

Lilium GmbH

Claude-Dornier-Str. 1, Geb. 335
 82234 Wessling
 Germany






Customer	Energy Test (Lilium)		
Project Description	Control for Heating Setup for TR Testing		
Job Number	EL013		
Lilium Patrimony Number	Lilium Number		
Manufacturer (company)	Lilium eAircraft GmbH		
Path			
Project name	EL013		
Power supply	23KW		
Input Voltage	400 V (including 230 V)		
Control voltage	24 V DC		
Place of installation			
Responsible for project	Matheus		
Edit date	5/24/2024	by (short name)	MATHEUS HAGEMANN
			Number of pages 26

			Date	2/13/2024	Lilium Number		Cover	= Cover +	
			Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing		Lilium eAircraft GmbH		
Modification	Date	Name	Original	Replacement of	Replaced by				EL013

Colour Legend

DISTRIBUTION LINE (Outside Panel):

-  Phase 1 - Brown (BN)
-  Phase 2 - Black (BK)
-  Phase 3 - Grey (GY)

PANEL:

-  Phase 1, 2, 3 - Black (BK)
-  Circuit Always On Even With General Switch Turn-off - Orange (OR)
-  Neutral - Light Blue (LBU)
-  Ground - Green with Yellow Stripe (PE)
-  24VDC - Dark Blue (BU)
-  0VDC - Dark Blue with White Stripes (BUWH)
-  Safety Channel - Orange (OR)
-  Analog - White (WH)

Colour Short Form

COLOR SHORT FORM

- PE - Green with Yellow Stripe
- WH - White
- BN - Brown
- GN - Green
- Yellow - YE
- GY - Grey
- PK - Pink
- BU - Blue
- BUWH - Blue with White Stripes
- LBU - Light Blue
- OR - Orange
- RD - Red
- BK - Black
- VT - violet

SHORT FORM - COLOR

- GYPK - Grey-Pink
- RDBU - Red-Blue
- WHGN - White-Green
- BNGN - Brown-Green
- WHYE - White-Yellow
- YEBN - Yellow-Brown
- WHGY - White-Grey
- GYBN - Grey-Brown
- WHPK - White-Pink
- PKBN - Pink-Brown
- WHBU - White-Blue
- BNBU - Brown-Blue
- WHRD - White-Red
- BNRD - Brown-Red
- WHBK - White-Black
- BNBK - Brown-Black
- GYGN - Grey-Green
- YEGY - Yellow-Grey
- PKGN - Pink-Green
- YEPK - Yellow-Pink

Grounding



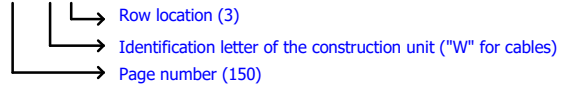
ALL PARTS THAT HOLD A COMPONENT WITH POTENTIAL (PHASE) SHALL BE GROUNDED WITH A GREEN/YELLOW CONDUCTOR.

- Machine base, structure and guarding shall be grounded.
- Moving parts of the machine assemble sets shall be grounded.
- Panel Grounding; Plate, door, structure.

*The cross section shall be defined at the project, but when missing a 2.5mm² electrical conductor shall be used (Green with Yellow Stripe (PE)).

Composition of the Cable Marking

150W3



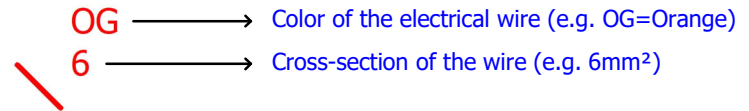
Cable Cross-Sections When Not Specified In the Project

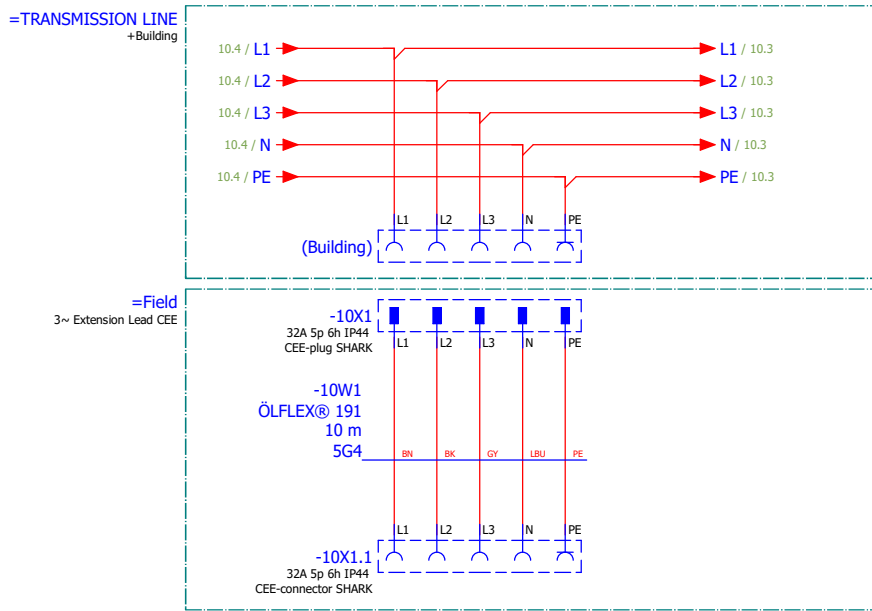
- 2.5mm² - Power Circuits (230, 400V)
- 2.5mm² - Grounding; machine, structures, components
- 1.0mm² - Safety Circuits
- 0.5mm² - Control Circuits (Including PLC I/Os)

Cable Rating Table

Cable Cross Sectional Area (mm ²)	Typical Current Rating (amps)	Recommended Circuit Breaker Rating (amps)
1.5 mm ²	7.9 - 15.9A	8A
2.5 mm ²	15.0 - 22A	15A
4 mm ²	22 - 30A	20A
6 mm ²	30 - 39A	30A
10 mm ²	39 - 54A	40A
16 mm ²	54 - 72A	60A
25 mm ²	71 - 93A	80A
50 mm ²	117 - 147A	125A
70 mm ²	147 - 180A	150A
95 mm ²	180 - 216A	200A
120 mm ²	216 - 250A	225A
150 mm ²	250 - 287A	275A
185 mm ²	287 - 334A	300A
240 mm ²	334 - 400A	350A

Connection Definition





*CEE-plug 32A 5p 6h IP44 SHARK (025-6)



*CEE-connector 32A 5p 6h IP44 SHARK (225-6)



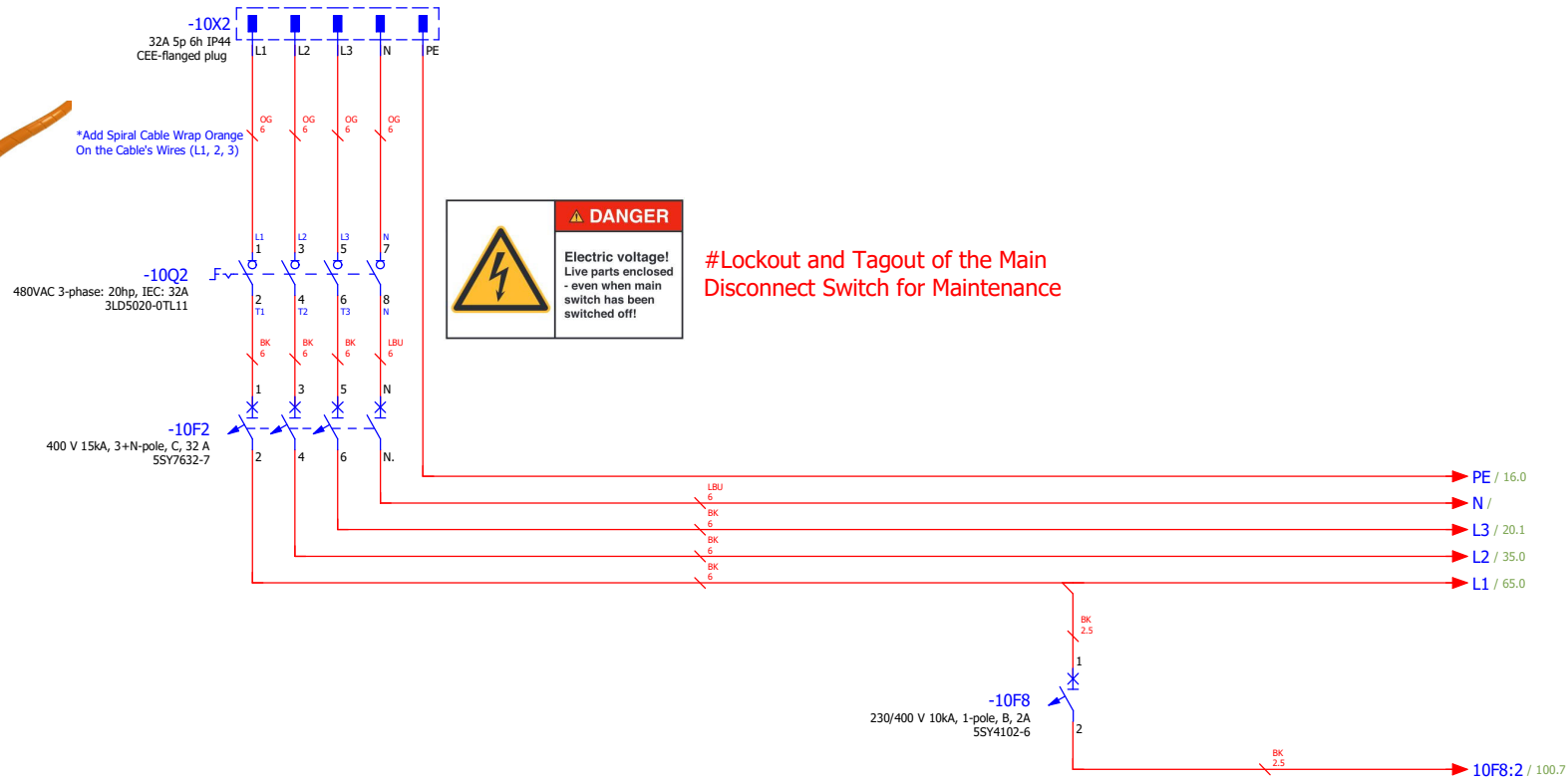
*CEE-flanged plug 75x75 straight 32A 5p 6h IP44 (625-6f7)



*3LD5020-0TL11



*Add Spiral Cable Wrap Orange
On the Cable's Wires (L1, 2, 3)



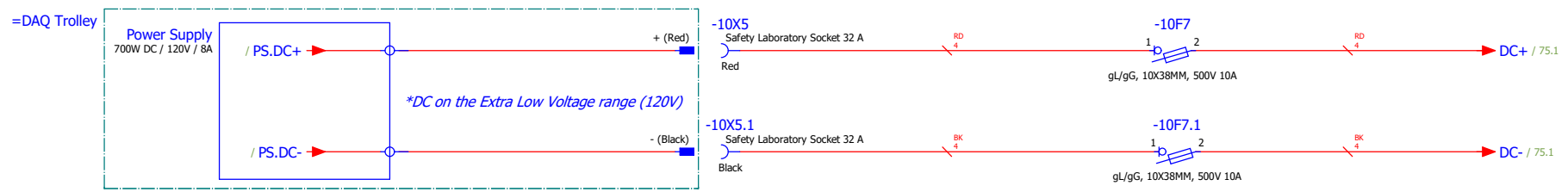
⚠ DANGER

Electric voltage!
Live parts enclosed
- even when main
switch has been
switched off!

**#Lockout and Tagout of the Main
Disconnect Switch for Maintenance**

=Cover+/5

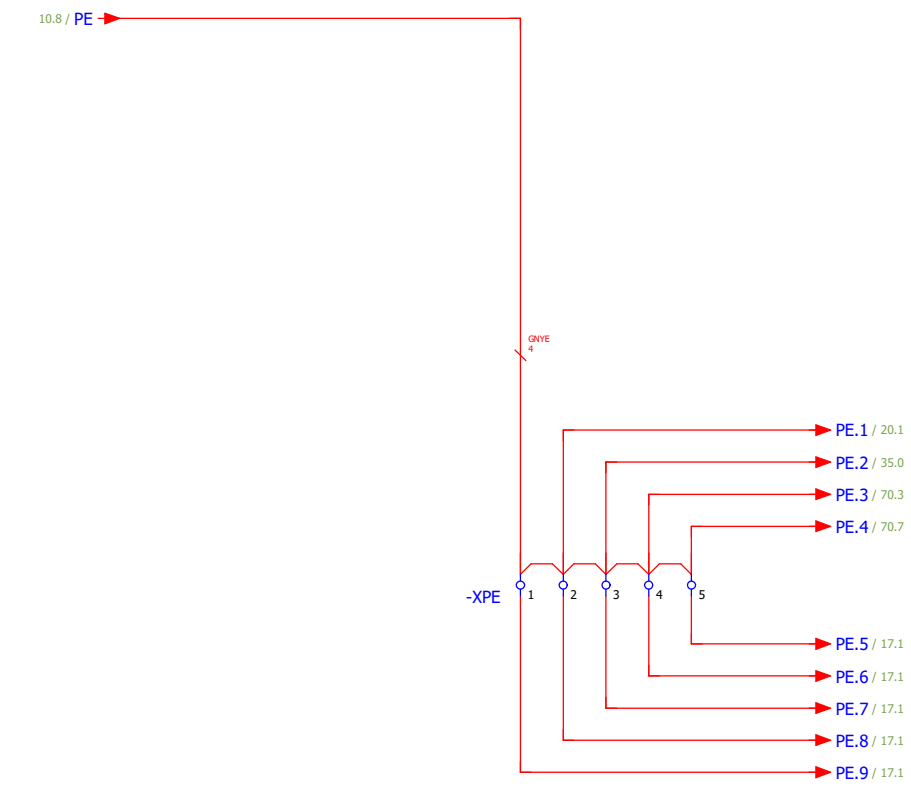
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				Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing		Lilium eAircraft GmbH		+ E01	
				Appr.		Replacement of				Page 10	
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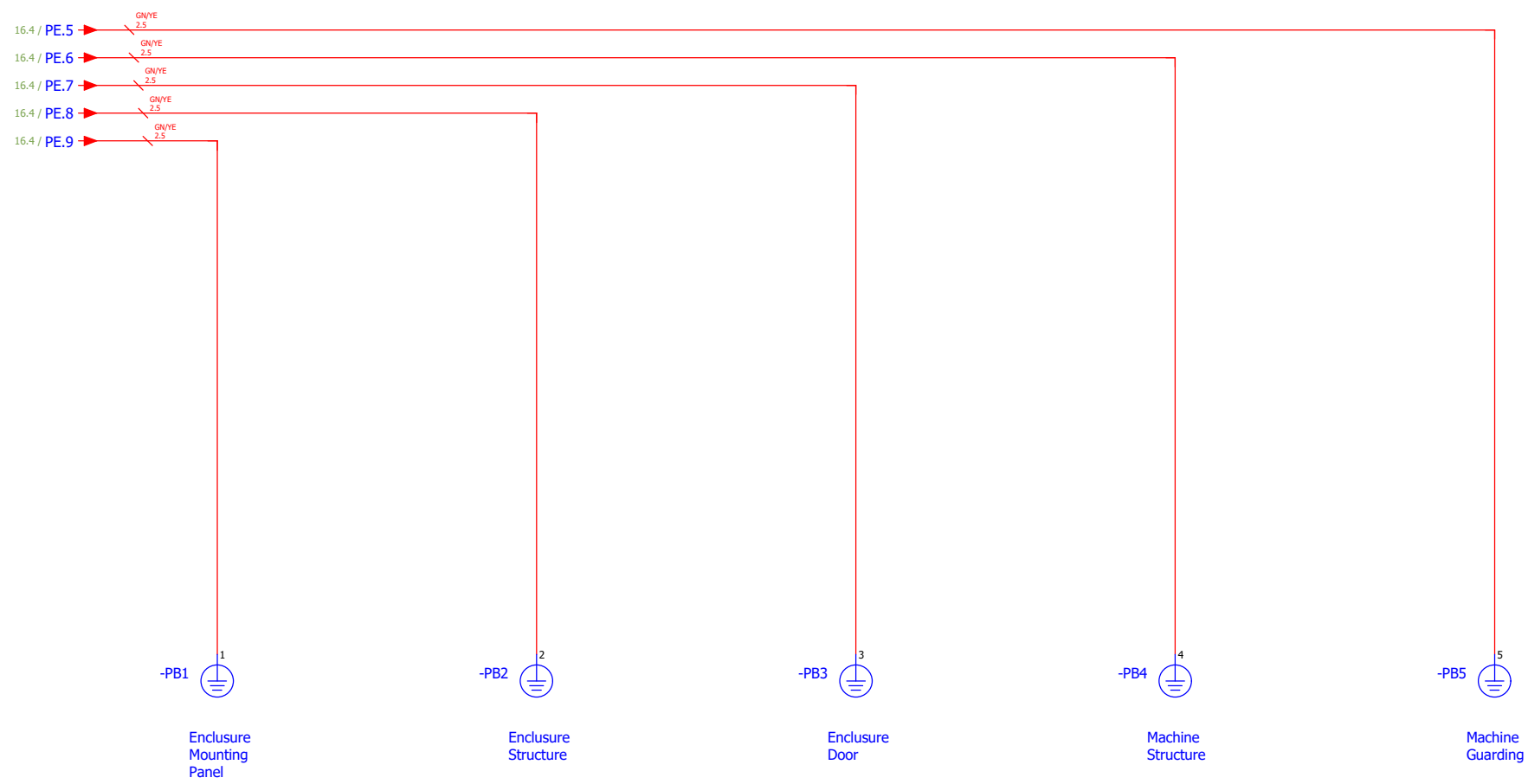
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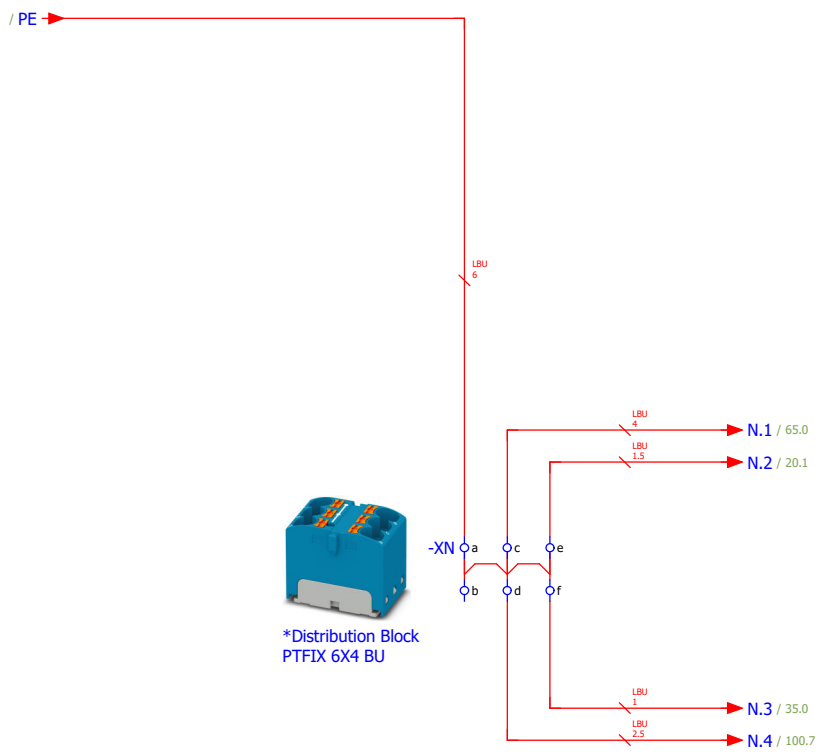
DC Panel Feeding
Lilium eAircraft GmbH



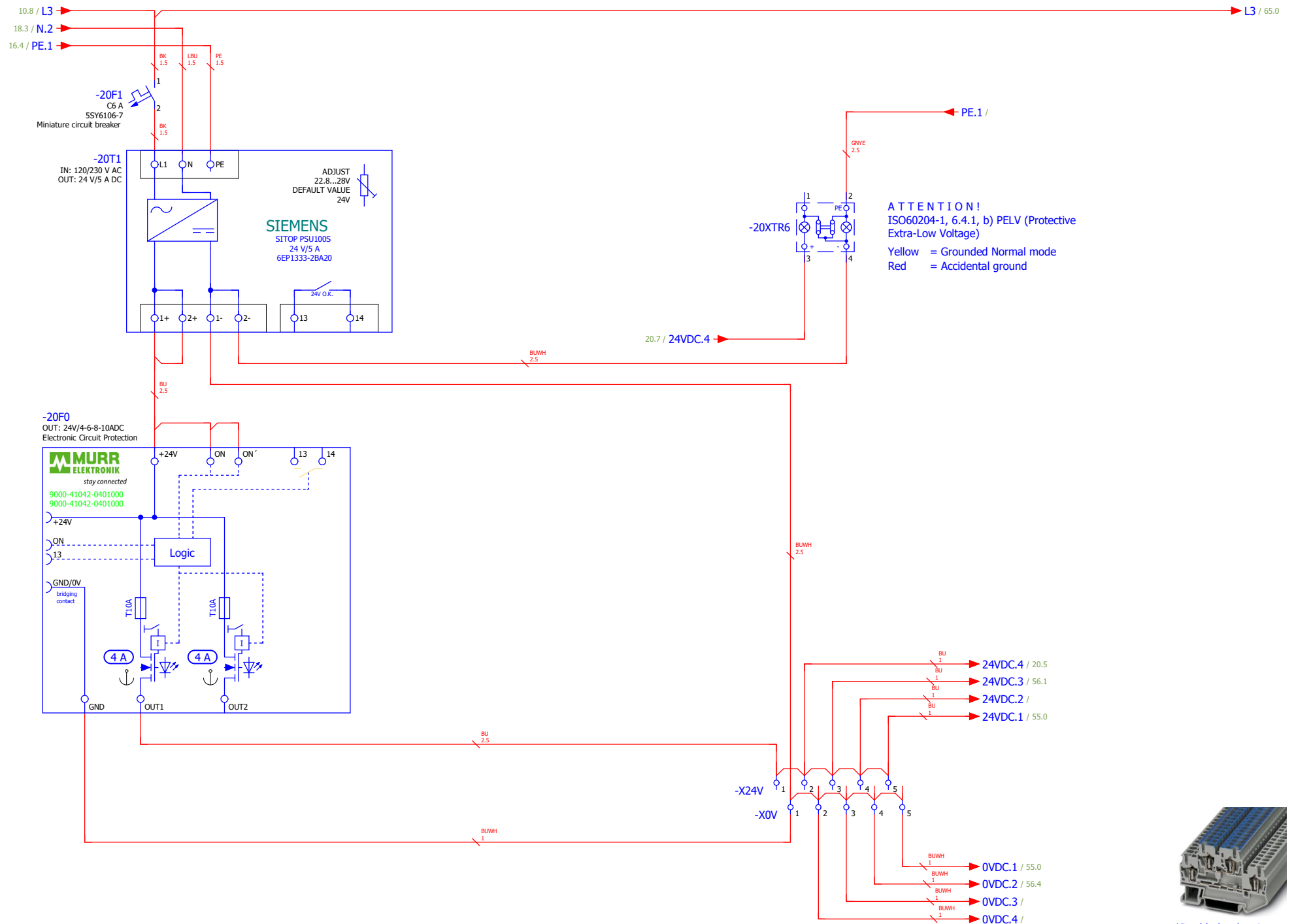
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			Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing		Lilium eAircraft GmbH	+ E01	
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			Date	5/24/2024	Lilium Number		PE Protective Bonding	= Main Enclosure	
			Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing		Lilium eAircraft GmbH	+ E01	
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			Date	5/24/2024	Lilium Number		Neutral Distribution Lilium eAircraft GmbH	= Main Enclosure	
			Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing			+ E01	
Modification	Date	Name	Original		Replacement of			Replaced by	EL013
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*Double-level spring-cage terminal block
3036330

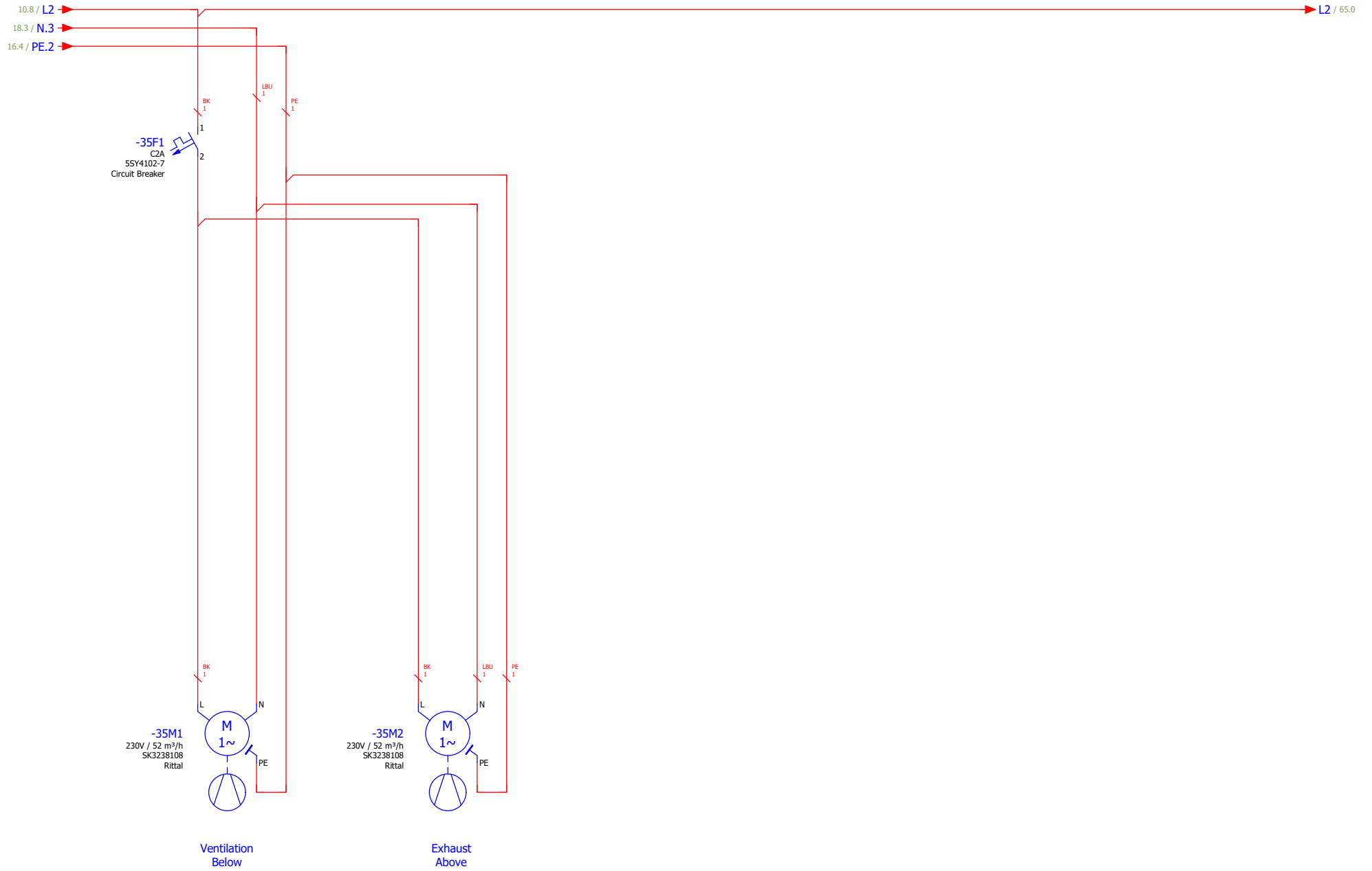
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Lilium Number	
Control for Heating Setup for TR Testing	
Replacement of	Replaced by

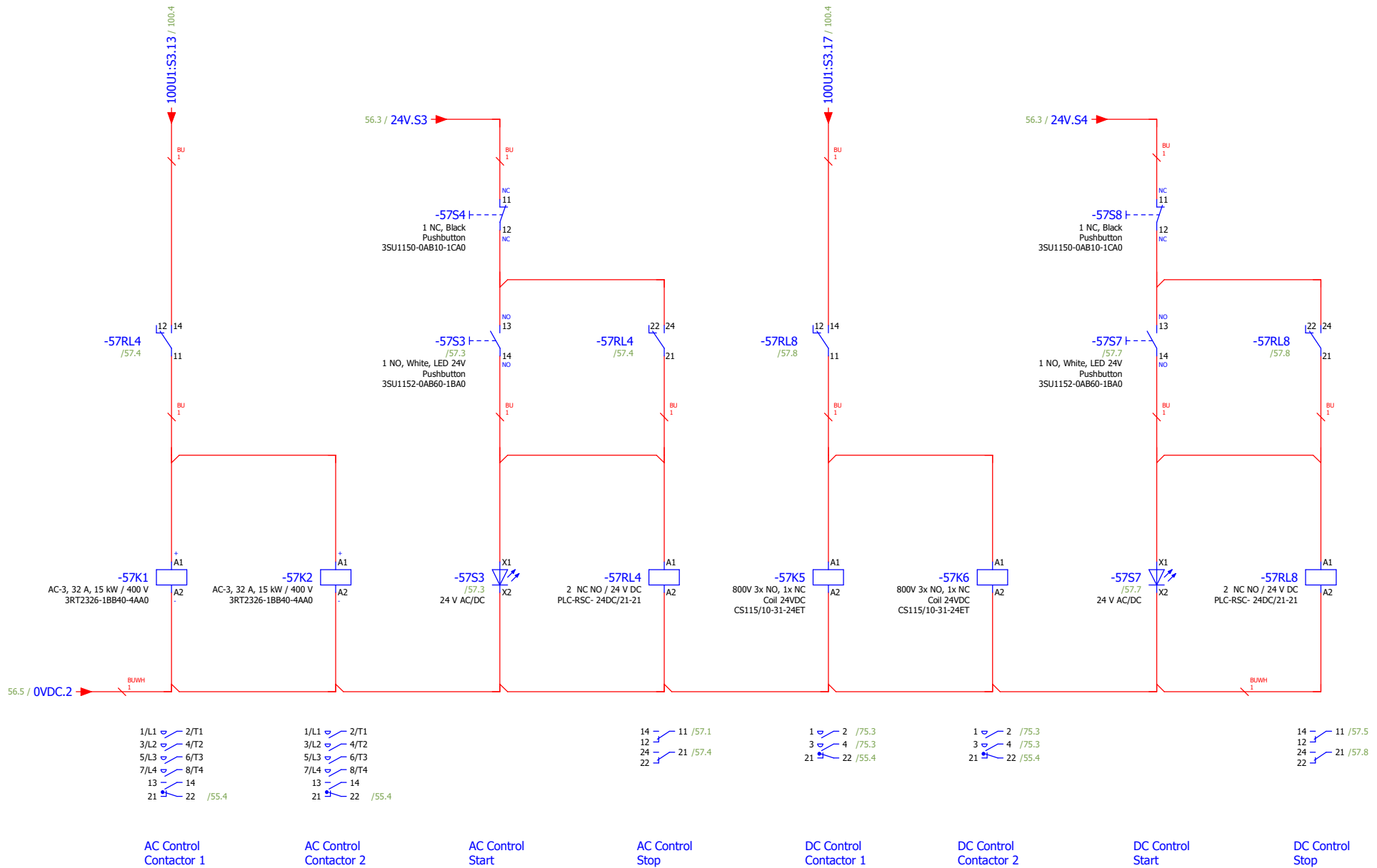


Power Supply 24V
Lilium eAircraft GmbH

		= Main Enclosure
		+ E01
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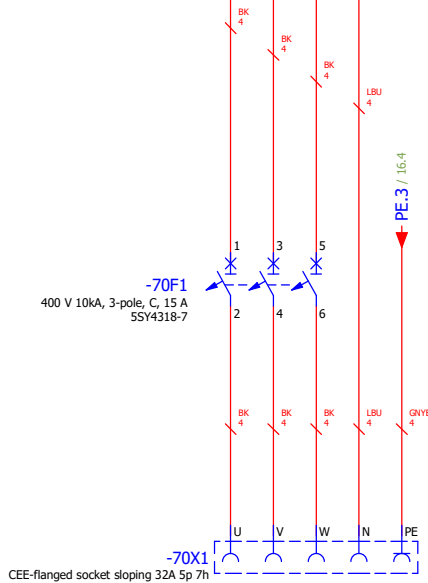


			Date	5/24/2024	Lilium Number		Motors	= Main Enclosure + E01	Page	35
			Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing		Lilium eAircraft GmbH		Page	11 / 26
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				Date	5/24/2024	Lilium Number		Safety Circuit - Contactors Coils		= Main Enclosure	
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65.9 / U_Safety
 65.9 / V_Safety
 65.9 / W_Safety
 65.9 / N_Safety

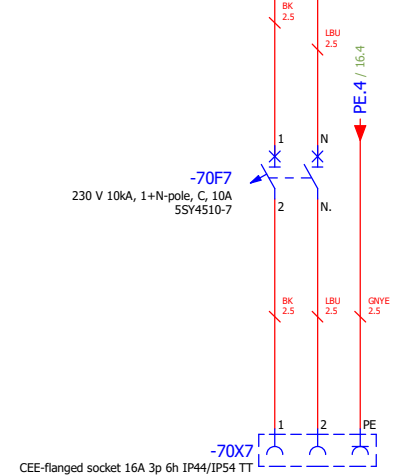
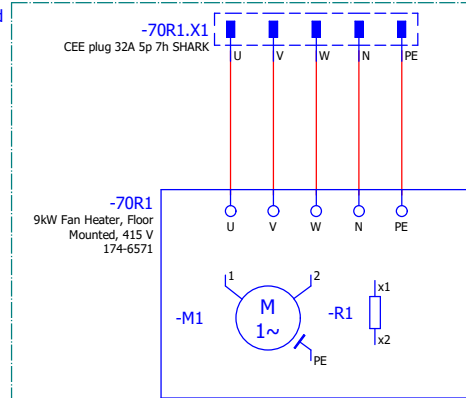


*CEE-flanged socket sloping (80x97mm) 32A 5p 7h IP44/IP54 (425-7)



*CEE-plug 32A 5p 7h IP44 SHARK (025-7)

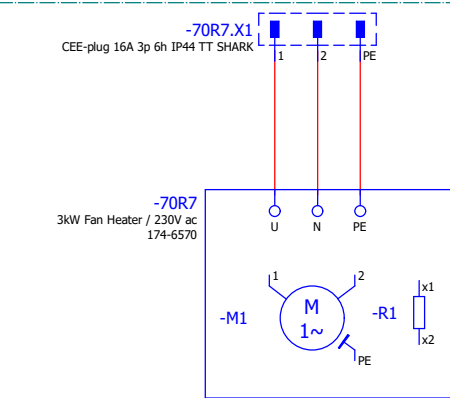
=Field



*CEE-flanged socket sloping (80x97mm) 16A 3p 6h IP44/IP54 (413-6f8)



*CEE-plug 16A 3p 6h IP44 TT SHARK (013-6tt)



				Date	5/24/2024	Lilium Number				= Main Enclosure	
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AC Fan Heater (9KW, 3KW)

Lilium eAircraft GmbH

12.8 / DC-
12.8 / DC+



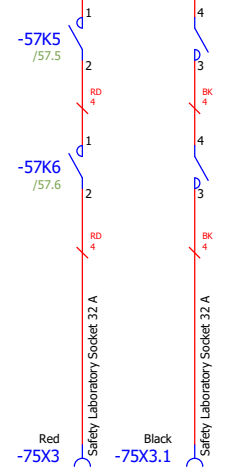
*CS115/10-31-24ET



*49.7046-22



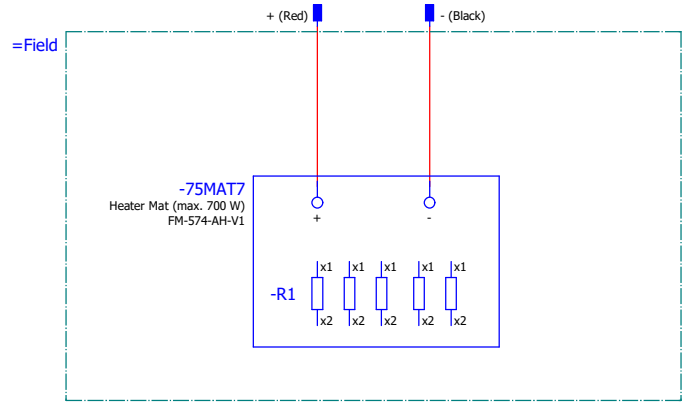
*23.3060-21



!!!Attention!!!
Unidirectional Contactor
Respect the Current Flow

(+)

(-)

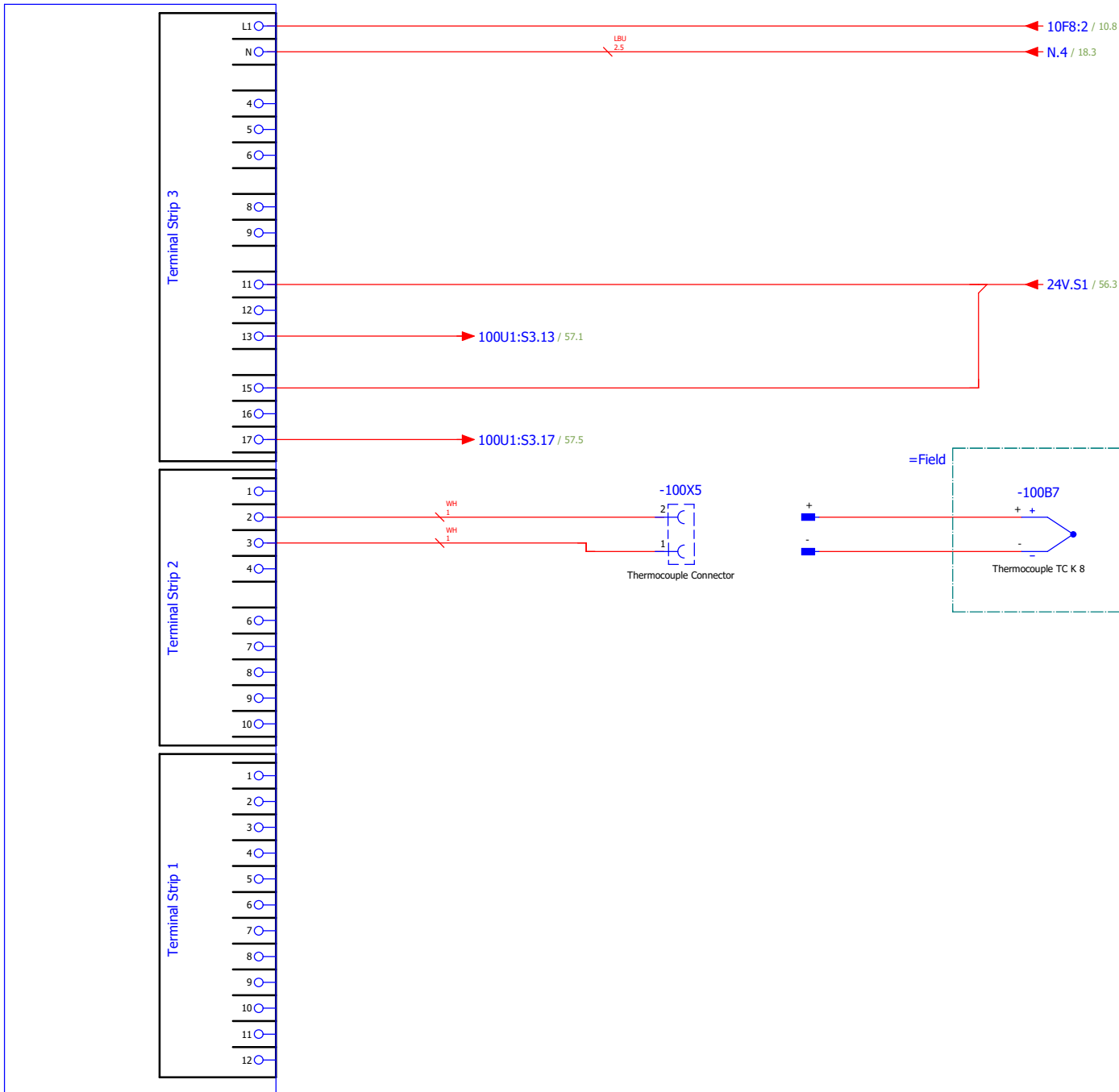


Heating Mat

				Date	5/24/2024	Lilium Number		Contactor DC (Heater Mat)		= Main Enclosure	
				Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing		Lilium eAircraft GmbH		+ E01	
				Appr.		Replacement of				Page 75	
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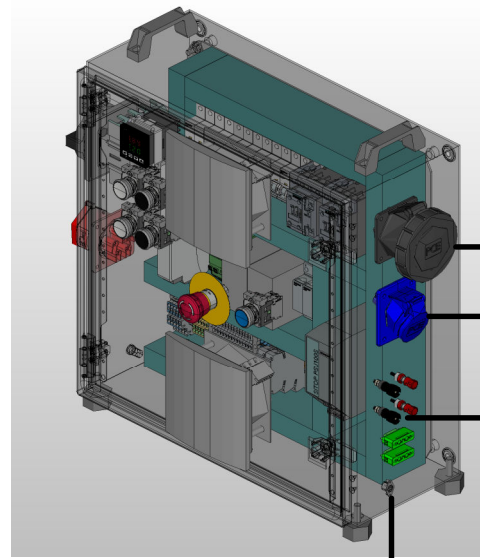
-100U1
Temperature controller
703044/181-000-23/000



*JUMO dTRON 304
703044/181-000-23/000

			Date	5/24/2024	Lilium Number	Temperature Controller		= Main Enclosure	
			Ed.	MATHEUS HAGEMANN	Control for Heating Setup for TR Testing	Lilium eAircraft GmbH		+ E01	
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Field Map



=Field

-70R1



*Heater 9kW

-70R7



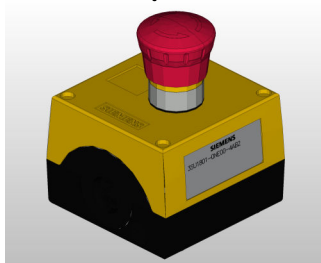
*Heater 3kW

-75MAT7

*Heater Mat (max. 700 W)
FM-574-AH-V1

=Field

-55EM3



=Main Enclosure+E01/100

			Date	5/24/2024
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Lilium Number	
Control for Heating Setup for TR Testing	
Replacement of	Replaced by

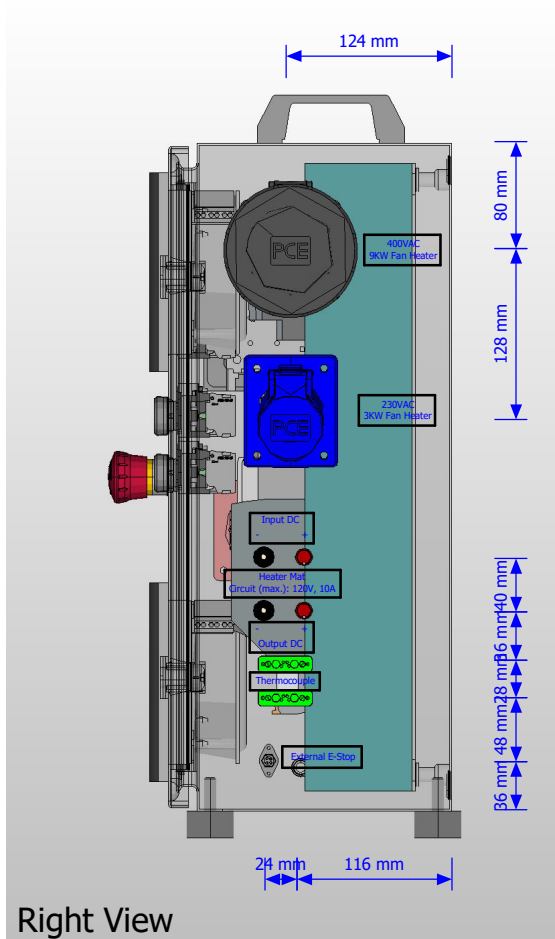
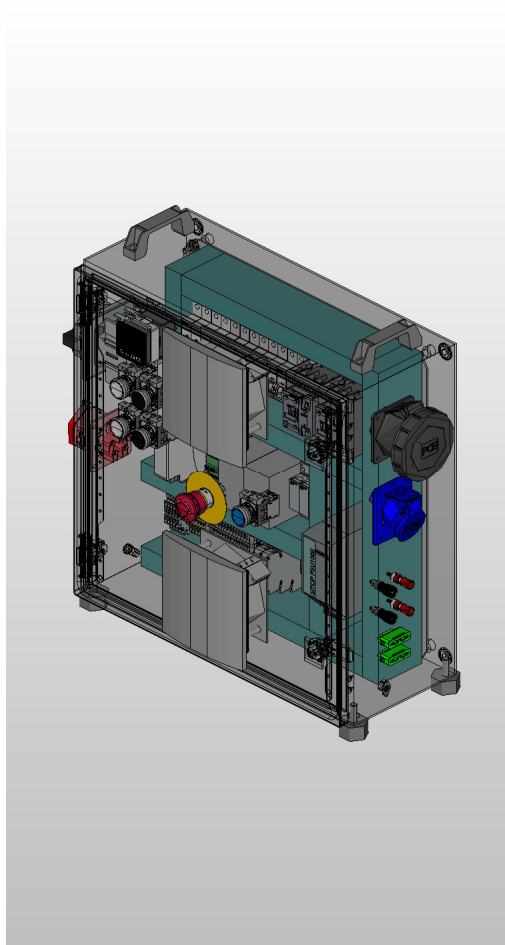


Field Map
Lilium eAircraft GmbH

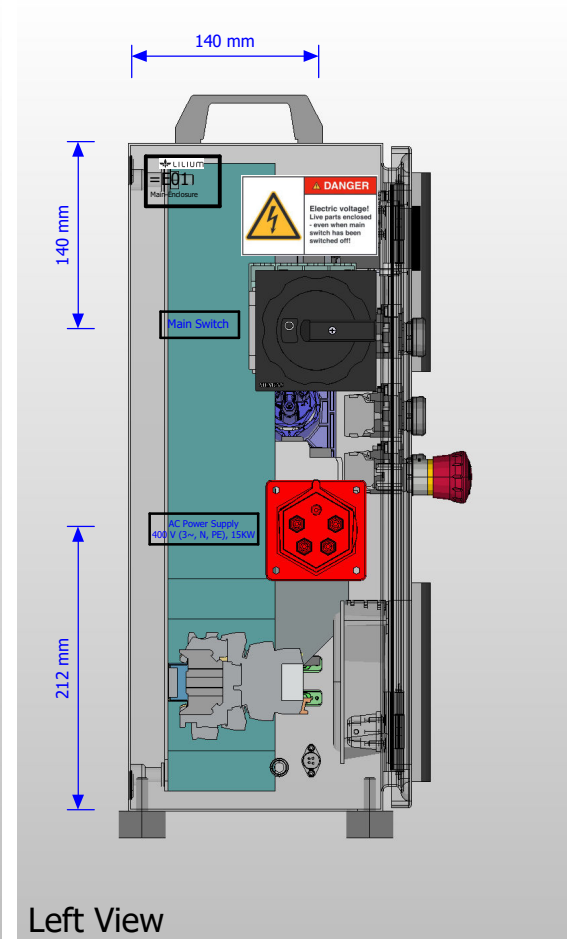
= Reports	
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901

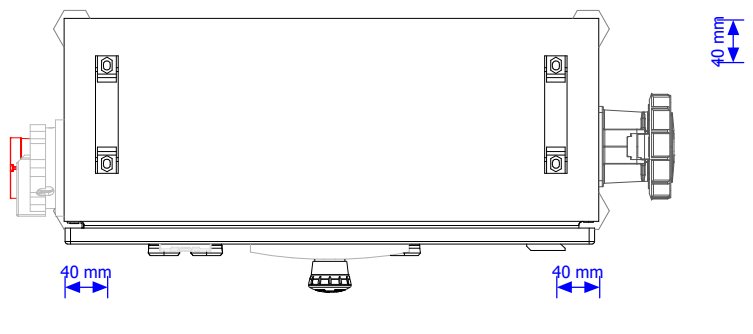
Main Enclosure



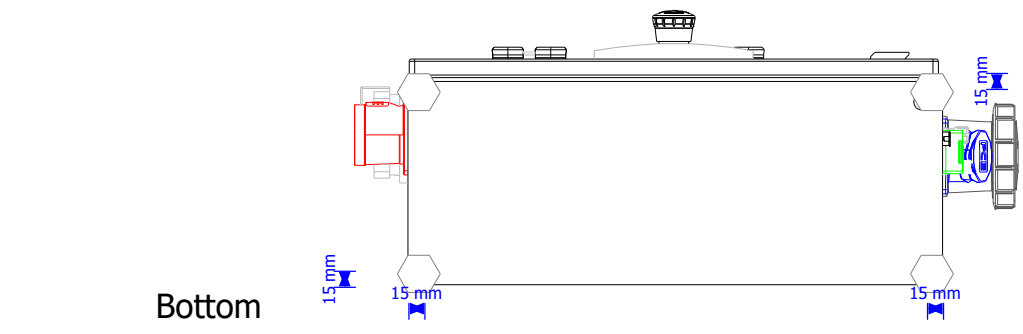
Right View



Left View



Top View



Bottom

Modification	Date	Name	Original

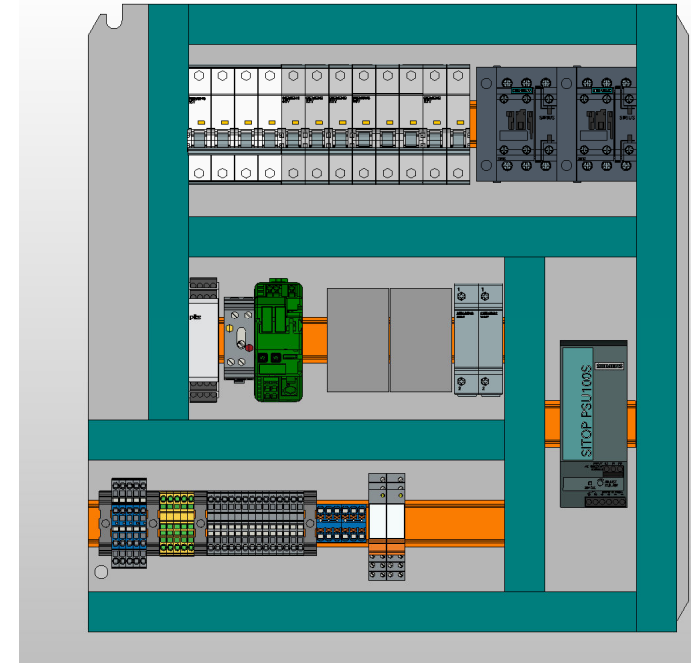
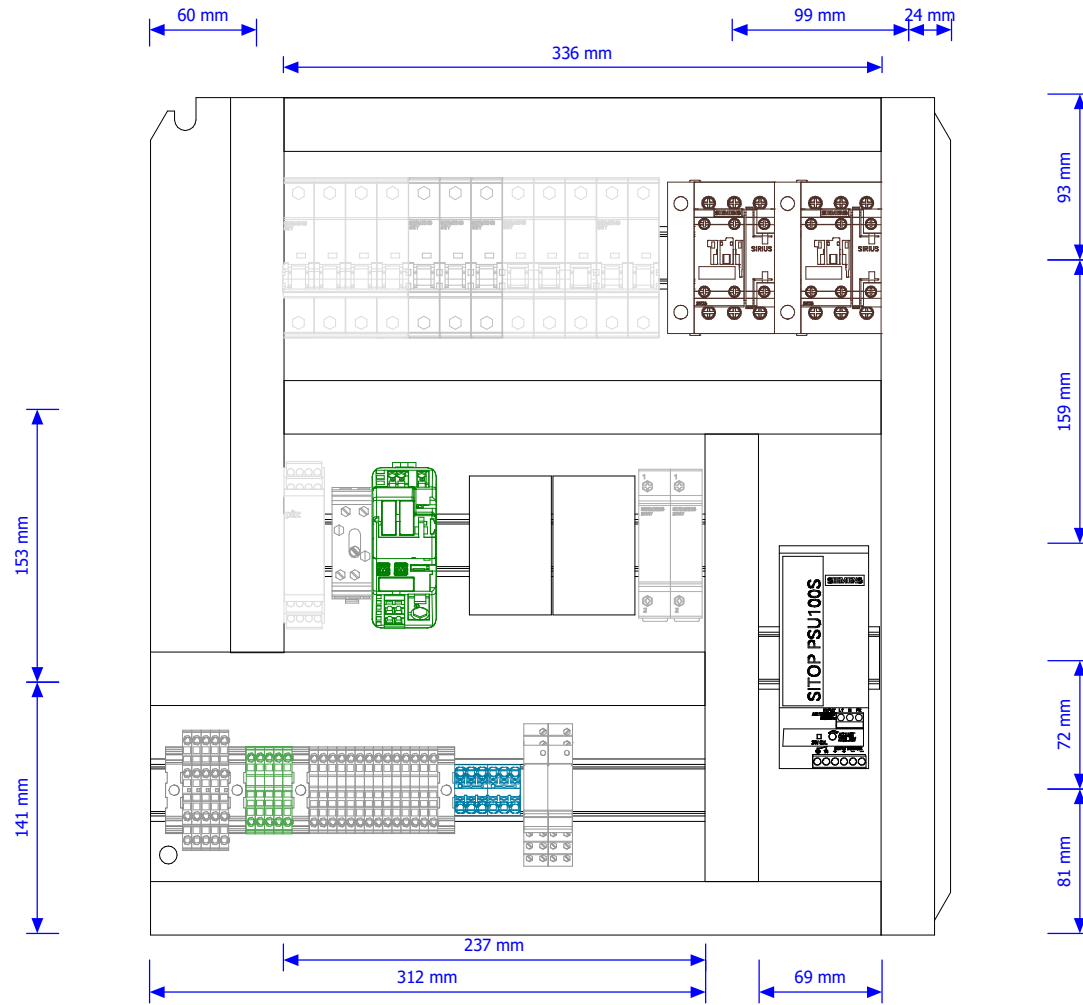
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Layout Enclosure View
Lilium eAircraft GmbH

EL013

Main Enclosure - Panel Layout



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			Original	

Lilium Number	
Control for Heating Setup for TR Testing	
Replacement of	Replaced by

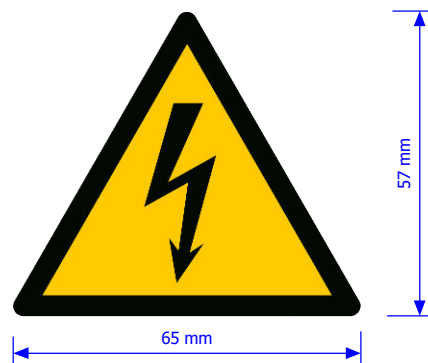


Layout Enclosure Panel
Lilium eAircraft GmbH

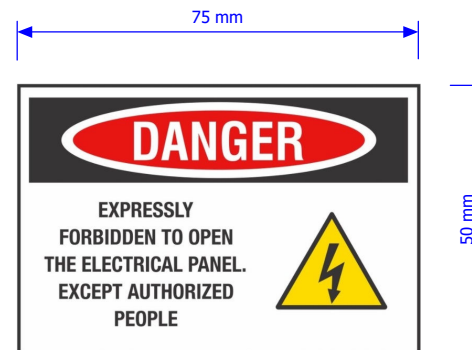
= Reports
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LAY-OUT FOR MANUFACTURE OF THE LABELS

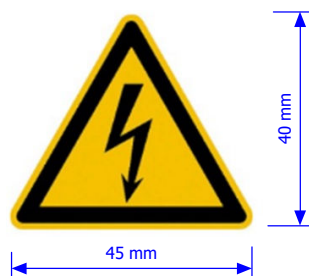
(1x)
*External Electrical Enclosure Door



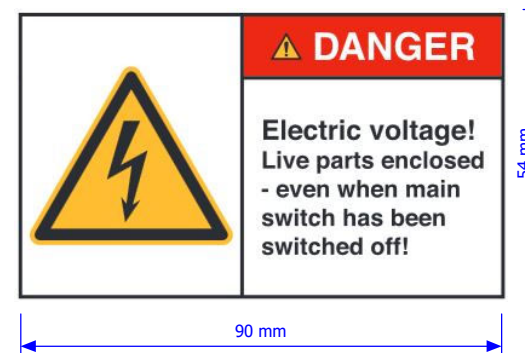
(1x)
*External Electrical Cabinet Door: Above the Door Handle



(2x)
*Internal Electrical Cabinet, Live Parts



(1x)
*Internal Electrical Cabinet: At the Main Disconnect Switch



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			Appr.		Control for Heating Setup for TR Testing			
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						Layout Identifications/Tags Lilium eAircraft GmbH		EL013 Page 24 / 26

