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Project code	CM000MB020	Rev	0
Project description	EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD		

Supply voltage	3P+N+E - 400V - 50/60Hz	Operating temperature	60°C
Rated current	51A		
Auxiliary voltage	230Vac		

Designed by	FrancoMeneghetti	on	03/08/2021
Checked by	Matteo Mazzocco	on	04/08/2021
Approved by	Matteo Mazzocco	on	04/08/2021

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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
\	
\	
\	
\	

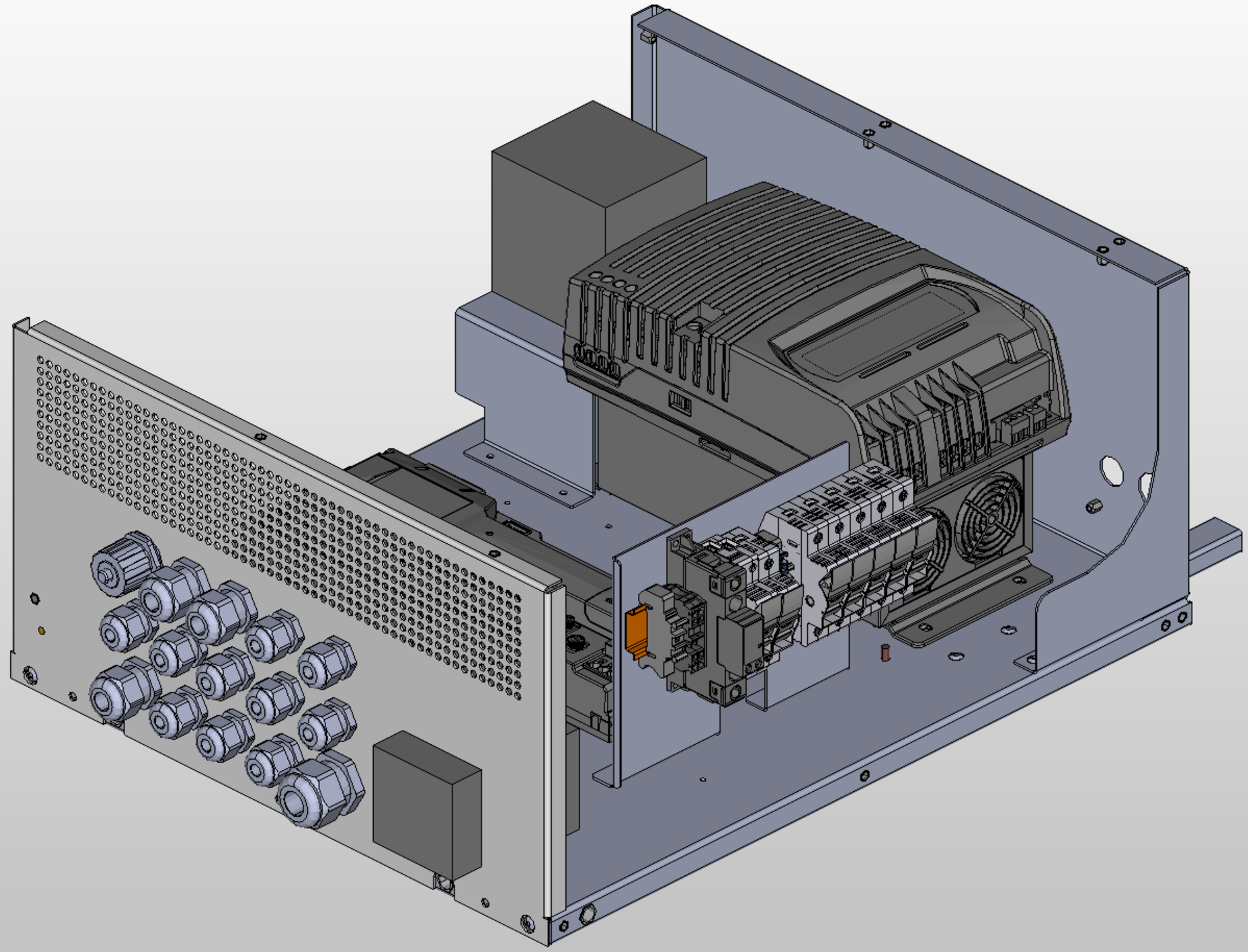
REVIEW TABLE

Rev.	Technical name	Date	Note

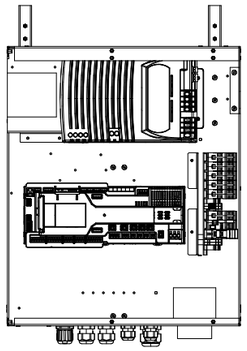
Table of contents

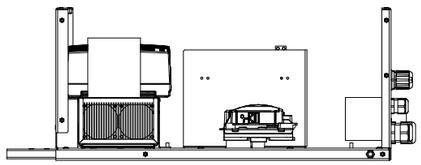
F06_003

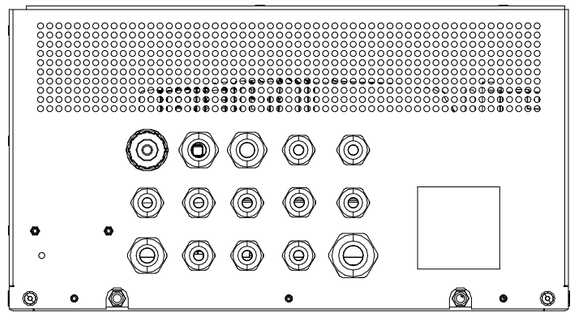
Page	Page type	Page description	Date	Edited by
&EAA/1	Title page / cover sheet	Title page	03/08/2021	FrancoMeneghetti
&EAA/2	Pre-planning	Technical information	03/08/2021	FrancoMeneghetti
&EAB/1	Table of contents	Table of contents	27/07/2022	FRANCOMENEGHETTI
+QE&ETL/1	Model view	General view	27/07/2022	FRANCOMENEGHETTI
+QE&ETL/2	Model view	View of all sides	27/07/2022	FRANCOMENEGHETTI
+QE&ETL/4	Model view	Mounting plate view	27/07/2022	FRANCOMENEGHETTI
+QE&ETL/6	Model view	Mounting plate view	27/07/2022	FRANCOMENEGHETTI
+QE&ETL/7	Model view	Bottom view	27/07/2022	FRANCOMENEGHETTI
+QE&EFS/1	Schematic multi-line	Power circuit	27/07/2022	FRANCOMENEGHETTI
+QE&EFS/2	Schematic multi-line	Auxiliary circuit	31/08/2021	FrancoMeneghetti
+QE&EFS/3	Schematic multi-line	Auxiliary circuit	03/08/2021	FrancoMeneghetti
+QE&EFS/4	Schematic multi-line	Auxiliary circuit	03/08/2021	FrancoMeneghetti
+QE&EFS/5	Schematic multi-line	Auxiliary circuit	25/07/2022	FRANCOMENEGHETTI
+QE&EFS/6	Schematic multi-line	Auxiliary circuit	31/08/2021	FrancoMeneghetti
+QE&EFS/7	Schematic multi-line	Auxiliary circuit	03/08/2021	FrancoMeneghetti
+QE&EFS/8	Schematic multi-line	Auxiliary circuit	25/08/2021	FrancoMeneghetti
+QE&EMA/1	Terminal diagram	Terminal strip	04/08/2021	FrancoMeneghetti
+QE&EMA/2	Terminal diagram	Terminal strip	04/08/2021	FrancoMeneghetti
+QE&EMB/1	Cable diagram	Multicore cables scheme	03/08/2021	FrancoMeneghetti
+QE&EMB/1.a	Cable diagram	Multicore cables scheme	03/08/2021	FrancoMeneghetti
+QE&EPA/1	Parts list	Parts list	25/07/2022	FRANCOMENEGHETTI
+QE&EPA/1.a	Parts list	Parts list	27/07/2022	FRANCOMENEGHETTI
+QE&EPA/1.b	Parts list	Parts list	27/07/2022	FRANCOMENEGHETTI

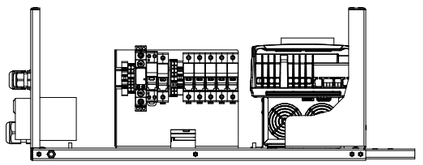


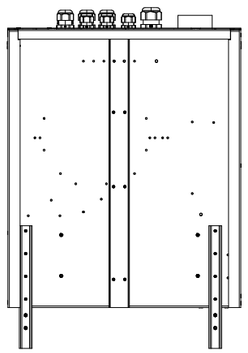
			Date	03/08/2021	CM000MB020		General view	Mounting locations + QE / Function =	Page +QE&ETL/1
			Elab	FrancoMeneghetti	EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD	CAREL			Next 2
									Total pages 22
Modification	Date	Name	Rev.	0					











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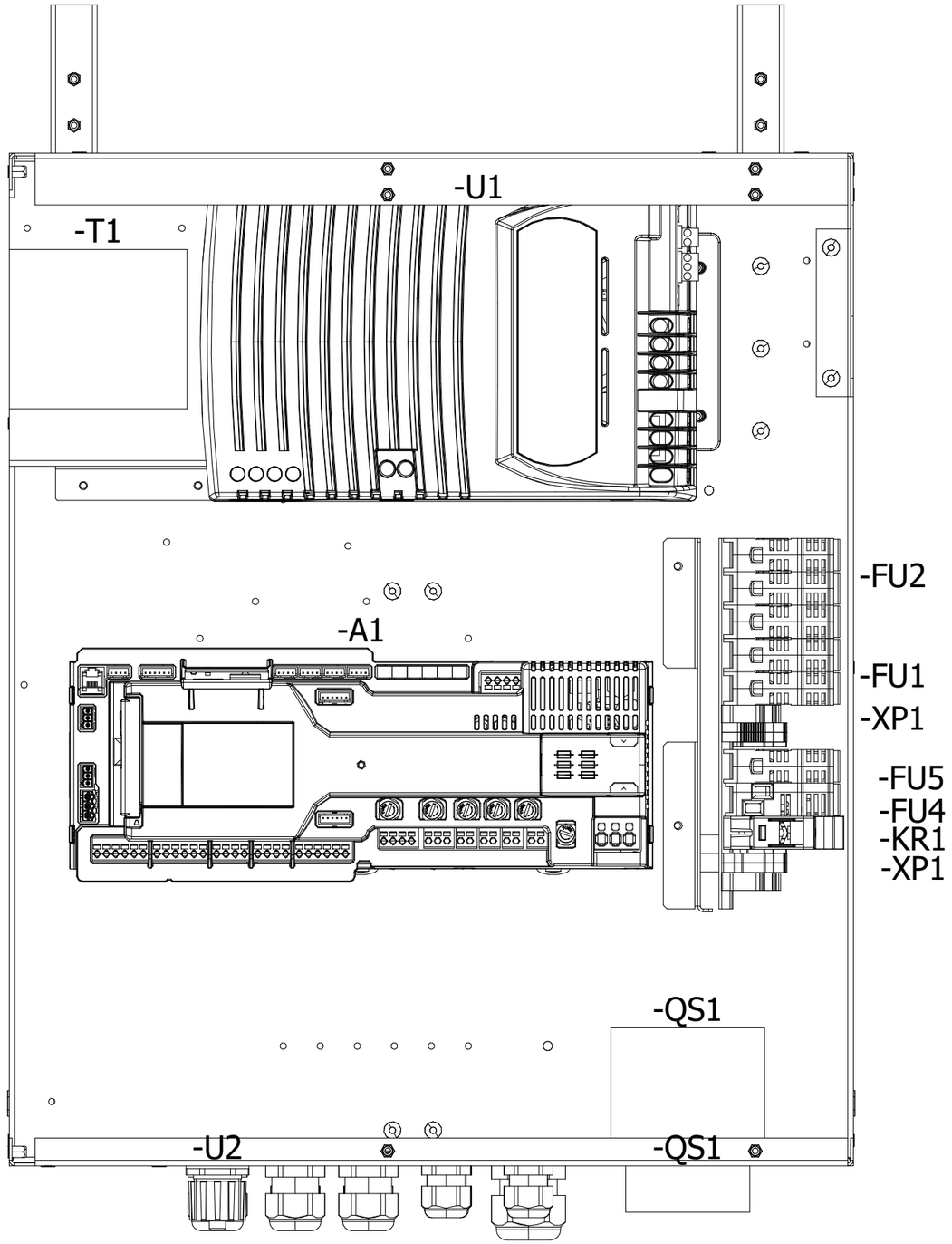
									Total pages 22
Modification	Date	Name	Rev.	0					



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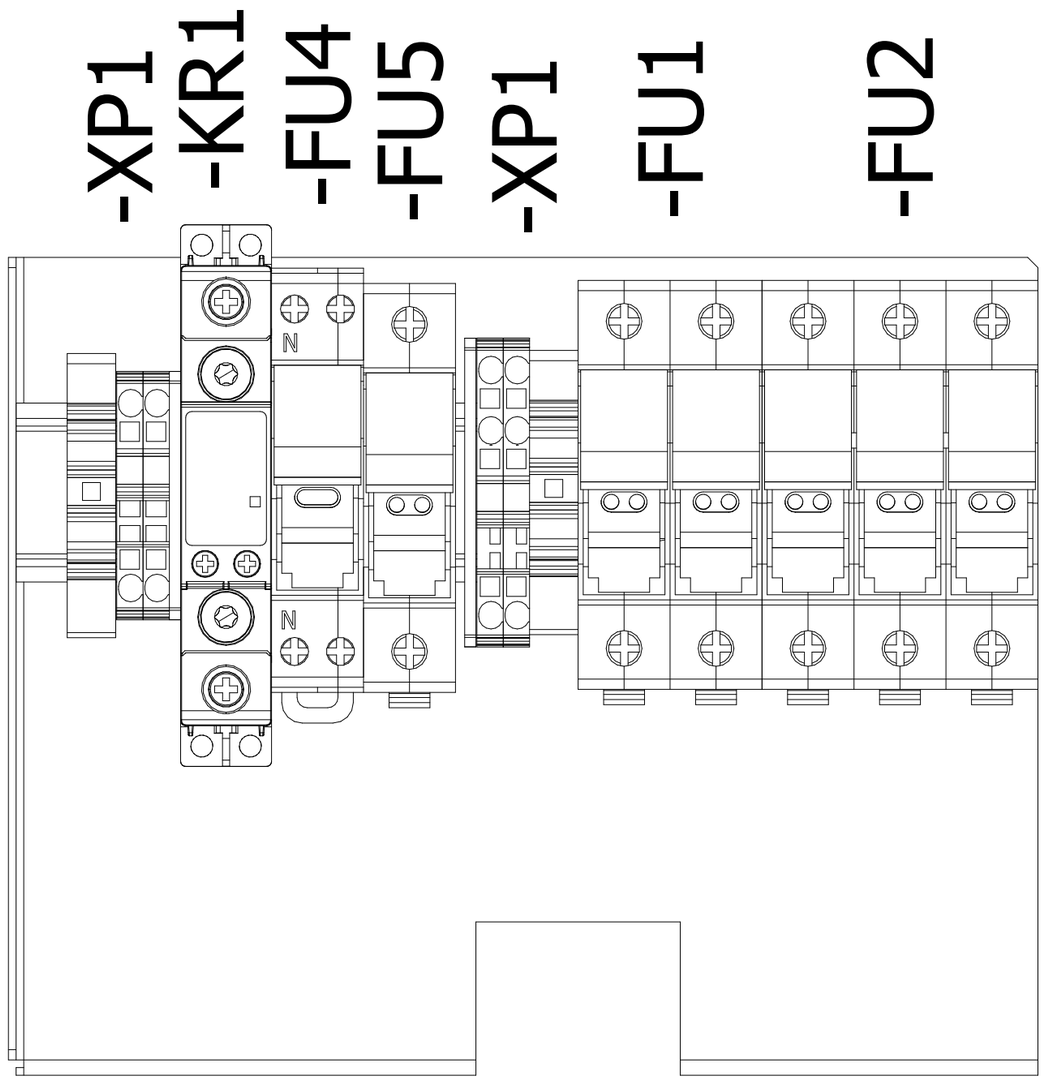
									Total pages 22
Modification	Date	Name	Rev.	0					



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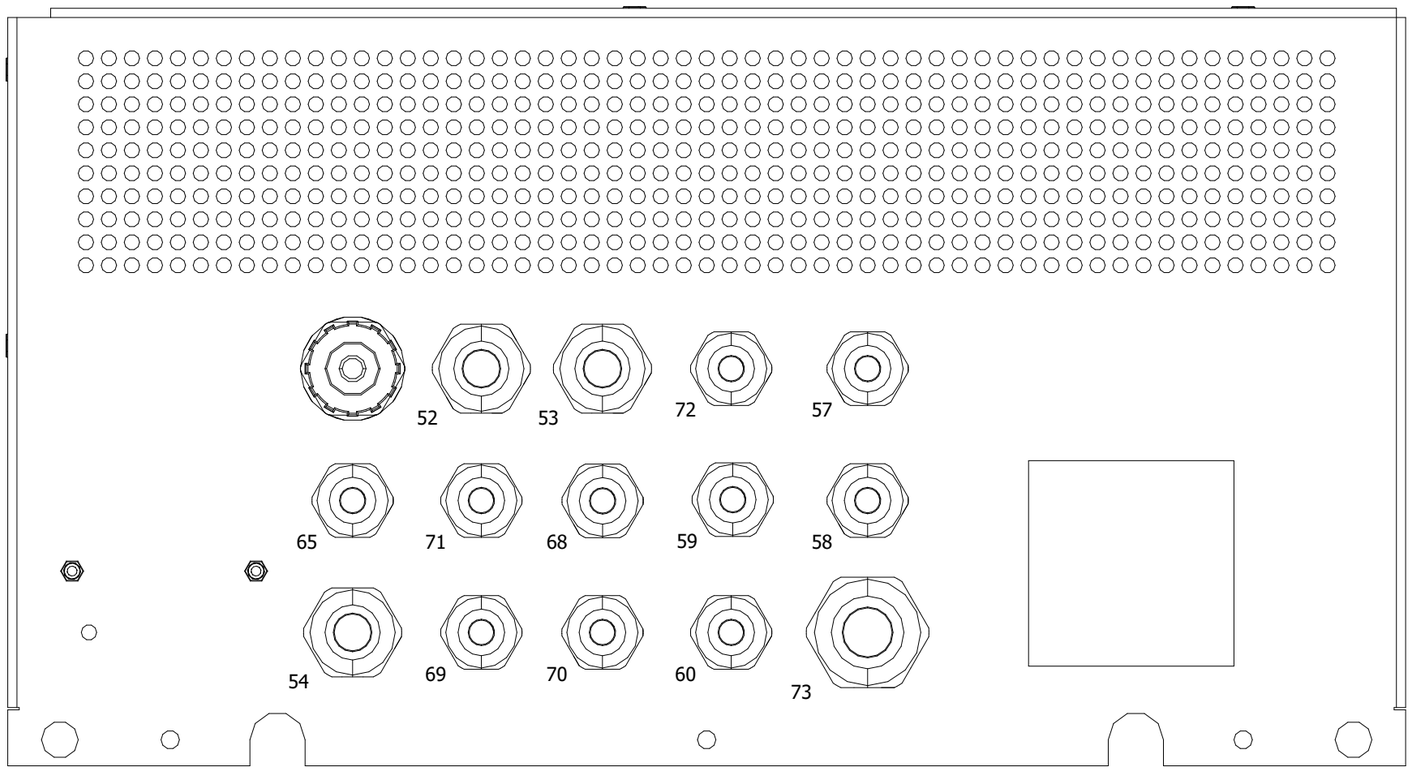
			Elab	FrancoMeneghetti	EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD		Next 7
							Function = / Total pages 22
Modification	Date	Name	Rev.	0			

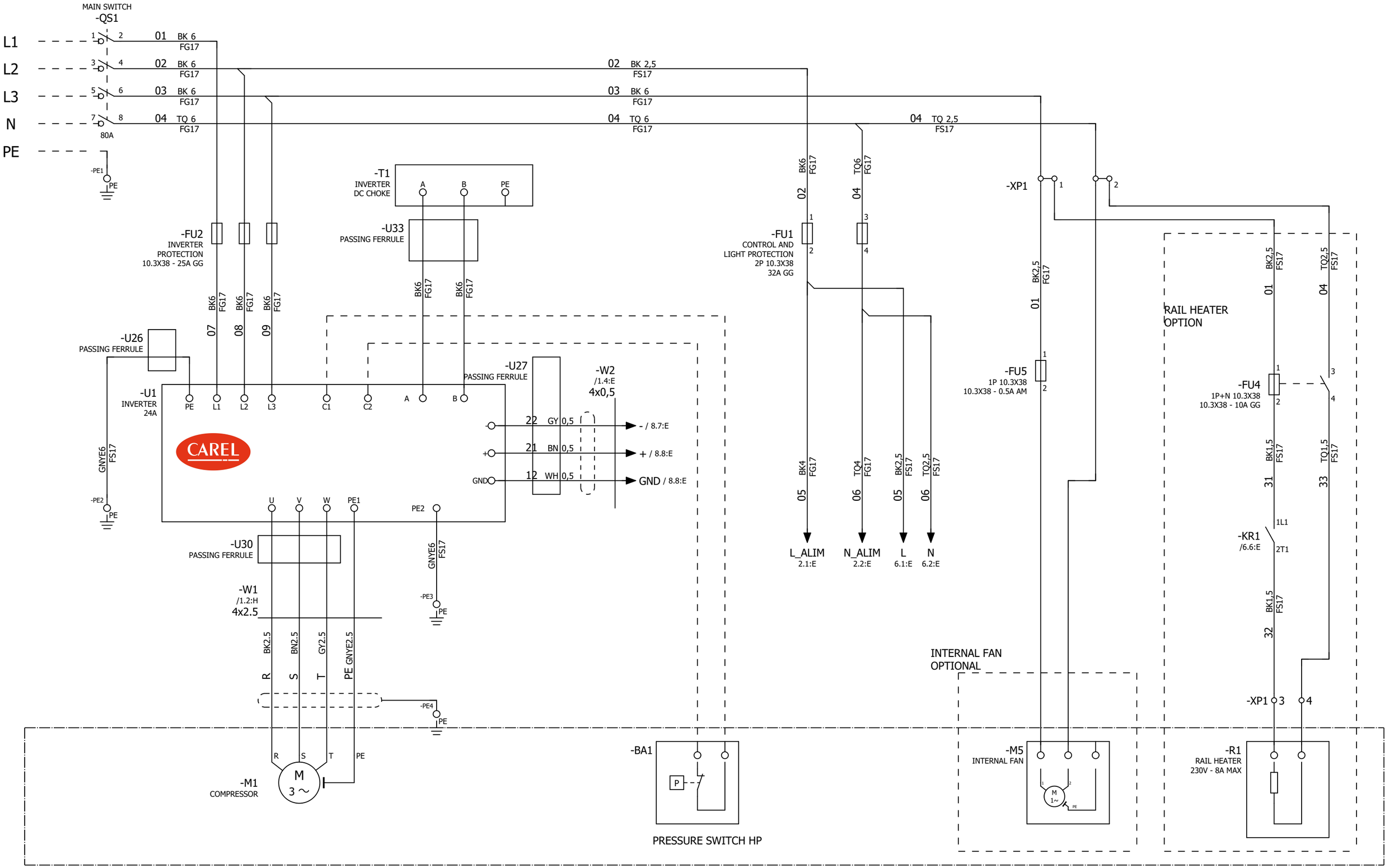
Cable entry/exit components

Item number	Component tipe	Drilling (Tollerance +-0.5mm)
52	M25 Gland	Ø 25.5mm
53	M25 Gland	Ø 25.5mm
54	M25 Gland	Ø 25.5mm
57	M20 Gland	Ø 20.5mm
58	M20 Gland	Ø 20.5mm
59	M20 Gland	Ø 20.5mm
60	M20 Gland	Ø 20.5mm
65	M20 Gland	Ø 20.5mm
68	M20 Gland	Ø 20.5mm
69	M20 Gland	Ø 20.5mm
70	M20 Gland	Ø 20.5mm
71	M20 Gland	Ø 20.5mm
72	M20 Gland	Ø 20.5mm
73	M32 Gland	Ø 32.5mm



			Date	03/08/2021	CM000MB020	Bottom view	Mounting locations + QE / Page +QE&ETL/7
			Elab	FrancoMeneghetti	EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD		Function = / Next &EFS/1
							Total pages 22
Modification	Date	Name	Rev.	0			

PLEASE NOTE THAT FUSES HAVE BEEN SIZED TO PROTECT THE LOADS AGAINST SHORT CIRCUIT AND NOT AGAINST OVERLOAD



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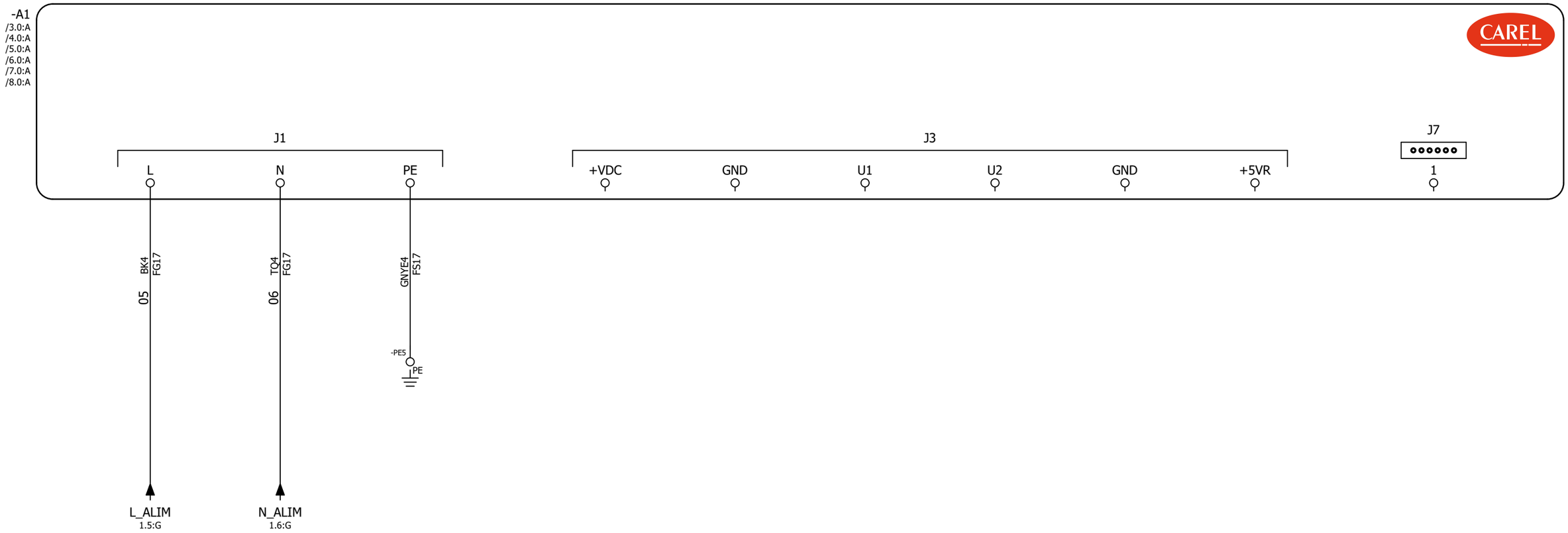
Modification	Date	Name	Rev.	0			Next 2
							Total pages 22



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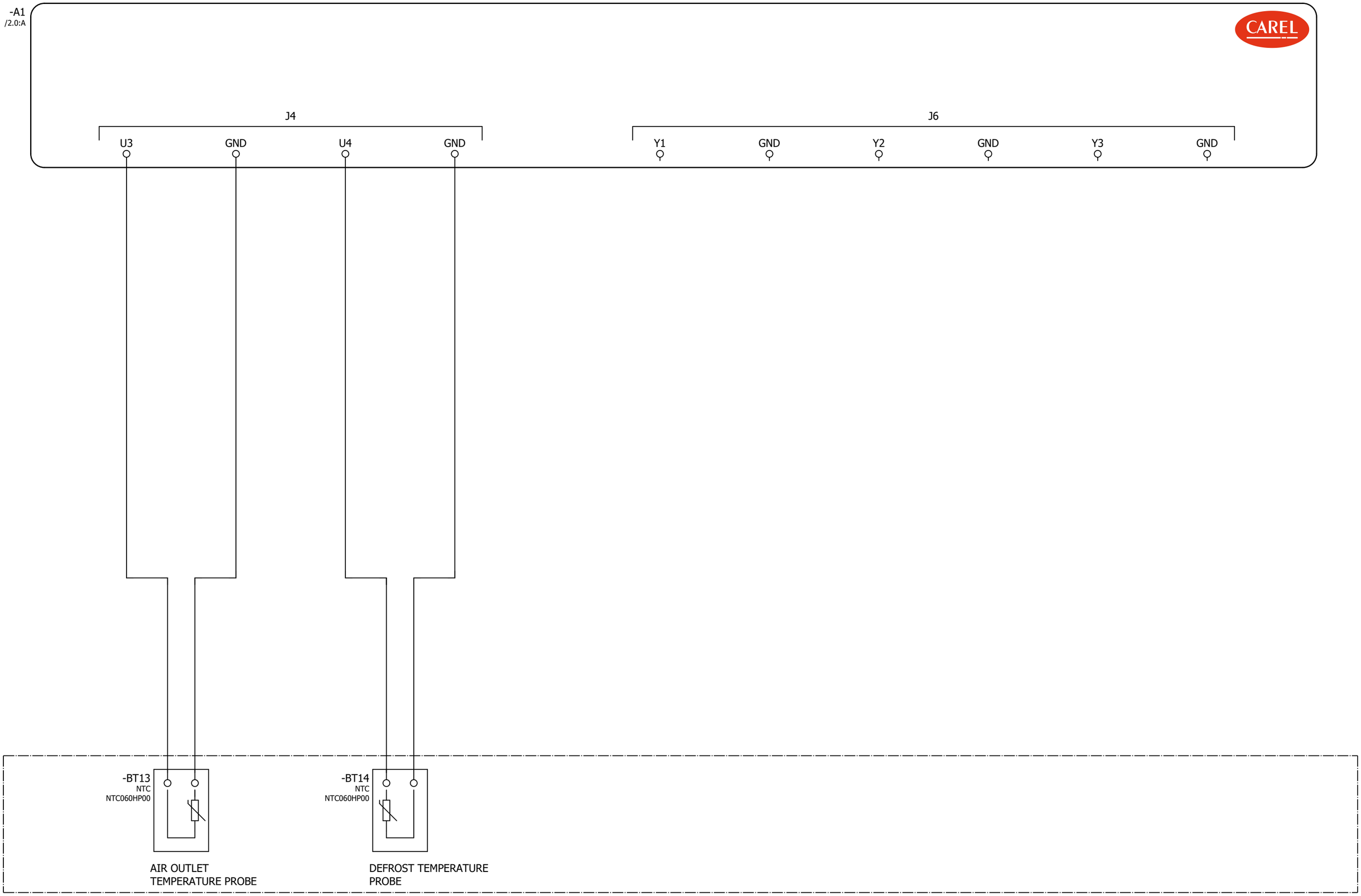
Modification	Date	Name	Rev.	0			

Page +QE&EFS/2
Next 3
Total pages 22



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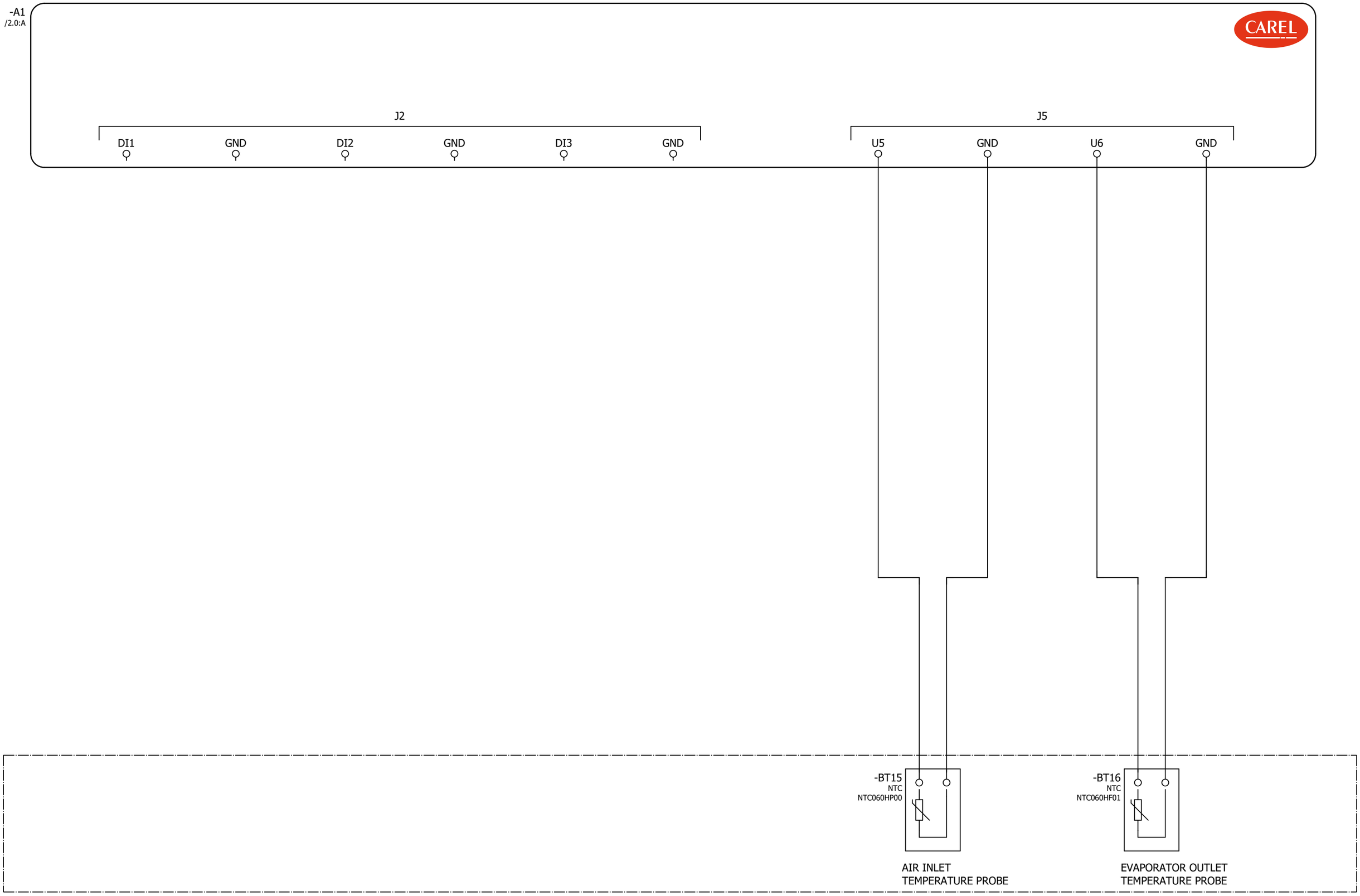
							Total pages 22
Modification	Date	Name	Rev.	0			



			Date	03/08/2021
			Elab	FrancoMeneghetti
Modification	Date	Name	Rev.	0

CM000MB020

EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD

Auxiliary circuit

Mounting locations + QE

Function =

Page +QE&EFS/4

Next 5

Total pages 22

-A1
/2.0:A

J22

U7 U8 U9 U10

J24

U11 U12 U13 U14 U15 U16

-SP1
LP TRASDUCER

-SP2
HP TRANSDUCER

-BT17
NTC
NTC030HF01

-BT1
NTC
NTC030HT41

-BT2
NTC
NTC030HF01

-BT4
NTC
NTC030WH01

-BT5
NTC
NTC030WH01

LP TRASDUCER

HP TRANSDUCER

SUCTION TEMP.
PROBE

DISCH. TEMP.
PROBE

LIQUID OUTLET
TEMP. PROBE

WATER INLET
TEMP. PROBE

WATER OUTLET
TEMP. PROBE

			Date	03/08/2021
			Elab	FrancoMeneghetti
Modification	Date	Name	Rev.	0

CM000MB020

EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD

Auxiliary circuit

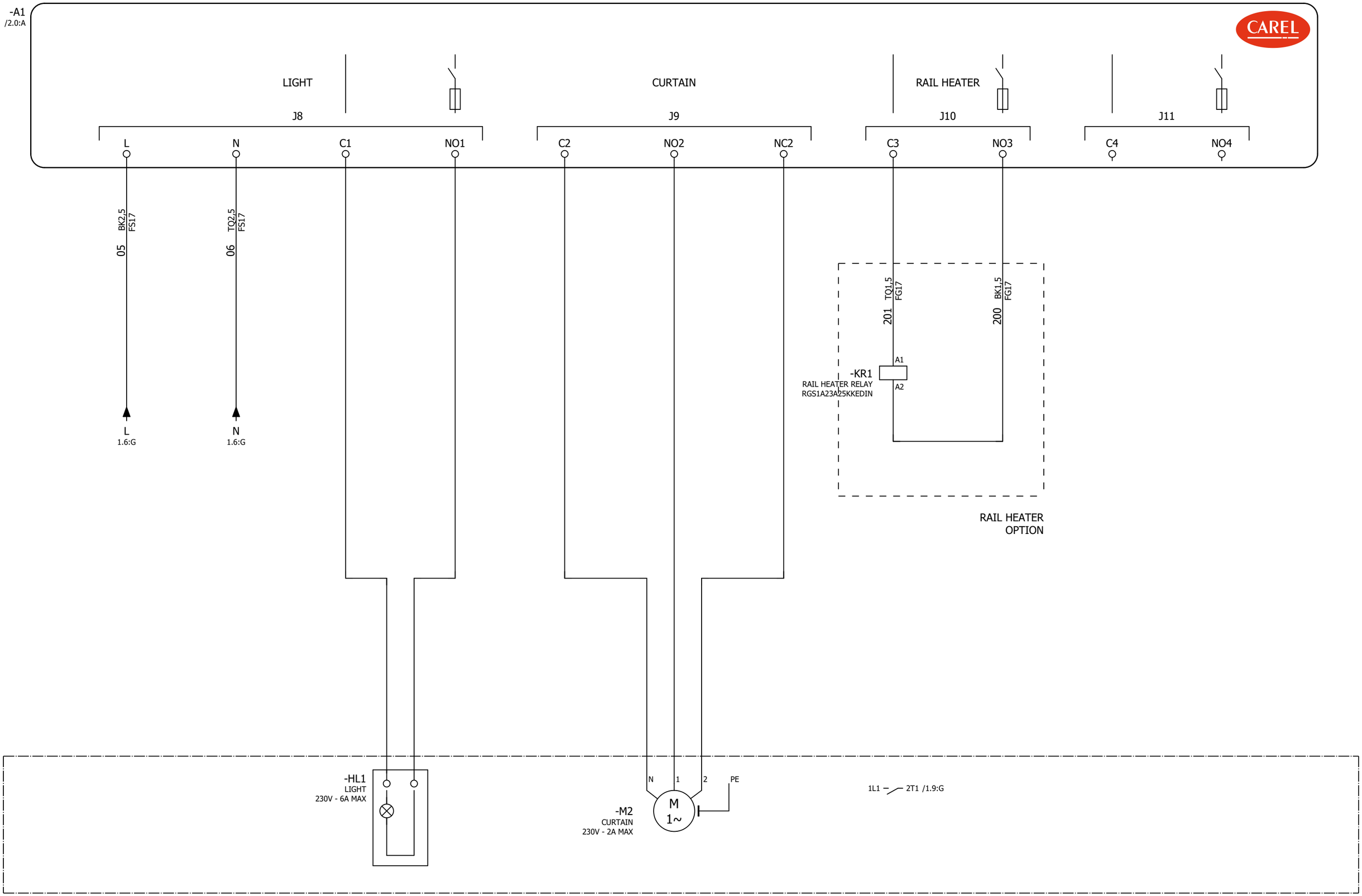
Mounting locations + QE

Function =

Page +QE&EFS/5

Next 6

Total pages 22



			Date	03/08/2021
			Elab	FrancoMeneghetti
Modification	Date	Name	Rev.	0

CM000MB020

EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD

CAREL

Auxiliary circuit

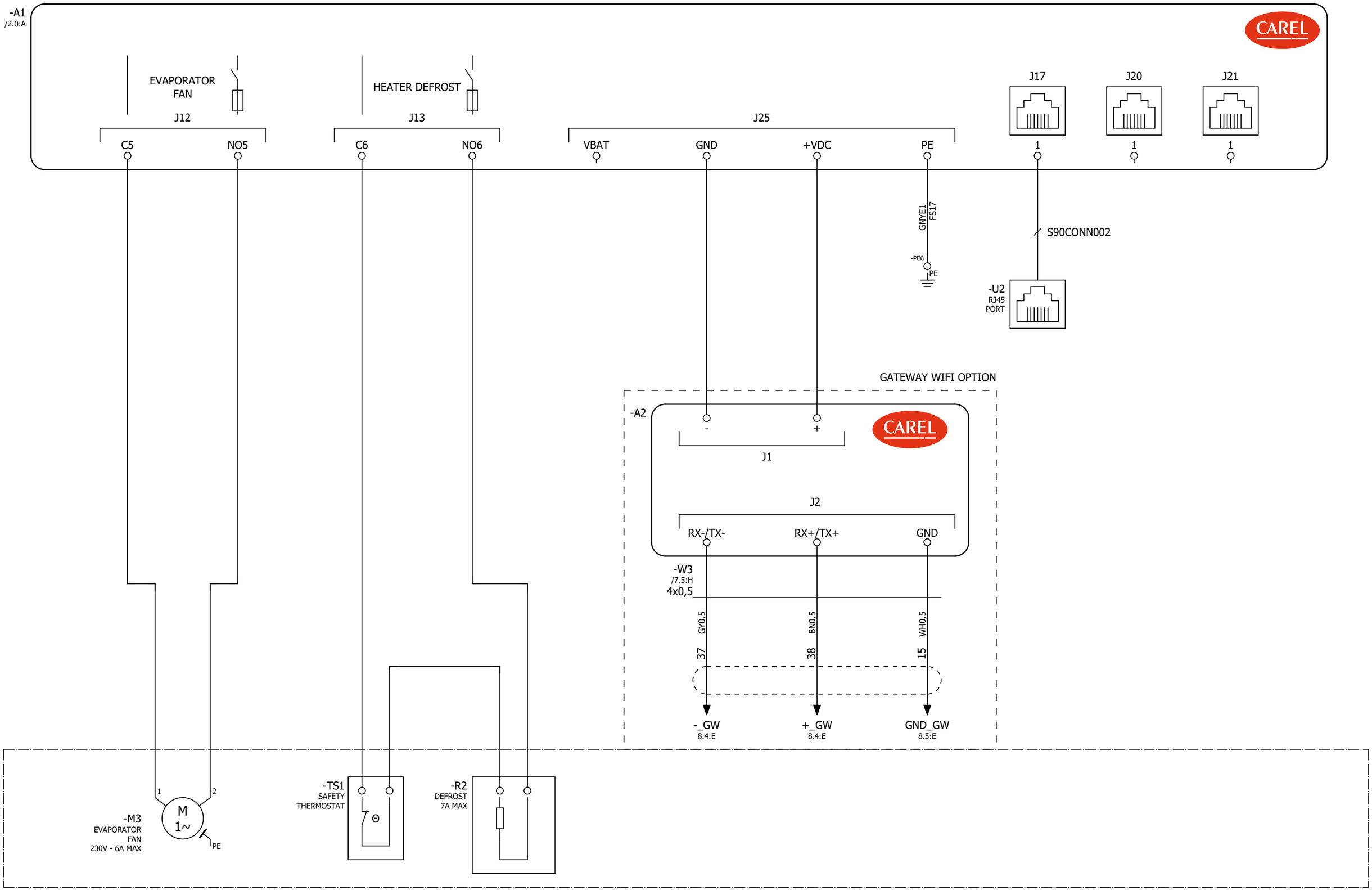
Mounting locations + QE

Function =

Page +QE&EFS/6

Next 7

Total pages 22



			Date	03/08/2021	CM000MB020	Auxiliary circuit	Mounting locations + QE / Function =
			Elab	FrancoMeneghetti	EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD		Page +QE&EFS/7 / Next 8 / Total pages 22
Modification	Date	Name	Rev.	0			

-A1
/2.0:A

DISPLAY
J18
1

UNIPOLAR EXV 1
J19
1

UNIPOLAR EXV 2
J23
1

BMS CARD
BMS CARD
1

BMS
J14
RX-/TX- RX+/TX+ GND

FBUS 1
J15
RX-/TX- RX+/TX+ GND

FBUS 2
J16
RX-/TX- RX+/TX+ GND

-W4
/8.3:D
4x0,5

GY0,5 37 -_GW 7.5:H
BN0,5 38 +_GW 7.6:H
WH0,5 15 GND_GW 7.6:H

-W5
/8.7:D
4x0,5

GY0,5 22 - 1.4:F
BN0,5 21 + 1.4:F
WH0,5 12 GND 1.4:F

GATEWAY WI-FI OPTION

EXPANSION VALVE

UNIPOLAR VALVE 2

MAIN\SECONDARY

			Date	03/08/2021
			Elab	FrancoMeneghetti
Modification	Date	Name	Rev.	0

CM000MB020

EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD

Auxiliary circuit

Mounting locations + QE

Function =

Page +QE&EFS/8

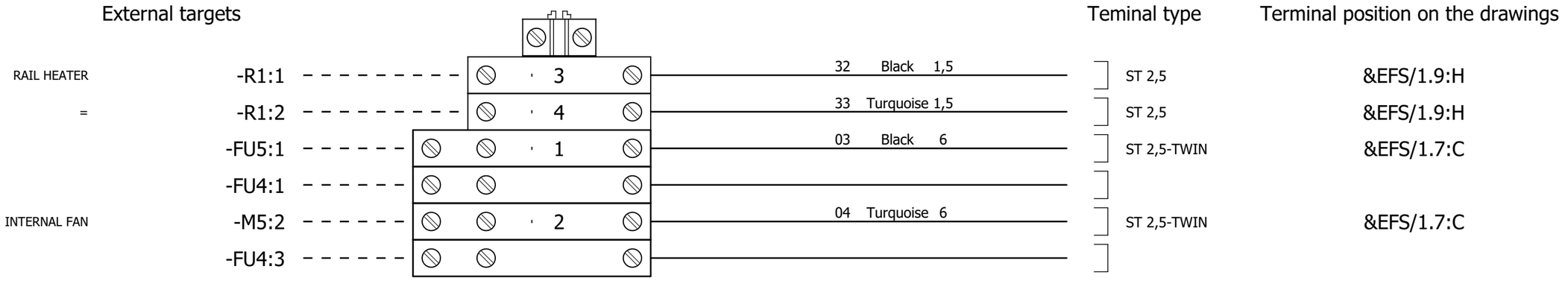
Next &EMA/1

Total pages 22

Terminal diagram

Terminal strip

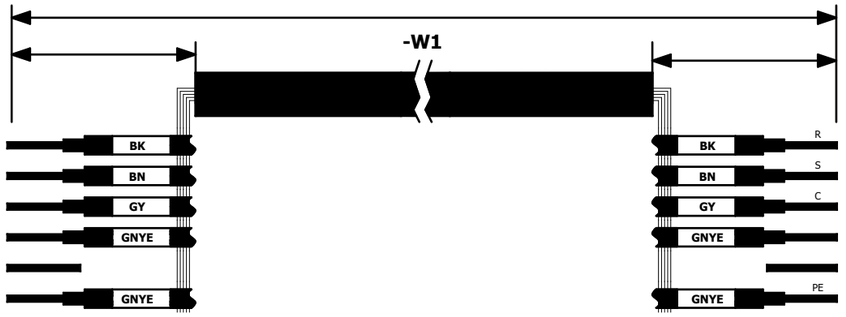
+QE-XP1



			Date	03/08/2021	CM000MB020	CAREL	Terminal strip	Mounting locations + QE / Function =	Page +QE&EMA/1
			Elab	FrancoMeneghetti	EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD				Next &EMB/1
									Total pages 22
Modification	Date	Name	Rev.	0					

Cable name +QE-W1
Cable type 4x2.5 mm²
Free conductors 1

Cable parts B08C04250
Order number 1008277AXX

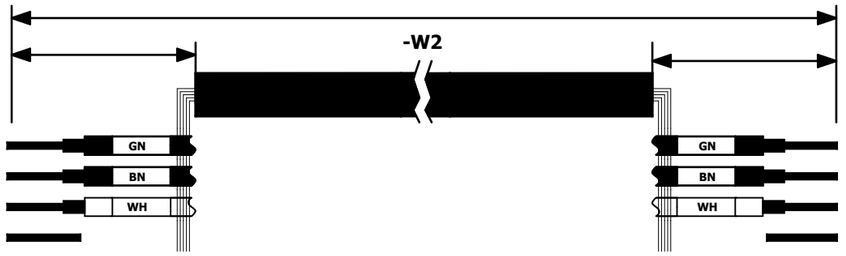


Mounting location:	Origin	Function text source	Display
Elettrical panel	-M1:R	COMPRESSOR	
Elettrical panel	-M1:S	=	
Elettrical panel	-M1:T	=	
Elettrical panel	-PE4		
Elettrical panel	-M1:PE	COMPRESSOR	

Display	Function text target	Target	Mounting location:
	COMPRESSOR	-U1:U	*Elettrical panel*
	=	-U1:V	*Elettrical panel*
	=	-U1:W	*Elettrical panel*
		-W1	*Elettrical panel*
	COMPRESSOR	-U1:PE1	*Elettrical panel*

Cable name +QE-W2
Cable type 4x0,5 mm²
Free conductors 3

Cable parts Shielded 3x0.5
Order number 1008019AXX

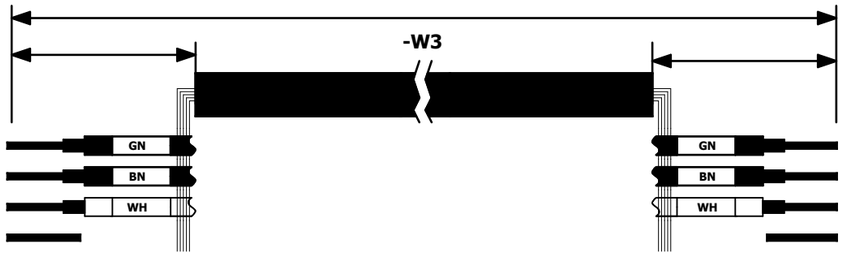


Mounting location:	Origin	Function text source	Display

Display	Function text target	Target	Mounting location:

Cable name +QE-W3
Cable type 4x0,5 mm²
Free conductors 3

Cable parts Shielded 3x0.5
Order number 1008019AXX

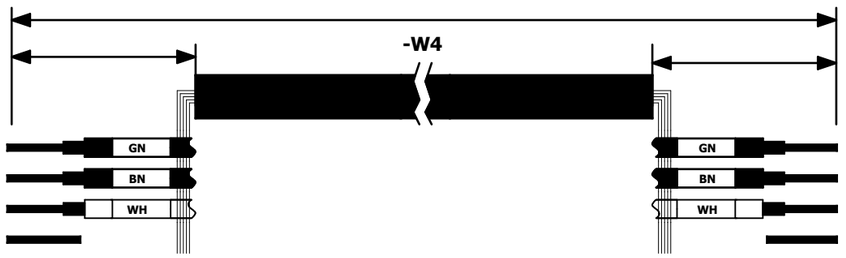


Mounting location:	Origin	Function text source	Display

Display	Function text target	Target	Mounting location:

Cable name +QE-W4
Cable type 4x0,5 mm²
Free conductors 3

Cable parts Shielded 3x0.5
Order number 1008019AXX

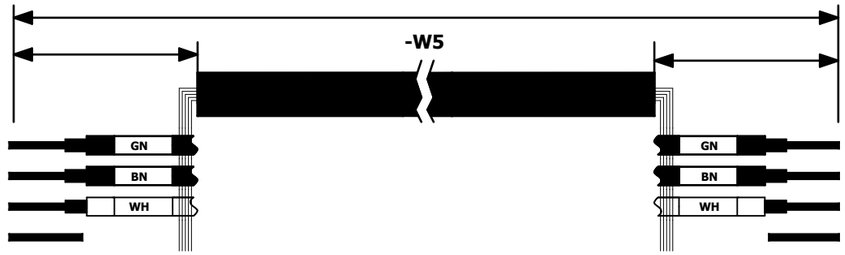


Mounting location:	Origin	Function text source	Display

Display	Function text target	Target	Mounting location:

Cable name +QE-W5
Cable type 4x0,5 mm²
Free conductors 3

Cable parts Shielded 3x0.5
Order number 1008019AXX



Mounting location:	Origin	Function text source	Display

Display	Function text target	Target	Mounting location:

F09_004_Cand STD-V2

			Date	03/08/2021	CM000MB020	Multicore cables scheme	Mounting locations + QE / Page +QE&EMB/1.a
			Elab	FrancoMeneghetti	EP HEOS BOX CE WITH INVERTER PSD2 24A AND POWER BOARD		Next &EPA/1
							Function = / Total pages 22
Modification	Date	Name	Rev.	0			

BOM internal panel

InternoQE_F01_003

Short name	Designation	Function text	Position	Manufacturer	Component tipe	Oracle code
A1	HEOS ELECTRONIC CONTROL		&EFS/2.0:A	CAREL	HEC00001113E2	HEC00001113E2
A2	GATEWAY WI-FI		&EFS/7.4:E	Carel	GTW0000WT0	GTW0000WT0
BA1		PRESSURE SWITCH HP	&EFS/1.4:I			
BT1	TEMPERATURE PROBE	DISCH. TEMP. PROBE	&EFS/5.5:H	CAREL	NTC030HT41	NTC030HT41
BT2	TEMPERATURE PROBE	LIQUID OUTLET TEMP. PROBE	&EFS/5.6:I	CAREL	NTC030HF01	NTC030HF01
BT4	TEMPERATURE PROBE	WATER INLET TEMP. PROBE	&EFS/5.7:I	CAREL	NTC030WH01	NTC030WH01
BT5	TEMPERATURE PROBE	WATER OUTLET TEMP. PROBE	&EFS/5.8:H	CAREL	NTC030WH01	NTC030WH01
BT13	TEMPERATURE PROBE	NTC060HP00	&EFS/3.1:I	CAREL	NTC060HP00	NTC060HP00
BT14	TEMPERATURE PROBE	=	&EFS/3.3:I	CAREL	NTC060HP00	NTC060HP00
BT15	TEMPERATURE PROBE	=	&EFS/4.6:I	CAREL	NTC060HP00	NTC060HP00
BT16	TEMPERATURE PROBE	NTC060HF01	&EFS/4.8:I	CAREL	NTC060HF01	NTC060HF01
BT17	TEMPERATURE PROBE	SUCTION TEMP. PROBE	&EFS/5.4:I	CAREL	NTC030HF01	NTC030HF01
FU1	Fuse holder	CONTROL AND LIGHT PROTECTION	&EFS/1.5:D		2P 10.3X38	0606198AXX
FU1	Safety fuse	=	&EFS/1.5:D		10.3X38 - 32A GG	0605368CEL
FU2	Fuse holder	INVERTER PROTECTION	&EFS/1.1:D		3P 10.3X38	0606199AXX
FU2	Safety fuse	=	&EFS/1.1:D		10.3X38 - 25A GG	0605327AXX
FU4	Fuse holder		&EFS/1.9:E		1P+N 10.3X38	0606194AXX
FU4	Safety fuse		&EFS/1.9:E		10.3X38 - 10A GG	0605362AUN
FU5	Fuse holder		&EFS/1.7:E		1P 10.3X38	0606197AXX
FU5	Safety fuse		&EFS/1.7:E		10.3X38 - 0.5A AM	0605408AUN
HL1		LIGHT	&EFS/6.3:I			
KR1	SSR Relay	RAIL HEATER RELAY	&EFS/6.6:E	CARLO GAVAZZI	RGS1A23A25KKEDIN	0110133AXX
M1		COMPRESSOR	&EFS/1.2:I			

BOM internal panel

InternoQE_F01_003

Short name	Designation	Function text	Position	Manufacturer	Component tipe	Oracle code
M2		CURTAIN	&EFS/6.4:I			
M3		EVAPORATOR FAN	&EFS/7.1:I			
M5		INTERNAL FAN	&EFS/1.7:I			
PE1	GROUND		&EFS/1.0:C		PE	PE
PE2	GROUND		&EFS/1.0:F		PE	PE
PE3	GROUND		&EFS/1.3:G		PE	PE
PE4	GROUND		&EFS/1.3:H		PE	PE
PE5	GROUND		&EFS/2.2:D		PE	PE
PE6	GROUND		&EFS/7.6:C		PE	PE
QS1	Disconnect switch	MAIN SWITCH	&EFS/1.0:A	GIOVENZANA INTERNATIONAL	REGOLUS 4P 80A	0402120AXX
QS1	Operation	=	&EFS/1.0:A	GIOVENZANA INTERNATIONAL	MANOVRA G/N 67X67 LUCCH. SERIE REGOLUS 4P 50A	0402118AXX
R1		RAIL HEATER	&EFS/1.8:I			
R2		DEFROST	&EFS/7.3:I			
SP1	CABLE FOR PRESSURE TRANSDUCER	LP TRASDUCER	&EFS/5.1:H	CAREL	Trasduttore	SPKC002310
SP2	CABLE FOR PRESSURE TRANSDUCER	HP TRANSDUCER	&EFS/5.1:I	CAREL	Trasduttore	SPKC002310
T1	DC CHOKE	INVERTER DC CHOKE	&EFS/1.2:C	CAREL	PSACH10200	PSACH10200
TS1		SAFETY THERMOSTAT	&EFS/7.2:I			
U1	POWER+ 24 A, 380-480 VAC 3PH WITH COVER	INVERTER	&EFS/1.1:E	CAREL	PS20024404110	PS20024404110
U2	Passaparete RJ45	RJ45 PORT	&EFS/7.7:D	CONEC	PASSAPARETE RJ45	0510180AXX
U26		PASSING FERRULE	&EFS/1.1:E		FERRITE	0910268AXX
U27		=	&EFS/1.3:E		FERRITE	0910268AXX
U30		=	&EFS/1.2:G		FERRITE	0910269AXX
U33		=	&EFS/1.3:C		FERRITE	0910322AXX

BOM internal panel

InternoQE_F01_003

Short name	Designation	Function text	Position	Manufacturer	Component tipe	Oracle code
XP1	End cover		(Quadro elettri co.MP3)	PHOENIX CONTACT	D-ST 2,5-TWIN	2219985CEL
XP1	Terminal block		(Quadro elettri co.MP3)	PHOENIX CONTACT	CLIPFIX 35	2214005AXX