

[illegible]

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[illegible]

Standards:

UNLESS CONFLICTING WITH UL 508A, NFPA 79 2024 TO BE USED AS A GUIDELINE FOR DESIGN AND CONSTRUCTION. GROUNDING: PE - EARTH OR "DIRTY GROUND" FE - FUNCTIONAL GROUND IE - INSTRUMENT GROUND CONDUCTOR TEMPERATURE RATING: ALL CONDUCTORS ARE TO BE RATED 90°C MINIMUM. REDUCING WIRE GAUGE WHEN SUBSTITUTING HIGHER TEMPERATURE RATED CONDUCTORS SHALL NOT BE ALLOWED. CONDUCTOR COLOR CODING: BLACK - ALL UNGROUNDED POWER OR CONTROL CIRCUIT CONDUCTORS OPERATING AT THE SUPPLY VOLTAGE WHITE - GROUNDED AC CURRENT-CARRYING POWER OR CONTROL CIRCUIT CONDUCTOR REGARDLESS OF VOLTAGE RED - UNGROUNDED AC CONTROL CIRCUITS OPERATING AT A VOLTAGE LESS THAN THE SUPPLY VOLTAGE BLUE - UNGROUNDED DC CONTROL CIRCUITS WHITE WITH BLUE STRIPE - GROUNDED DC CURRENT-CARRYING CONTROL CIRCUIT CONDUCTOR YELLOW OR ORANGE - UNGROUNDED CONTROL CIRCUITS OR OTHER WIRING, SUCH AS FOR CABINET LIGHTING, THAT REMAIN ENERGIZED WHEN THE MAIN DISCONNECT IS IN THE OFF POSITION WHITE WITH YELLOW STRIPE OR WHITE WITH ORANGE STRIPE - GROUNDED AC CONTROL CIRCUIT CURRENT-CARRYING CONDUCTOR THAT REMAINS ENERGIZED WHEN MAIN DISCONNECT SWITCH IS IN THE OFF POSITION GREEN WITH YELLOW STRIPE OR YELLOW WITH GREEN STRIPE - EARTHING CONDUCTOR NOTES: ALL COMPONENTS SHALL BE INSTALLED SUCH THAT REPLACEMENT DOES NOT REQUIRE THE REMOVAL OF THE BACKPANEL FROM THE ENCLOSURE. MTW CONDUCTOR INSULATION PREFERENCE IN PANEL CONSTRUCTION. CONDUCTOR AMPACITY TO BE DETERMINED BY RELEVANT NFPA70 AND NFPA79 AMPACITY TABLES. POWER CONDUCTORS TO BE 14AWG MINIMUM UNLESS OTHERWISE NOTED. CONTROL CONDUCTORS TO BE 18 AWG MINIMUM UNLESS OTHERWISE NOTED. POWER PANEL CONDUCTORS TO BE 600V INSULATION MINIMUM. CONTROL PANEL CONDUCTORS TO BE 300V INSULATION MINIMUM. CABLE OUTER SHEATH TO BE TRIMMED BACK MINIMUM 2 INCH. TRIMMED EDGE TO BE COVERED WITH HEAT SHRINK MINIMUM 1 INCH LENGTH WHERE CONDUCTORS AND OUTER SHEATH ARE EQUALLY COVERED. INDIVIDUAL CONDUCTORS TO BE LABELED BOTH ENDS WITH WIRE NUMBER INDICATED ON ELECTRICAL SCHEMATICS. EXCEPTION IS FOR CONDUCTOR LENGTHS 6 INCHES OR LESS WHICH MAY HAVE A SINGLE LABEL IN THE MIDDLE OF THE LENGTH OR AS APPROPRIATE. INDIVIDUAL CABLES TO BE LABELED BOTH ENDS WITH CABLE NUMBER INDICATED ON ELECTRICAL SCHEMATICS. INSTRUMENT CABLE SHIELDS TO BE GROUNDED ONE END ONLY LOCATION AS SHOWN IN THE ELECTRICAL SCHEMATICS. POWER CABLE SHIELDS TO BE GROUNDED BOTH ENDS. REVISION GUIDELINES: RED PEN: ADD THE TEXT AND LINES AS SHOWN GREEN PEN: DELETE TEXT/LINE WORK OR OBJECT BLUE OR BLACK PEN: NOTES, SKETCHES AND DIRECTIONS TO THE CAD DEPARTMENT, (NOT TO BE SHOWN) BUT INSTEAD TO BE ADDRESSED ON THE OUTPUT YELLOW OR BLUE HIGHLIGHTER: CHECKED OUT OK ORANGE OR PINK HIGHLIGHTER: QUESTION THIS AREA (NEEDS CLARITY)

Page number Legend:

Pages 3~9: Incoming power distribution
Page 10: Control voltage
Page 20: Motor controls
Page 30: Heater controls
Page 100: Ethernet/Profinet/ other communications
Page 101: PLC I/O rack overview
Page 110: PLC F-DI cards
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Page 130: PLC DI cards
Page 140: PLC DQ cards
Page 150: PLC AI cards
Page 160: PLC AQ cards
Page 200: model views, layout
Reports:
Page 2a~2n: Table of Contents
Page A1~An: BOM
Page B1~Bn: Connection list
Page C1~Cn: Cable list
Page D1~Dn: PLC address overview

Voltage marker label: MySafetyLabel Parts 1.125" x 4.5"
Place on the power side of the enclosure above the disconnect handle
Place inside the enclosure above the line side of the MCB



Equipment Warning label: MySafetyLabel Parts no. L-2391, 1.5" x 3"
Place on the front of the enclosure below the disconnect handle



Equipment Caution label: MySafetyLabel Parts no. L-0286-VS, 1.5" x 3"
Place on the front of the enclosure below the disconnect handle



Industrial Control Panel Nameplate: : Part no. L-111-102Q-NAMEPLATE
3" x 7"x 0.20"
Cut from JDS L-111-102Q White/Black Duets Flexible Contours Plastic.
Place one on the outside of the enclosure, on the door, per layout

76 mm[2.99"]

THINKPLC

301 Welcome Center Blvd
Lexington, NC 27295
Phone: 888-407-5448

INDUSTRIAL CONTROL PANEL
FOR INDUSTRIAL MACHINERY

PROJECT NUMBER:

VFD-FSA-12-480-3CB

MAX SHORT CIRCUIT
CURRENT RATING:

5 kA

MODEL NUMBER:

MAIN SUPPLY BREAKER
OR FUSE RATING (A):

10 A

DRAWING NUMBER:

D10072

LARGEST MOTOR LOAD (A):

5.9 A

FULL LOAD CURRENT (A):

6.26 A

ENCLOSURE TYPE:

Type 12

LARGEST HEATER LOAD (A):

N/A

CONDUCTOR TYPE:

UL

VOLTAGE:

480 VAC

LINE SIDE FIELD
CONNECTIONS (75 Deg):

14~3/0 AWG, 45~70 lb-in
1 wire per phase

PHASES:

3

FREQUENCY:

60 Hz

178 mm[7.01"]

Think-PLC Logo tag: 1.7" x 4"

Numbered UL listed label:
place near the Industrial Control Panel nameplate
on the inside of the enclosure

THINKPLC

Think-PLC
301 Welcome Center Blvd., Lexington, NC 27295 USA
(888) 407-5448 www.think-plc.com

PROJECT NUMBER VFD-FSA-12-480-3CB

Enclosed VFD, type 12, 480V, G120 FSA

DRAWING No. D10072

REVISION No. 0.01

VARIANT No. N/A

DRAWN BY bmcnulty

LAST EDITOR bmcnulty

09/30/25

10/01/25

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PAGE DESCRIPTION

Definitions sheet

FULL PAGE STRUCTURE

=PACK&TOC/a

PAGE NO.

a

PREVIOUS PAGE

2a

NEXT PAGE

+VFD1&/3

300 +FACILITY Customer facility utilities

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ELECTRICAL
FACILITY FEEDER

FEED FROM
CUSTOMER
FACILITY

VOLTAGE:
480 VAC

PHASES:
3

FREQUENCY:
60 Hz

FULL LOAD CURRENT:
6.26 A

L1

L2

L3

N

+

-

PE

FLC Shown based off NEC Table 430.250 for motors, along with combined component specifications based on the equipment application. Use 75° C copper conductors only. Field conductor size specifications on this document are based only on Think-PLC equipment FLC and does not account for unknown field conditions such as conductorlength, environmental conditions, facility electrical capacity, or any site requirements.The final determination of conductor size is to be decided by a qualified installer inaccordance with local, state, and federal regulations.

Warning:
Line side feeder
stays energized
when main is off

-CB0304

8~3/0 AWG, 45~70 lb-in
SIE.3VA5191-1MH31-0AA0
SIE.3VA9133-0JB11
SIE.3VA9137-0FK31

-XPE

14~1/0 AWG, 35~50 lb-in
PAN.LAMA1/0-14-L

-TB0332

Mechanical ground bar kit, 10 connections
14~4 AWG, 24~30 lb-in
SIE.ECGB10

1

2

3

4

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10

PE1 / (1010)

PE2 / (1010)

PE3 / (2007)

GND

10 GWE

PE

-GND0333

door

-GND0335

enclosure

-MSP0304

4.5~6.3A set to 6A
Primary breaker 24VDC supply
(x2) 18~14 AWG,(x2) 12 AWG
18~22, lb-in
SIE.3RV2011-1GA10
SIE.3RV2901-1E

X304

Busbar, 4 CB, 45mm
10~4 AWG
SIE.3RV2925-5AB
SIE.3RV1915-1AB

-U0304

internal bus

1/L1

3/L2

5/L3

2/T1

4/T2

6/T3

3041 / (1004)

3051 / (1005)

3061 / (1006)

-MSP0314

MSP, 5.5~8A, S0
(x2) 16~12 AWG, (2x) 14~8 AWG
18~22 lb-in
SIE.3RV2021-1HA10
SIE.3RV2901-1E

-U0304

internal bus

1/L1

3/L2

5/L3

2/T1

4/T2

6/T3

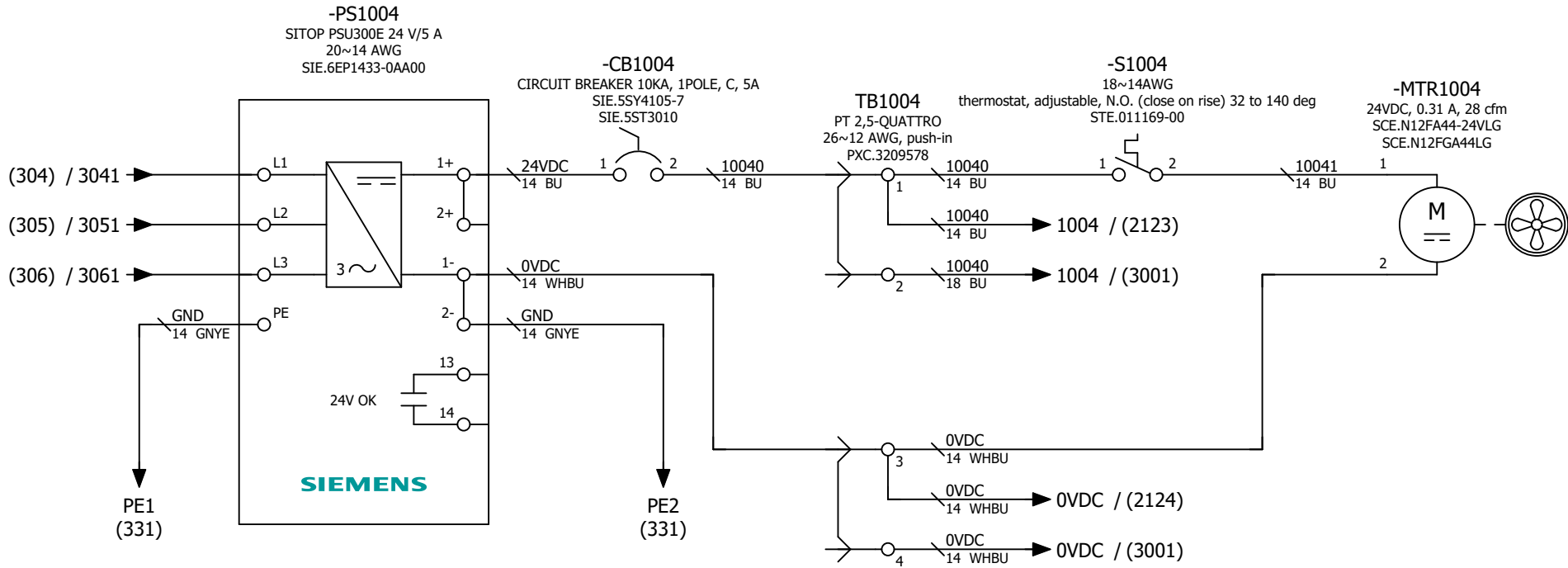
3141 / (2003)

3151 / (2004)

3161 / (2005)

5.5... set to 6.2 A

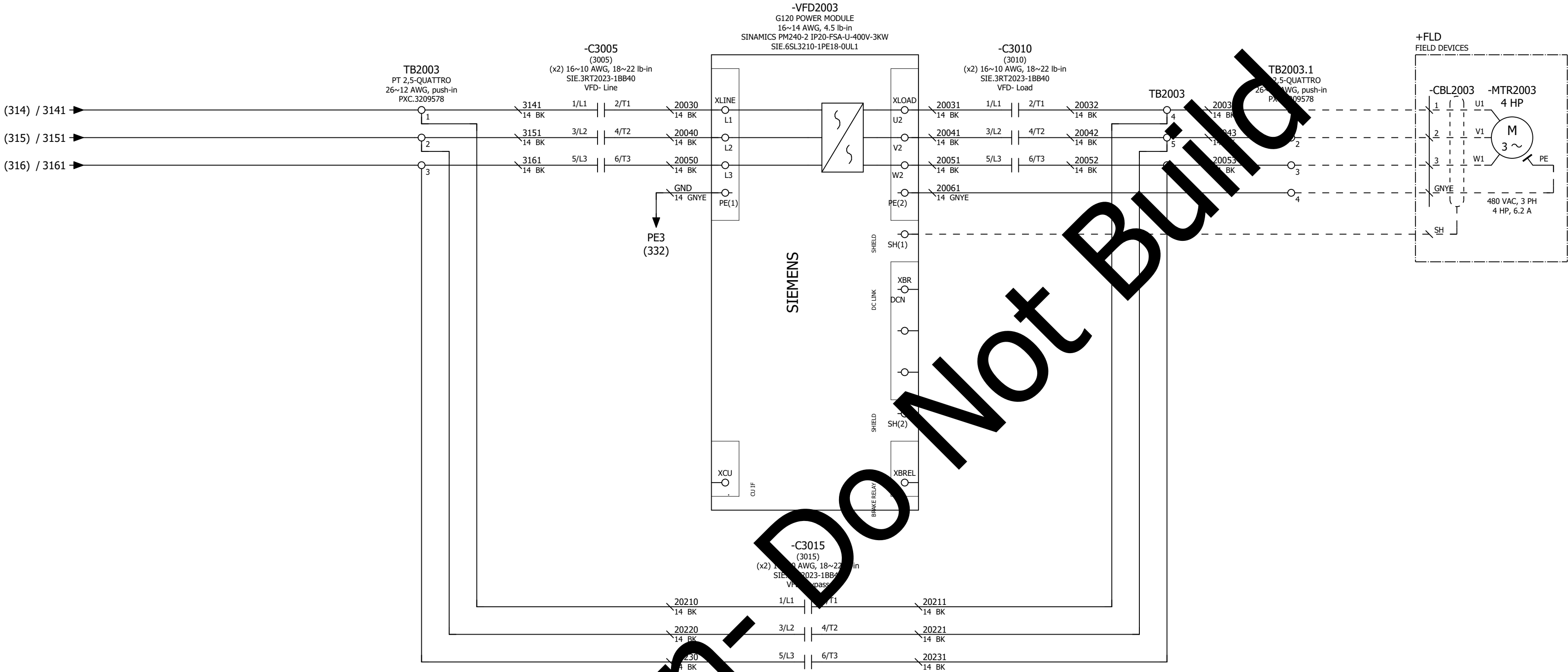
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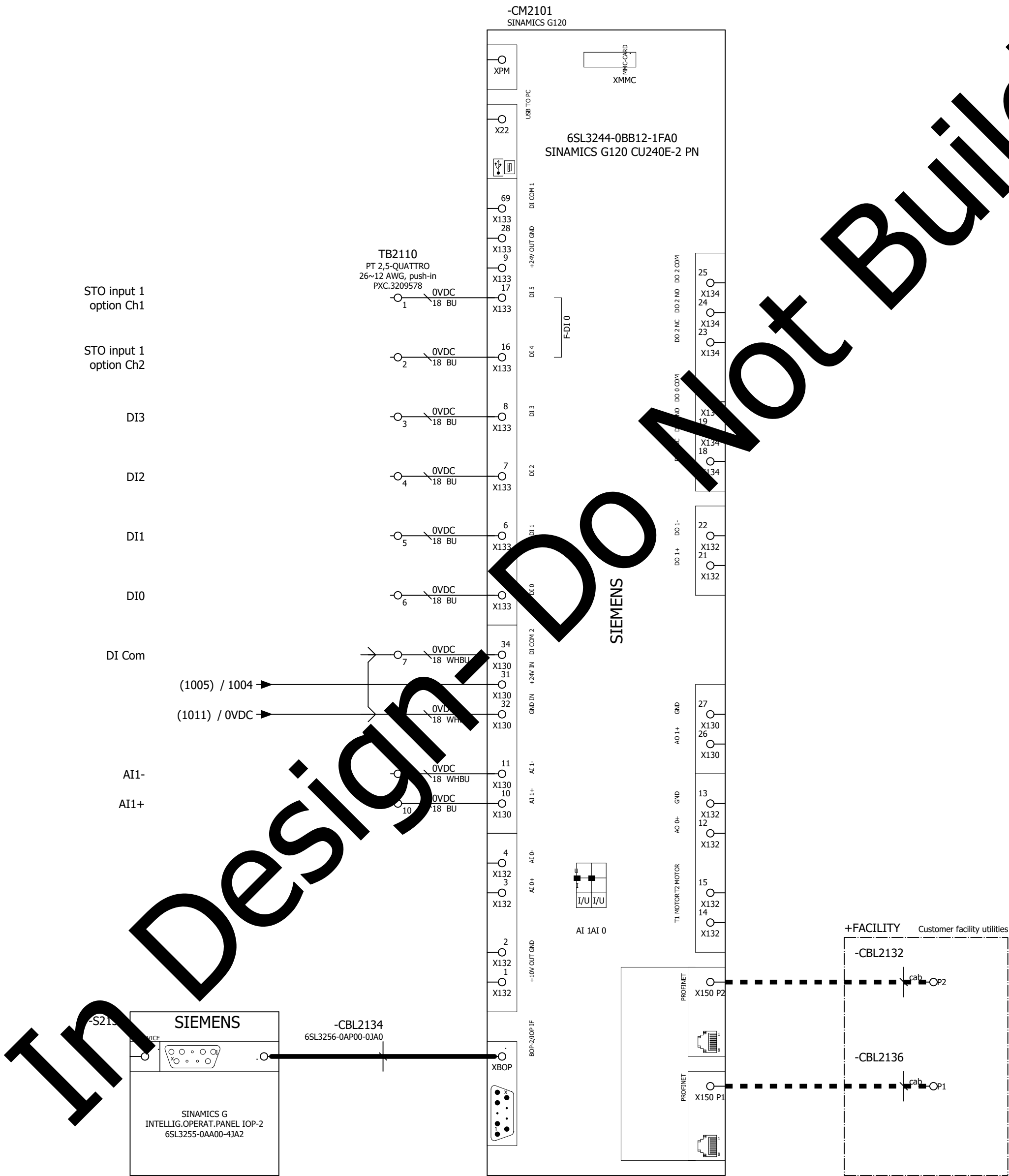
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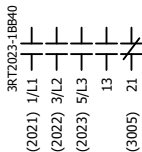
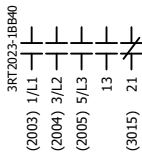
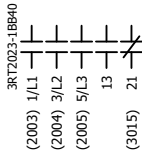
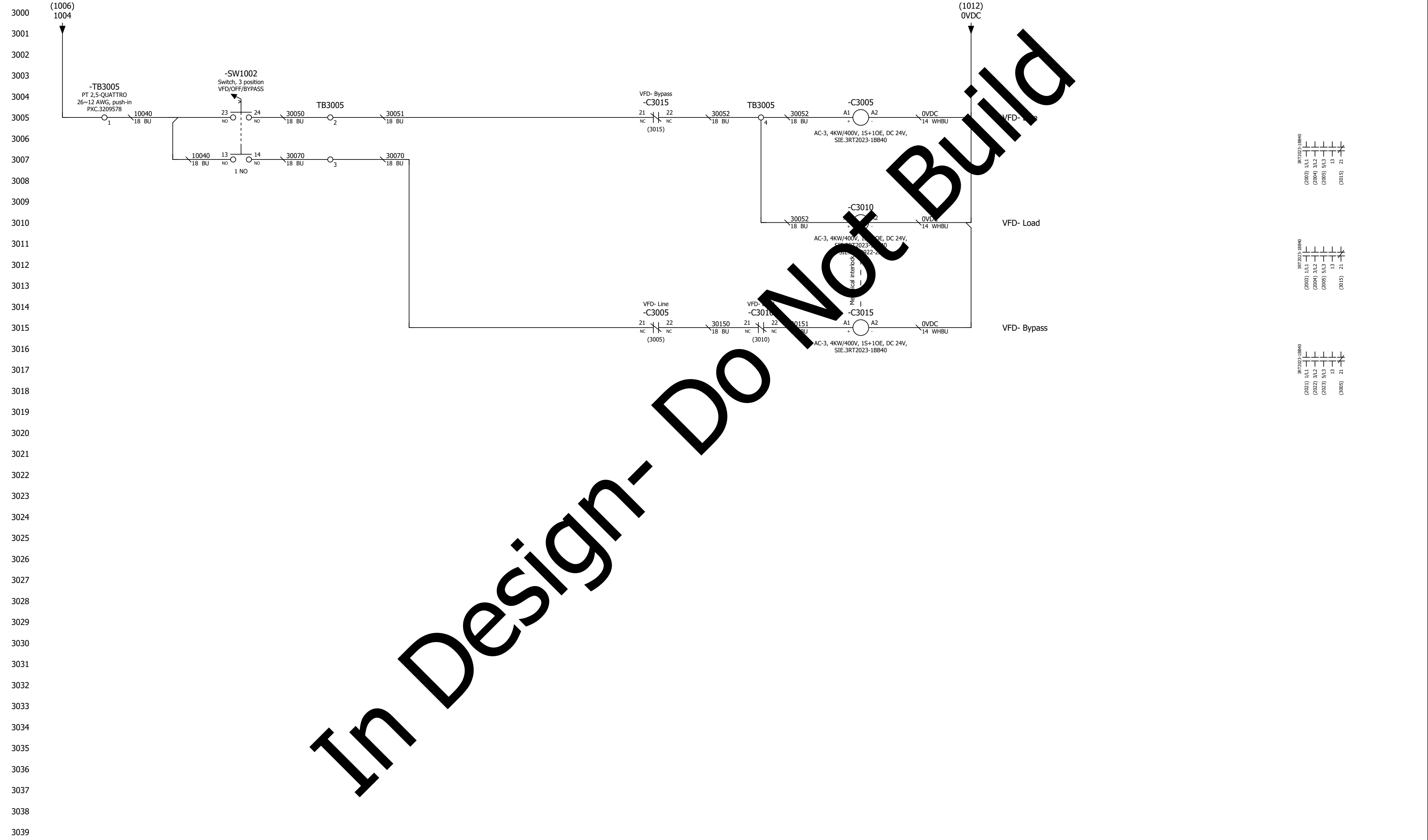
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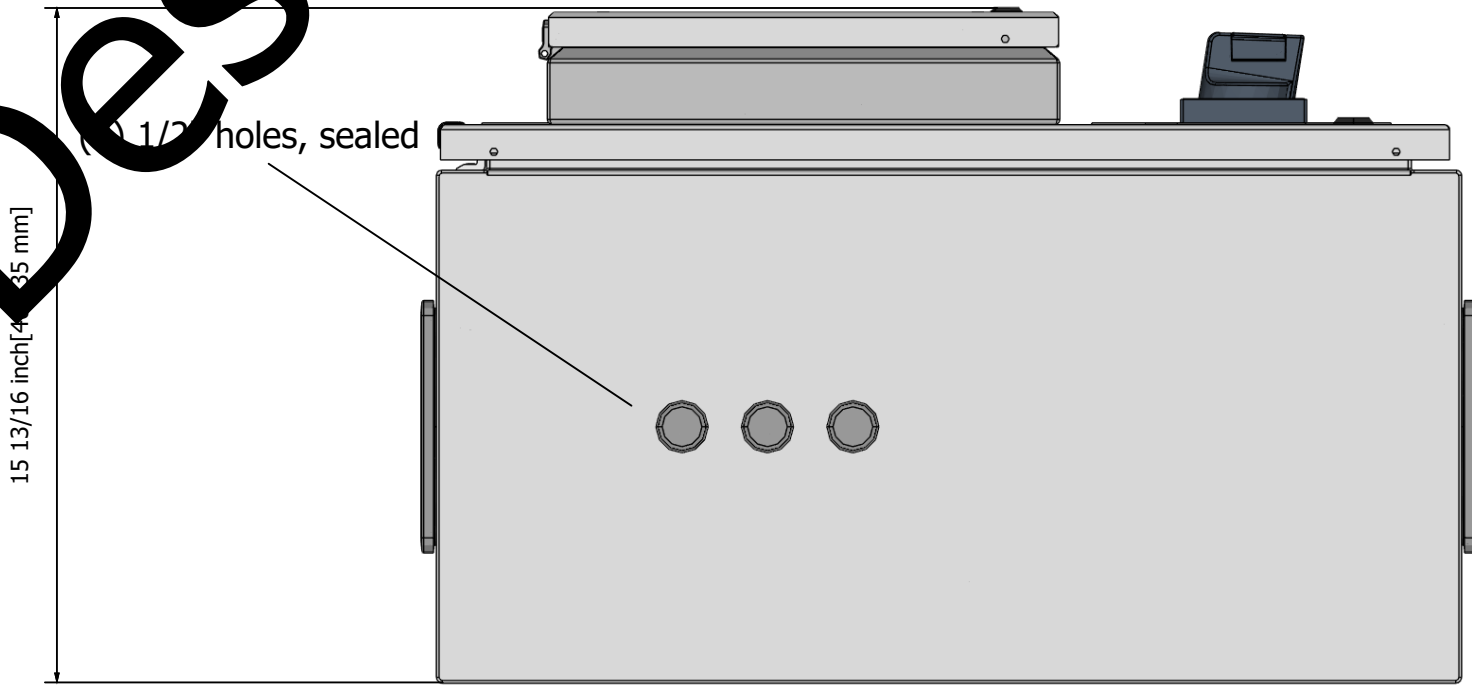
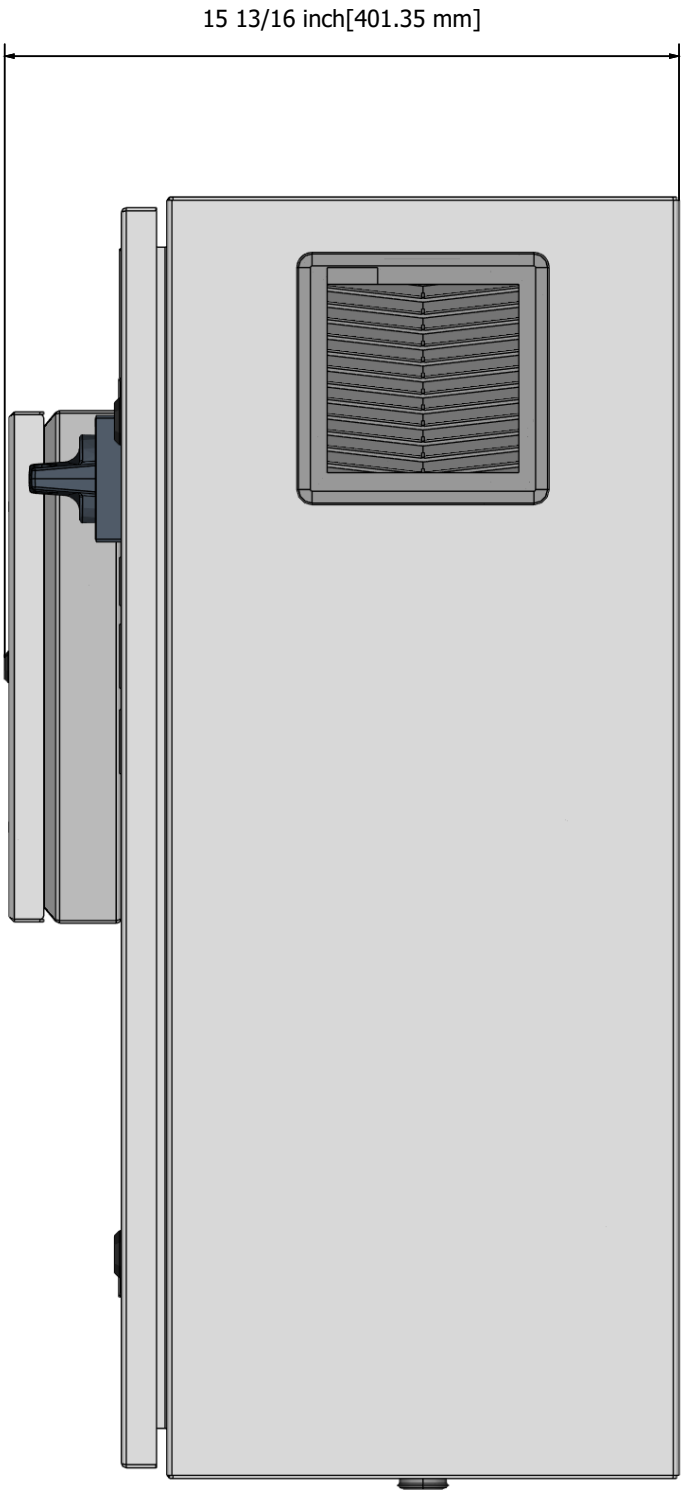
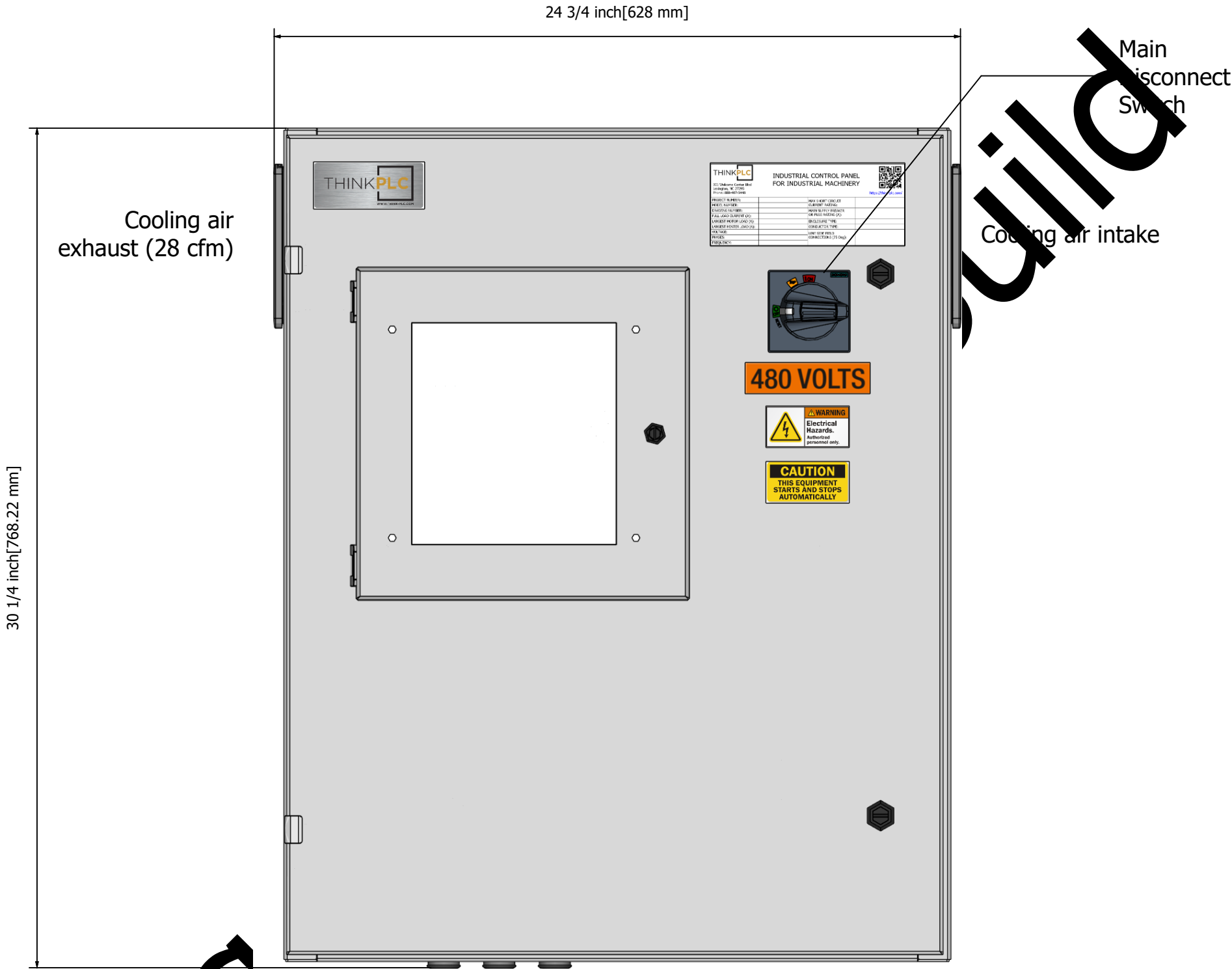
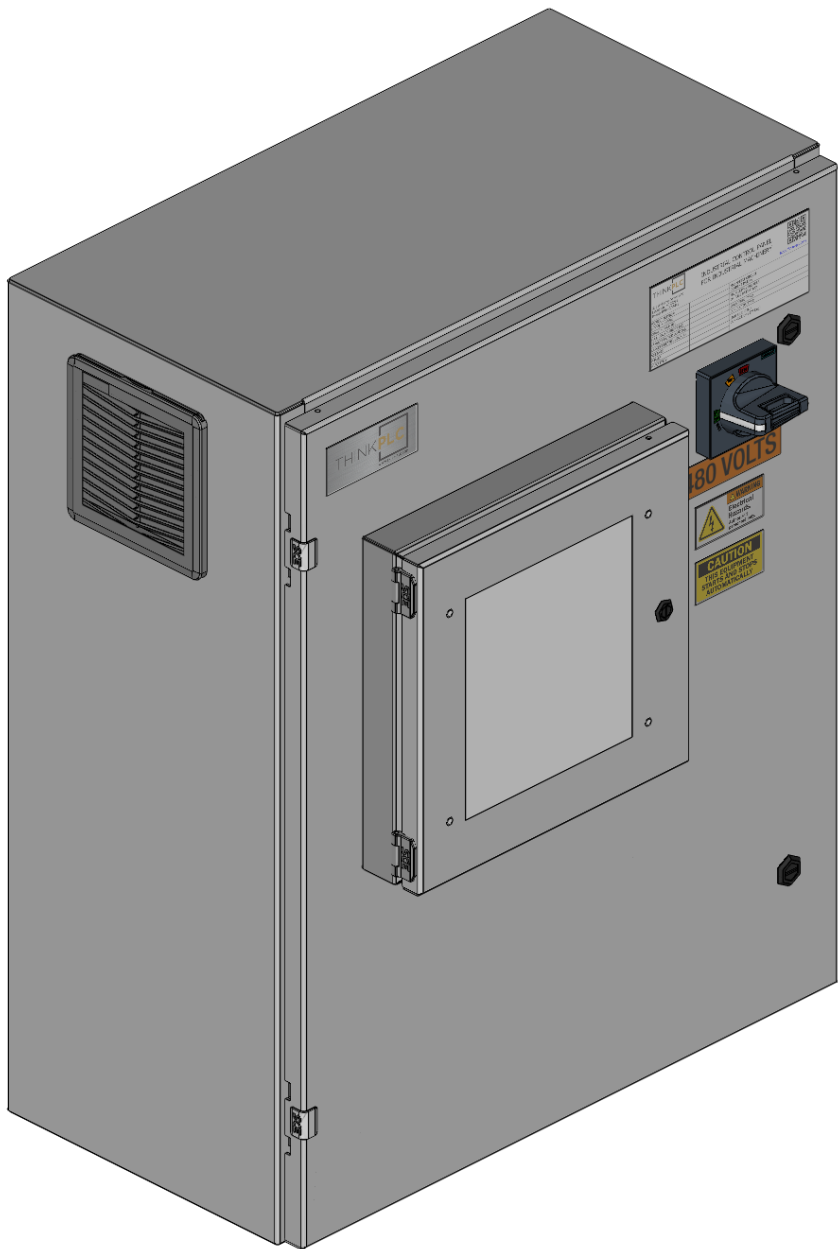
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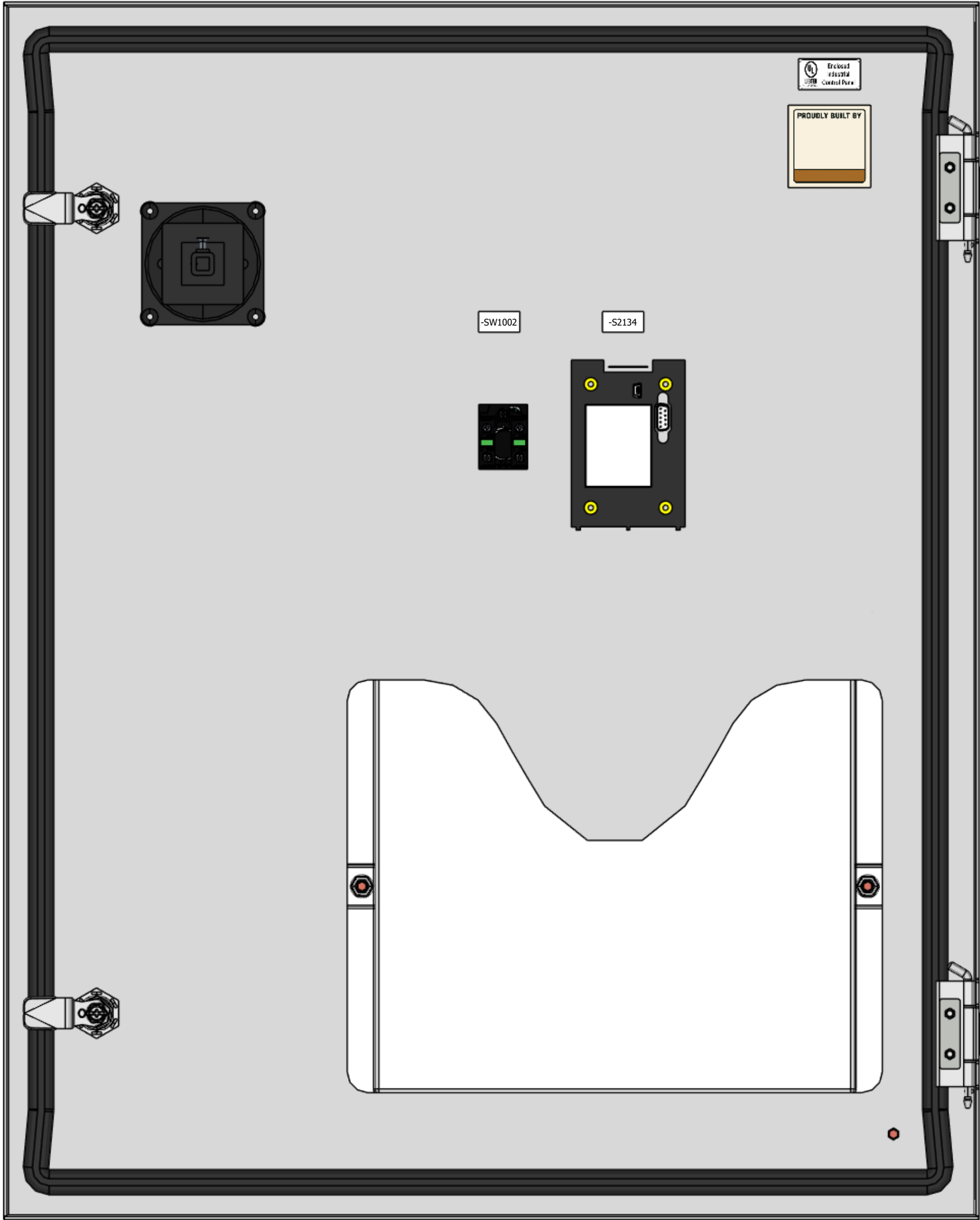




ENCLOSED VFD, SIEMENS G120, FRAME SIZE A

- * Rated for Indoor use (UL type 12)
- * Optional rainhoods for outdoor use (UL type 3R)
- * 480VAC Primary Voltage
- * Motor HP: 4
- * Optional HP derating to 0.5, 0.75, 1, 1.5, 2, 3
- * Profinet control arrangement
- * Dual channel Profinet





Bill of Material

Think PLC_F02_001-RMR_R4

Part Number	Quantity	Total Length (if applicable)	Description	Manufacturer	DT (Device Tags)
3RA2922-2H	1		Mechanical connectors Lateral interlock for contactor		-C3010
1605-871	1		THINK-PLC Dometag	Dometag	-0000.5
ASPBG	3		Hol-Sealers Hole Seal, 1.22-inch Diameter, Gray, Mild Steel	HOFFMAN	-3...-5
LB-0731-B	1		Label, 480 Volt, 1.125in. x 4.5in.	My Safety Label	-0000.6
L-0286-VS	1		Label, Equipment Starts And Stops Automatically, 1.5in. x 3in.	My Safety Label	-0000.7
LB-2368	1		Label, Hazardous Voltage, 1.5in. x 3in.	My Safety Label	-0000.8
C100X050APT	15		Label, panel component, 0.5" x 1", White	Panduit	-C3005;-C3010;-C3015;-CB0304;-CB1004;-CM2101;-MSP0304;-MSP0314;-MTR1004;-PS1004;-S1004;-S2134;-SW1002;-VFD2003;-XPE
F1X3LG6	6	76.057 In	Narrow Slotted Duct, LGRY, 1 X 3 X 6'	Panduit	-DCT1...-DCT6
LAMA1/0-14-L	1		Lug, mechanical, one hole	Panduit	-XPE
PESS-A-SS	1		Label, ground identification, 0.49" (12.50mm) marker	Panduit	-XPE
3022276	8		End bracket for terminal block	Phoenix Contact	-2;-3;-4;-5;-11;-15;-18;-24
3022218	5		End bracket for terminal block	Phoenix Contact	-4;-5;-8;-11;-16
3030514	6		End and partition plate for terminal block 2, 5	Phoenix Contact	-11;-19...-23
1004348	5		Carrier for marking accessories	Phoenix Contact	-0000;-0000.1;-0000.4;-0000.13;-0000.14
3209578	28		Feed-through terminal block, PT 2,5	Phoenix Contact	-TB1004;-TB2003;-TB2003.1;-TB2110;-TB3005
3036877	3		Cross-connector for terminal block, Blue, 5.2 mm, 2-pin	Phoenix Contact	-TB1004;-TB2110
0828734	28		Labeling for terminal block	Phoenix Contact	-TB1004;-TB2003;-TB2003.1;-TB2110;-TB3005
0819275	5		Marker for marker carrier	Phoenix Contact	-TB1004;-TB2003;-TB2003.1;-TB2110;-TB3005
0801704	4	35.5 In	DIN rail, unperforated	Phoenix Contact	-U1...-U4
30EL2412LP	1		EL Enclosure	Saginaw	-1
30P24GALV	1		Subpanel	Saginaw	-1
HWK1212	1		Kit	Saginaw	-2
SCE-N12FA44-24VLG	1		Saginaw Enviro-Therm, Fan Assembly, 24VDC	Saginaw	-MTR1004
SCE-N12FGA44LG	1		Filter & Grille Assy. Type 12 RAL 7035, 5.91"	Saginaw	-MTR1004
3RT2023-1BB40	3		CONTACTOR,AC3:4KW 1NO+1NC DC24V	Siemens	-C3005;-C3010;-C3015
3VA5191-1MH31-0AA0	1		MCCB_UL_FS125_10A_3P_TM_ AM	Siemens	-CB0304
3VA9133-0JB11	2		SENTRON accessories , Lugs 3VA4/5 12	Siemens	-CB0304
3VA9137-0FK31	1		DOOR MOUNTED ROTARY SWITCH, 5	Siemens	-CB0304
5SY4105-7	1		CIRCUIT BREAKER 10kV 1POLE, C, 5A	Siemens	-CB1004
5ST3010	1		SENTRON Auxiliary current switch Mountable	Siemens	-CB1004
6SL3244-0BB12-1FA0	1		SINAMICS G120 CU240E-2 PN	Siemens	-CM2101
3RV2011-1GA10	1		MSP, 4.5x6 A, 50	Siemens	-MSP0304
3RV2901-1E	2		TRANSVERSAL AUX. SWITCH, 1NO+1NC, SCREW CONNECTION	Siemens	-MSP0304;-MSP0314
3RV2021-1HA10	1		MSP, 5x6 A, 50	Siemens	-MSP0314
6EP14330AA00	1		SITOP PSU100E 24 V/5 A	Siemens	-PS1004
6SL3255-0AA00-4JA2	1		SINAMICS G INTELLIG.OPERAT.PANEL IOP-2	Siemens	-S2134
6SL3256-0AP00-0JA0	1		SINAMICS G120 IOP/BOP-2 DOOR MOUNT KIT	Siemens	-S2134

Bill of Material

Think PLC_F02_001-RMR_R4

Part Number	Quantity	Total Length (if applicable)	Description	Manufacturer	DT (Device Tags)
3SU1052-2BL60-0AA0	1		Selector switch	Siemens	-SW1002
3SU1500-0AA10-0AA0	1		HOLDER	Siemens	-SW1002
3SU1900-0AR10-0AA0	1		Label holder	Siemens	-SW1002
3SU1900-0AC81-0AA0	1		LABELING PLATE, SELF-ADHESIVE	Siemens	-SW1002
3SU1400-1AA10-1BA0	2		CONTACT MODULE 1NO	Siemens	-SW1002
ECGB10	1		Mechanical ground bar kit, 10 connections	Siemens	-TB0332
6SL3210-1PE18-0UL1	1		SINAMICS PM240-2 IP20-FSA-U-400V-3KW	Siemens	-VFD2003
3RV2925-5AB	1		3-PHASE INFEED TERMINAL SZ S0/S00, 63A	Siemens	-X304
3RV1915-1AB	1		3-PHASE BUSBARS, 2 CIRCUIT-BREAKERS, 45mm	Siemens	-X304
011169-00	1		thermostat, adjustable, N.O. (close on rise) 32 to 140 deg	STEGO	-S1004
L-111-102Q-NAMEPLATE	1		Label, UL required nameplate	THINK-PLC	-0000.1
R650807277	1		proudly built by label	THINK-PLC	-0000.1
UL-LABEL	1		Label, UL listed enclosed industrial control panel	THINK-PLC	-0000.12

In Design- Do Not Build