



# Carel USA LLC

385 South Oak St.  
 Manheim, PA 17545 USA  
 tel. +1 717-664-0500  
 info: sales\_usa@carel.com



power solution

Project code	CMNAKSE001	Rev	1
Project description	Fan Hood Controller 1353		
Supply voltage	1P+N+PE - 120V - 60Hz	Operating temperature	40°C
Rated current	2A		
Auxiliary voltage	24VDC		
Designed by	Matteo Mazzocco	on	15-Nov-2022
Checked by	Daniel Harris	on	20-Sep-2023
Approved by	Daniel Harris	on	20-Sep-2023
<p>NOT ALLOWED DELIVER TO THIRD PARTIES OR REPRODUCE THIS DOCUMENT NOT USE THE CONTENT OR OTHERWISE MAKE KNOWN TO THIRD PARTIES WITHOUT OUR EXPRESS PERMISSION. ANY INFRINGEMENT WILL RESULT IN DAMAGES SUFFERED. And it MADE SUBJECT TO ALL RIGHTS UNDER PATENTS OR MODELS</p>			

Modification	Date	Name	Rev.	1
--------------	------	------	------	---

Date	15-Nov-2022
Elab	Matteo Mazzocco
CMNAKSE001	
Fan Hood Controller 1353	



Title page

Mounting locations	+	Page	&EAA/1
		Next	2
Function	=	Total pages	21

Cables Range		
Cross-sect	FS17 Range (60°C)	FG17 Range (60°C)
0,5	4 A	\
0,75	\	\
1	10.3 A	12 A
1,5	13.5 A	19.5 A
2,5	18.3 A	26 A
4	24 A	35 A
6	31 A	46 A
10	44 A	63 A
16	59 A	85 A
\	\	\
25	77 A	112 A
35	96 A	138 A
50	117 A	168 A
70	134 A	213 A
95	\	268 A

AWG Cables Range	
AWG Type	Range (75°C)
22	3 A
\	\
18	7 A
16	10 A
14	15 A
12	20 A
10	30 A
8	50 A
6	65 A
4	85 A
3	100 A
2	115 A
1	131 A
\	\
\	\

Colors Table	
Colors	Short name
Red	RD
Black	BK
Yellow	YE
Yellow\Green	GNYE
Orange	OG
Light blue	TQ
Blue	BU
Pink	PK
White	WH
Gray	GY
Brown	BN
Green	GN
Purple	VT
\	
\	
\	
\	

## REVIEW TABLE

Rev.	Technical name	Date	Note
1A	DH	18-MAY-2023	ENCLOSURE UPDATED TO HINGED VERSION PER CUSTOMER REQUEST LIGHT AND FAN OVERRIDE SWITCH ADDED TO DOOR
1B	DH	14-AUG-2023	ADD ADDITIONAL TERMINALS FOR TESTING MACHINE CORRECT ERROR WITH S1 WIRING
1	DH	20-SEP-2023	RELEASE TO PRODUCTION

Date	15-Nov-2022
Elab	Matteo Mazzocco
Modification	Date
Name	Rev.
	1

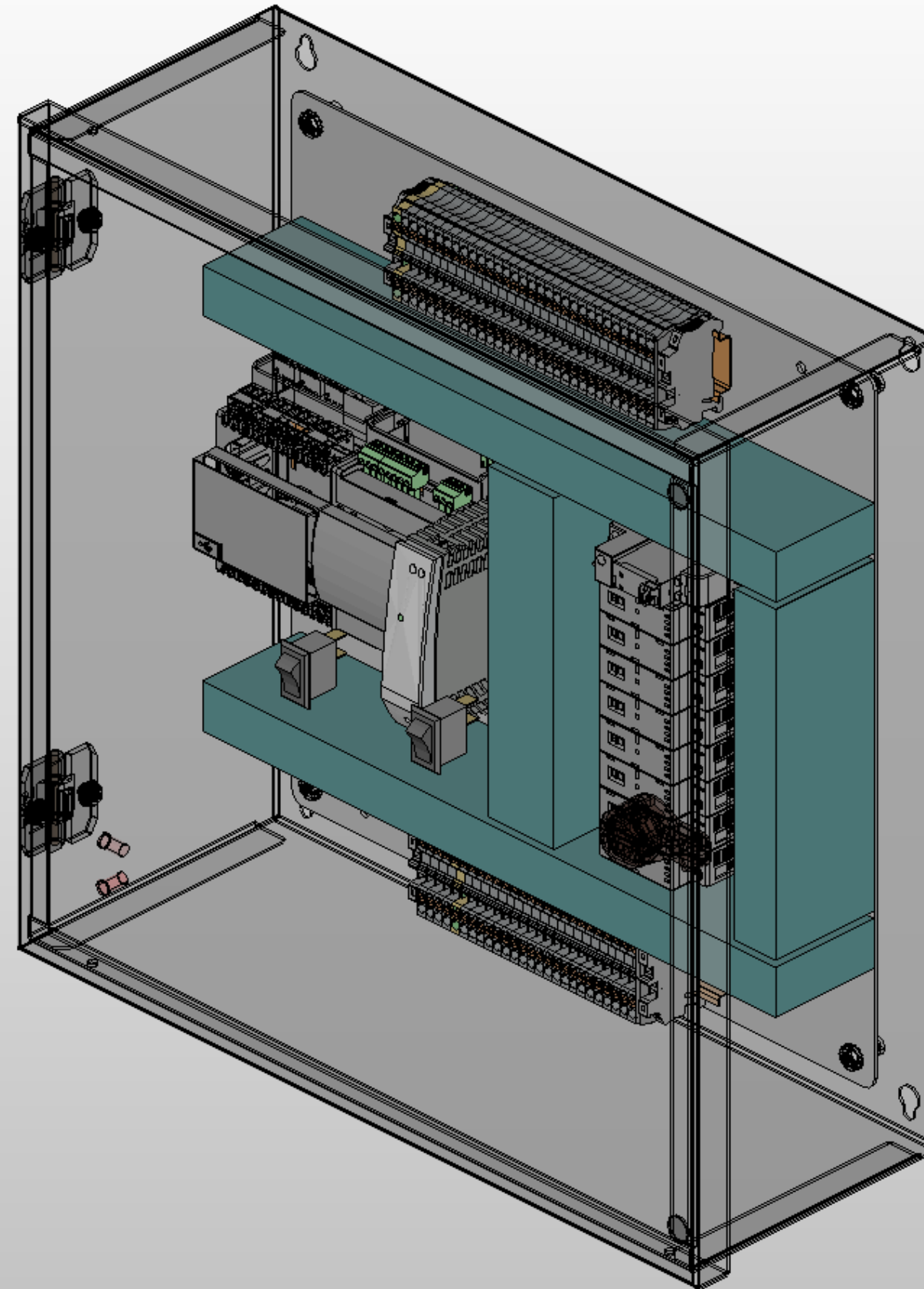
CMNAKSE001
Fan Hood Controller 1353



Technical information

Mounting locations	+	Page	&EAA/2
Function	=	Next	&EAB/1
		Total pages	21





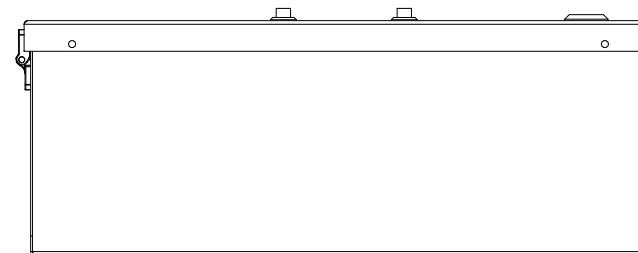
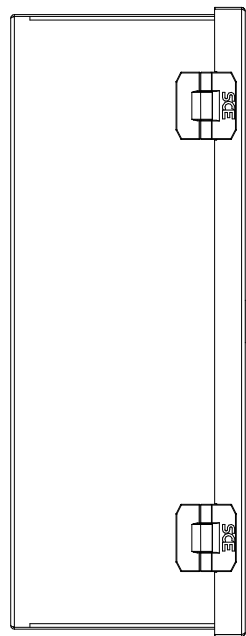
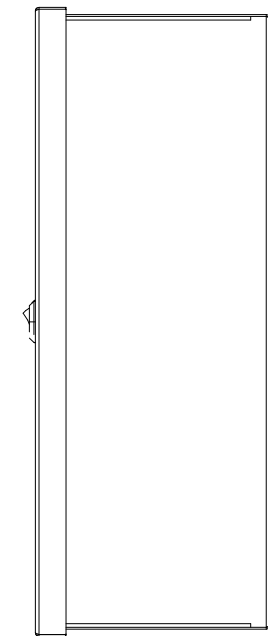
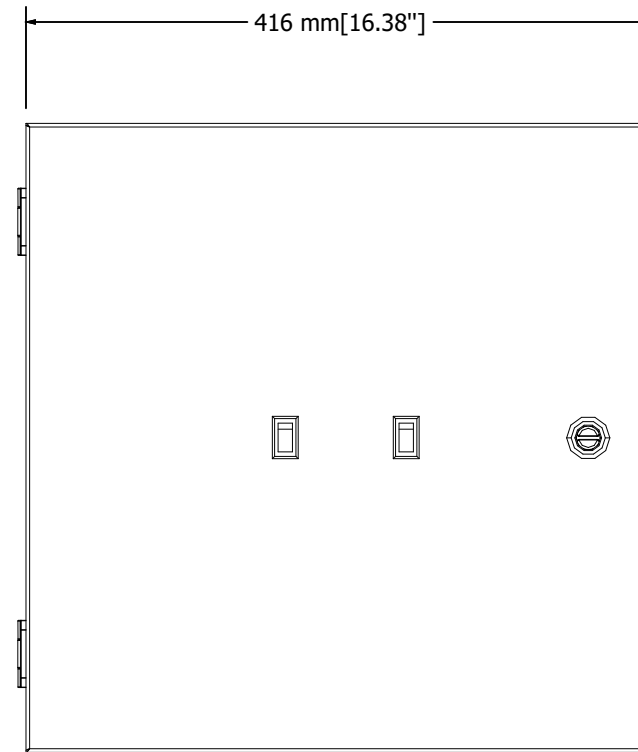
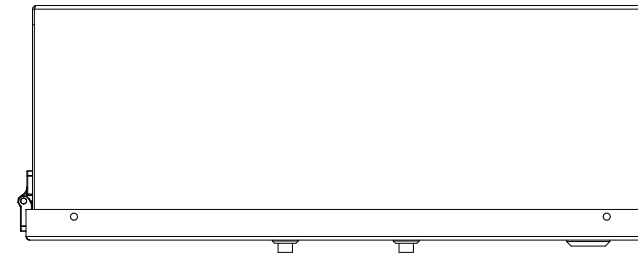
			Date	15-Nov-2022
			Elab	Matteo Mazzocco
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



General view

Mounting locations	+ QE	Page	+QE&ETL/1
		Next	2
Function	=	Total pages	21



			Date	15-Nov-2022
			Elab	Matteo Mazzocco
Modification	Date	Name	Rev.	1

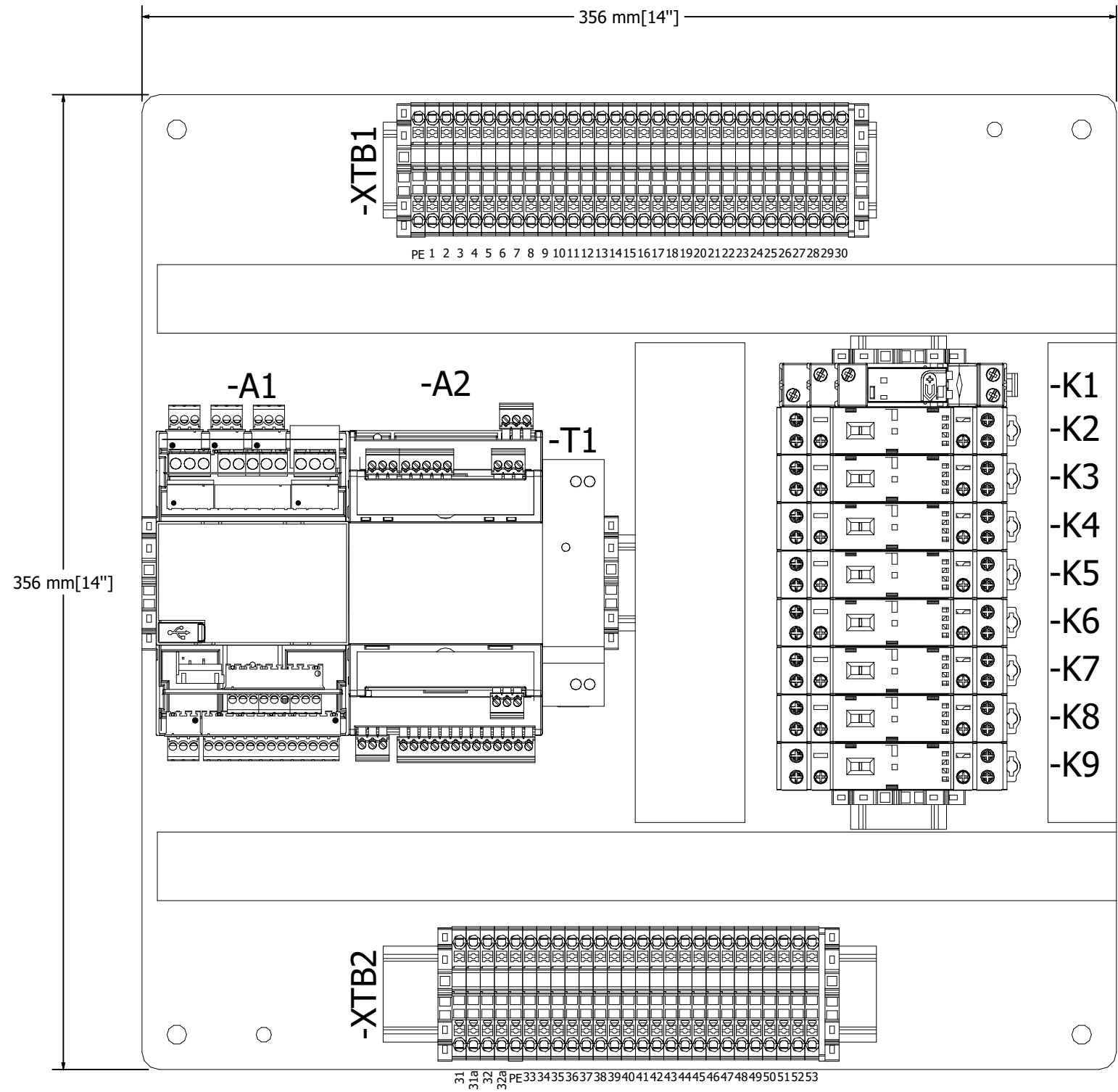
CMNAKSE001  
Fan Hood Controller 1353



View of all sides

Mounting locations	+ QE
Function	=

Page	+QE&ETL/2
Next	3
Total pages	21



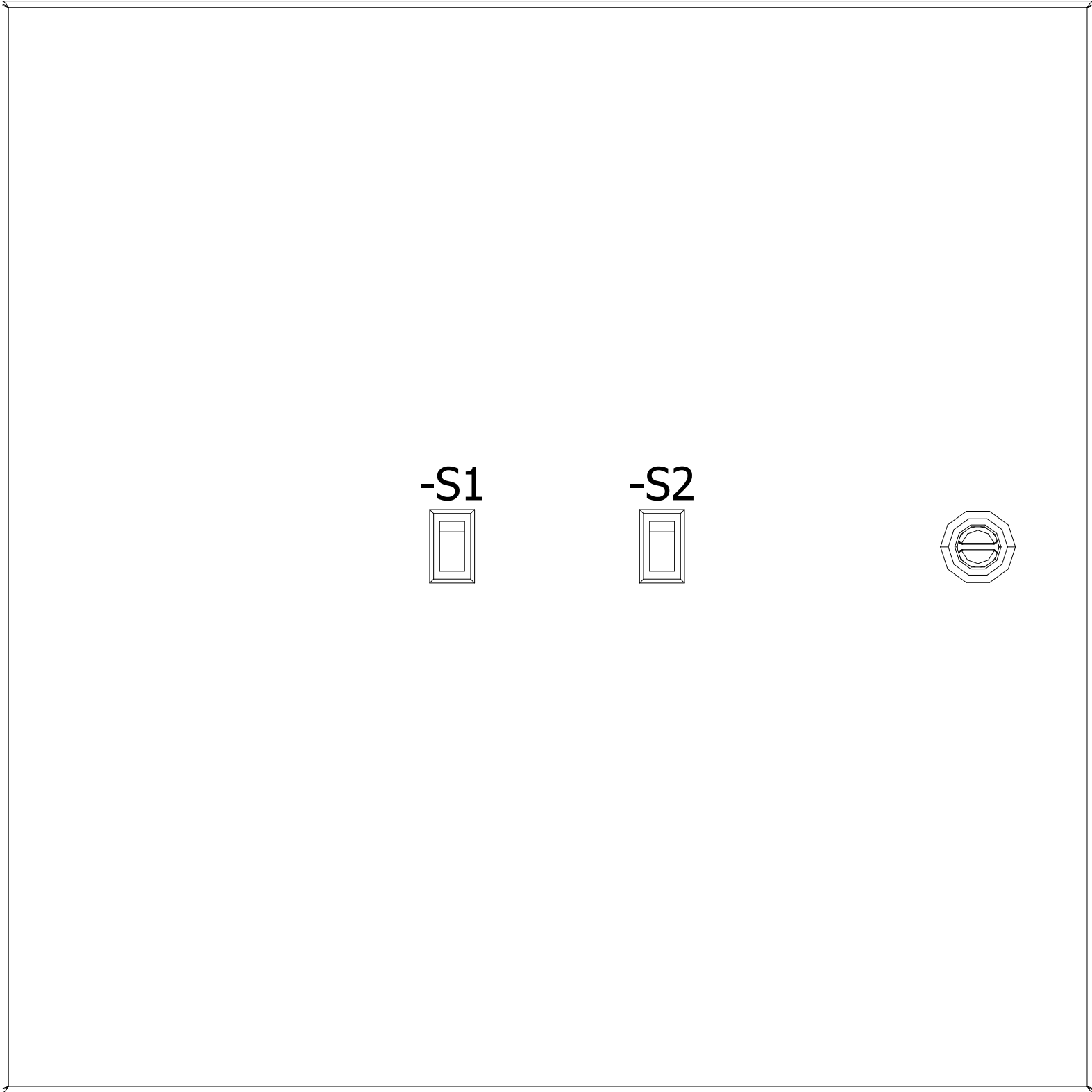
			Date	15-Nov-2022
			Elab	Matteo Mazzocco
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Mounting plate view

Mounting locations	+ QE	Page	+QE&ETL/3
		Next	4
Function	=	Total pages	21



			Date	15-Nov-2022
			Elab	Matteo Mazzocco
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353

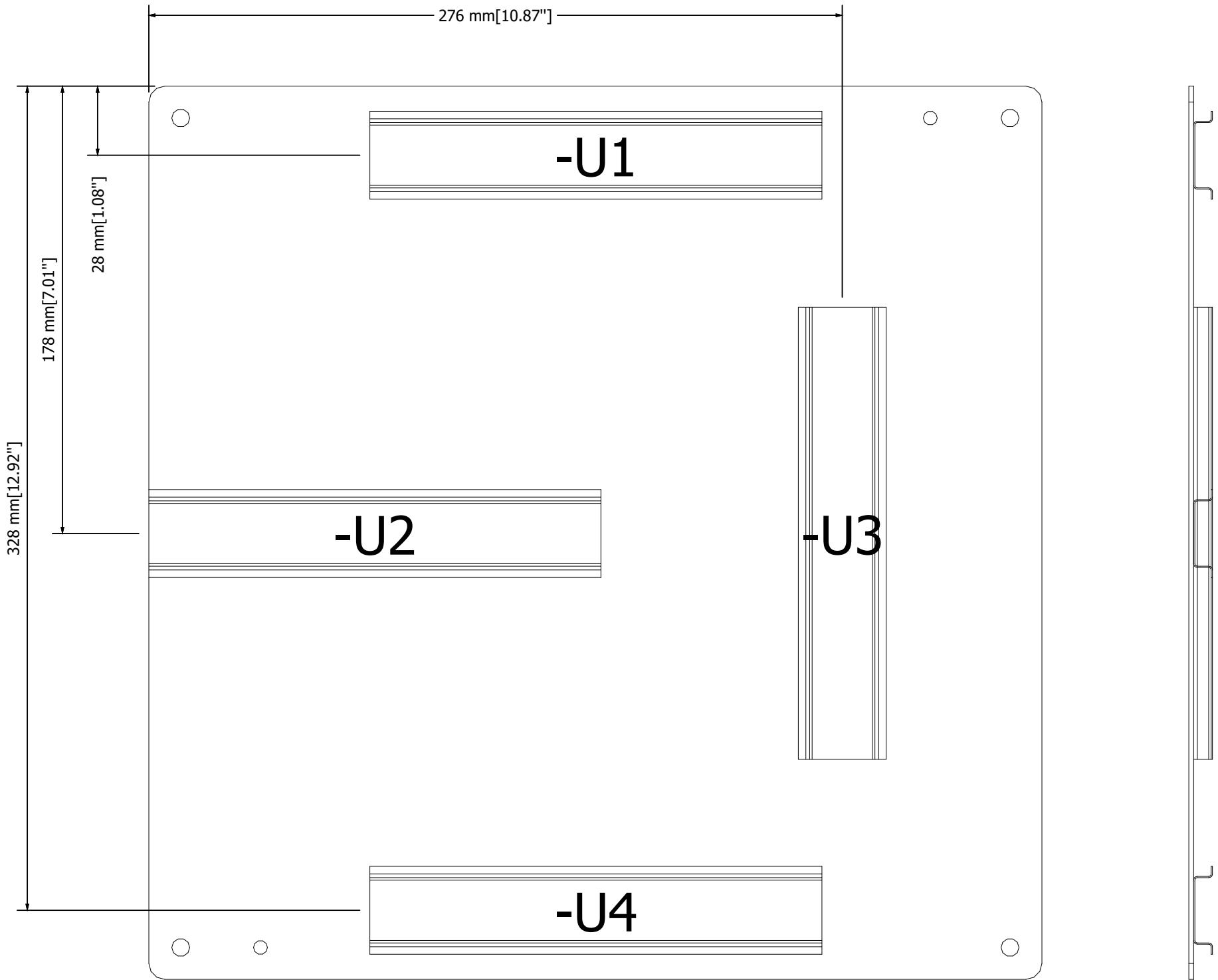


Door view

Mounting locations	+ QE
Function	=

Page	+QE&ETL/4
Next	5
Total pages	21

# Layout guides and channels



Sign	Type	Length (Tolerance -5mm)
U2	35x7.5	180 mm
U1	35x7.5	180 mm
U4	35x7.5	180 mm
U3	35x7.5	180 mm

Empty

Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353

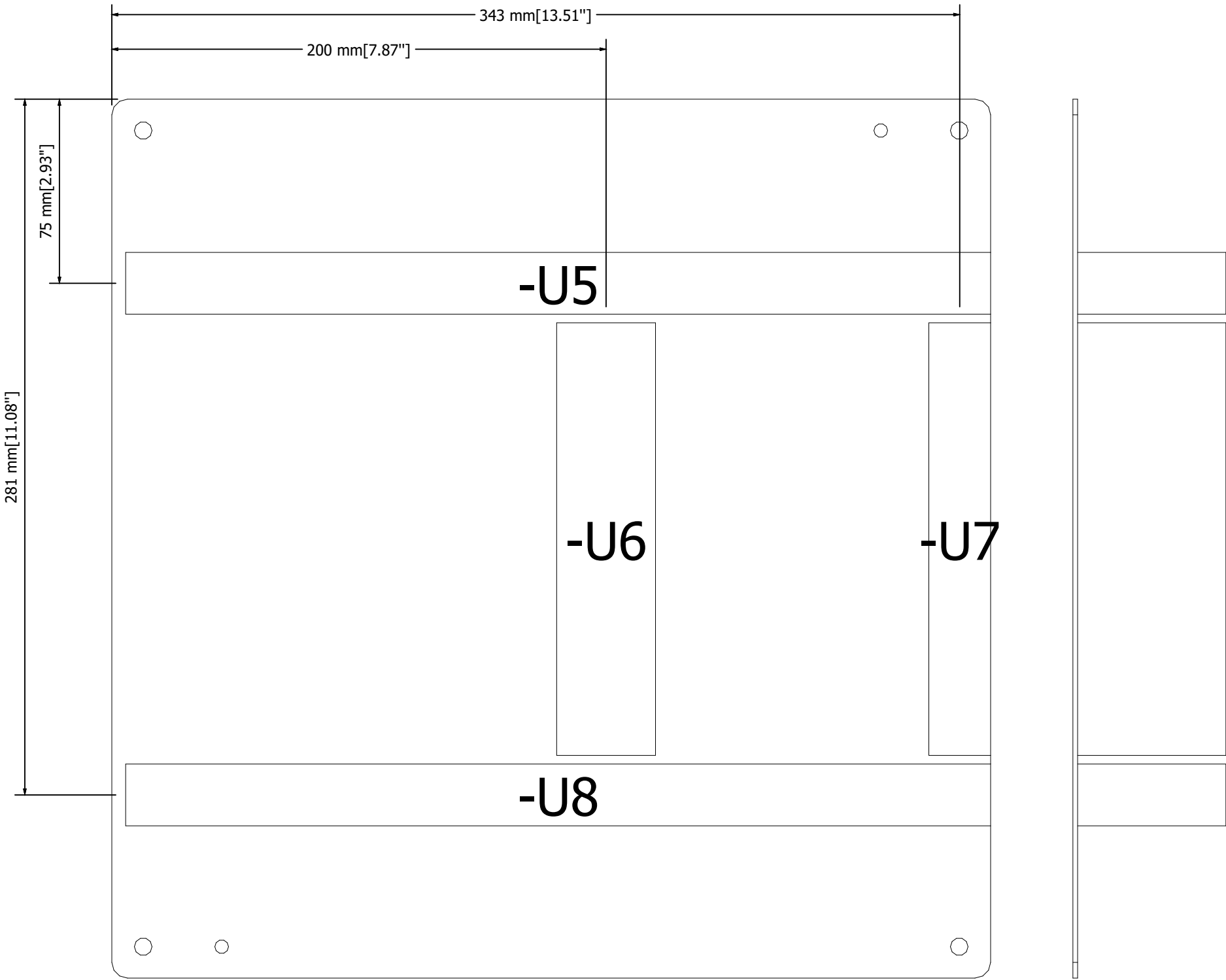


Guides view

Mounting locations	+ QE	Page	+QE&ETL/5
Function	=	Next	6
		Total pages	21



# Layout guides and channels



Sign	Type	Length (Tolerance -5mm)
U5	25x60	350 mm
U8	25x60	350 mm
U7	25x60	175 mm
U6	40x60	175 mm

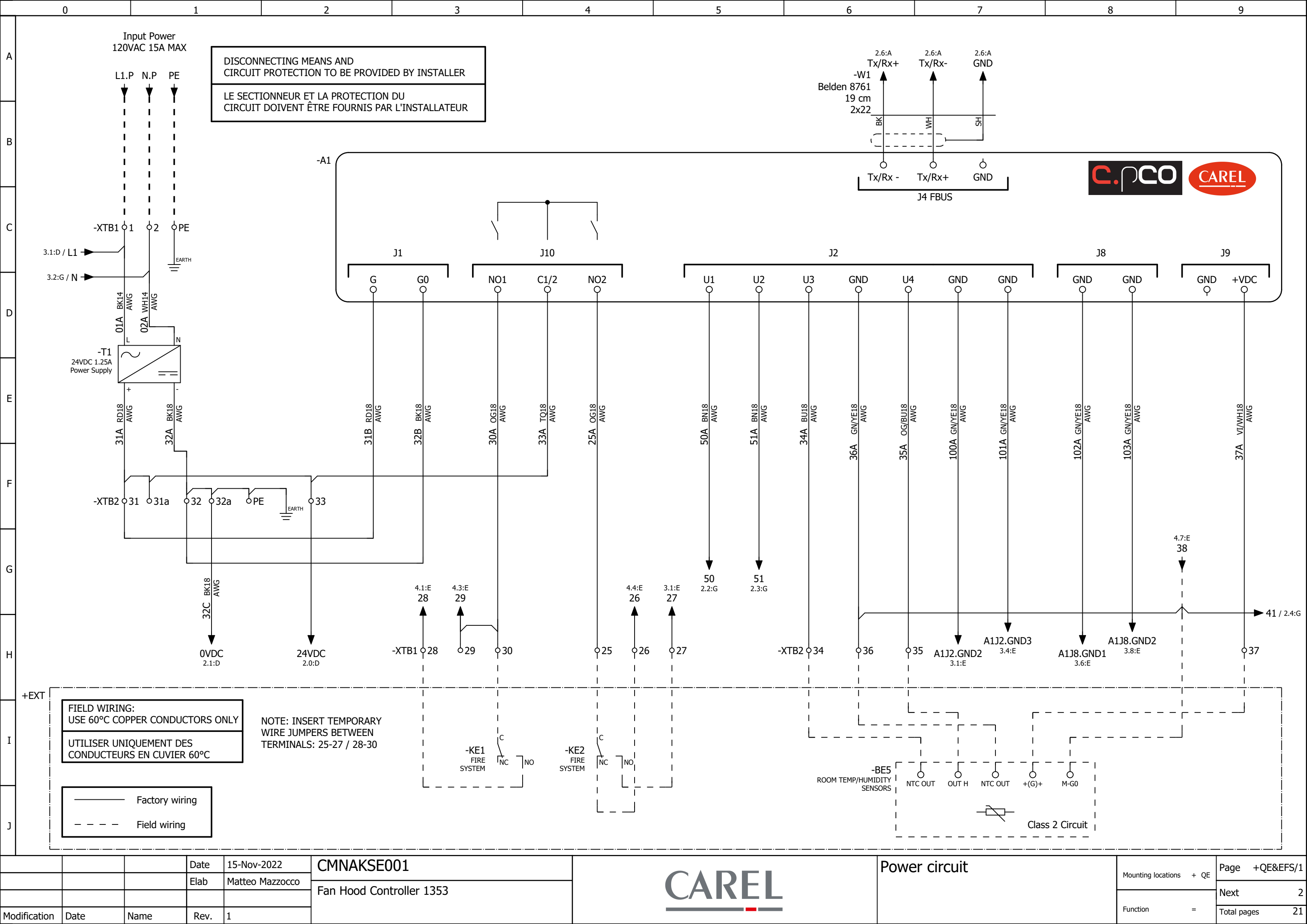
Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Channels view

Mounting locations	+ QE	Page	+QE&ETL/6
Function	=	Next	&EFS/1
		Total pages	21



DISCONNECTING MEANS AND  
CIRCUIT PROTECTION TO BE PROVIDED BY INSTALLER

LE SECTIONNEUR ET LA PROTECTION DU  
CIRCUIT DOIVENT ÊTRE FOURNIS PAR L'INSTALLATEUR



FIELD WIRING:  
USE 60°C COPPER CONDUCTORS ONLY

UTILISER UNIQUEMENT DES  
CONDUCTEURS EN CUIVIER 60°C

NOTE: INSERT TEMPORARY  
WIRE JUMPERS BETWEEN  
TERMINALS: 25-27 / 28-30

— Factory wiring  
- - - Field wiring

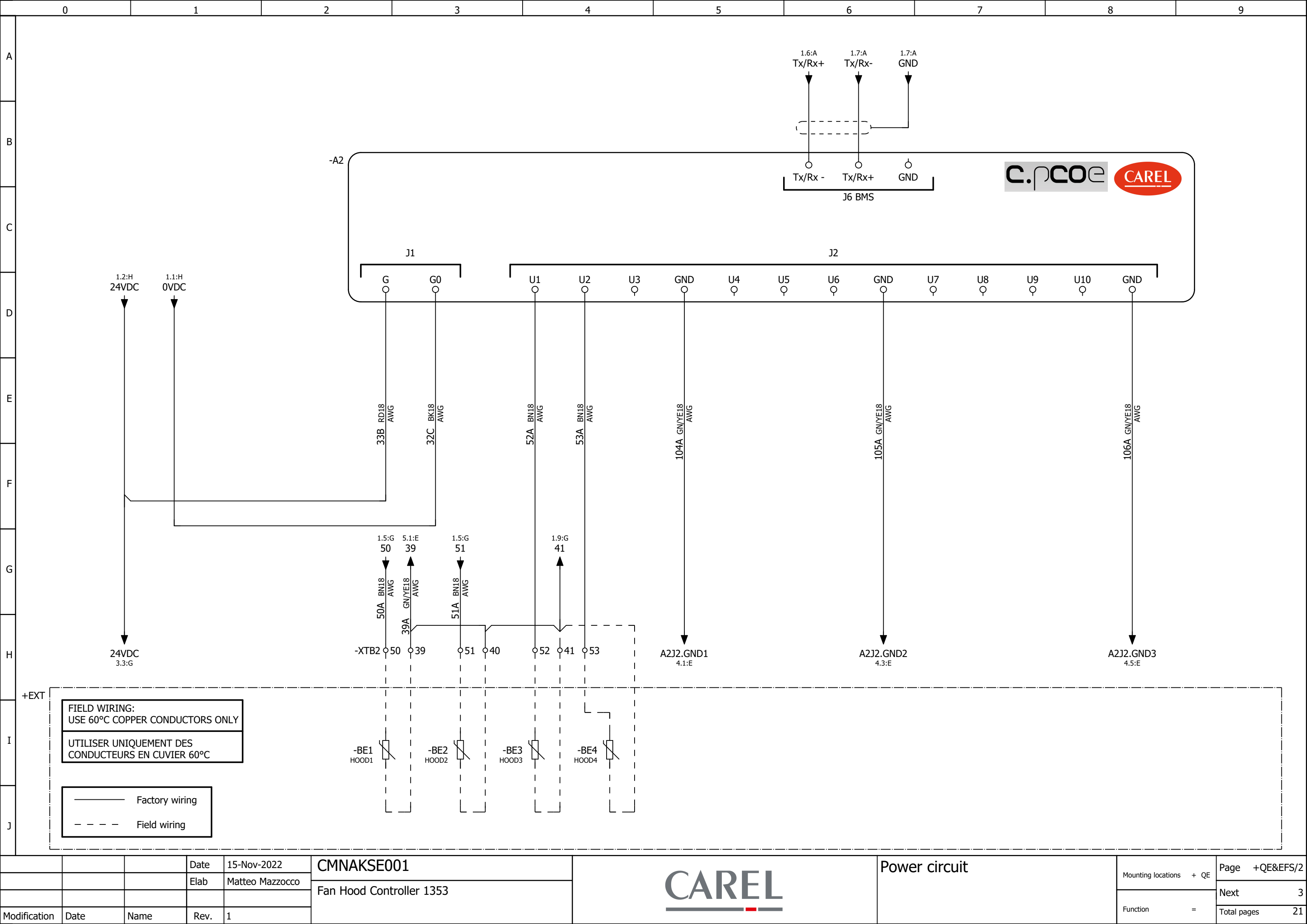
Date	15-Nov-2022
Elab	Matteo Mazzocco
Modification	Date
Name	Rev. 1

CMNAKSE001  
Fan Hood Controller 1353



Power circuit

Mounting locations	+ QE	Page	+QE&EFS/1
Function	=	Next	2
		Total pages	21



FIELD WIRING:  
USE 60°C COPPER CONDUCTORS ONLY

UTILISER UNIQUEMENT DES  
CONDUCTEURS EN CUVIER 60°C

————— Factory wiring  
- - - - - Field wiring

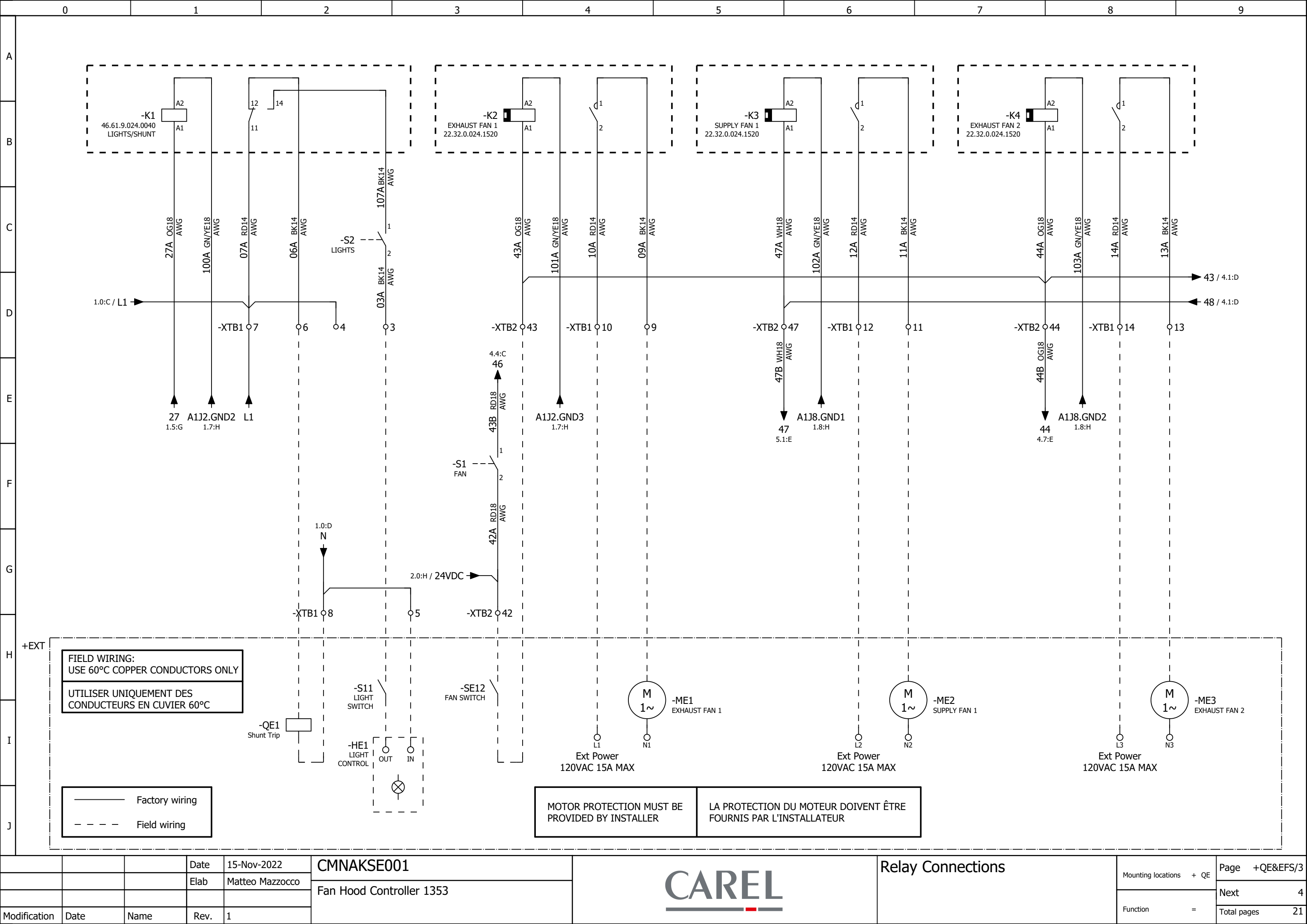
Date	15-Nov-2022
Elab	Matteo Mazzocco
Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Power circuit

Mounting locations	+ QE	Page	+QE&EFS/2
Function	=	Next	3
		Total pages	21



FIELD WIRING:  
USE 60°C COPPER CONDUCTORS ONLY

UTILISER UNIQUEMENT DES  
CONDUCTEURS EN CUIVIER 60°C

MOTOR PROTECTION MUST BE  
PROVIDED BY INSTALLER

LA PROTECTION DU MOTEUR DOIVENT ÊTRE  
FOURNIS PAR L'INSTALLATEUR

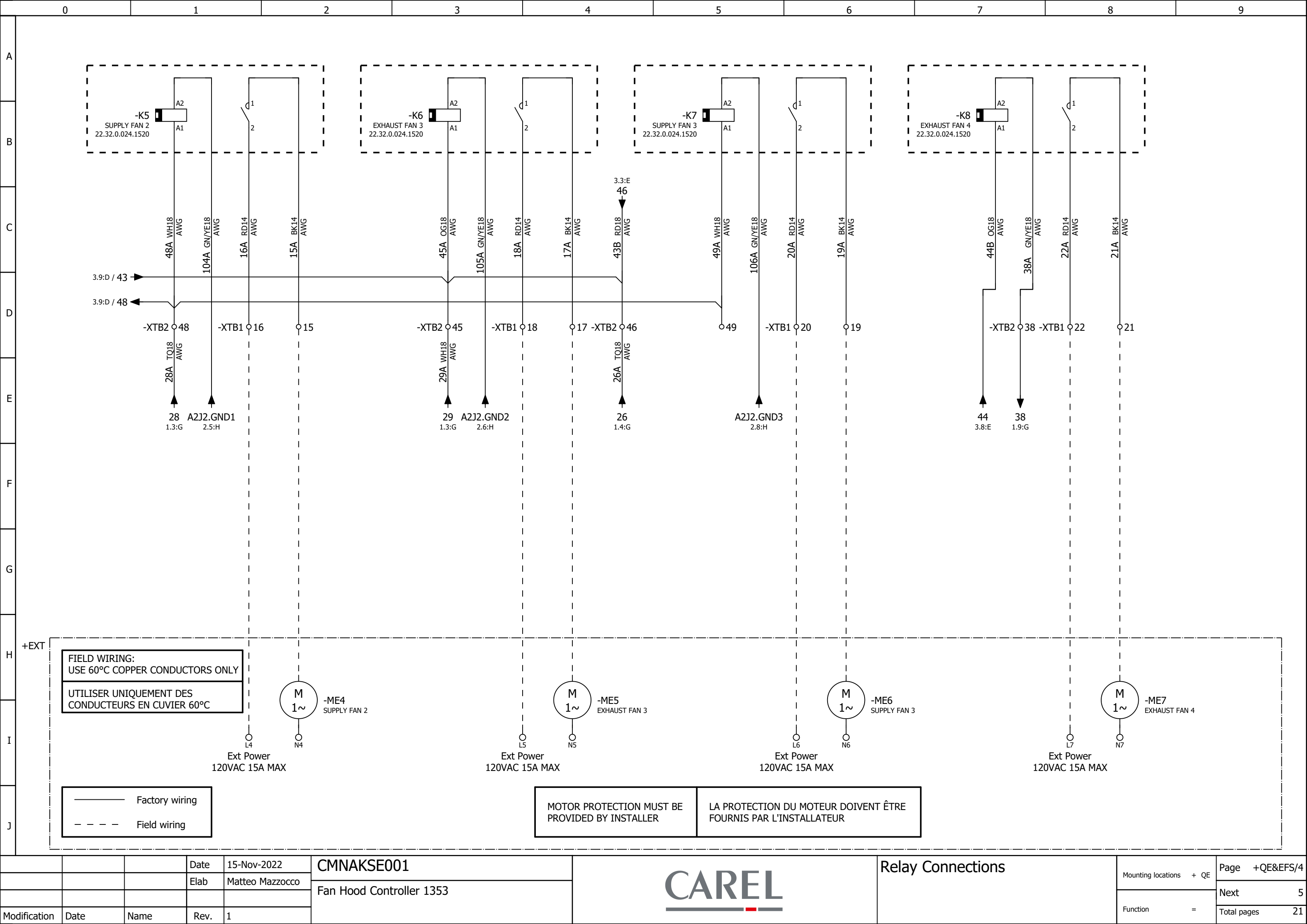
Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Relay Connections

Mounting locations	+ QE	Page	+QE&EFS/3
Function	=	Next	4
		Total pages	21



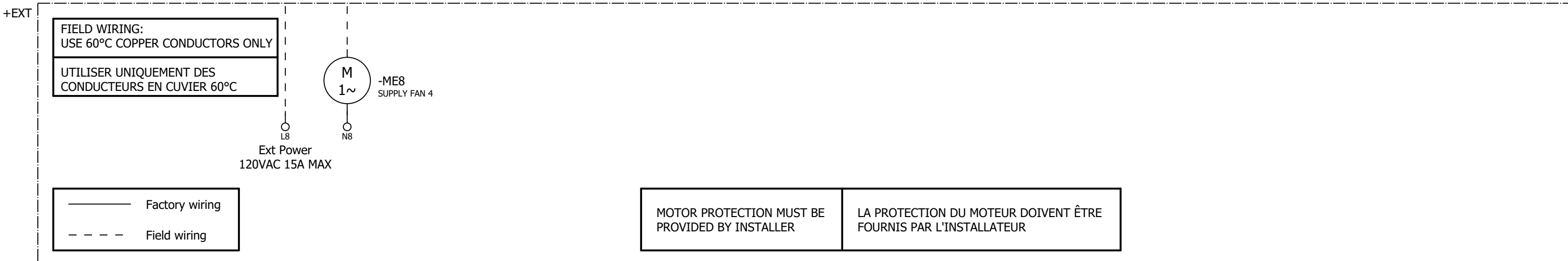
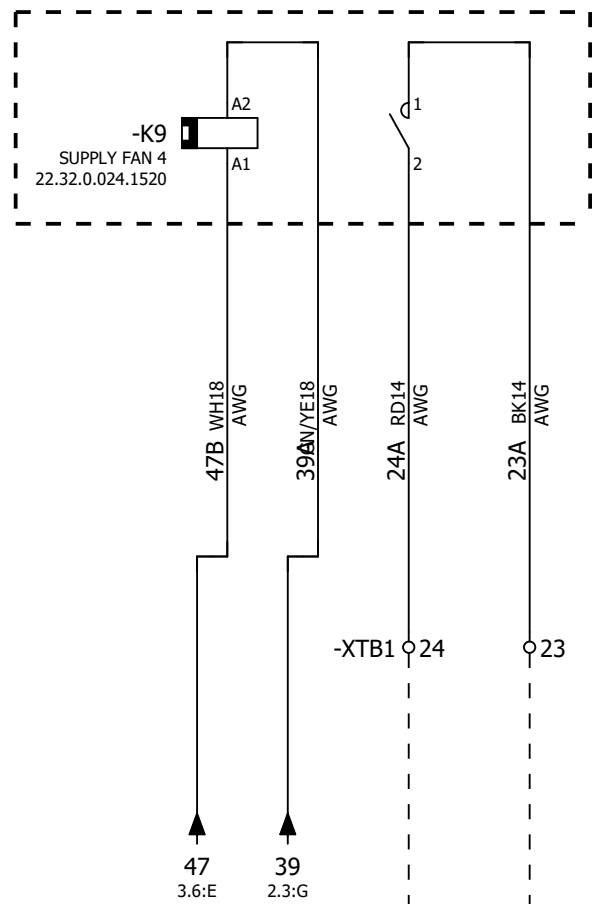
Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Relay Connections

Mounting locations	+ QE	Page	+QE&EFS/4
Function	=	Next	5
		Total pages	21



Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Relay Connections

Mounting locations	+ QE	Page	+QE&EFS/5
Function	=	Next	&EMA/1
		Total pages	21

# Terminal diagram

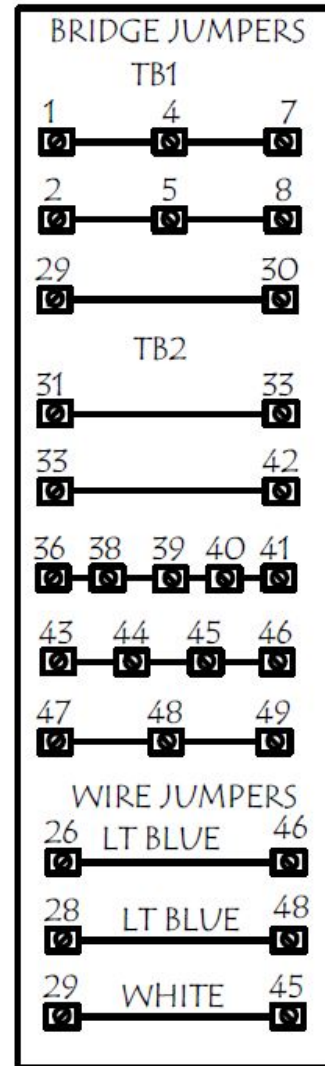
## Terminal strip

+QE-XTB1

External targets

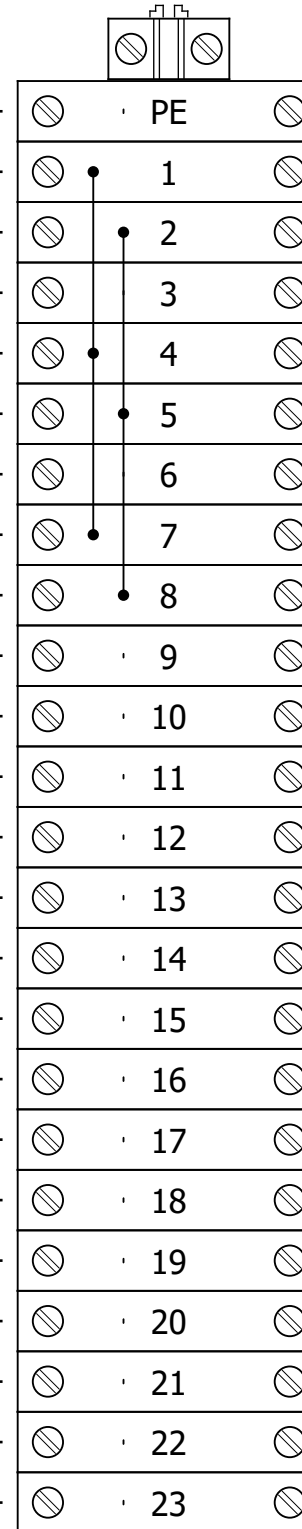
Terminal type

Terminal position on the drawings



Power Supply  
=  
LIGHT SWITCH  
LIGHT CONTROL  
Shunt Trip  
Shunt Trip  
EXHAUST FAN 1  
SUPPLY FAN 1  
EXHAUST FAN 2  
SUPPLY FAN 2  
EXHAUST FAN 3  
SUPPLY FAN 3  
EXHAUST FAN 4  
SUPPLY FAN 4

-T1:L  
-T1:N  
+EXT-S11  
+EXT-HE1:IN  
+EXT-QE1  
+EXT-QE1  
+EXT-ME1  
L1  
+EXT-ME2  
L2  
+EXT-ME3  
L3  
+EXT-ME4  
L4  
+EXT-ME5  
L5  
+EXT-ME6  
L6  
+EXT-ME7  
L7  
+EXT-ME8

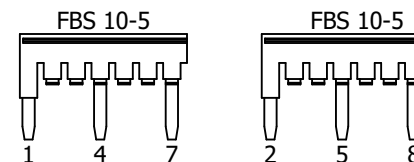


03A Black 14  
06A Black 14  
07A Red 14  
09A Black 14  
10A Red 14  
11A Black 14  
12A Red 14  
13A Black 14  
14A Red 14  
15A Black 14  
16A Red 14  
17A Black 14  
18A Red 14  
19A Black 14  
20A Red 14  
21A Black 14  
22A Red 14  
23A Black 14

PT 2,5-PE  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5  
PT 2,5

&EFS/1.1:C  
&EFS/1.0:C  
&EFS/1.1:C  
&EFS/3.2:D  
&EFS/3.2:D  
&EFS/3.3:G  
&EFS/3.2:D  
&EFS/3.1:D  
&EFS/3.2:G  
&EFS/3.4:D  
&EFS/3.4:D  
&EFS/3.6:D  
&EFS/3.6:D  
&EFS/3.8:D  
&EFS/3.8:D  
&EFS/4.2:D  
&EFS/4.1:D  
&EFS/4.4:D  
&EFS/4.4:D  
&EFS/4.6:D  
&EFS/4.6:D  
&EFS/4.8:D  
&EFS/4.8:D  
&EFS/5.2:D

### Jumper Configuration



Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Terminal strip

Mounting locations	+ QE	Page	+QE&EMA/1
Function	=	Next	1.a
		Total pages	21

# Terminal diagram

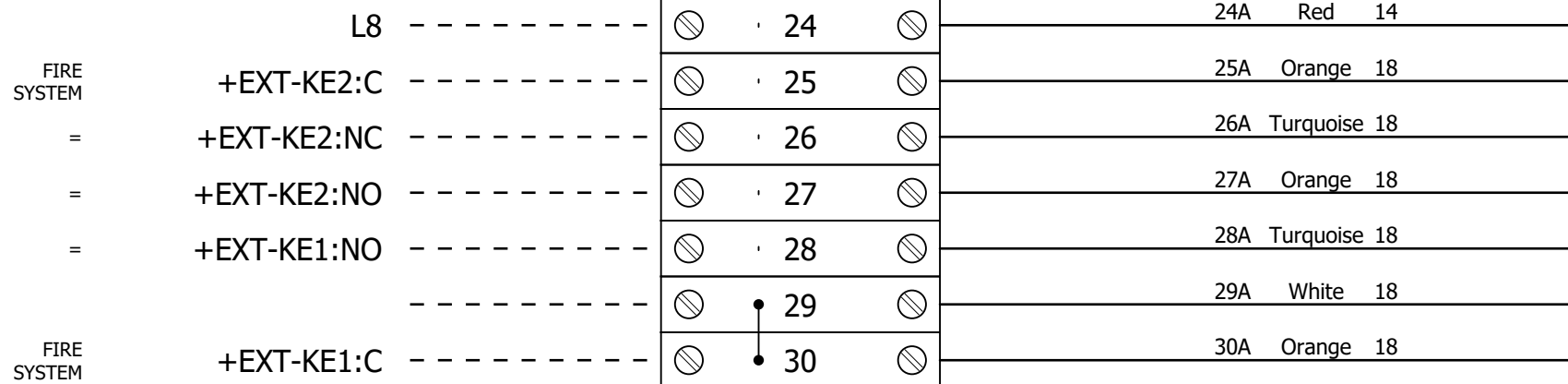
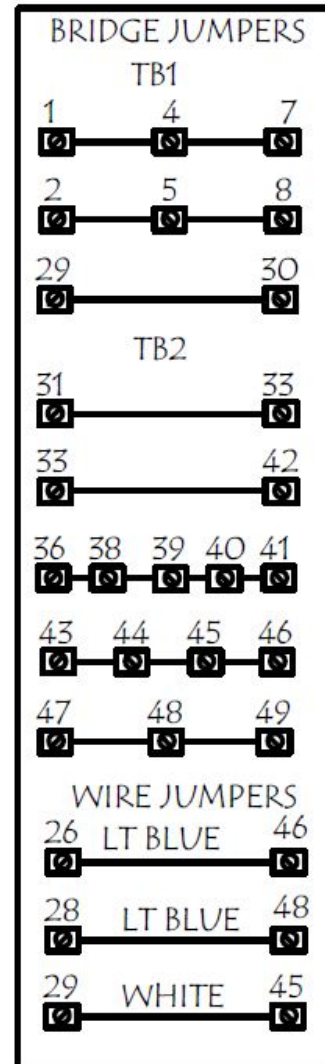
## Terminal strip

+QE-XTB1

External targets

Terminal type

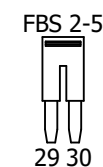
Terminal position on the drawings



24A	Red	14
25A	Orange	18
26A	Turquoise	18
27A	Orange	18
28A	Turquoise	18
29A	White	18
30A	Orange	18

PT 2,5	&EFS/5.1:D
PT 2,5	&EFS/1.4:H
PT 2,5	&EFS/1.4:H
PT 2,5	&EFS/1.5:H
PT 2,5	&EFS/1.3:H
PT 2,5	&EFS/1.3:H
PT 2,5	&EFS/1.3:H

## Jumper Configuration



Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001
Fan Hood Controller 1353



Terminal strip

Mounting locations	+ QE	Page +QE&EMA/1.a
Function	=	Next 2
		Total pages 21



# Terminal diagram

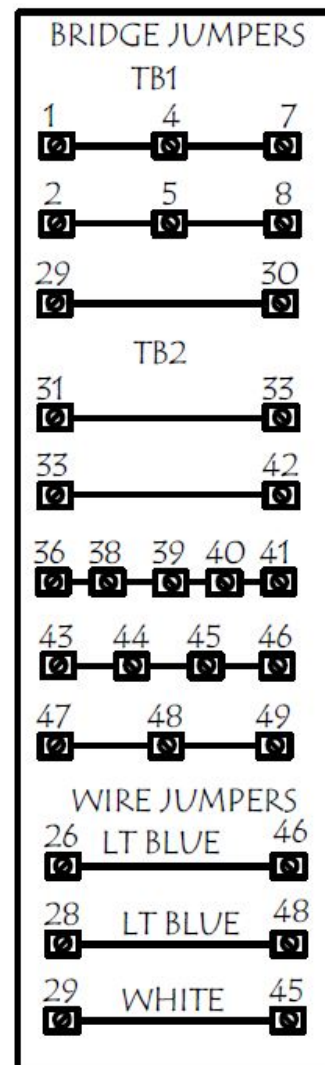
## Terminal strip

+QE-XTB2

External targets

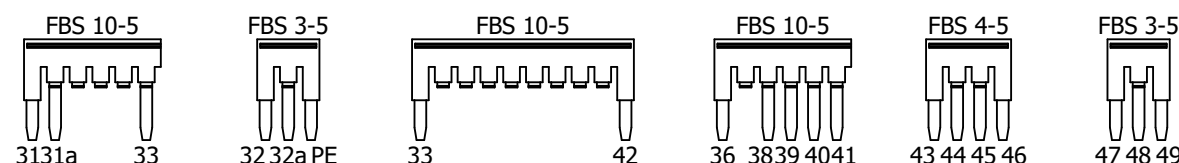
Terminal type

Terminal position on the drawings



External targets	Terminal strip	Terminal type	Terminal position on the drawings
-A1:J1:G	31	31A Red 18	PT 2,5 &EFS/1.0:F
-A1:J1:G0	31a		PT 2,5 &EFS/1.1:F
-A2:J1:G0	32	32A Black 18	PT 2,5 &EFS/1.1:F
-A2:J1:G	32a		PT 2,5 &EFS/1.1:F
	PE		PT 2,5-PE &EFS/1.1:F
+EXT-BE5:NTC OUT	33	33A Turquoise 18	PT 2,5 &EFS/1.2:F
= +EXT-BE5:OUT H	34	34A Blue 18	PT 2,5 &EFS/1.6:H
= +EXT-BE5:NTC OUT	35	35A OG/BU 18	PT 2,5 &EFS/1.6:H
= +EXT-BE5:+(G)+	36	36A GN/YE 18	PT 2,5 &EFS/1.6:H
= +EXT-BE5:M-G0	37	37A VI/WH 18	PT 2,5 &EFS/1.9:H
HOOD1 +EXT-BE1	38	38A GN/YE 18	PT 2,5 &EFS/4.7:D
HOOD2 +EXT-BE2	39	39A GN/YE 18	PT 2,5 &EFS/2.3:H
HOOD3 +EXT-BE3	40		PT 2,5 &EFS/2.3:H
FAN SWITCH +EXT-SE12	41		PT 2,5 &EFS/2.4:H
= +EXT-SE12	42	42A Red 18	PT 2,5 &EFS/3.3:G
EXHAUST FAN 4 -K8:A1	43	43A Orange 18	PT 2,5 &EFS/3.4:D
-XTB1:29:1	44	44A Orange 18	PT 2,5 &EFS/3.8:D
-XTB1:26:1	45	45A Orange 18	PT 2,5 &EFS/4.3:D
SUPPLY FAN 4 -K9:A1	46	43B Red 18	PT 2,5 &EFS/4.4:D
-XTB1:28:1	47	47A White 18	PT 2,5 &EFS/3.6:D
	48	48A White 18	PT 2,5 &EFS/4.1:D
	49	49A White 18	PT 2,5 &EFS/4.5:D
HOOD1 +EXT-BE1	50	50A Brown 18	PT 2,5 &EFS/2.2:H
HOOD2 +EXT-BE2	51	51A Brown 18	PT 2,5 &EFS/2.3:H

## Jumper Configuration



Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001
Fan Hood Controller 1353



Terminal strip
----------------

Mounting locations	+ QE	Page	+QE&EMA/2
Function	=	Next	2.a
		Total pages	21

# Terminal diagram

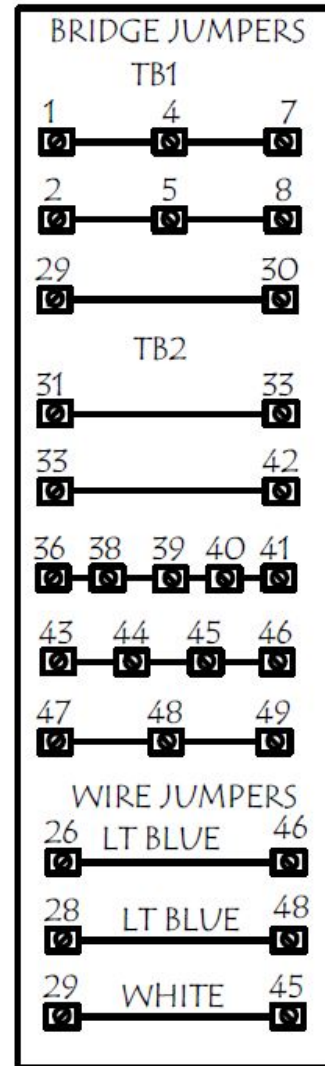
## Terminal strip

+QE-XTB2

External targets

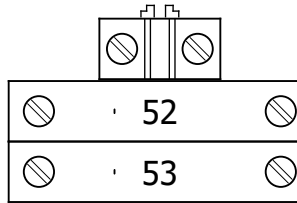
Terminal type

Terminal position on the drawings



HOOD3  
HOOD4

+EXT-BE3  
+EXT-BE4



52A Brown 18  
53A Brown 18

PT 2,5  
PT 2,5

&EFS/2.4:H  
&EFS/2.4:H

Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Terminal strip

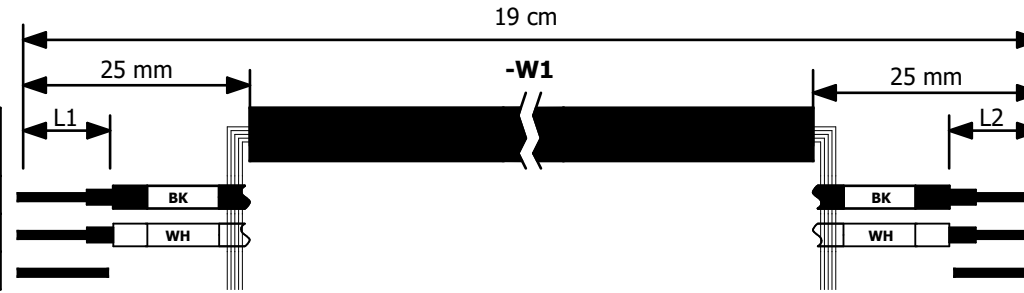
Mounting locations	+ QE	Page +QE&EMA/2.a
Function	=	Next &EMB/1 Total pages 21

**Cable name** +QE-W1  
**Cable type** Belden 8761 2x22 AWG  
**Free conductofs**

**Cable parts** BELDEN 8761  
**Order number** 8761

P09\_004\_Cable STD-V2

Mounting location:	Source	Function text source	Stopper	L1 [mm]	Part number
Electrical Panel	-A1:J4 FBUS:Tx/Rx -	FieldBus Tx/Rx -		8 mm	
Electrical Panel	-A1:J4 FBUS:Tx/Rx+	FieldBus Tx/Rx +		8 mm	



Part number	L2 [mm]	Stopper	Function text target	Target	Mounting location:
	8 mm		FieldBus Tx/Rx -	-A2:J6 BMS:Tx/Rx -	Electrical Panel
	8 mm		FieldBus Tx/Rx +	-A2:J4 FBUS:Tx/Rx+	Electrical Panel

Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
 Fan Hood Controller 1353



Multicore cables scheme

# BOM internal panel

InternoQE\_F01\_003

Short name	Designation	Function text	Position	Manufacturer	Component tipe	Oracle code
A1	Programmable control		&EFS/1.2:B	CAREL	CPCO Mini	P+D000NH1DLF0
A2	Programmable control		&EFS/2.2:B	CAREL	c.pCOe Basic	P+E0000000000
K1	Relay	LIGHTS/SHUNT	&EFS/3.1:B	FINDER	46.61.9.024.0040	0110169AXX
K1	Base element	=	&EFS/3.1:B	FINDER	97.01	5932562AXX
K1	Module	=	&EFS/3.1:B	FINDER	99.02.9.024.99	5931081AXX
K2	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	EXHAUST FAN 1	&EFS/3.4:B	FINDER	22.32.0.024.1520	0110119AXX
K3	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	SUPPLY FAN 1	&EFS/3.6:B	FINDER	22.32.0.024.1520	0110119AXX
K4	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	EXHAUST FAN 2	&EFS/3.8:B	FINDER	22.32.0.024.1520	0110119AXX
K5	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	SUPPLY FAN 2	&EFS/4.1:B	FINDER	22.32.0.024.1520	0110119AXX
K6	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	EXHAUST FAN 3	&EFS/4.3:B	FINDER	22.32.0.024.1520	0110119AXX
K7	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	SUPPLY FAN 3	&EFS/4.5:B	FINDER	22.32.0.024.1520	0110119AXX
K8	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	EXHAUST FAN 4	&EFS/4.7:B	FINDER	22.32.0.024.1520	0110119AXX
K9	Modular contactor, 2 pole, 25 A, 1 NO + 1NC	SUPPLY FAN 4	&EFS/5.1:B	FINDER	22.32.0.024.1520	0110119AXX
S1	Rocker Switch	FAN	&EFS/3.3:F	ZF	CRE22F2FBBNE	0505183AXX
S2	Rocker Switch	LIGHTS	&EFS/3.2:C	ZF	CRE22F2FBBNE	0505183AXX
T1	Power supply unit	Power Supply	&EFS/1.0:E	PHOENIX CONTACT	UNO-PS/1AC/24DC/ 30W	6500373AXX
XTB1	Terminal block		(Quadro elettrici co.S2)	PHOENIX CONTACT	CLIPFIX 35-5	2214102AXX
XTB2	Terminal block		(Quadro elettrici co.S2)	PHOENIX CONTACT	CLIPFIX 35-5	2214102AXX

Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Parts list

Mounting locations	+ QE	Page	+QE&EPA/1
Function	=	Next	+EXT/1
		Total pages	21

# BOM internal panel

InternoQE\_F01\_003

Short name	Designation	Function text	Position	Manufacturer	Component tipe	Oracle code
BE1		HOOD1	+QE&EFS/2.2:I			
BE2		HOOD2	+QE&EFS/2.3:I			
BE3		HOOD3	+QE&EFS/2.4:I			
BE4		HOOD4	+QE&EFS/2.4:I			
BE5		ROOM TEMP/HUMIDITY SENSORS	+QE&EFS/1.6:I			
HE1		LIGHT CONTROL	+QE&EFS/3.2:I			
ME1		EXHAUST FAN 1	+QE&EFS/3.4: H			
ME2		SUPPLY FAN 1	+QE&EFS/3.6: H			
ME3		EXHAUST FAN 2	+QE&EFS/3.8: H			
ME4		SUPPLY FAN 2	+QE&EFS/4.2: H			
ME5		EXHAUST FAN 3	+QE&EFS/4.4: H			
ME6		SUPPLY FAN 3	+QE&EFS/4.6: H			
ME7		EXHAUST FAN 4	+QE&EFS/4.8: H			
ME8		SUPPLY FAN 4	+QE&EFS/5.2: H			
QE1		Shunt Trip	+QE&EFS/3.2:I			

Date	15-Nov-2022			
Elab	Matteo Mazzocco			
Modification	Date	Name	Rev.	1

CMNAKSE001  
Fan Hood Controller 1353



Parts list

Mounting locations	+ EXT	Page	+EXT&EPA/1
Function	=	Next	
		Total pages	21