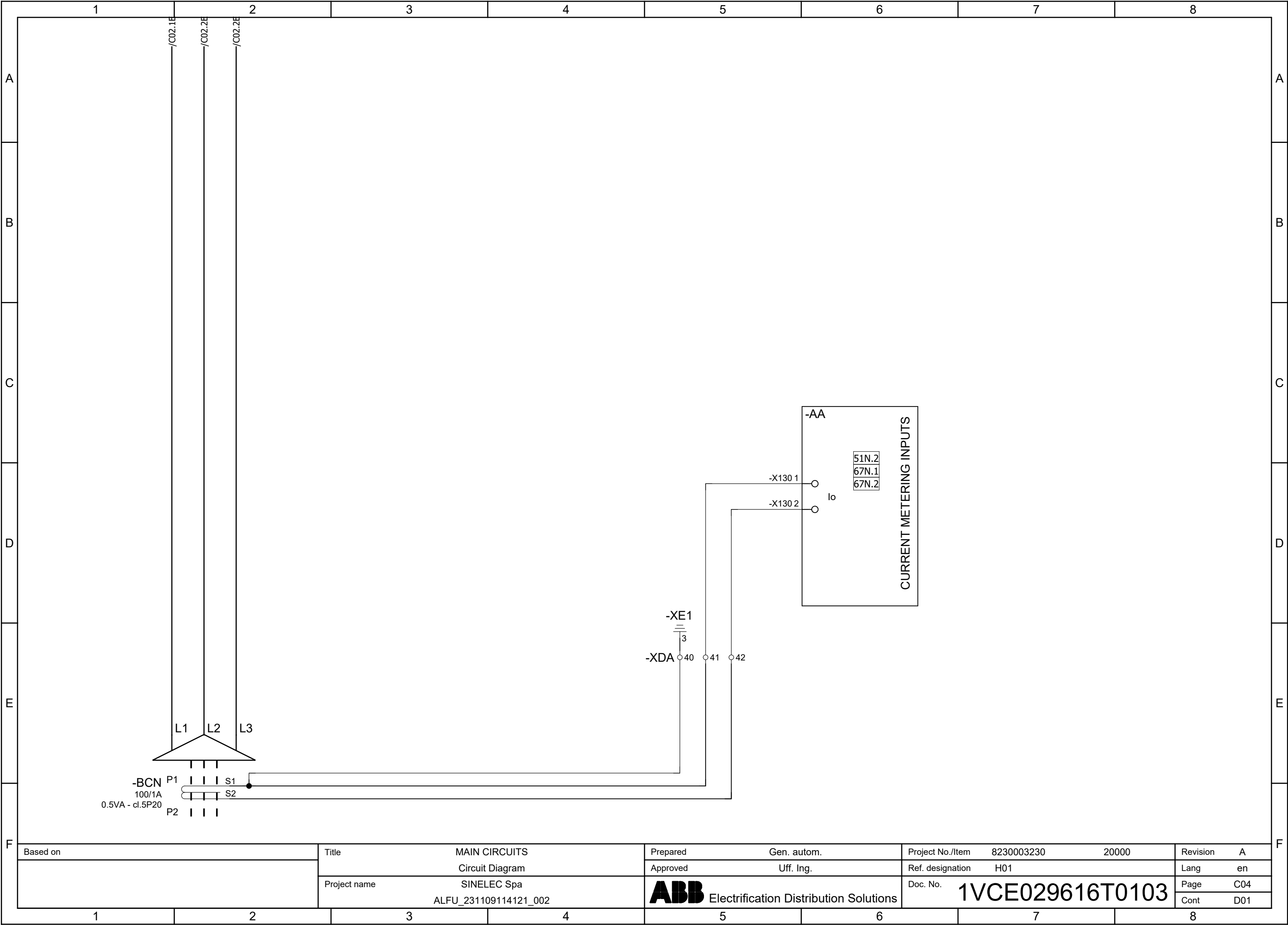



Based on	Title MAIN CIRCUITS Circuit Diagram Project name SINELEC Spa ALFU_231109114121_002	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
		Approved Uff. Ing.	Ref. designation H01	Lang en
		Doc. No. 1VCE029616T0103	Page C02	Cont C04




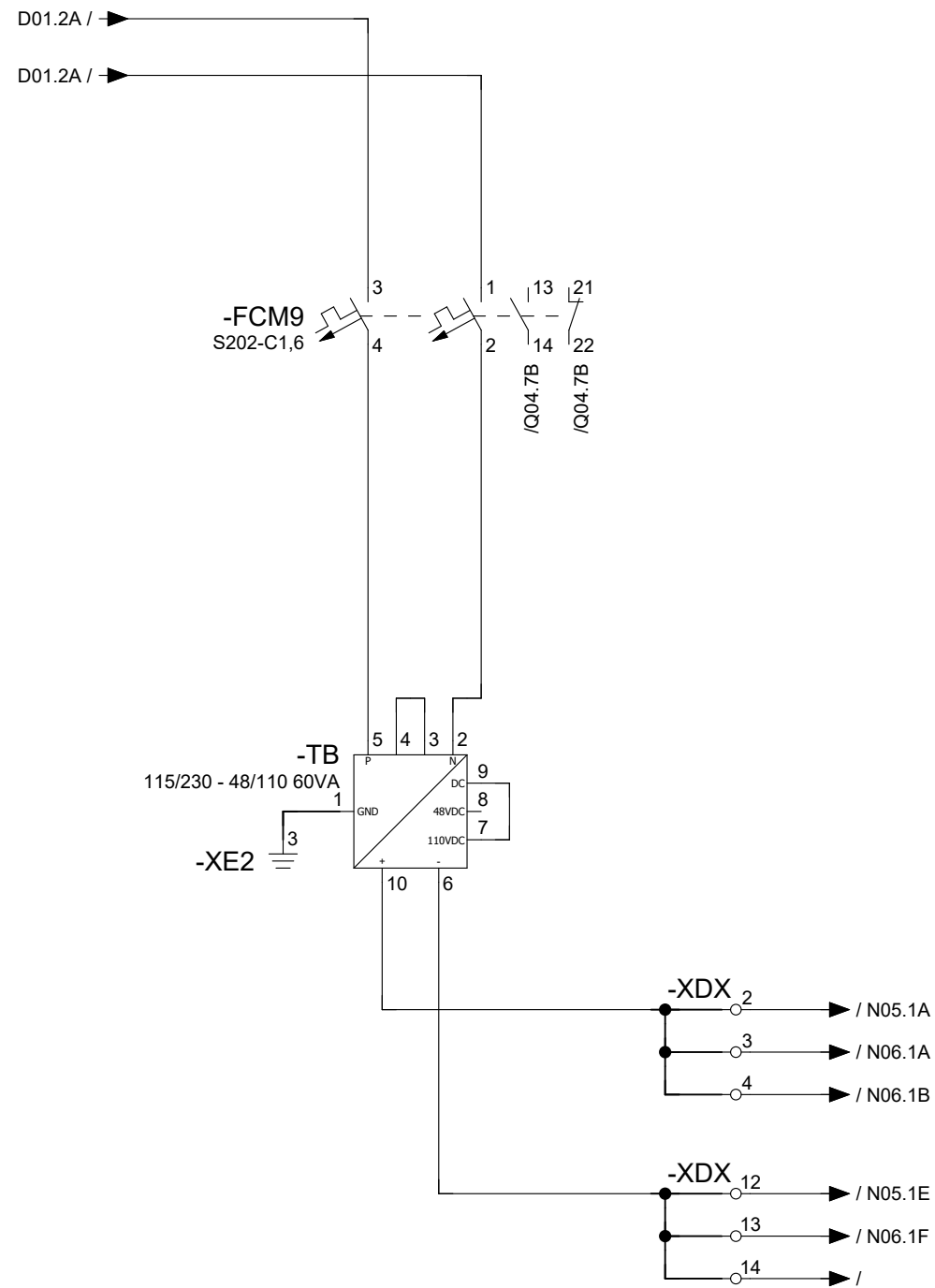
Electrification Distribution Solutions

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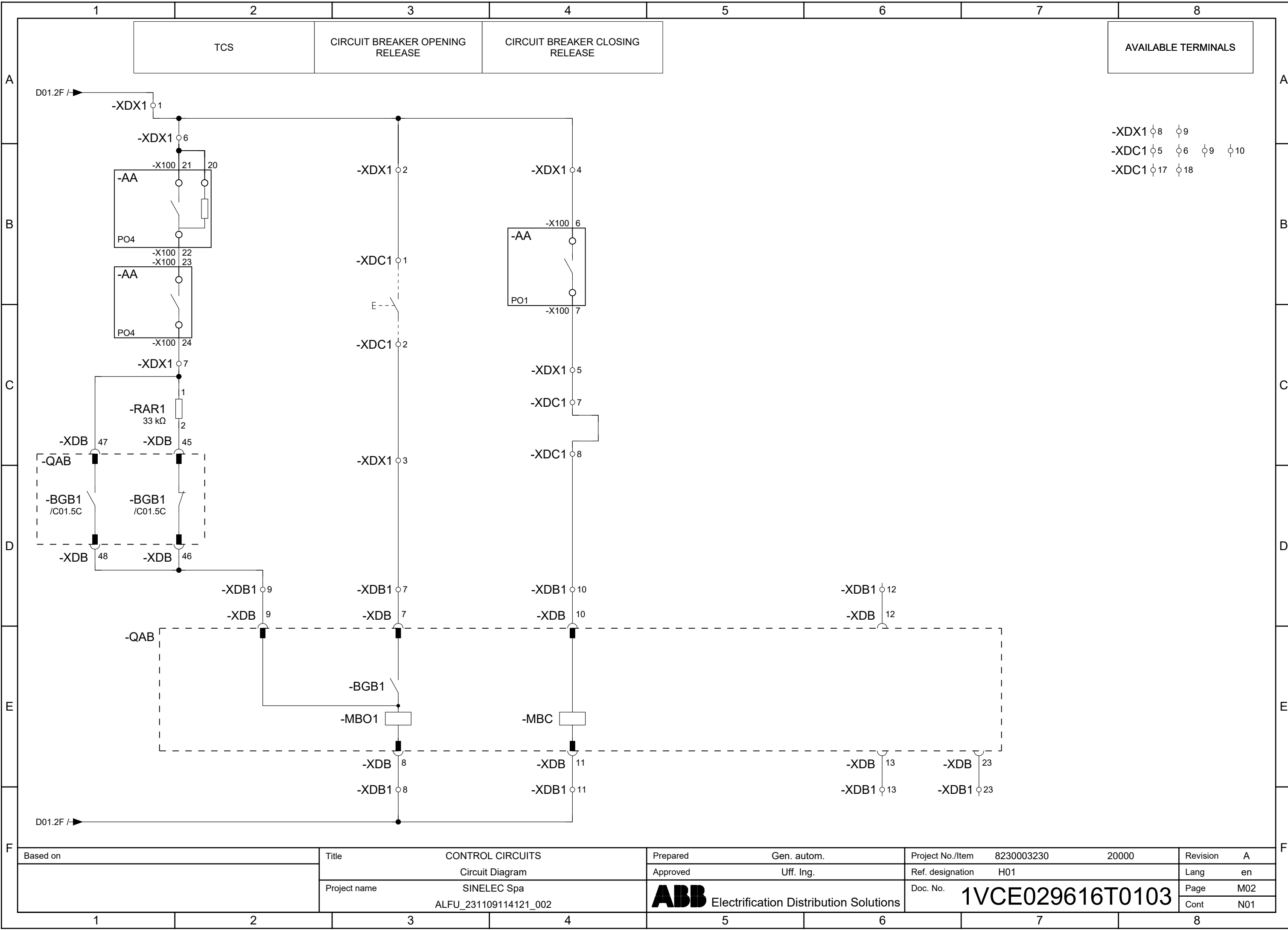
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	Project name	SINELEC Spa	 Electrification Distribution Solutions	Doc. No.	1VCE029616T0103	Page	C04		
	ALFU_231109114121_002	Cont				D01			

Based on	Title	DISTRIBUTION OF AUXILIARY CIRCUITS	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	SINELEC Spa	 Electrification Distribution Solutions	Doc. No.	1VCE029616T0103	Page	D01		
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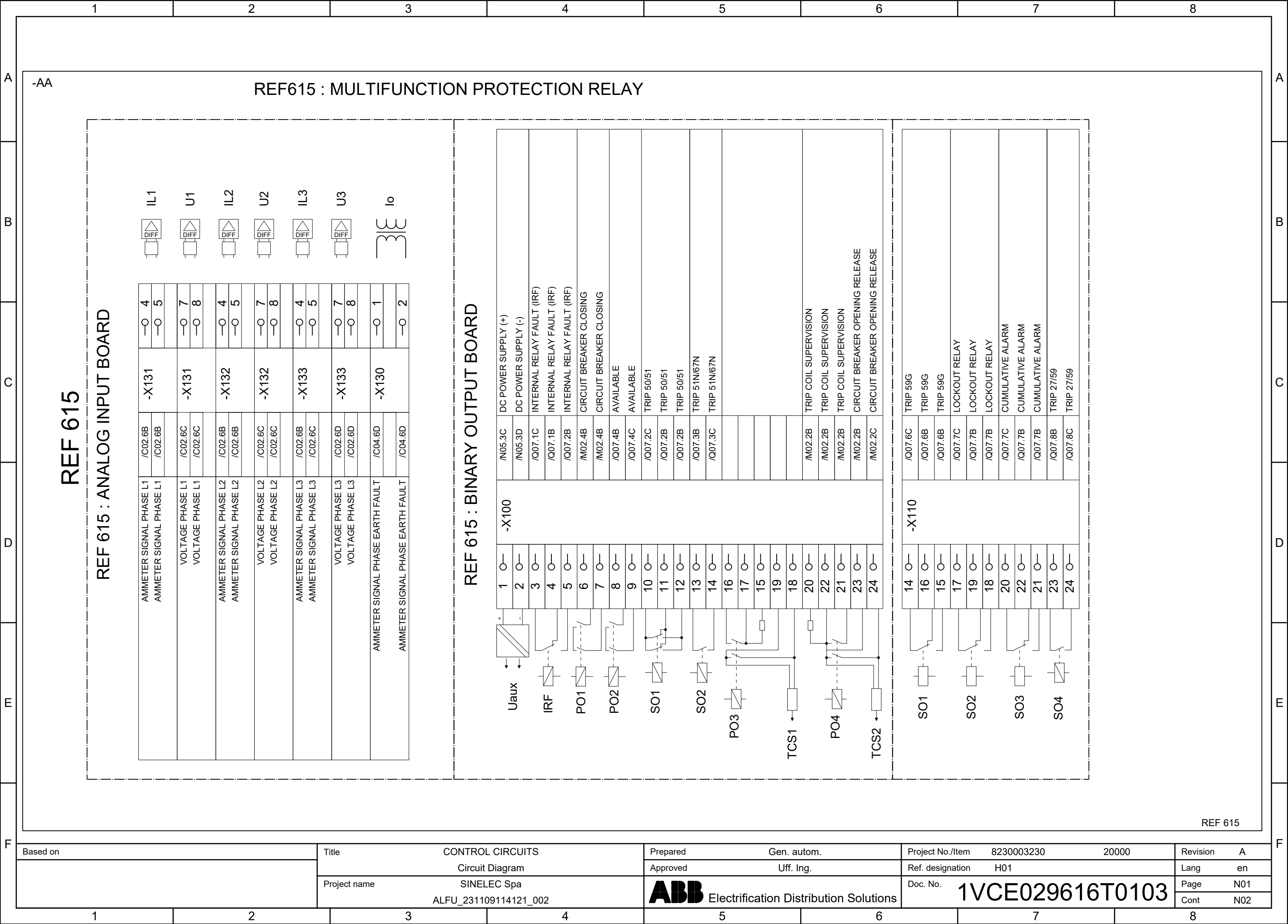
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		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	SINELEC Spa	ABB Electrification Distribution Solutions	Doc. No.	1VCE029616T0103	Page		G02	
		ALFU_231109114121_002				Cont		M02	

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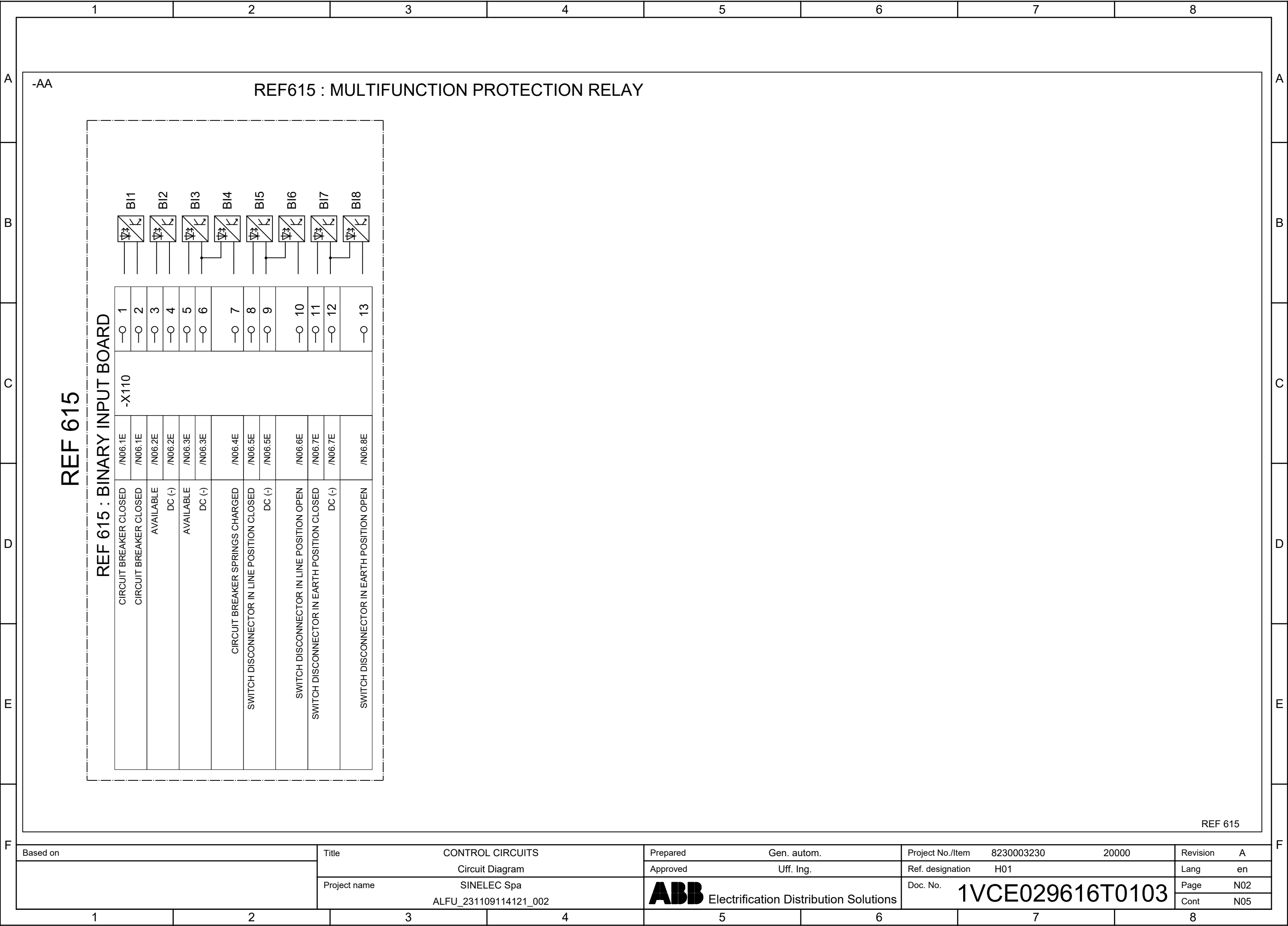


Based on	Title	CONTROL CIRCUITS	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	SINELEC Spa	ABB Electrification Distribution Solutions		Doc. No.	1VCE029616T0103		Page	M02
		ALFU_231109114121_002			Cont			N01	

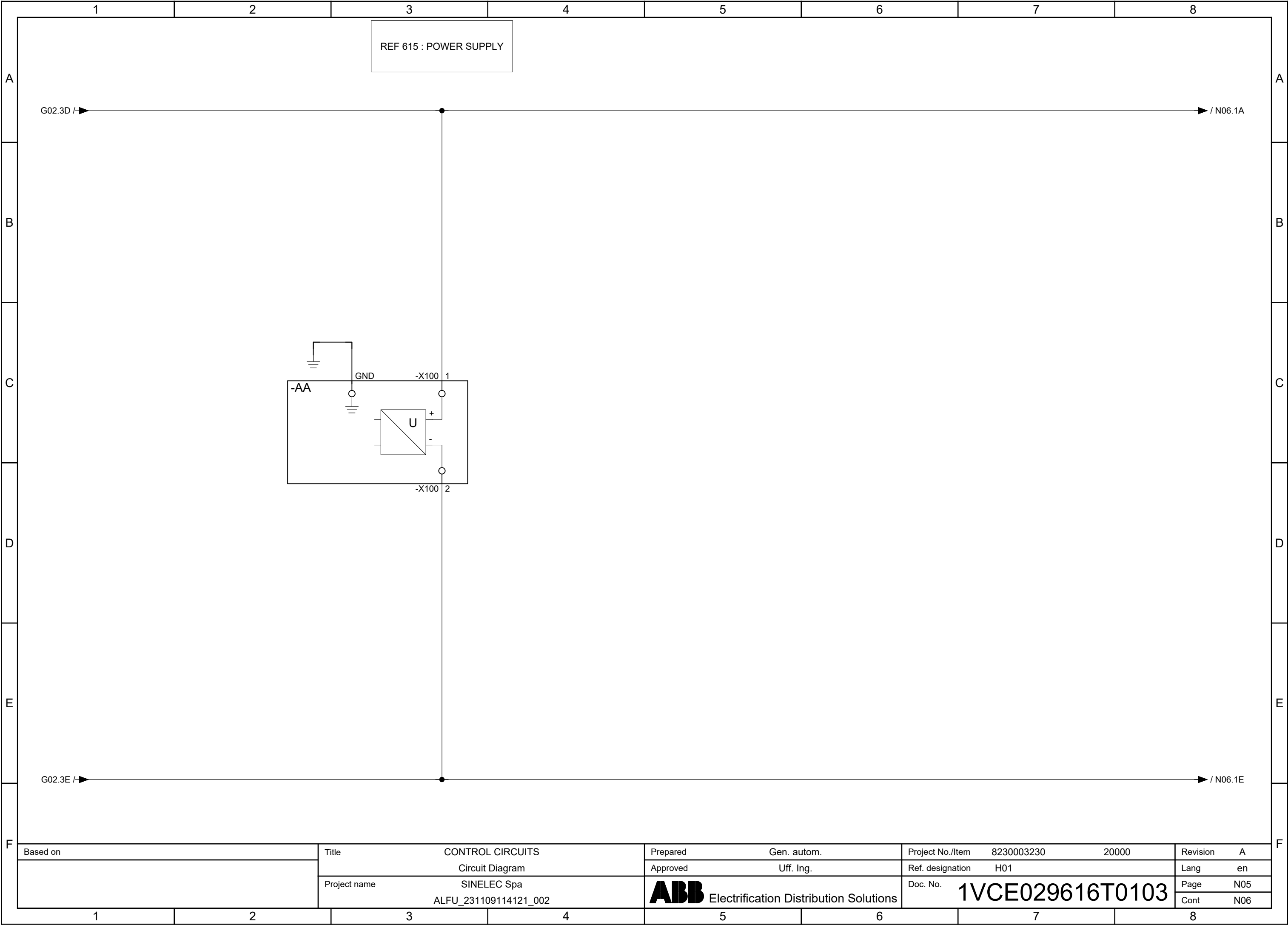
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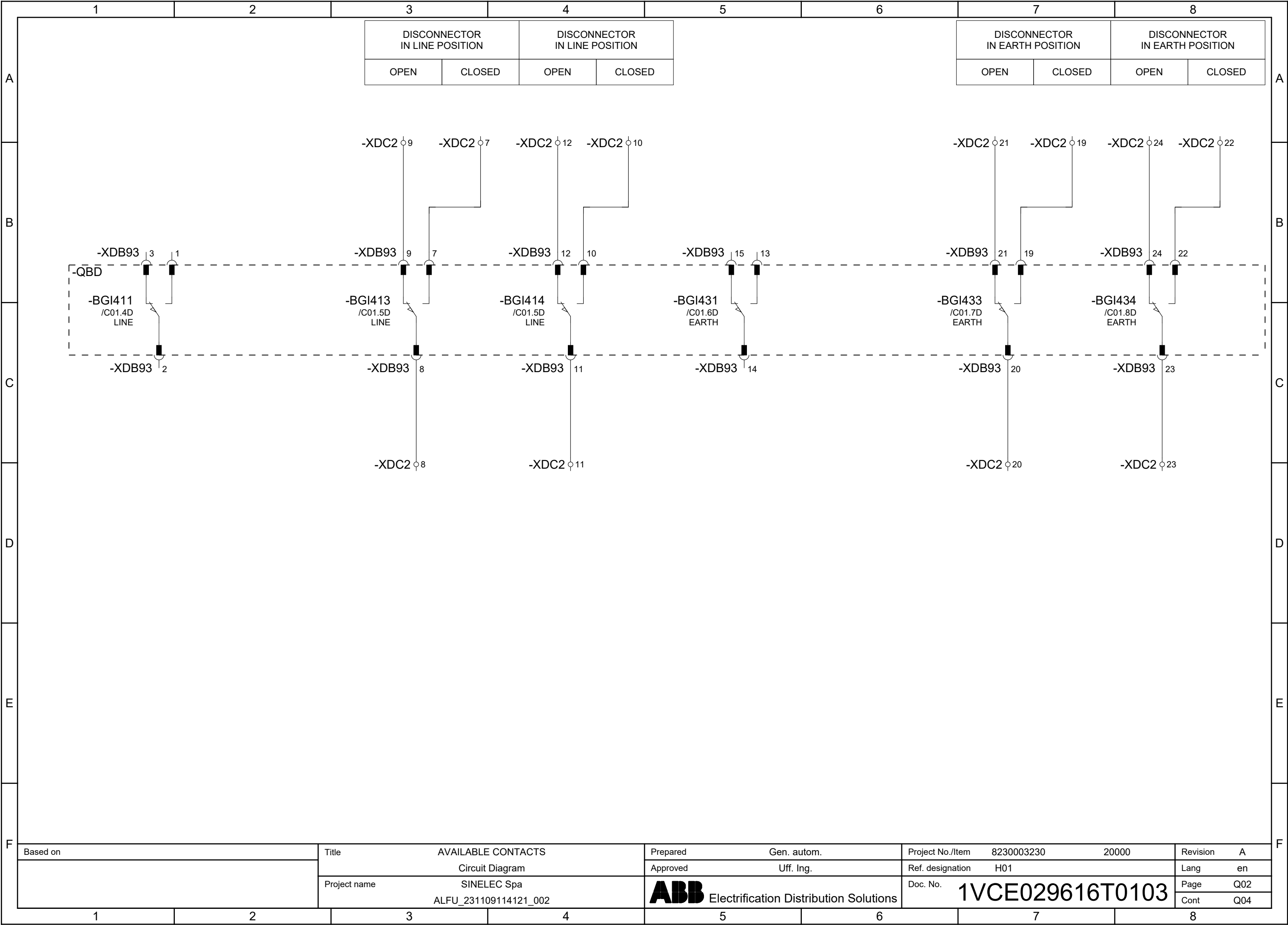


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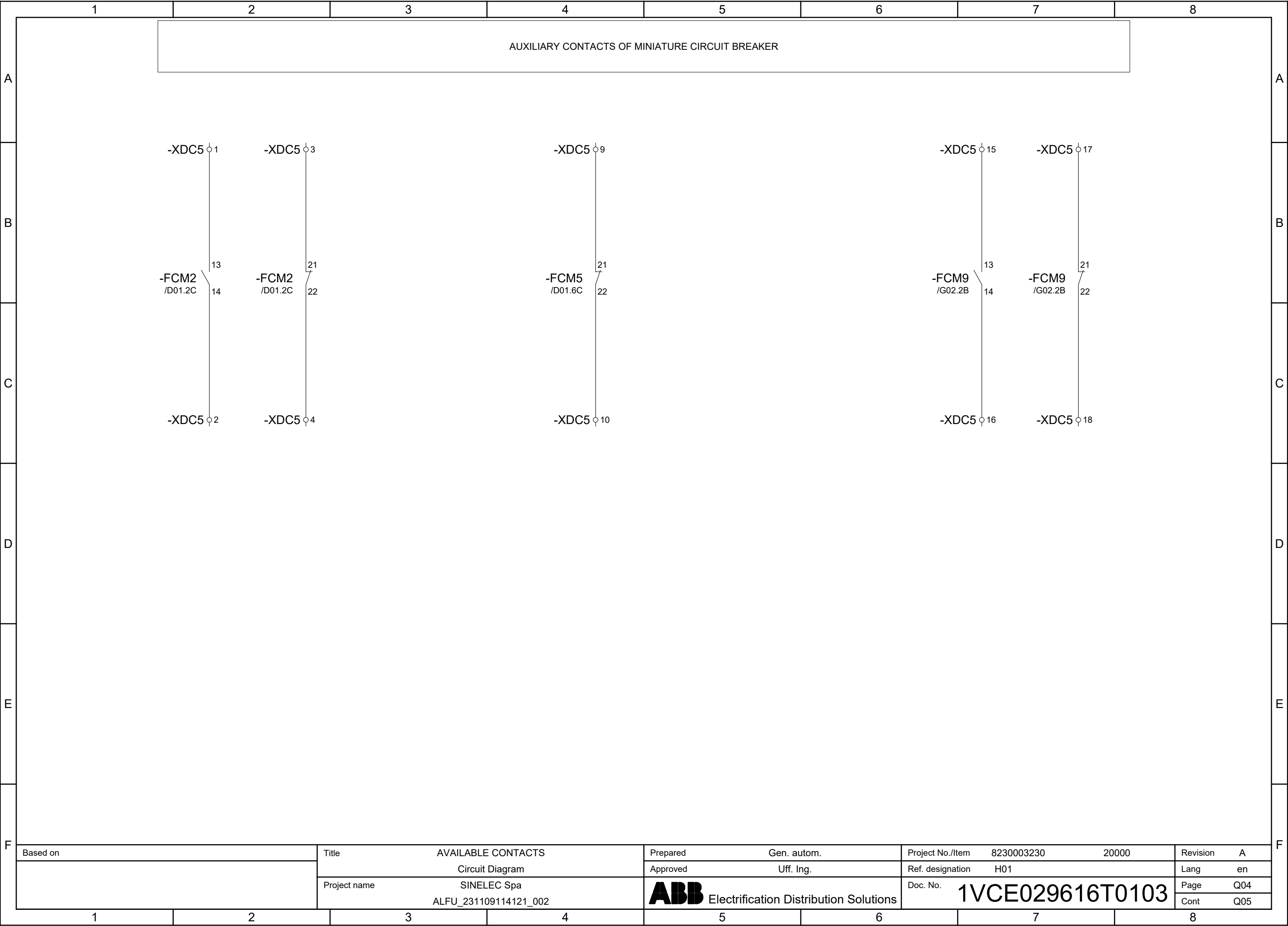


Based on	Title CONTROL CIRCUITS	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
	Circuit Diagram	Approved Uff. Ing.	Ref. designation H01	Lang en
	Project name SINELEC Spa	ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0103	Page N06
	ALFU_231109114121_002			Cont Q02

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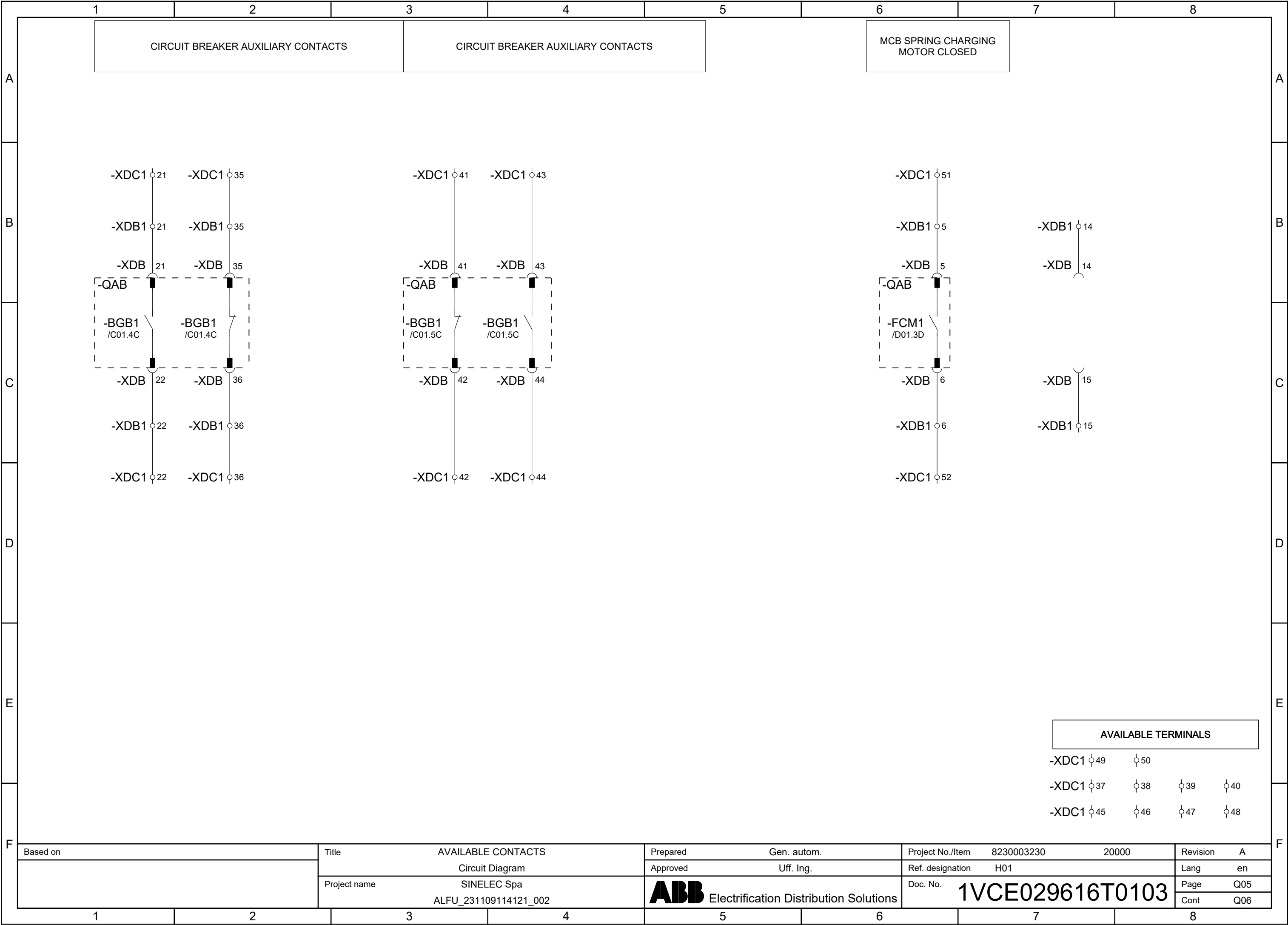
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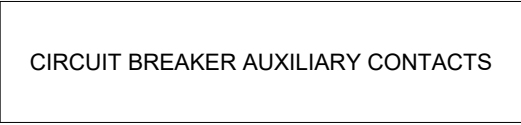
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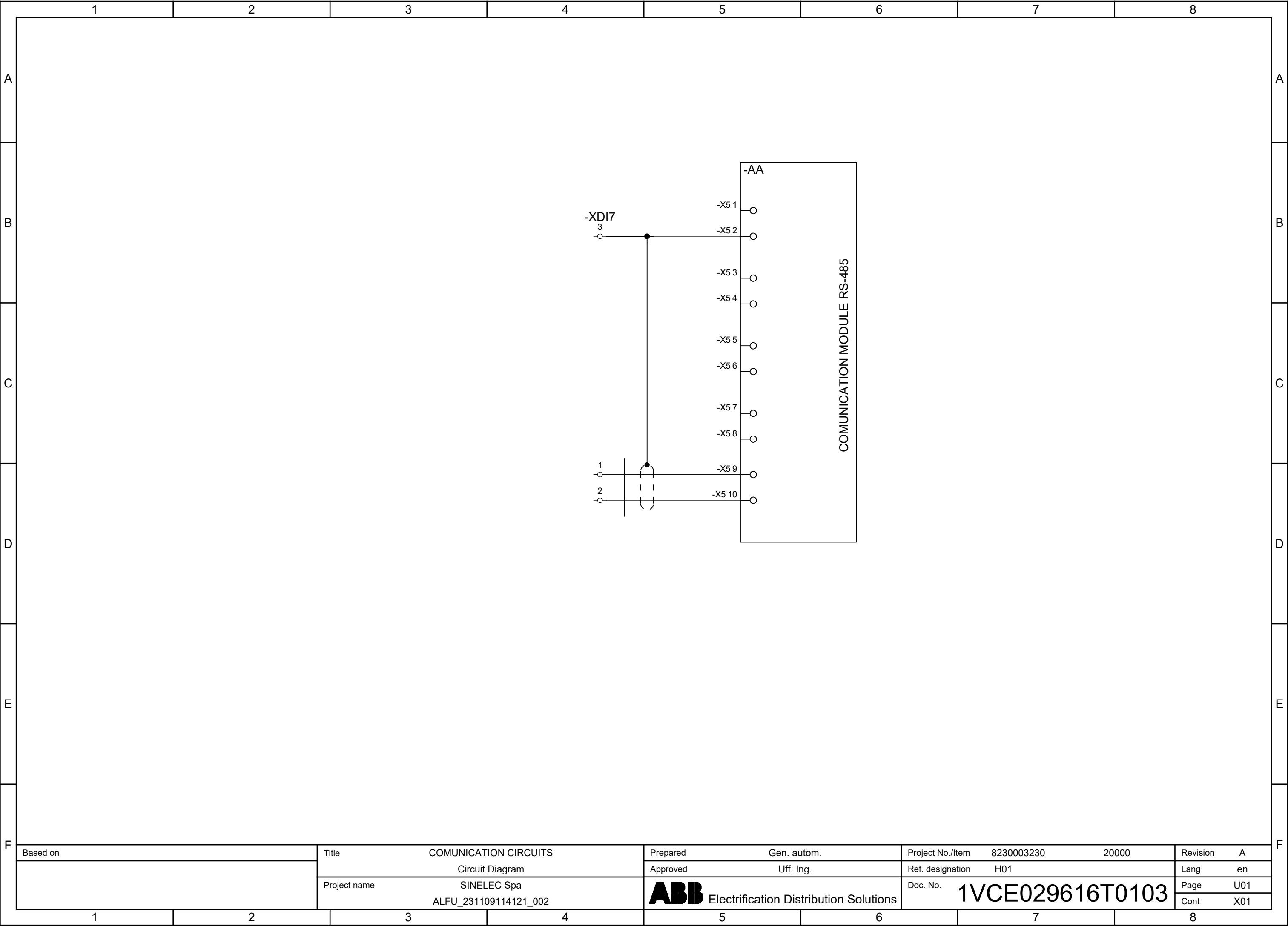





Based on	Title	AVAILABLE CONTACTS	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	SINELEC Spa	ABB Electrification Distribution Solutions		Doc. No.	1VCE029616T0103		Page	Q06
		ALFU_231109114121_002					Cont	Q07	

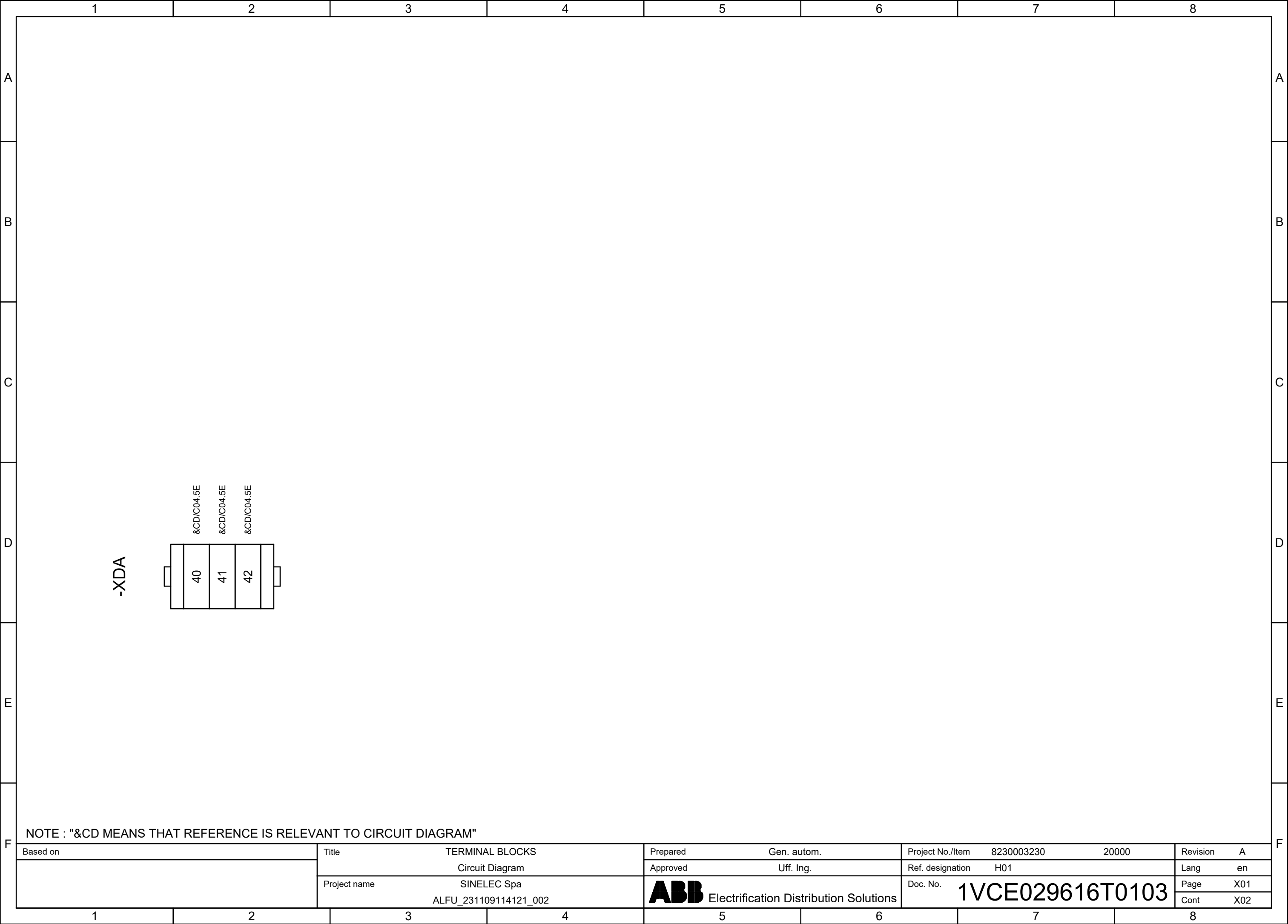
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		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	SINELEC Spa	ABB Electrification Distribution Solutions		Doc. No.	1VCE029616T0103		Page	Q07
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		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	SINELEC Spa	 Electrification Distribution Solutions	Doc. No.	1VCE029616T0103	Page	U01		
		ALFU_231109114121_002				Cont	X01		

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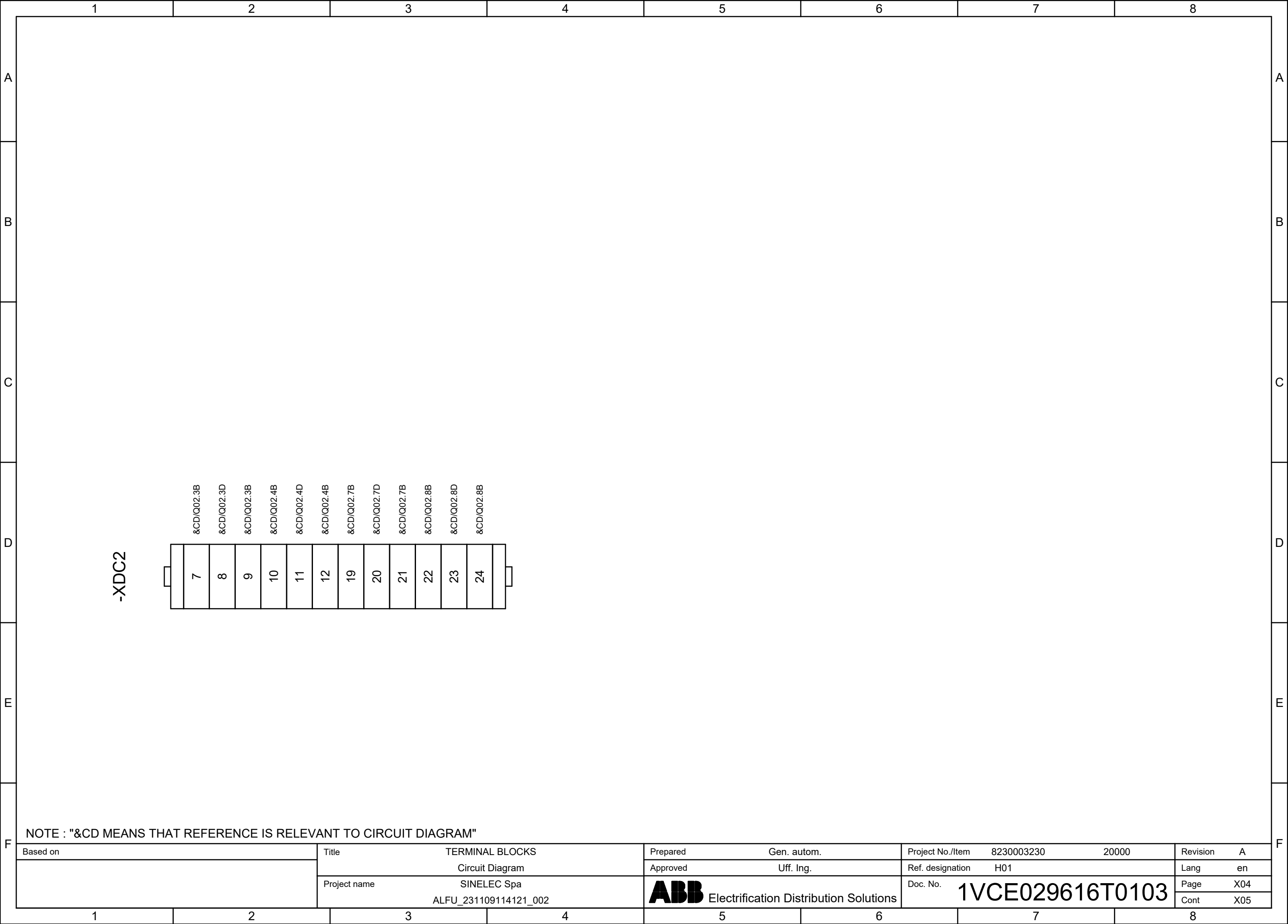
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Based on	Title	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
	Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H01		Lang	en
	Project name	 ABB Electrification Distribution Solutions		Doc. No.	1VCE029616T0103		Page	X02
	ALFU_231109114121_002			Cont			X03	

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Based on	Title TERMINAL BLOCKS	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
	Circuit Diagram	Approved Uff. Ing.	Ref. designation H01	Lang en
	Project name SINELEC Spa ALFU_231109114121_002	ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0103	Page X03
				Cont X04

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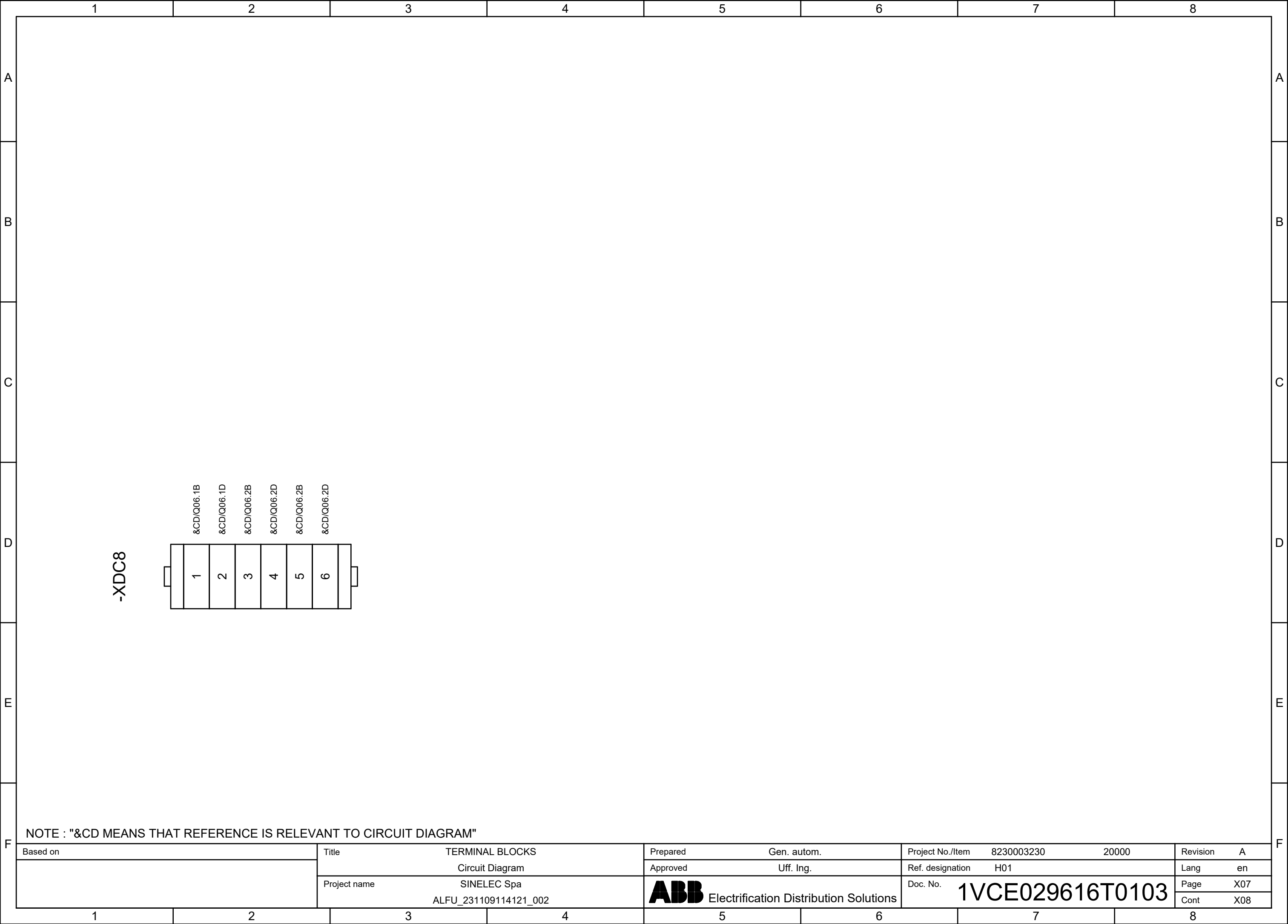
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				SINELEC Spa								1VCE029616T0103				X05			
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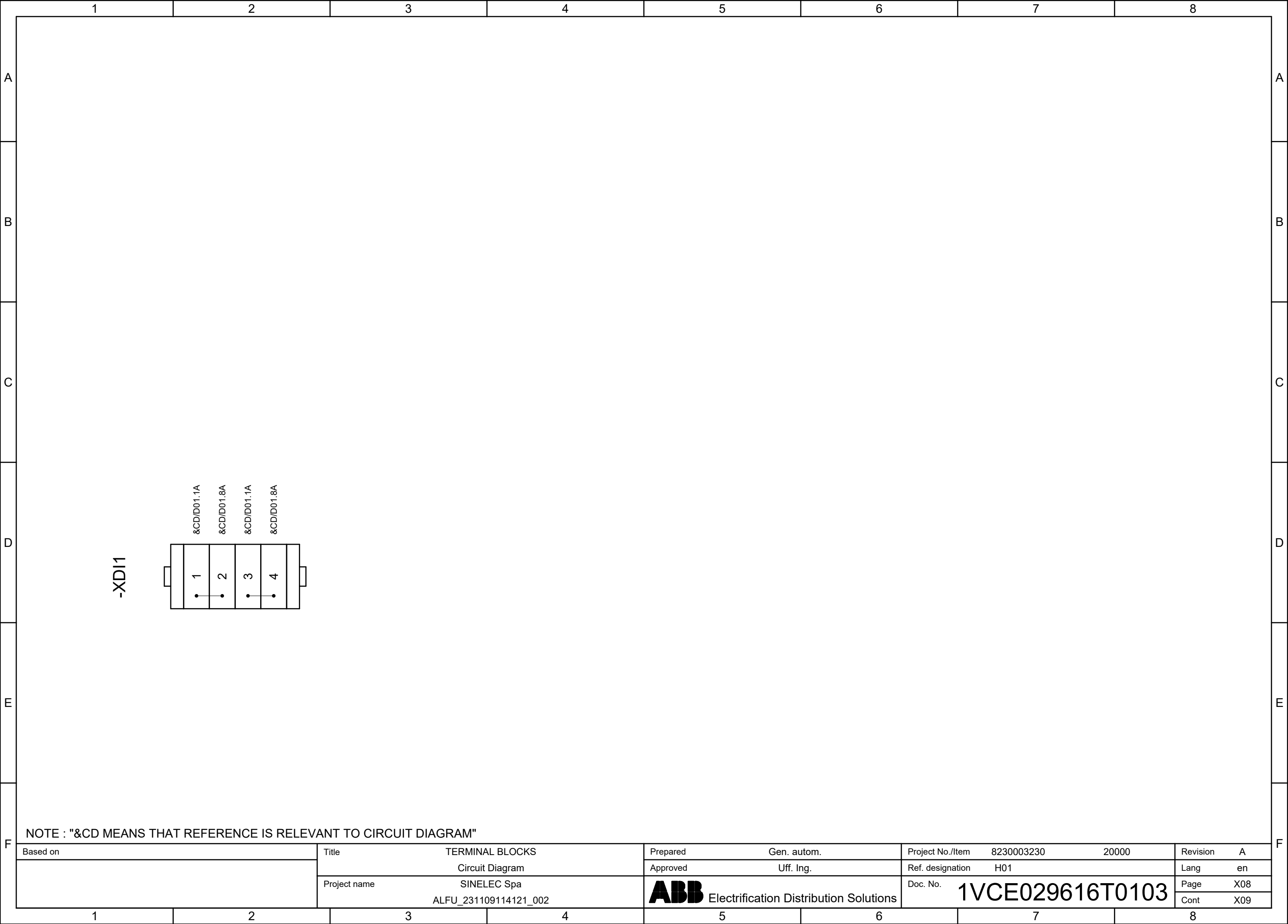
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				SINELEC Spa								1VCE029616T0103				X06			
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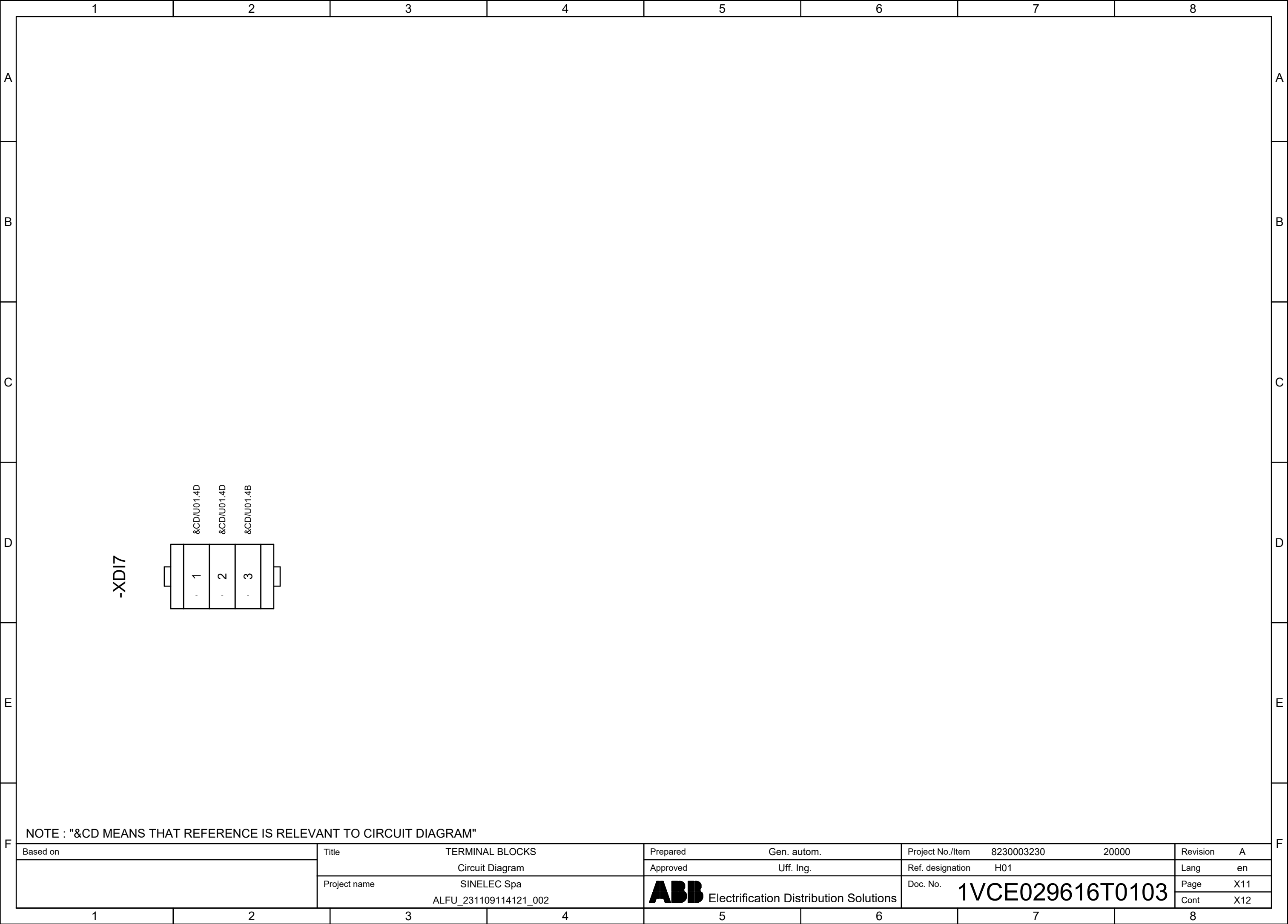
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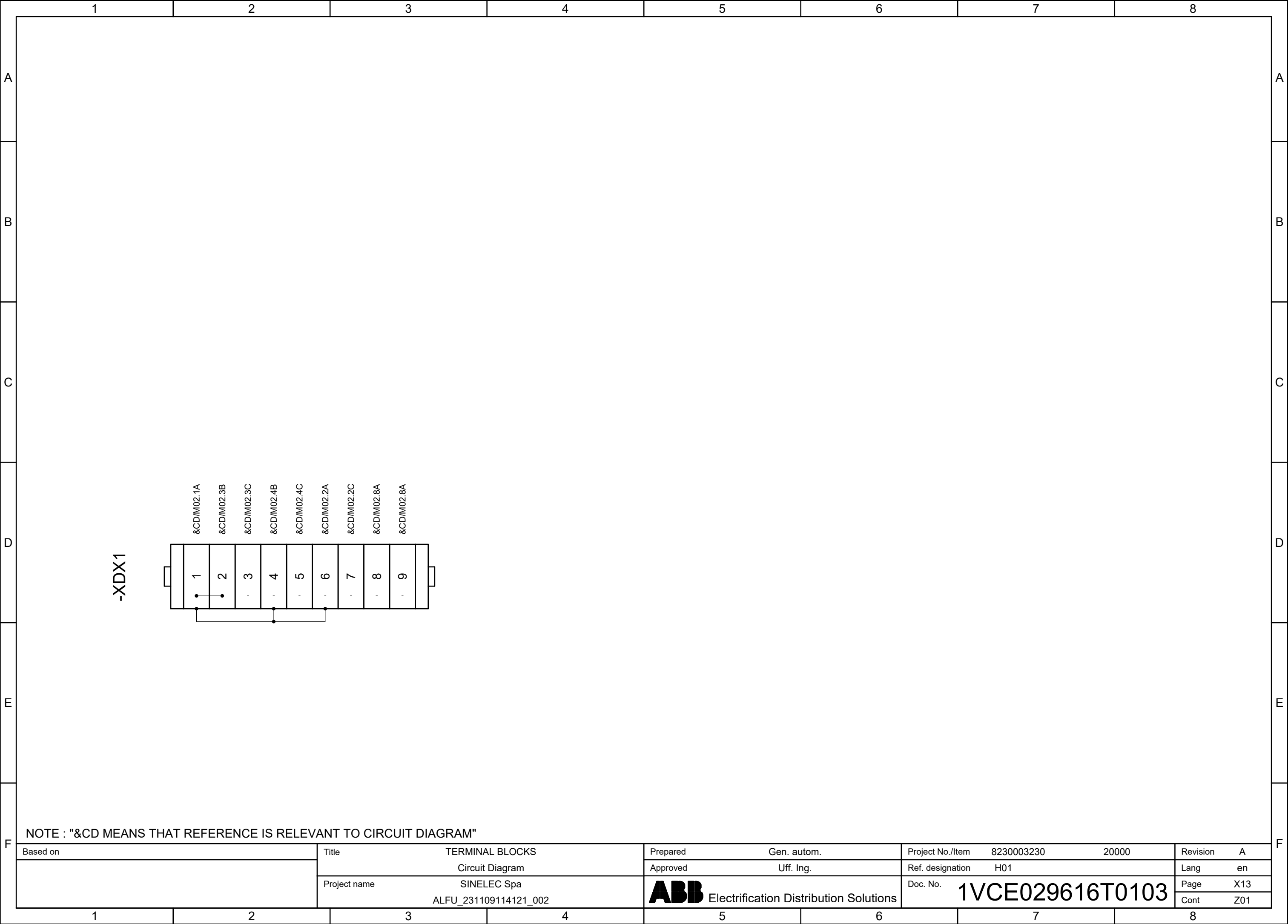
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A	PART LIST															A
	DESIGNATION	CLASS	CHARACTERISTICS				CODE ORDER NUMBER	MANUFACTURED CODE	QUANTITY	SUPPLIER						
B	-AA	Protection devices	FEEDER PROTECTION AND CONTROL UNIT TYPE REF615 CONFIGURATION G VERSION 5.0 FP1				HBFGDAAHABC1ANA11G	REF615-G	1	ABB				B		
	-EA2	Light	LED BULB TYPE G9 220-240V 50/60Hz				3WDA033486P0001	555249.0101	1	RELCO						
	-EB1	Heating	HEATER 50W 110-250VAC/DC				3WDA026276P0001	SHT50W	1	ALFA ELECTRIC						
	-FCM2	Protection devices	MCB S202-C1,6				3WCA022097P0103	2CDS252001R0974	1	ABB						
	-FCM2	Protection devices	AUX. CONTACT S2C-H11L FOR MCB SERIES S200				3WCA022097P0013	2CDS200936R0001	1	ABB						
C	-FCM5	Protection devices	MCB S202-C0,5				3WCA022097P0101	2CDS252001R0984	1	ABB				C		
	-FCM5	Protection devices	AUX. CONTACT S2C-H11L FOR MCB SERIES S200				3WCA022097P0013	2CDS200936R0001	1	ABB						
	-FCM9	Protection devices	MCB S202-C1,6				3WCA022097P0103	2CDS252001R0974	1	ABB						
	-FCM9	Protection devices	AUX. CONTACT S2C-H11L FOR MCB SERIES S200				3WCA022097P0013	2CDS200936R0001	1	ABB						
	-RAR1	Resistors	RESISTOR FOR PROTECTION UNIT 33 kΩ				3WDA017905P0007	-	1	MC RESISTORI						
D	-TB	Voltage source and generator	POWER SUPPLY 115/230VAC - 48/110VDC - 60VA				3WDA017077P0001	016996	1	ICES				D		
	-XDA	Terminals	EARTHING TERMINAL BLOCK UTMED 4-PE				3WDA031116P0002	3047478	1	PHOENIX						
	-XDA	Terminals	TEST DISCONNECT TERMINAL BLOCK UTME 4-CT/1P				3WDA030258P0001	3057432	2	PHOENIX						
	-XDB1	Terminals	TERMINAL D2,5/8.ADO.1				3WDA025413P0002	EN019906322	2	ABB						
	-XDB1	Terminals	TERMINAL D1/5.ADO.1				3WDA025413P0001	1SNA199563R2400	22	ABB						
E	-XDC1	Terminals	TERMINAL D2,5/5.ADO				3WCA022102P0001	EN019955423	30	ABB				E		
	-XDC2	Terminals	TERMINAL D2,5/5.ADO				3WCA022102P0001	EN019955423	12	ABB						
	-XDC3	Terminals	TERMINAL D2,5/5.ADO				3WCA022102P0001	EN019955423	22	ABB						
	-XDC5	Terminals	TERMINAL D2,5/5.ADO				3WCA022102P0001	EN019955423	10	ABB						
	-XDC8	Terminals	TERMINAL D2,5/5.ADO				3WCA022102P0001	EN019955423	6	ABB						
F	-XDI1	Terminals	TERMINAL D6/8.ADO.1				3WDA025414P0003	EN019904621	4	ABB				F		
	-XDI2	Terminals	TERMINAL D6/8.ADO.1				3WDA025414P0003	EN019904621	4	ABB						
	-XDI4	Terminals	TERMINAL D6/8.ADO.1				3WDA025414P0003	EN019904621	4	ABB						
Based on		Title				Prepared		Gen. autom.		Project No./Item		Revision		A		
		Circuit Diagram				Approved		Uff. Ing.		Ref. designation		Lang		en		
		Project name				 Electrification Distribution Solutions		Doc. No.		1VCE029616T0103		Page		Z01		
		ALFU_231109114121_002										Cont		Z02		
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A	PART LIST															A											
	DESIGNATION		CLASS		CHARACTERISTICS				CODE ORDER NUMBER		MANUFACTURED CODE		QUANTITY		SUPPLIER												
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	-XDX1		Terminals		TERMINAL D1/5.ADO.1				3WDA025413P0001		1SNA199563R2400		9		ABB												
B	-XDX		Terminals		TERMINAL D1/5.ADO.1				3WDA025413P0001		1SNA199563R2400		8		ABB		B										
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A	M.V. CIRCUIT-BREAKER															A			
	DESIGNATION		CLASS		CHARACTERISTICS								QUANTITY		SUPPLIER				
	-QAB		CIRCUIT-BREAKER		TYPE: HySec 24kV 630A 16kA CIRCUIT DIAGRAM :1VCD400180 -BGB1 (FIG.32) CIRCUIT BREAKER AUXILIARY CONTACTS -BGS2 (FIG.22) CONTACT SIGNALLING CLOSING SPRINGS CHARGED -FCM1 (FIG.21);(FIG.26) MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CIRCUIT-BREAKER SPRINGS CHARGING MOTOR;CONTACT SIGNALLING MINIATURE BREAKER FOR PROTECTION OF THE SPRING-CHARGING MOTOR ON -MAS (FIG.01) SPRING CHARGING-MOTOR CIRCUIT -MBC (FIG.02) SHUNT CLOSING RELEASE -MBO1 (FIG.07) FIRST SHUNT OPENING RELEASE CIRCUIT -BGI411 (FIG.43) DISCONNECTORS AVAILABLE AUXILIARY CONTACTS								1		ABB				
B																B			
C	M.V. DEVICES															C			
	DESIGNATION		CLASS		CHARACTERISTICS								QUANTITY		SUPPLIER				
	-BCN		Homopolar Transformer		100/1A 0.5VA - cl.5P20								1		ABB				
D	-BUS1		Current and Voltage Sensor		KEVCD 24kV AE3								1		ABB		D		
	-BUS2		Current and Voltage Sensor		KEVCD 24kV AE3								1		ABB				
	-BUS3		Current and Voltage Sensor		KEVCD 24kV AE3								1		ABB				
	-QBD		Disconnecter		HySec 24kV 630A 16kA								1		ABB				
E																E			
F																F			
	Based on				Title MV DEVICES CHARACTERISTICS				Prepared Gen. autom.				Project No./Item 8230003230 20000				Revision A		
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					Project name SINELEC Spa				 Electrification Distribution Solutions				Doc. No. 1VCE029616T0103				Page Z10		
					ALFU_231109114121_002												Cont		
1		2		3		4		5		6		7		8					

INDEX OF SHEETS		
SHEET	DESCRIPTION	REVISION
A01	COVER SHEET	A
A03	INDEX OF SHEETS	A
A10	REFERENCE DESIGNATIONS	A
A11	REFERENCE DESIGNATIONS	A
C01	MAIN CIRCUITS	A
C04	MAIN CIRCUITS	A
D01	DISTRIBUTION OF AUXILIARY CIRCUITS	A
Q02	AVAILABLE CONTACTS	A
Q04	AVAILABLE CONTACTS	A
X01	TERMINAL BLOCKS	A
X02	TERMINAL BLOCKS	A
X03	TERMINAL BLOCKS	A
Z01	PARTS LIST	A
Z10	MV DEVICES CHARACTERISTICS	A

REVISION LIST				
INDEX REV	DESCRIPTION	DATE	PREPARED	APPROVED
A	FIRST ISSUE	09/11/2023	Gen. autom.	Uff. Ing.
B				
C				
D				
E				
F				
G				
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STANDARD REFERENCES

THIS DRAWING IS IN COMPLIANCE WITH THE FOLLOWING INTERNATIONAL STANDARDS:

- IEC 60617: GRAPHICAL SYMBOLS FOR DIAGRAMS*
- IEC 61082: PREPARATION OF DOCUMENTS USED IN ELECTROTECHNOLOGY*
- IEC 81346: STRUCTURING PRINCIPLES AND REFERENCE DESIGNATIONS*

THE DIAGRAM INDICATES COMPONENTS HAVING A MOVABLE PART IN THE FOLLOWING POSITION OR OPERATIONAL STATE (IEC 61082-1 7.4.4.1):

- C.BREAKER OR CONTACTOR IN OPEN (OFF) AND SERVICE POSITION*
- DISCONNECTORS AND EARTHING SWITCH IN OPEN POSITION*
- WITHDRAWABLE VOLTAGE TRANSFORMERS IN CONNECTED POSITION*
- CLOSING SPRINGS OF C.BREAKER IN DISCHARGED POSITION*
- CONNECTOR OF C.BREAKER AUXILIARY CIRCUITS IN CONNECTED POSITION*
- CIRCUITS IN DE-ENERGIZED STATE*
- RELAYS IN NON-ACTUATED STATE*
- GAS PRESSURE AT RATED SERVICE VALUE*
- FUSES NOT OPERATED*
- DOORS AND PRESSURE RELIEF FLAPS IN CLOSED POSITION*
- UNDERVOLTAGE RELEASE NOT EXCLUDED MECHANICALLY*

Based on	Title	INDEX OF SHEETS	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H02		Lang	en
	Project name	SINELEC Spa	ABB Electrification Distribution Solutions	Doc. No.	1VCE029616T0104	Page	A03		
		ALFU_231109114121_002				Cont	A10		

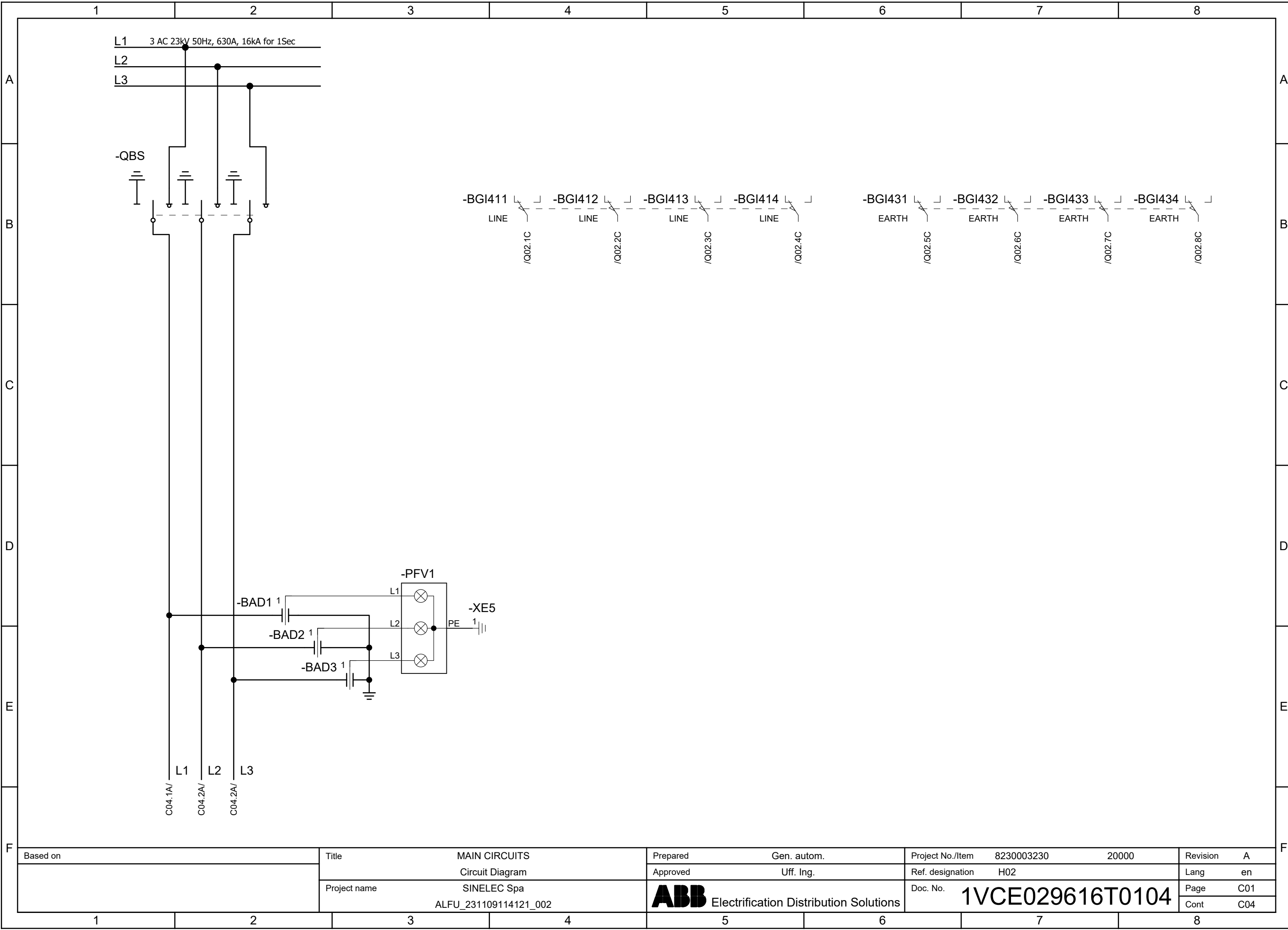
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A	REFERENCE DESIGNATION OF OBJECTS IN ELECTRICAL DOCUMENTS				-BX1 UNIT WITH SENSORS FOR DETECTION OF INTERNAL ARCING			
	(IN COMPLIANCE WITH STANDARD IEC 81346-2 AND ABB TECHNICAL STANDARD 2NBA000001)				-BX2 ADDITIONAL CURRENT SENSING UNIT FOR DETECTION OF INTERNAL ARCING			
B	DESIGNATION DESCRIPTION				-BUS... COMBINED CURRENT AND VOLTAGE SENSOR			
	-AA MULTIFUNCTION UNIT (CENTRAL UNIT)				-CA CAPACITORS			
C	-BAD... CAPACITIVE VOLTAGE DIVIDER				-EA1 LIGHTING LAMP LOCATED IN L.V. INSTRUMENT COMPARTMENT			
	-BAR VOLTAGE PROTECTION RELAY				-EA2 LIGHTING LAMP LOCATED IN CABLE COMPARTMENT			
D	-BAS... VOLTAGE SENSOR LOCATED ON PHASE L1				-EA4 LIGHTING LAMP LOCATED IN CIRCUIT BREAKER COMPARTMENT			
	-BAT... VOLTAGE TRANSFORMER LOCATED ON PHASE L1				-EB1 HEATER LOCATED IN CABLE COMPARTMENT			
E	-BCN NEUTRAL (RESIDUAL) CURRENT TRANSFORMER				-FA... SURGE ARRESTER			
	-BCR CURRENT PROTECTION RELAY				-FCD FUSE-DISCONNECTORS FOR PROTECTION OF AUXILIARY CIRCUITS			
F	-BCS... CURRENT SENSOR LOCATED ON PHASE L1				-FCF... MEDIUM VOLTAGE FUSE			
	-BCT... CURRENT TRANSFORMER LOCATED ON PHASE L1				-FCM1 MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF SPRINGS CHARGING MOTOR ON MAIN CIRCUIT-BREAKER			
A	-BD4 DENSITY SWITCH OF SWITCH-DISCONNECTOR				-FCM2 MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CONTROL CIRCUITS			
	-BER SUPERVISION RELAYS				-FCM3 MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CIRCUIT FOR CONTACTOR			
B	-BES SYNCHRONIZING RELAY				-FCM4 MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CIRCUITS OF MOTOR FOR SWITCH-DISCONNECTOR OPERATION			
	-BET THERMAL PROTECTION RELAY				-FCM5 MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF AUXILIARY CIRCUITS IN ALTERNATING CURRENT			
C	-BGB1...4 POSITION SWITCHES OF CIRCUIT-BREAKER OR CONTACTOR				-FCM6... MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF BROKEN DELTA SECONDARY CIRCUITS OF VOLTAGE TRANSFORMERS			
	-BGB5 POSITION SWITCH OF CIRCUIT-BREAKER SIGNALLING UNDERVOLTAGE RELEASE ENERGIZED				-FCM7... MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF STAR CONNECTION SECONDARY CIRCUITS OF VOLTAGE TRANSFORMERS, FIRST WINDING			
D	-BGB6 POSITION SWITCH OF CIRCUIT-BREAKER SIGNALLING UNDERVOLTAGE RELEASE EXCLUDED MECHANICALLY				-FCM8... MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF STAR CONNECTION SECONDARY CIRCUITS OF VOLTAGE TRANSFORMERS, SECOND WINDING			
	-BGD2 POSITION SWITCH OF CABLE COMPARTMENT DOOR				-FCM9 MINIATURE CIRCUIT-BREAKER FOR PROTECTION OF CIRCUITS OF PROTECTION RELAYS OR MULTIFUNCION UNITS			
E	-BGE1... POSITION SWITCHES SIGNALLING EARTHING SWITCH -QCE IN OPEN POSITION				-KFA1 AUXILIARY RELAY SIGNALLING LOW GAS PRESSURE			
	-BGE2... POSITION SWITCHES SIGNALLING EARTHING SWITCH -QCE IN CLOSED POSITION				-KFA2 AUXILIARY RELAY SIGNALLING INSUFFICIENT GAS PRESSURE			
F	-BGE3 POSITION SWITCHES OF EARTHING SWITCH OPERATION ACTUATED BY ELECTRIC MOTOR				-KFA3...9 AUXILIARY RELAYS OR CONTACTORS			
	-BGE4... POSITION SWITCHES FOR ELECTRICAL OPERATION LOCK OF IN CASE OF MANUAL OPERATION OF EARTHING SWITCH				-KFC... CLOSING RELAYS OR CONTACTORS			
A	-BGF1 POSITION SWITCHES OF MEDIUM VOLTAGE FUSES				-KFI INTEGRATED CIRCUITS			
	-BGF2 POSITION SWITCH OF MEDIUM VOLTAGE FUSES FOR ACTUATOR DRIVE CONTROL CIRCUIT OF SWITCH-DISCONNECTOR				-KFL LOCKOUT RELAY			
B	-BGI7 POSITION SWITCH SIGNALLING DICONNECTOR (OR SWITCH-DISCONNECTOR) -QBD NOT IN MANUAL OPERATION				-KFO... OPENING RELAYS OR CONTACTORS			
	-BGI41... POSITION SWITCHES SIGNALLING SWITCH-DISCONNECTOR -QBS CLOSED IN FEEDER POSITION				-KFP PROGRAMMABLE LOGIC CONTROLLERS (PLC)			
C	-BGI43... POSITION SWITCHES SIGNALLING SWITCH-DISCONNECTOR -QBS CLOSED IN EARTH POSITION				-KFS SYNCHRONIZING DEVICES			
	-BGK POSITION SWITCH OF KEY LOCK				-KFT... AUXILIARY TIME RELAYS, DELAY ELEMENTS			
D	-BGL3 POSITION SWITCH OF ELECTROMECHANICAL LOCK -RLE3				-KFU CONTROL UNIT			
	-BGS1, 2 POSITION SWITCHES OF CIRCUIT-BREAKER SPRINGS				-KZA NETWORK SWITCHES (COMMUNICATION)			
E	-BGS6...8 POSITION SWITCHES OF THE SPRINGS OF SWITCH-DISCONNECTOR FOR CONTROL CIRCUITS OF THE MOTOR OPERATOR				-MAD MOTOR FOR ELECTRICAL OPERATION OF SWITCH-DISCONNECTOR -QBS			
	-BGT1 POSITION SWITCHES ON TRUCK SIGNALLING TRUCK IN SERVICE POSITION				-MAE MOTOR FOR ELECTRICAL OPERATION OF EARTHING SWITCH -QCE			
F	-BGT2 POSITION SWITCHES ON TRUCK SIGNALLING TRUCK IN TEST POSITION				-MAS MOTOR FOR CIRCUIT-BREAKER SPRINGS CHARGING			
	-BGT3 POSITION SWITCH ON TRUCK SIGNALLING TRUCK NOT IN ISOLATING TRAVEL POSITION				-MAT MOTOR FOR ELECTRICAL OPERATION OF TRUCK RACKING-IN/OUT			
A	-BGT4 POSITION SWITCHES ON SWITCHGEAR SIGNALLING TRUCK IN SERVICE POSITION				-MBC CLOSING RELEASE OF CIRCUIT-BREAKER			
	-BGT5 POSITION SWITCHES ON SWITCHGEAR SIGNALLING TRUCK IN TEST POSITION				-MBC4 CLOSING RELEASE OF SWITCH-DISCONNECTOR -QBS			
B	-BM HYGROSTAT				-MBO1 FIRST OPENING RELEASE OF CIRCUIT-BREAKER			
	-BPS PRESSURE SWITCH LOCATED ON CIRCUIT-BREAKER				-MBO2 SECOND OPENING RELEASE OF CIRCUIT-BREAKER			
C	-BPS4 PRESSURE SWITCH OF SWITCH-DISCONNECTOR				-MBO3 OPENING SOLENOID FOR OVERCURRENT RELEASE OF CIRCUIT-BREAKER			
	-BR FLAME DETECTORS, SMOKE DETECTORS				-MBO4 OPENING RELEASE OF SWITCH-DISCONNECTOR -QBS			
D	-BT THERMOSTAT				-MBU UNDERVOLTAGE RELEASE OF CIRCUIT-BREAKER			
					-MBU4 UNDERVOLTAGE RELEASE OF SWITCH-DISCONNECTOR -QBS			
E					-PFB BLUE SIGNAL LAMPS			
					-PFF FLAG RELAYS			
F					-PFG GREEN SIGNAL LAMPS			
					-PFR RED SIGNAL LAMPS			
A					-PFS SHORT CIRCUIT INDICATORS			
B	Based on				Prepared Gen. autom.		Project No./Item 8230003230 20000	
	Title REFERENCE DESIGNATIONS				Approved Uff. Ing.		Revision A	
C	Circuit Diagram						Lang en	
	Project name SINELEC Spa				Doc. No. 1VCE029616T0104		Page A10	
D	ALFU_231109114121_002				Electrification Distribution Solutions		Cont A11	
E	1				5		8	
	2				6		7	
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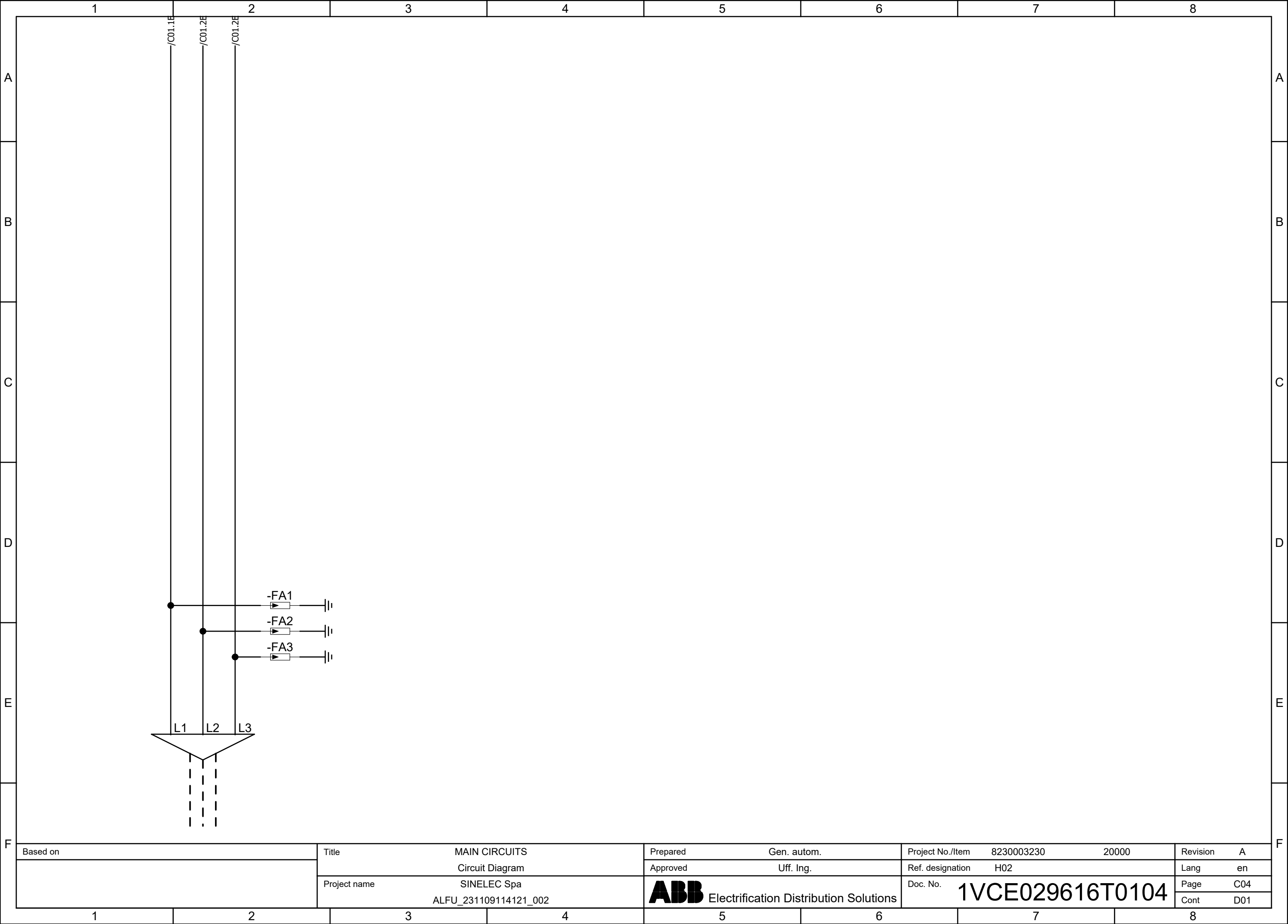
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A	-PFV1	VOLTAGE INDICATOR ON FEEDER SIDE						-TFM	MULTIFUNCTION TRANSDUCERS							A
	-PFV2	VOLTAGE INDICATOR ON BUSBAR SIDE						-TFP	POWER-FACTOR TRANSDUCERS							
	-PFW	WHITE SIGNAL LAMPS						-TFQ	REACTIVE POWER TRANSDUCERS							
	-PFX	CROSS INDICATORS, ELECTROMECHANICAL INDICATORS						-TFS	SIGNAL CONVERTERS							
	-PFY	YELLOW SIGNAL LAMPS						-TFT...	TEMPERATURE SENSORS							
B	-PGA	AMMETERS						-TFV	VOLTAGE TRANSDUCERS							B
	-PGC	COUNTERS						-WF...	DATA BUS							
	-PGF	FREQUENCYMETERS						-XDA	TERMINAL BLOCK FOR CIRCUITS OF CURRENT TRANSFORMERS							
	-PGH	HOURMETERS						-XDB	CONNECTOR FOR ISOLATION OF CIRCUIT-BREAKER							
	-PGI	PROTECTION AND CONTROL UNIT: HUMAN MACHINE INTERFACE						-XDB1,2	TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF CIRCUIT-BREAKER							
C	-PGJ	ACTIVE ENERGY METERS						-XDB10...89	CONNECTOR FOR CIRCUIT-BREAKER INTERNAL CIRCUITS							C
	-PGK	REACTIVE ENERGY METERS						-XDB9...	CONNECTOR FOR INTERNAL CIRCUITS							
	-PGM	MULTIFUNCTION INDICATORS						-XDC	CUSTOMER TERMINAL BLOCK							
	-PGP	POWER-FACTOR METERS						-XDC1, 8	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF CIRCUIT BREAKER							
	-PGQ	VARMETERS						-XDC2	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF SWITCH-DISCONNECTOR							
D	-PGS	SYNCHRONOSCOPES						-XDC3	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF PROTECTION RELAY AND MULTIFUNCTION UNIT							D
	-PGV	VOLTMETERS						-XDC4	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF VOLTAGE TRANSFORMERS							
	-PGW	WATTMETERS						-XDC5...	CUSTOMER TERMINAL BLOCK FOR AUXILIARY CONTACTS OF MINIATURE CIRCUIT-BREAKERS							
	-PJ	ACOUSTICAL SIGNAL DEVICES (BELLS, SIRENS)						-XDC6	CUSTOMER TERMINAL BLOCK FOR PRESSURE OR DENSITY SWITCH OF SWITCH-DISCONNECTOR							
	-QAB	CIRCUIT-BREAKERS						-XDC7	CUSTOMER TERMINAL BLOCK FOR GAS PRESSURE SIGNALLING CONTACTS OF CIRCUIT BREAKER							
E	-QAC	CONTACTORS (FOR POWER)						-XDE	TERMINAL BLOCK FOR AUXILIARY CIRCUITS OF EARTHING SWITCH -QCE							E
	-QBD	DISCONNECTORS						-XDH	TERMINAL BLOCK FOR AUXILIARY CIRCUITS IN ALTERNATING CURRENT							
	-QBM...	MINIATURE SWITCH-DISCONNECTORS						-XDH1	TERMINAL BLOCK FOR CIRCUITS OF ELECTROMECHANICAL LOCK PREVENTING THE DOOR OPENING OPERATION							
	-QBS	SWITCH-DISCONNECTORS						-XDI	TERMINAL BLOCK FOR INTERCONNECTION (CONNECTION BETWEEN PANELS)							
	-QCE...	EARTHING SWITCH						-XDI1	TERMINAL BLOCK FOR INTERCONNECTIONS OF CONTROL CIRCUITS							
F	-RAA...	FERRO-RESONANCE DUMPING RESISTOR						-XDI2	TERMINAL BLOCK FOR INTERCONNECTIONS OF CIRCUITS OF MOTOR FOR CIRCUIT-BREAKER SPRINGS CHARGING							F
	-RAD...	DIODES						-XDI3	TERMINAL BLOCK FOR INTERCONNECTIONS OF CIRCUITS OF MOTOR FOR SWITCH-DISCONNECTOR ELECTRICAL OPERATION							
	-RAR	RESISTORS						-XDI4	TERMINAL BLOCK FOR INTERCONNECTIONS OF AUXILIARY CIRCUITS IN ALTERNATING CURRENT							
	-RF	FILTERS						-XDI5	TERMINAL BLOCK FOR INTERCONNECTIONS OF ABILITY ELECTROMECHANICAL LOCK OPERATION OF EARTHING SWITCH							
	-RLE1	ELECTROMECHANICAL LOCK PREVENTING CIRCUIT-BREAKER CLOSING						-XDI6	TERMINAL BLOCK FOR INTERCONNECTIONS OF VOLTAGE CIRCUITS							
G	-RLE2	ELECTROMECHANICAL LOCK PREVENTING TRUCK RACKING-IN/OUT						-XDI7	TERMINAL BLOCK FOR INTERCONNECTIONS OF MOD-BUS CIRCUITS							G
	-RLE3, 8	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF EARTHING SWITCH						-XDI8	TERMINAL BLOCK FOR INTERCONNECTIONS OF CURRENT CIRCUITS							
	-RLE4	ELECTROMECHANICAL LOCK PREVENTING THE DOOR OPENING OPERATION						-XDI9	TERMINAL BLOCK FOR INTERCONNECTIONS OF SPECIAL CIRCUITS							
	-RLE5	ELECTROMECHANICAL LOCK PREVENTING INSERTION OF LEVER FOR CLOSING OPERATION OF LINE SWITCH						-XDI10	TERMINAL BLOCK FOR INTERCONNECTIONS OF ABILITY ELECTROMECHANICAL LOCK OPERATION OF LINE SWITCH							
	-SFA	AMMETRIC SWITCHES						-XDI11	TERMINAL BLOCK FOR INTERCONNECTIONS OF ELECTROMECHANICAL LOCK OPERATION OF EARTHING SWITCH TOP APP.							
H	-SFC...	CONTROL SWITCHES, CLOSING PUSH-BUTTONS						-XDM	SEALABLE TERMINAL BLOCK FOR MEASUREMENT							H
	-SFM	MOTOR CONTROL PUSH-BUTTON						-XDS	SOCKET OUTLETS							
	-SFO...	OPENING PUSH-BUTTONS						-XDT	TERMINAL BLOCK FOR POSITION CONTACTS OF TRUCK							
	-SFR	RESET PUSH-BUTTONS						-XDV	TERMINAL BLOCK FOR CIRCUITS OF VOLTAGE TRANSFORMERS							
	-SFS...	SELECTOR SWITCHES						-XDV1...	CONNECTOR FOR CIRCUITS OF VOLTAGE TRANSFORMERS							
I	-SFT	TEST PUSH-BUTTONS						-XDV4...	CONNECTOR FOR CIRCUITS OF FERRO-RESONANCE DUMPING RESISTOR							I
	-SFU...	UNLOCKING PUSH-BUTTONS						-XDX...	SUPPORT TERMINAL BLOCKS							
	-SFV	VOLTMETRIC SWITCHES						-XE...	EARTHING TERMINAL BLOCK							
	-TA	POWER TRANSFORMERS														
	-TB	CONVERTER														
J	-TFA	ACTIVE POWER TRANSDUCERS														J
	-TFC	CURRENT TRANSDUCERS														
	-TFF	FREQUENCY TRANSDUCERS														
	-TFJ	ACTIVE ENERGY TRANSDUCERS														
	-TFK	REACTIVE ENERGY TRANSDUCERS														
Based on		Title						Prepared		Gen. autom.		Project No./Item		Revision		
		Circuit Diagram						Approved		Uff. Ing.		Ref. designation		Lang		
		Project name						ABB Electrification Distribution Solutions		Doc. No.		1VCE029616T0104		Page		
		ALFU_231109114121_002												Cont		
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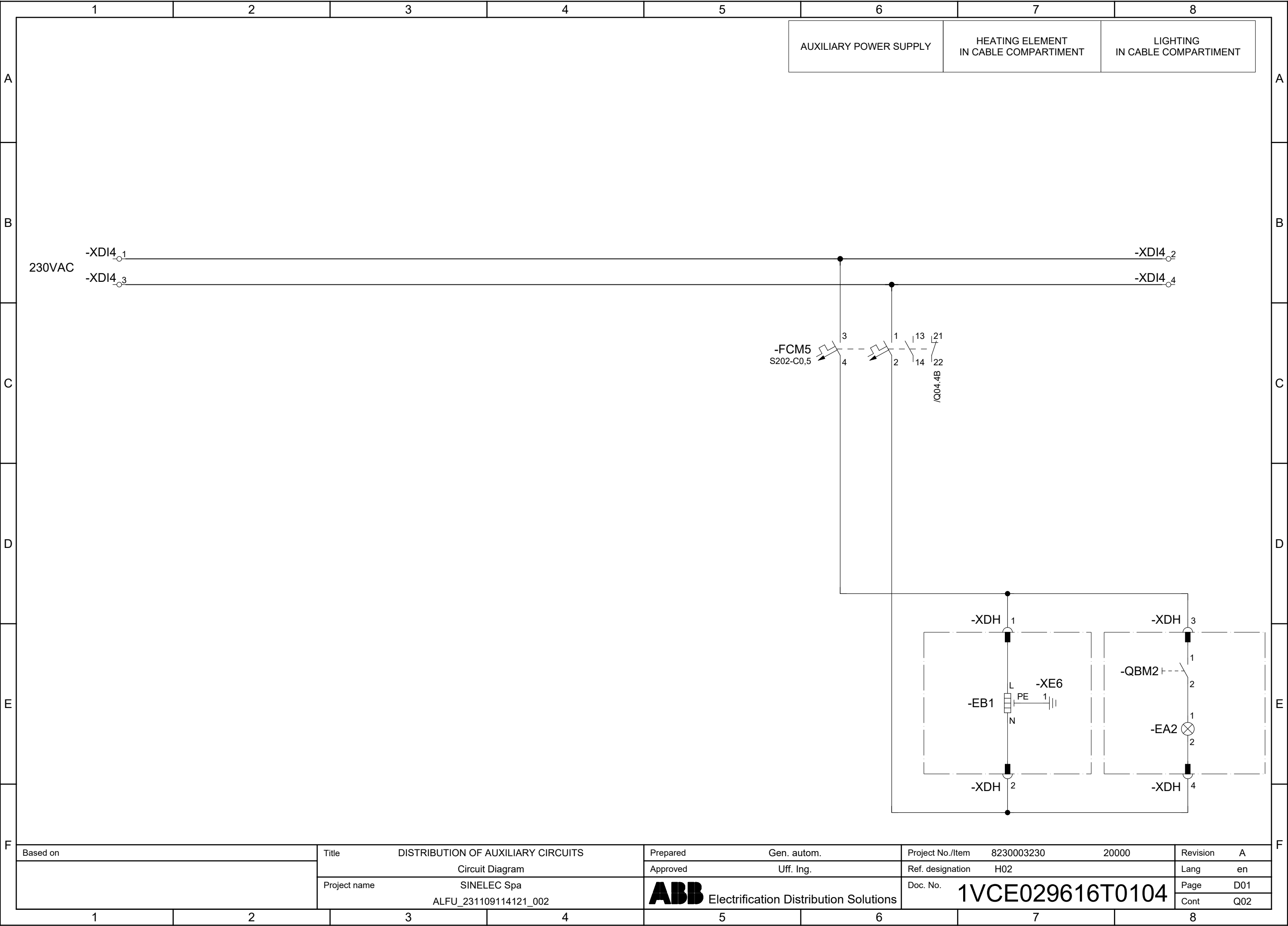


Based on	Title	MAIN CIRCUITS	Prepared	Gen. autom.	Project No./Item	8230003230	20000	Revision	A
		Circuit Diagram	Approved	Uff. Ing.	Ref. designation	H02		Lang	en
	Project name	SINELEC Spa	ABB Electrification Distribution Solutions	Doc. No.	1VCE029616T0104			Page	C01
		ALFU_231109114121_002						Cont	C04

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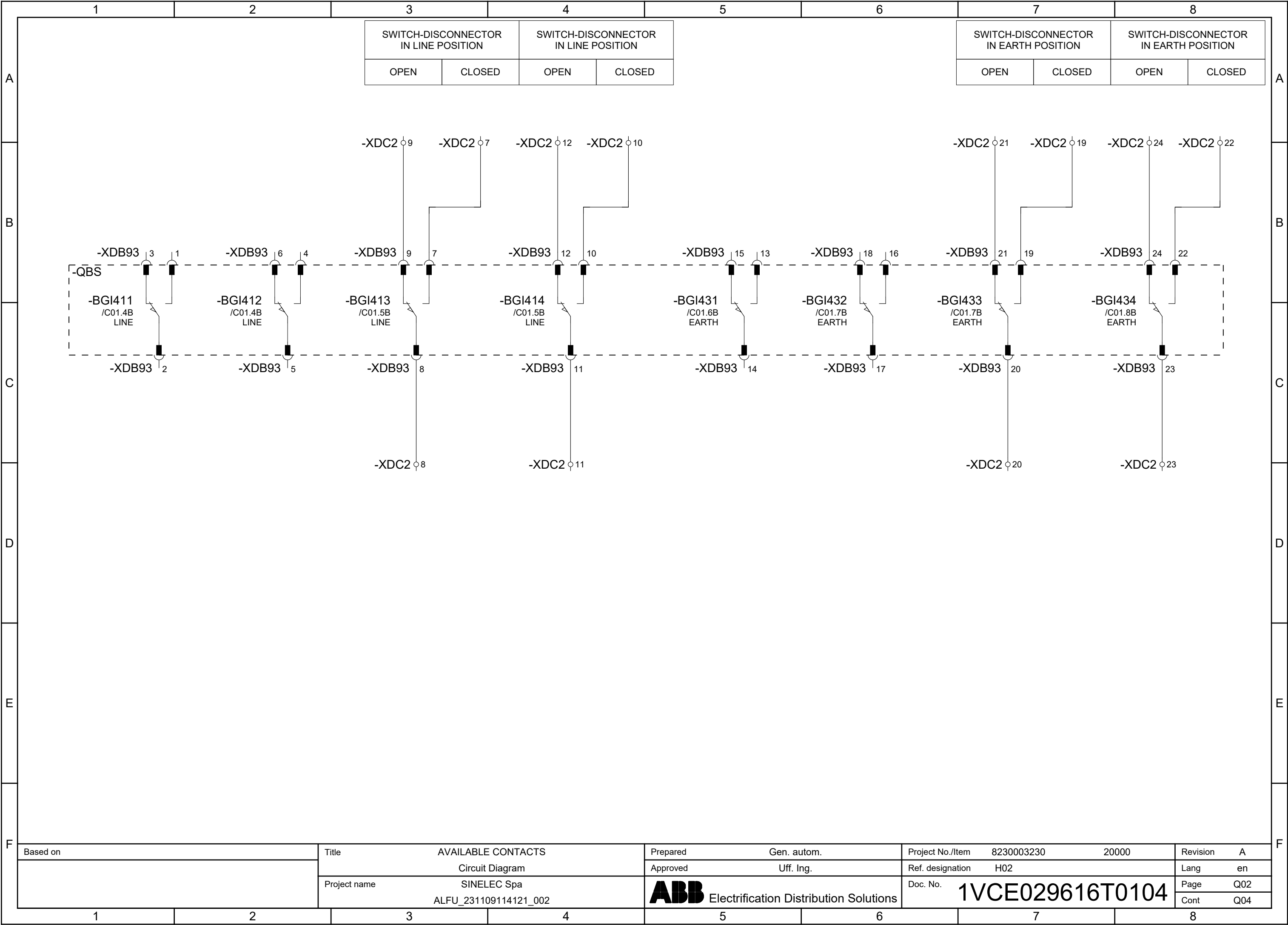


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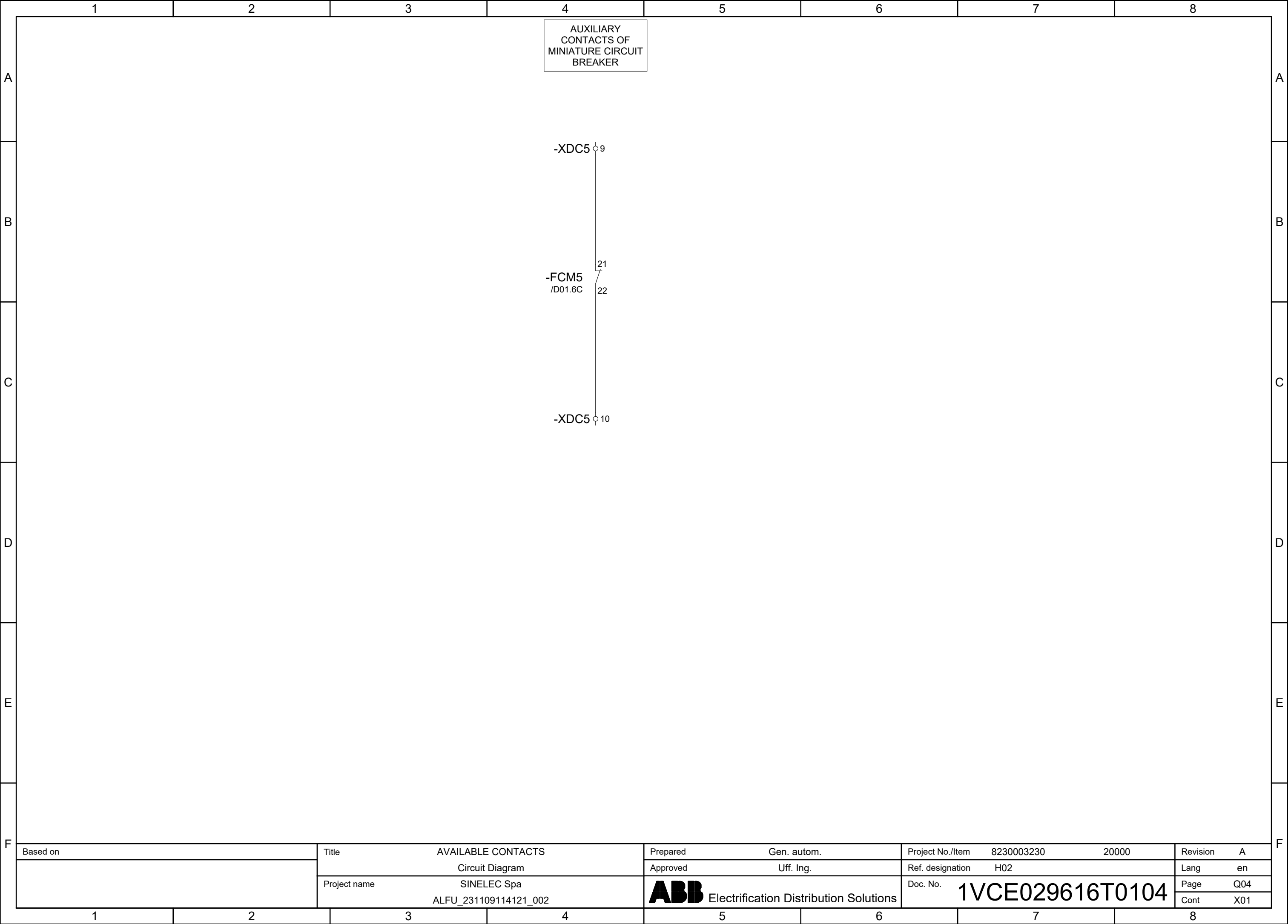
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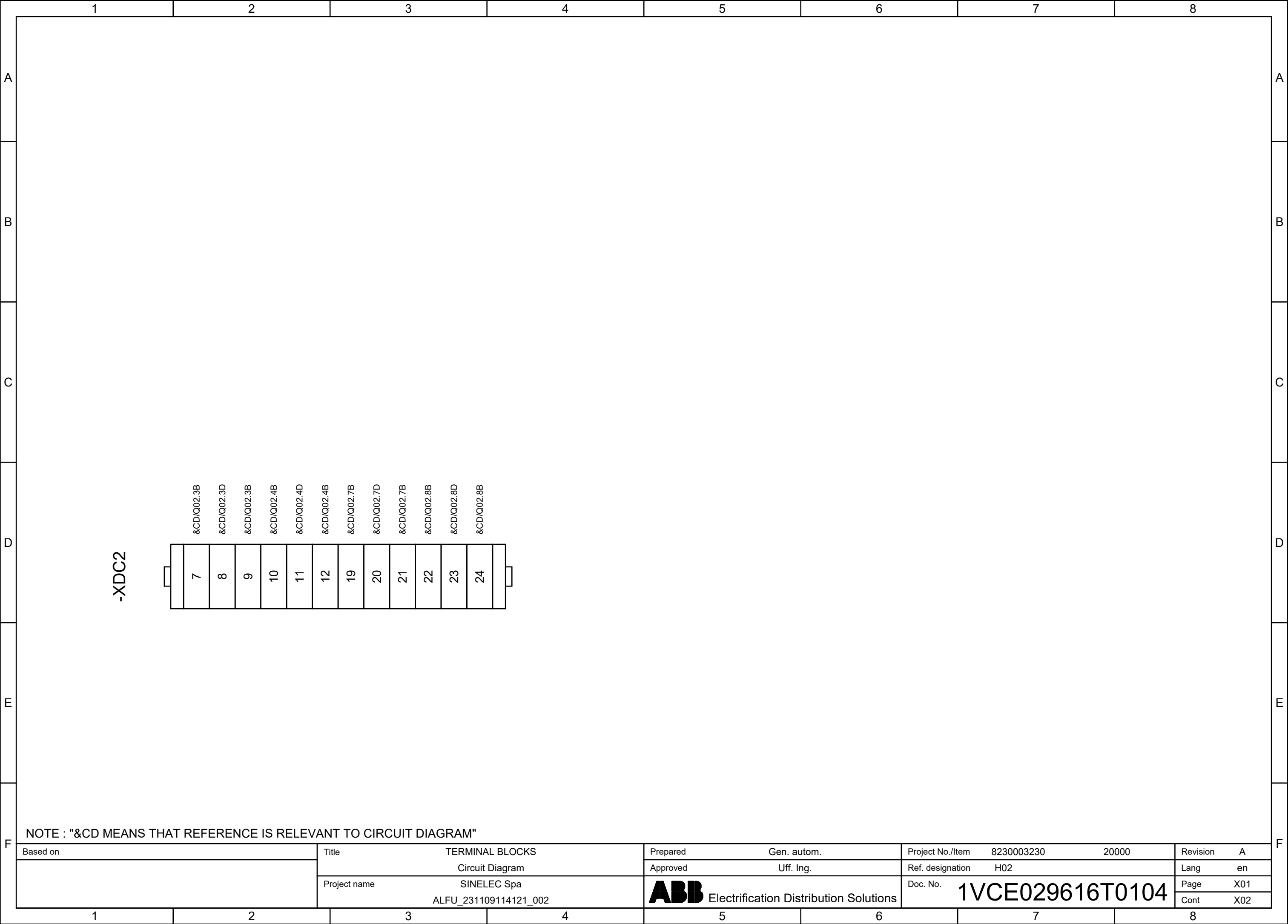


Based on	Title AVAILABLE CONTACTS Circuit Diagram	Prepared Gen. autom.	Project No./Item 8230003230 20000	Revision A
		Approved Uff. Ing.	Ref. designation H02	Lang en
	Project name SINELEC Spa ALFU_231109114121_002	ABB Electrification Distribution Solutions	Doc. No. 1VCE029616T0104	Page Q02
				Cont Q04

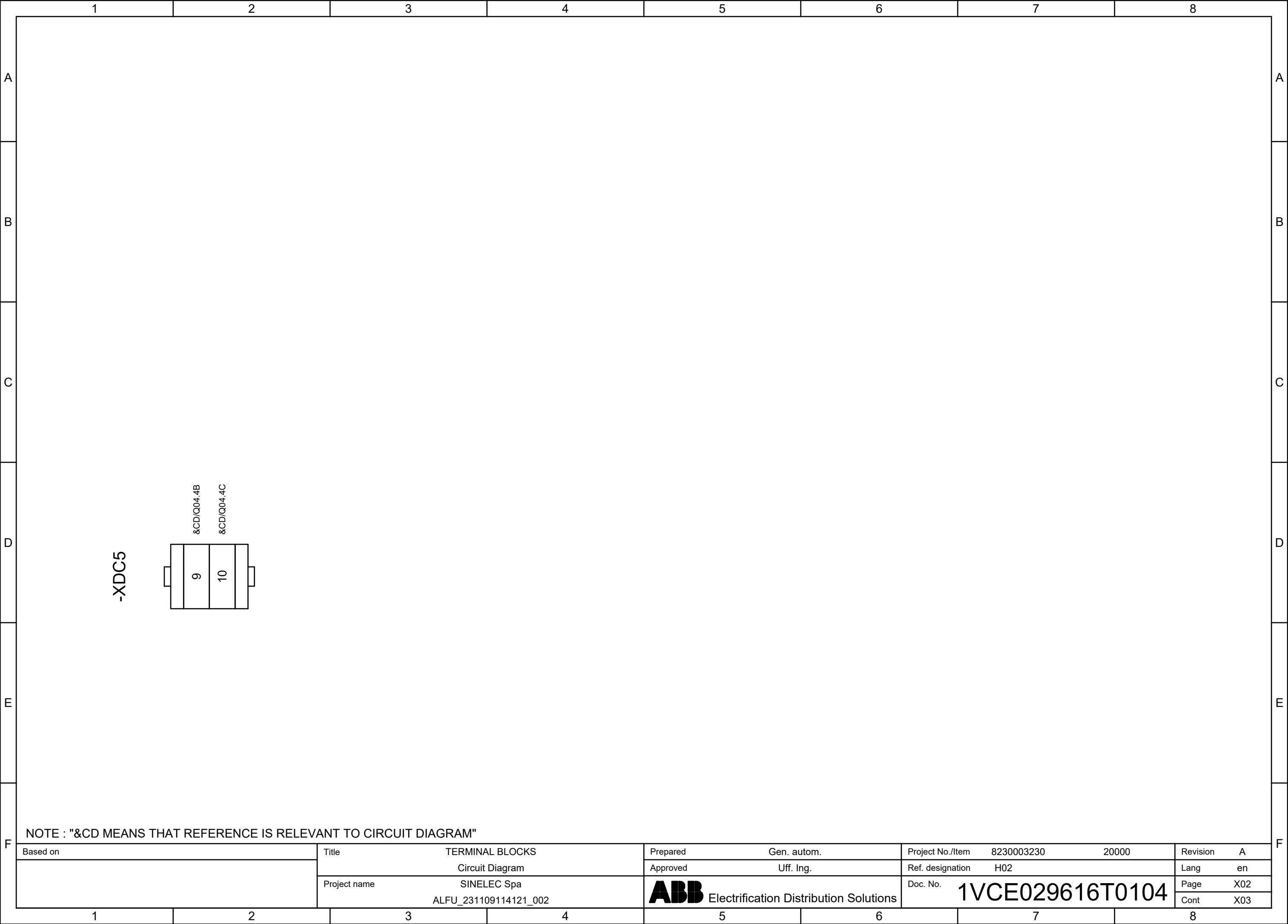
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NOTE : "&CD MEANS THAT REFERENCE IS RELEVANT TO CIRCUIT DIAGRAM"																			
Based on				Title				Prepared				Project No./Item				Revision			
				Circuit Diagram				Uff. Ing.				H02				en			
				SINELEC Spa				<div><div>ABB</div>Electrification Distribution Solutions</div>				Doc. No.				1VCE029616T0104			
				ALFU_231109114121_002															
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A B C D E F	PART LIST														A B C D E F
	DESIGNATION	CLASS	CHARACTERISTICS				CODE ORDER NUMBER		MANUFACTURED CODE		QUANTITY	SUPPLIER			
	-EA2	Light	LED BULB TYPE G9 220-240V 50/60Hz				3WDA033486P0001		555249.0101		1	RELCO			
	-EB1	Heating	HEATER 50W 110-250VAC/DC				3WDA026276P0001		SHT50W		1	ALFA ELECTRIC			
	-FCM5	Protection devices	MCB S202-C0,5				3WCA022097P0101		2CDS252001R0984		1	ABB			
	-FCM5	Protection devices	AUX. CONTACT S2C-H11L FOR MCB SERIES S200				3WCA022097P0013		2CDS200936R0001		1	ABB			
	-XDC2	Terminals	TERMINAL D2,5/5.ADO				3WCA022102P0001		EN019955423		12	ABB			
	-XDC5	Terminals	TERMINAL D2,5/5.ADO				3WCA022102P0001		EN019955423		2	ABB			
-XDI4	Terminals	TERMINAL D6/8.ADO.1				3WDA025414P0003		EN019904621		4	ABB				
Based on		Title PARTS LIST Circuit Diagram				Prepared Gen. autom.		Project No./Item 8230003230 20000		Revision A					
		Project name SINELEC Spa ALFU_231109114121_002				Approved Uff. Ing.		Ref. designation H02		Lang en					
						Doc. No.		1VCE029616T0104		Page Z01					
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A	M.V. DEVICES															A																								
	DESIGNATION		CLASS		CHARACTERISTICS								QUANTITY		SUPPLIER																									
	-FA1		Surge arrester		23 kV								1		REBOSIO																									
	-FA2		Surge arrester		23 kV								1		REBOSIO																									
	-FA3		Surge arrester		23 kV								1		REBOSIO																									
B	-QBS		Switch-Disconnecter		G-Sec 24kV 630A 16kA								1		ABB																									
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									Circuit Diagram				Approved				Uff. Ing.				Ref. designation				H02				Lang				en							
					Project name				SINELEC Spa				 Electrification Distribution Solutions				Doc. No.				1VCE029616T0104								Page				Z10							
					ALFU_231109114121_002				Cont																															
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