HF650

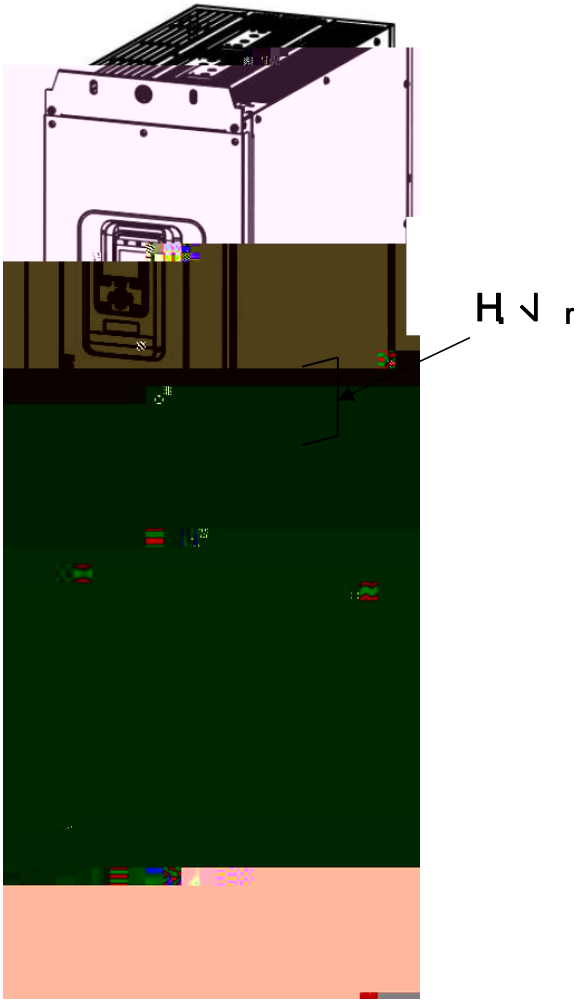
1. 1
1.1 1
1.2 4
1.3 4
2. 6
2.1 6
2.2 6
2.3 7
2.4 9
2.4.1 10
2.4.2 11
2.4.3 12
2.4.4 13
3. 14
3.1 14
3.2 14
3.3 19
3.4 20
3.5 21
3.6 ..... t˜ 23
3.7 ..... m ..... Ń ض . . ם . . Ń ض . . ם . . Ń ض . . ם . . Ń ض . . ם . . Ń ض . . ם . . Ń ض . . 23 Ń ض ם Ń
8. 24
4. ..... ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . ŃŃ ضض . ם . . 28 ضض ם ŃŃ ضض ם
4.1 28
4.2 28
4.3 33
4.4

7.3.1 75
7.3.2 75
7.3.3 76
7.3.4 76
7.3.5 77
7.3.6 78
7.3.7 79
7.3.8 79
7.3.9 80
8. 81
8.1 81
8.1.1 81
8.1.2 81
8.1.3 82
8.1.4 83
8.1.5 83
8.1.6 84
8.1.7 AFE 84
8.2 86
9. 87
9.1 87
9.2 88
9.3 91
10. 94
10.1 94
10.2 95
10.3 95
10.4 96
10.5 96
..... 97

1.

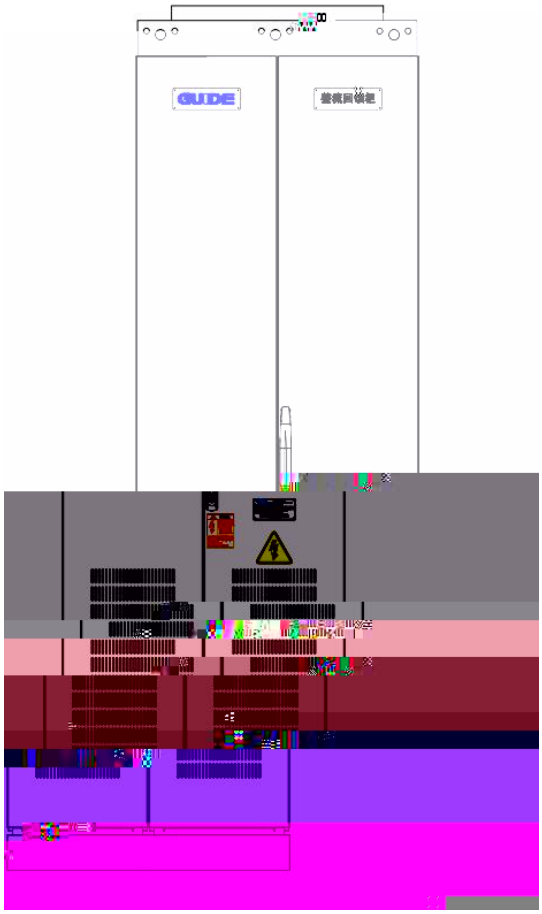
1.1

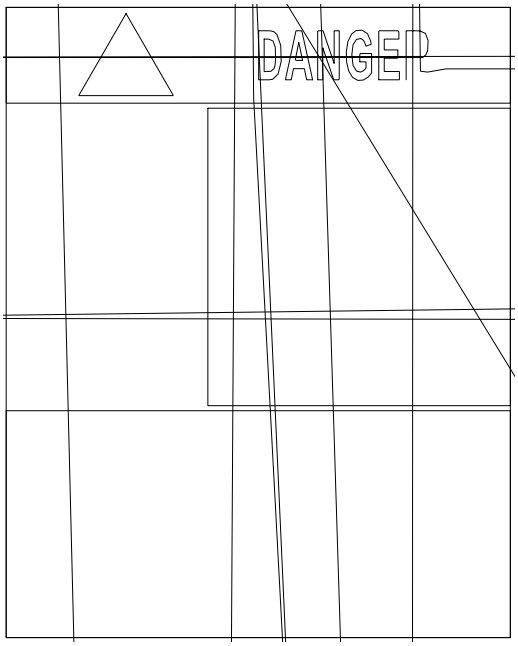


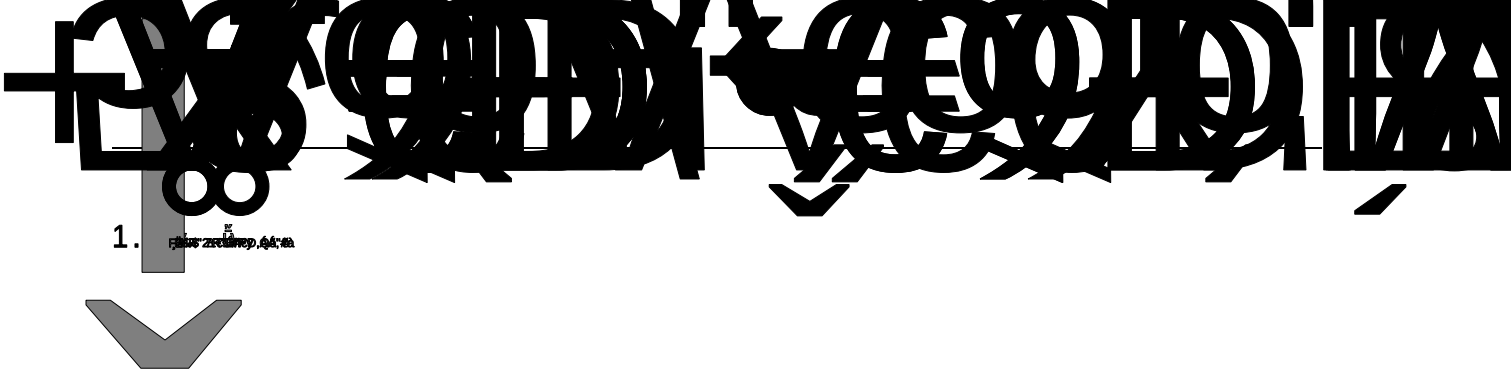


HF650A-450-4-D

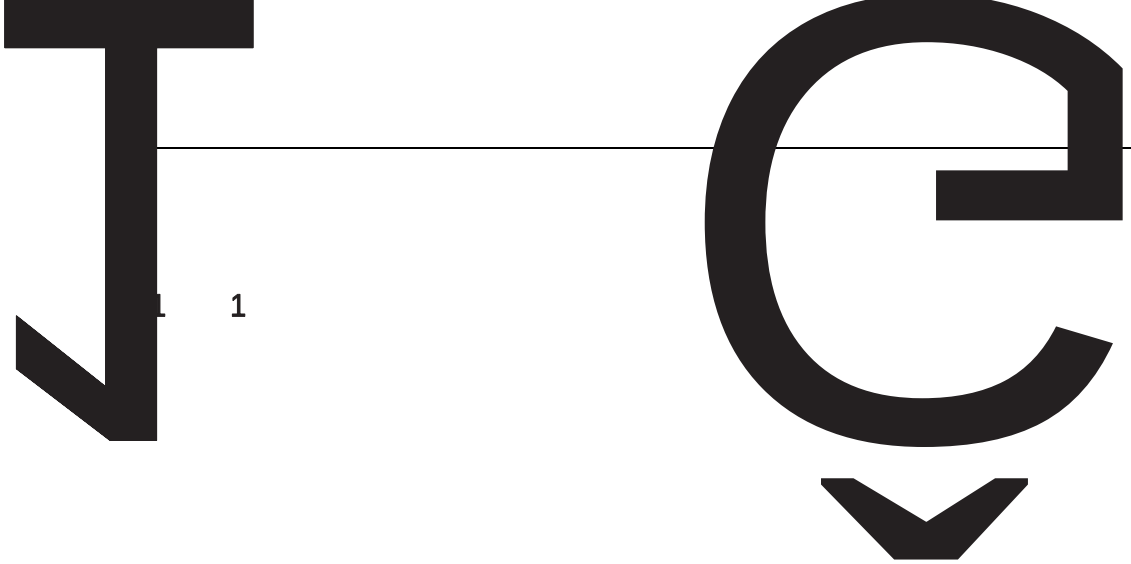
HF650A-400-4-C







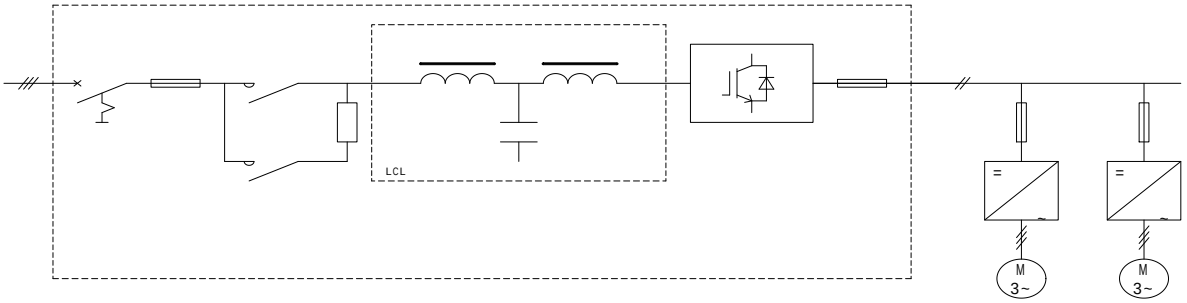
1.



2.

2.1

HF650 LCL



IGBT

AFE

DC15V

IGBT

2.2

1

AFE

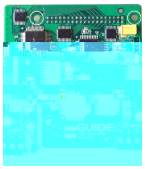
V/F

2

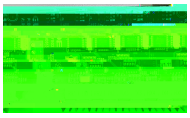
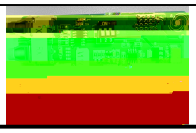
		PID
		/
		/
		/
		/

2.3

GDHF-DP03



GDHF-DP03 Profibus

GDHF-KL4 4		GDHF-KL4 4 HF650A HF650B 4
GDHF-FB01		1 HF650A HF650B
GDHF-FB02		HF650A HF650B
GDHF-FB03		HF650A HF650B 500kW~800kW
GDHF-FB04		HF650A HF650B 500kW~2400kW
GDHF-FB05		HF650A HF650B 1200kW~2400kW
GDHF-FB06		HF650A HF650B

2.4

1. / “ ”

/

2.

3.

- R S T
- U V W
- P N

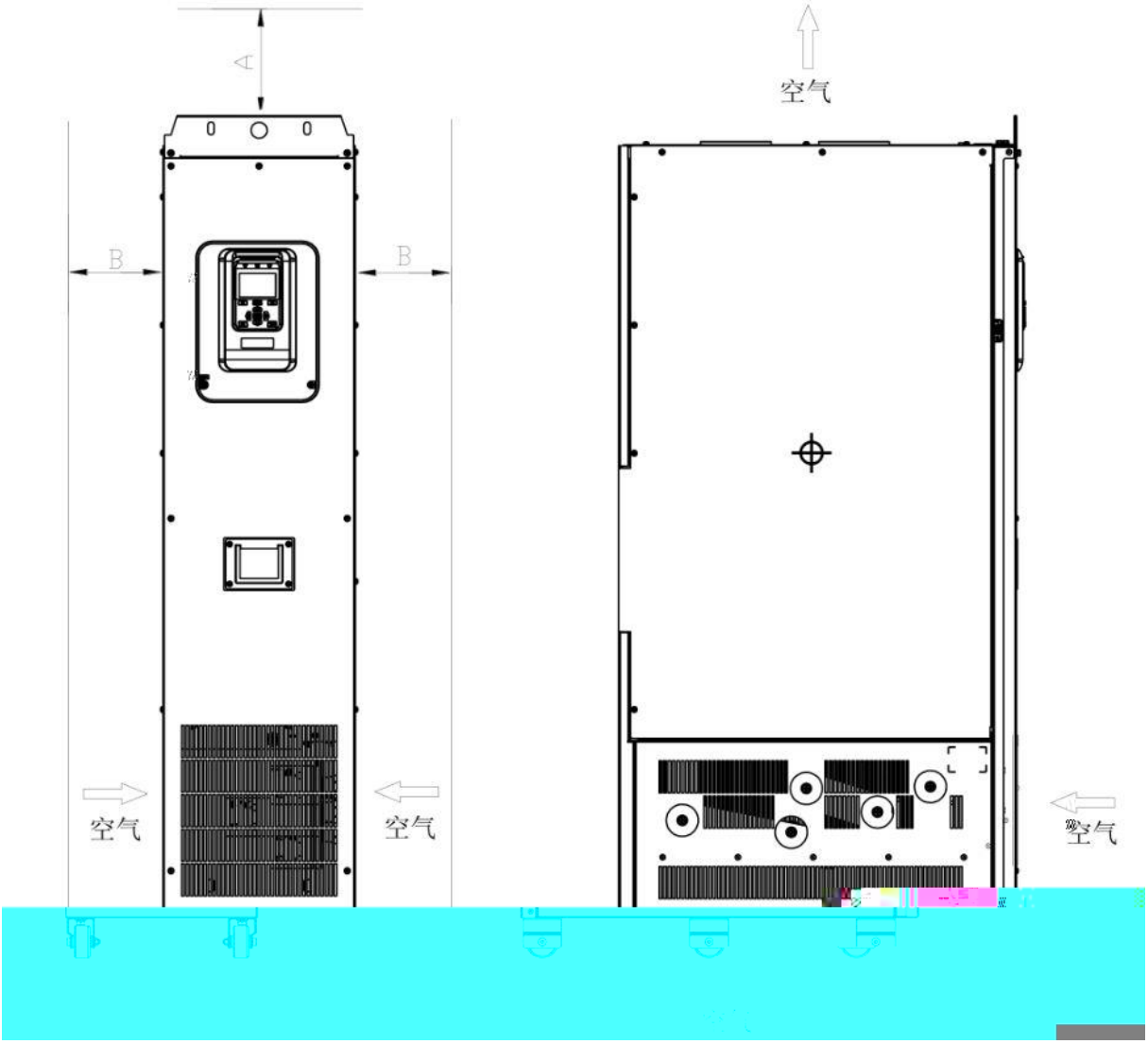
4. 12 mز



2.4.1

10cm 5cm

2.4.2

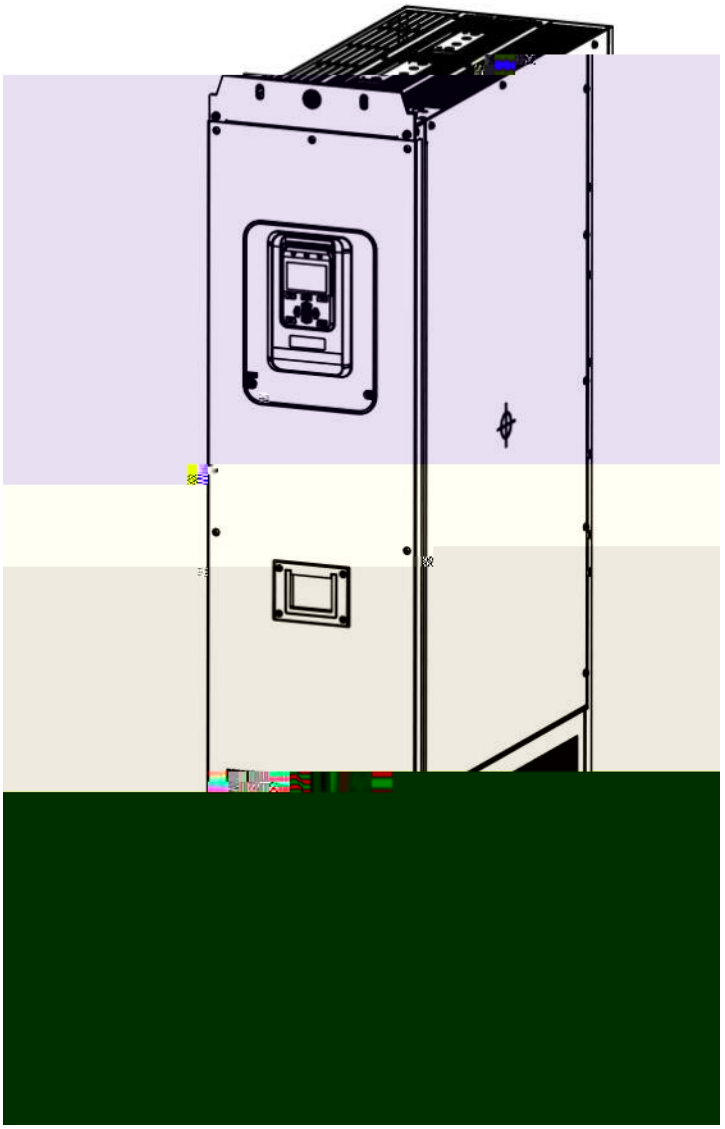


	A ≥ 200mm	B ≥ 50mm

2.4.3

1 1 7

2 2



1

2

2.4.4



1. 2. 3.

3.

3.1

LCL

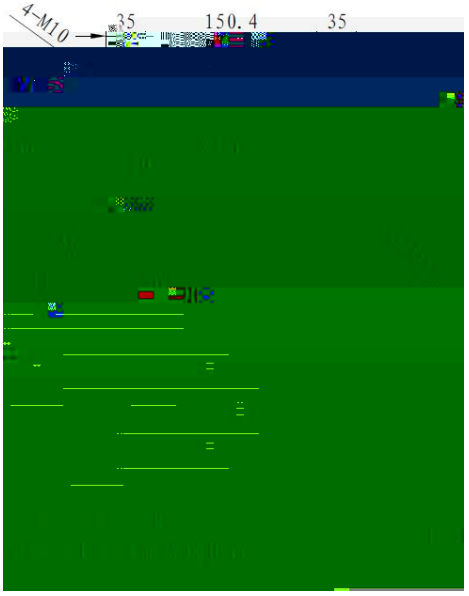
LCL

3.2

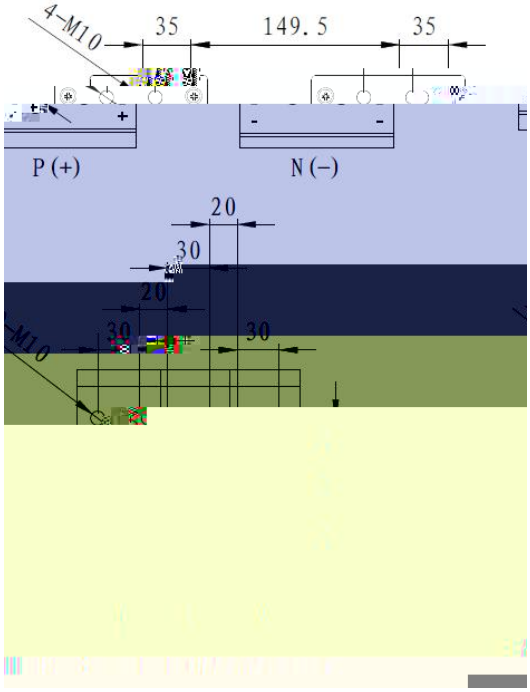
1

P	N	R	S	T	PE

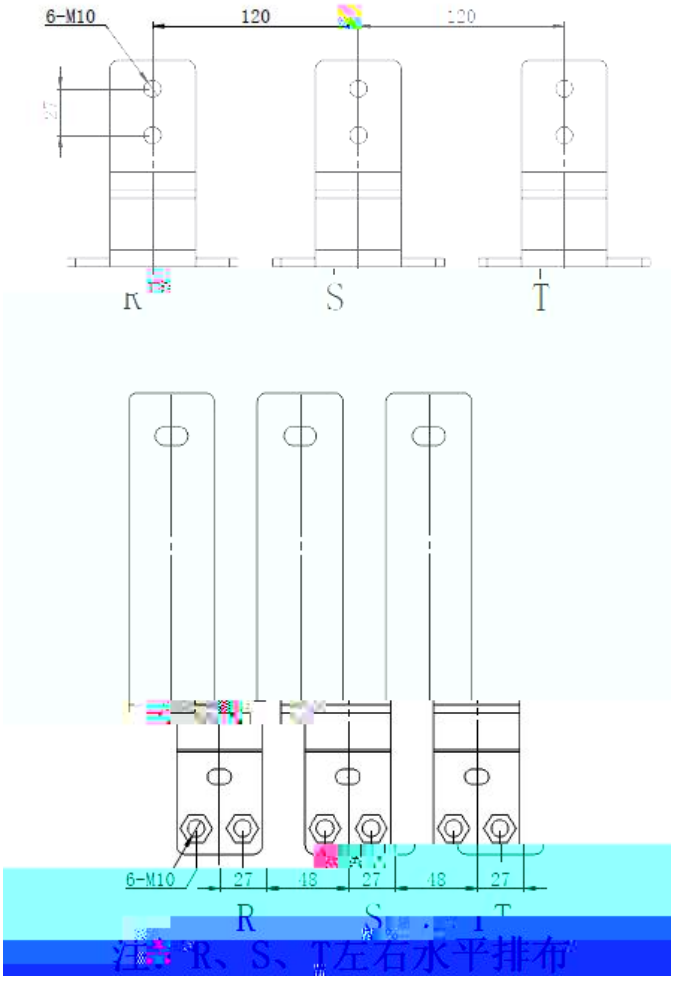
P	
N	
R S T	
PE	



HF650A-250-4-D



HF650A-450-4-D



HF650A-250-4-D LCL

2

1

	1	2	3	4	5	6	7	8
	+10V	GND	AI1+	AI1-	AI2+	AI2-	AO1	AO2
	9	10	11	12	13	14	15	16

| | | |

31 DO5C 5

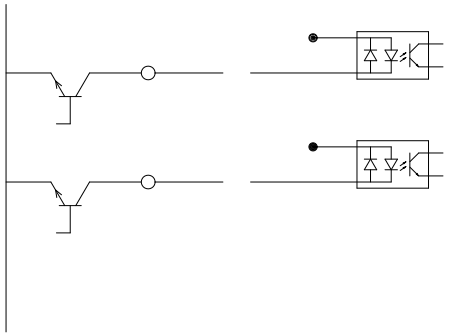
5 DC15V

PGND DC15V

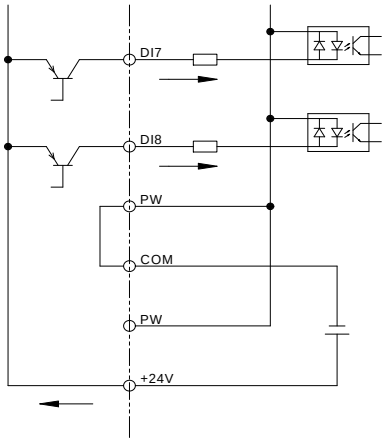
+15V DC15V

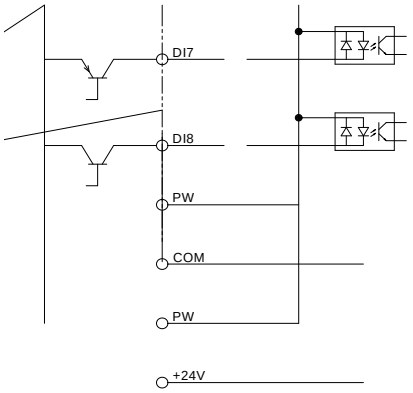
6

0V NPN



P N P





100mm

2. HF650A-500-4-C HF650A-500-4-C-Z1 500kW

100mm

620V

	kW	(kVA)	(A)	(A)
HF650A-250-4-D HF650A-250-4-C	250	263	400	403
HF650A-315-4-D HF650A-315-4-C	315	332	504	508
HF650A-400-4-D HF650A-400-4-C	400	421	640	645
HF650A-450-4-D	450	473	720	726
HF650A-500-4-C	500	526	760	767
HF650A-630-4-C	630	663	958	965
HF650A-800-4-C	800	842	1216	1226
HF650A-1200-4-C	1200	1263	1824	1838
HF650A-1600-4-C	1600	1684	2432	2451
HF650A-2000-4-C	2000	2105	3040	3064
HF650A-2400-4-C	2400	2526	3648	3676

3.4

LCL

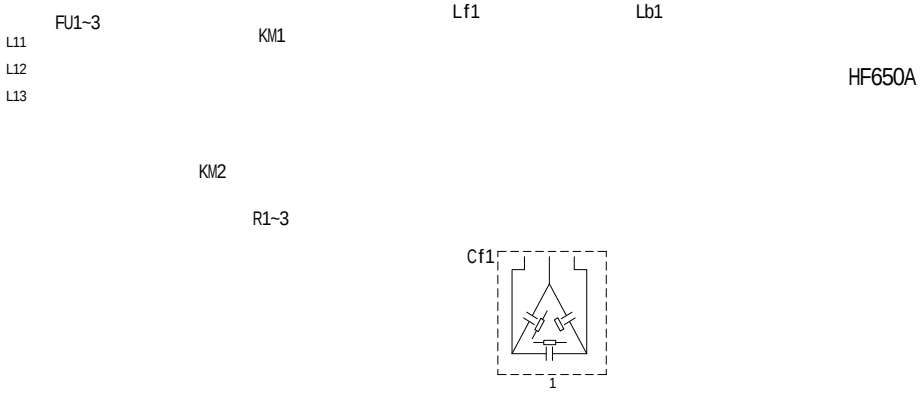
	LCL Lf Lb Cf	Lf	Lb	Cf	
HF650A-250-4-D	GDHF650-LCL-250	ACL-250-4	PWM-250-4	CAP-250-4	3×4R
HF650A-315-4-D	GDHF650-LCL-315	ACL-315-4	PWM-315-4	CAP-315-4	3×2R5
HF650A-400-4-D	GDHF650-LCL-400	ACL-400-4	PWM-400-4	CAP-400-4	3×2R5
HF650A-450-4-D	GDHF650-LCL-400	ACL-400-4	PWM-400-4	CAP-400-4	3×2R5

1. LCL Lf Lb Cf

2. 450kW LCL

3. -C LCL

3.5



4
3
2
1

3.6

380V 480V

50 / 60Hz

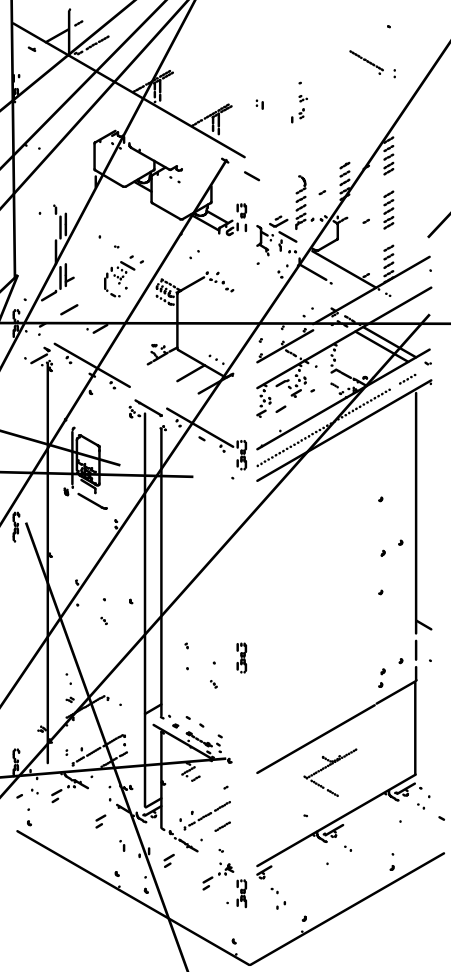
-

8.

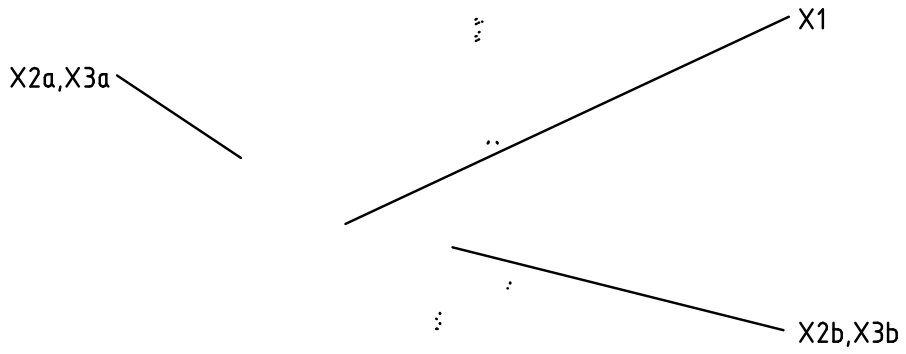
1

450kW

450kW



1 a



2 b

	C							
	X1	X2	X3	X4	X2a	X2b	X3a	X3b
			AFE					
1 N1					N2 -		N2 -	
2 N2					N3 -	N1 -	N3 -	N1 -
3 N3					N4 -	N2 -	N4 -	N2 -
4 N4					N5 -	N3 -	N5 -	N3 -
5 N5								

	kW	1				2	
HF650A-500-4-C HF650A-630-4-C HF650A-800-4-C	500~800	N1	N2	/	/	/	/
HF650A-1200-4-C	1200	N1	N2	N3	/	/	/
HF650A-1600-4-C	1600	N1	N2	N3	N4	/	/
HF650A-2000-4-C	2000	N1	N2	N3	N4	N5	/
HF650A-2400-4-C	2400	N1	N2	N3	N4	N5	N6

4.

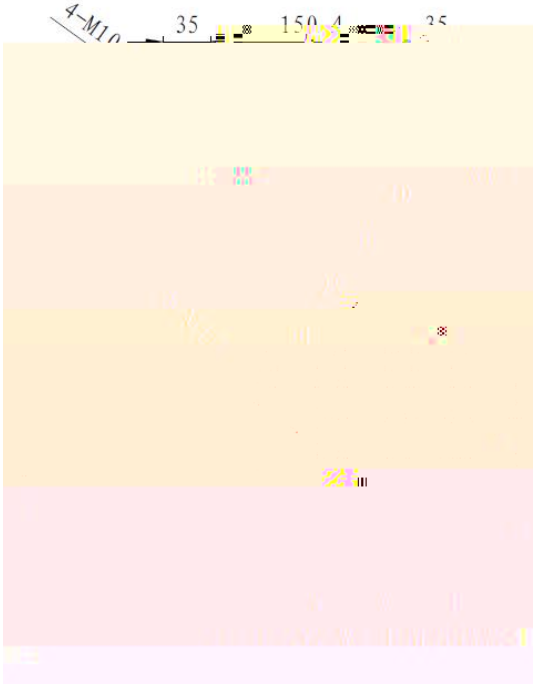
4.1

4.2

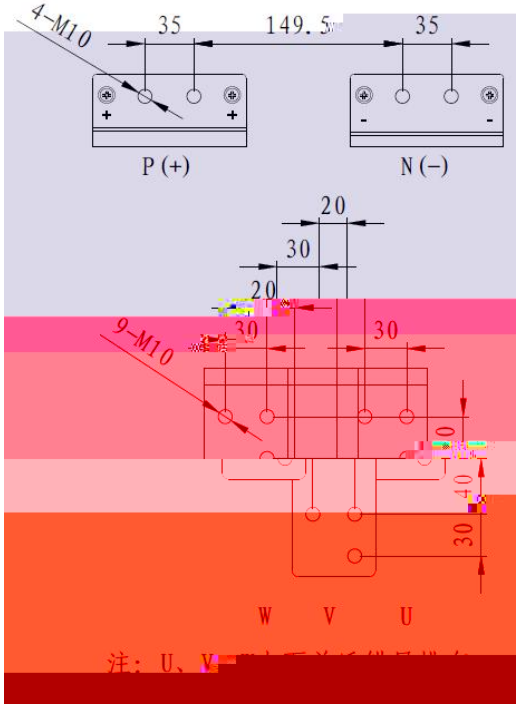
1

P N U V W PE

P	
N	
U V W	
PE	



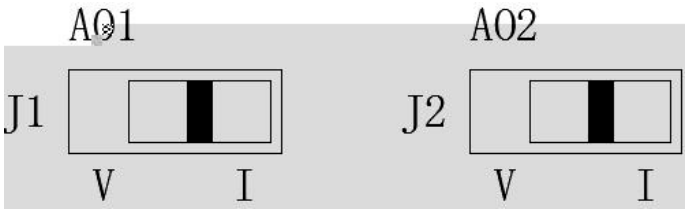
HF650B-250-4-D



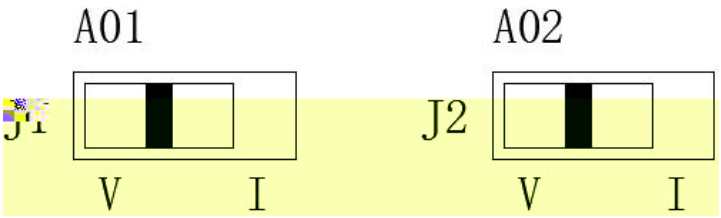
HF650B-400-4-D

2

3



a.



b.

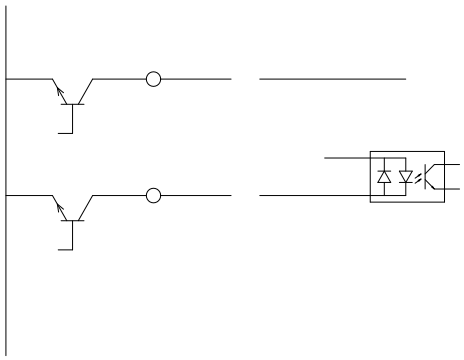
4

1	+10V		10V
2	GND		,
3	AI1+/AV1	1	0/4 20mA 1 -10 10V
4	AI1-	1	
5	AI2+/AV2	2	0/4 20mA 2 -10 10V
6	AI2-	2	
7	AO1	1	0/4 20mA J1 I a 0 10V J1 V b
8	AO2	2	0/4 20mA J2 I a 0 10V J2 V b
9	DI1	1	
10	DI2	2	
11	DI3	3	
12	DI4	4	
13	DI5	5	

14	DI6		6		
15	DI7		7		
16	DI8		8		
17	PW				
18	COM	24V			
19	PW				
20	+24V	24V	+		
21	+24V	24V			
22	DO1		1	DC24V	50mA
23	+24V	24V			
24	DO2		2	DC24V	50mA
25	+24V	24V			
26	DO3		3	DC24V	50mA
27	DO4A		4		
28	DO4C		4		
29	DO4B		4		
30	DO5A		5		
31	DO5C		5		

5

0V NPN



4.3

	kW	A	(A)	(A)
HF650B-160-4-D	160	287	330	270
HF650B-185-4-D	185	332	365	320
HF650B-200-4-D	200	360	415	370
HF650B-220-4-D	220	394	438	415
HF650B-250-4-D	250	448	485	440
HF650B-315-4-D	315	565	610	490
HF650B-355-4-D	355	636	668	580
HF650B-400-4-D	400	717	720	634
HF650B-500-4-C	500	896	920	745
HF650B-630-4-C	630	1129	1100	940
HF650B-800-4-C	800	1434	1290	1140

DC620V

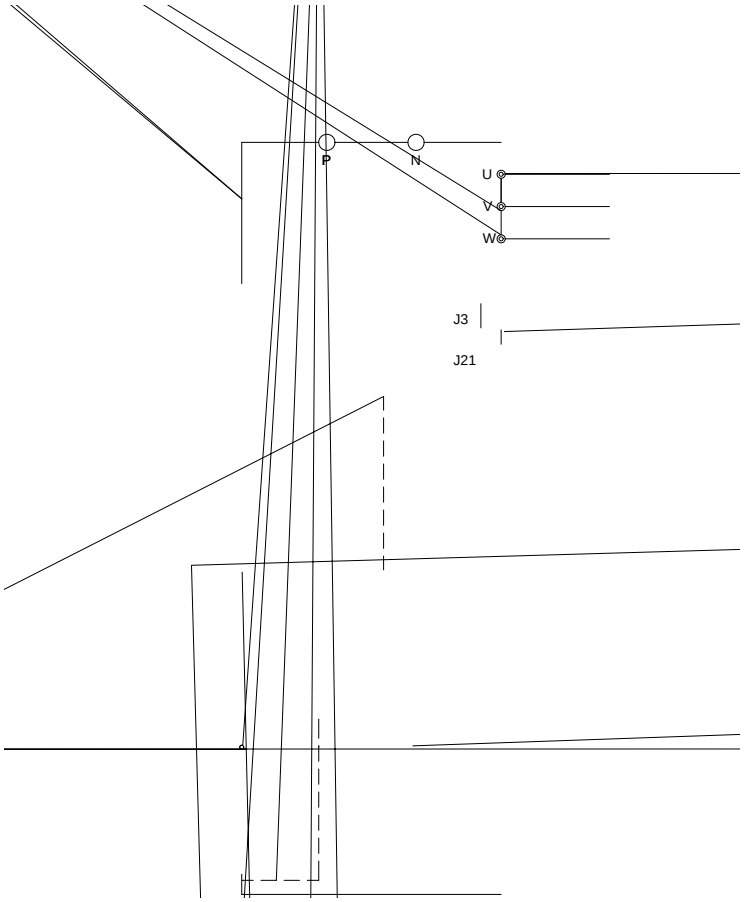
4.4

HF650B-160-4-D	OCL-160-4
HF650B-185-4-D	OCL-185-4
HF650B-200-4-D	OCL-200-4
HF650B-220-4-D	OCL-220-4
HF650B-250-4-D	OCL-250-4
HF650B-315-4-D	OCL-315-4
HF650B-355-4-D	OCL-355-4
HF650B-400-4-D	OCL-400-4

1. 50

2. 400kW

4.5



		mm^2	V/A
HF650B-160-4-D	95		1000/500
HF650B-185-4-D	95		1000/630
HF650B-200-4-D	95		1000/630

5.

5.1



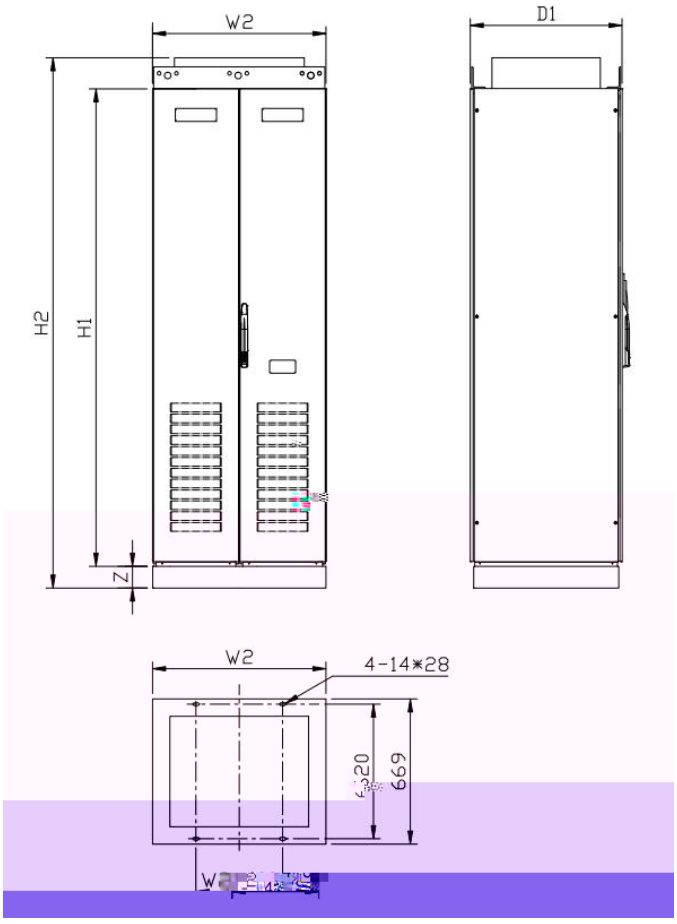
(250KW~450KW)

250kW~450kW

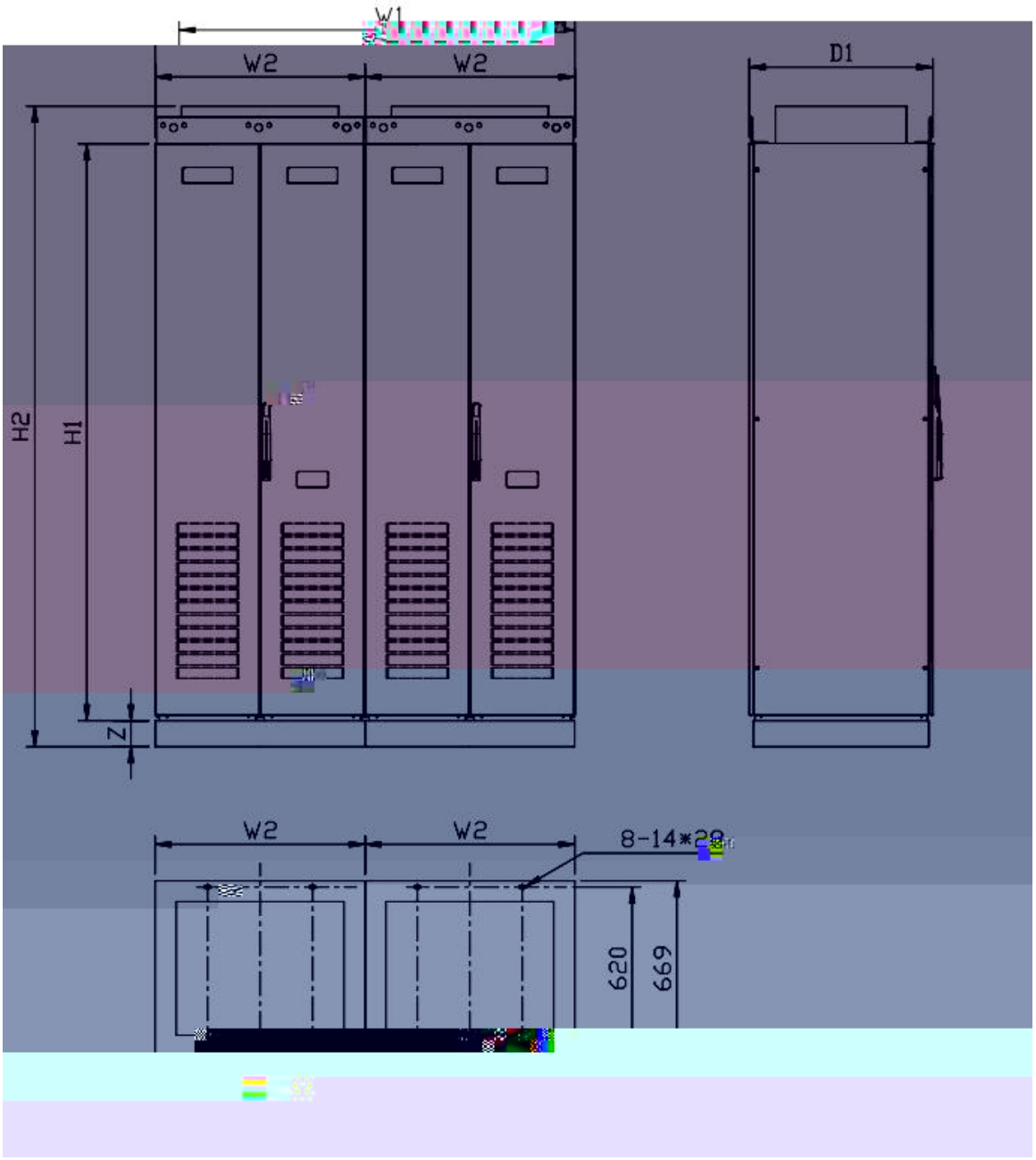
	mm			mm				8.8	kg
	H1	W1	D1	A1	B1	B2			
HF650A-250-4-D	1316	300	520	1295	150	100	4- φ 10	4-M8	150
HF650A-315-4-D	1316	300	620	1295	150	100	4- φ 10	4-M8	200
HF650A-400-4-D									
HF650A-450-4-D									

5.2

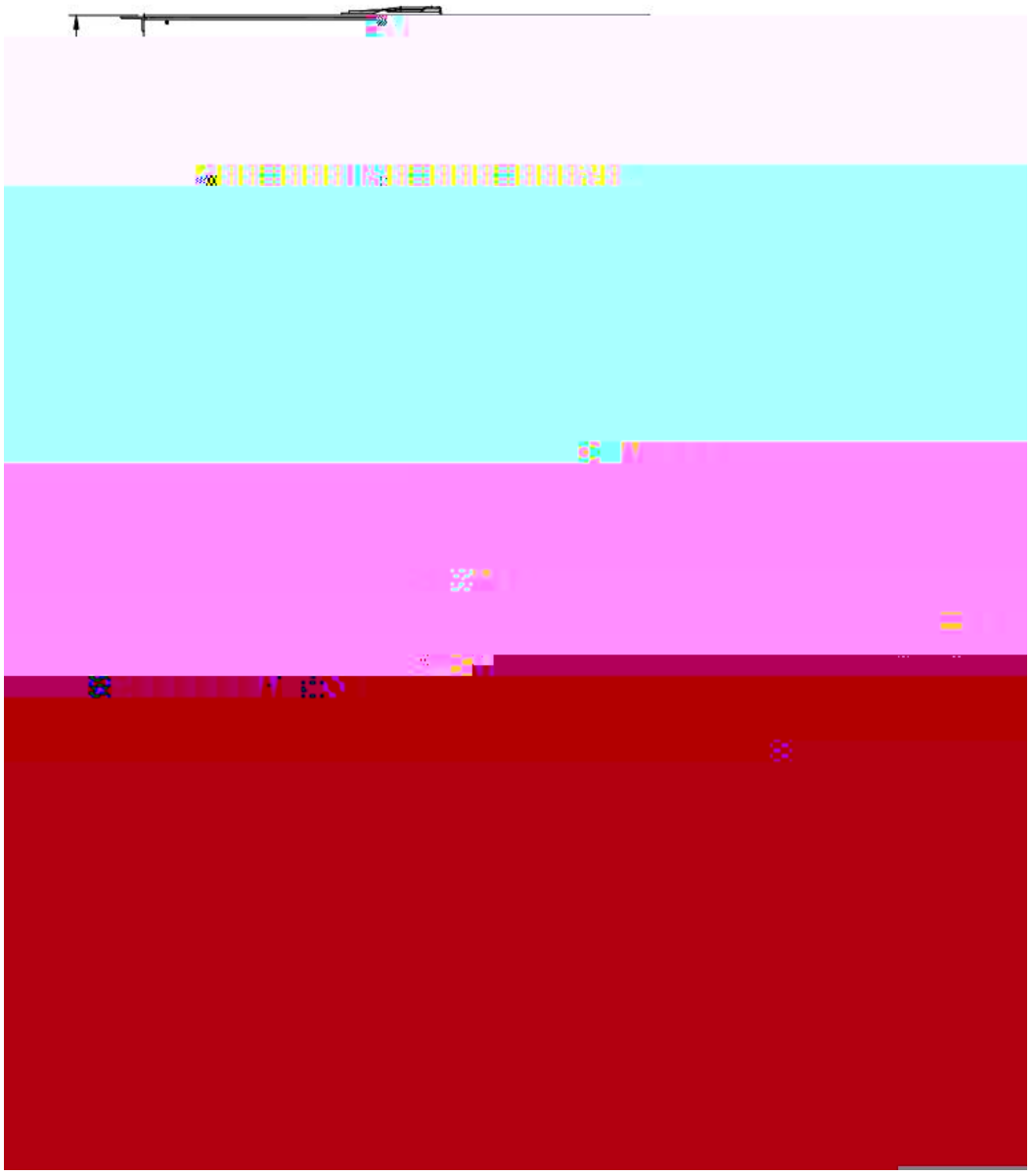
250kW~2400kW



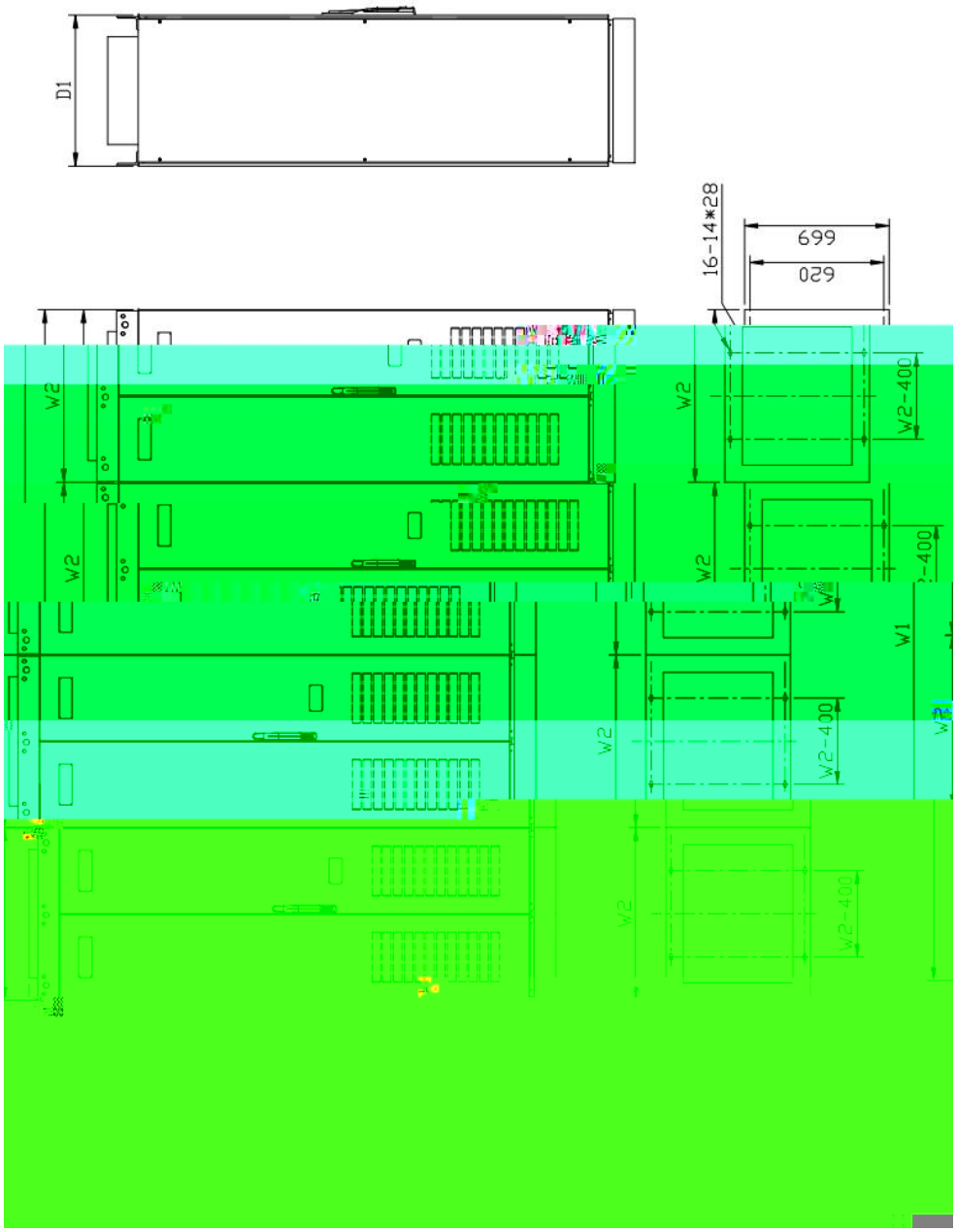
HF650A-250-4-C HF650A-315-4-C HF650A-400-4-C



HF650A-500-4-C HF650A-630-4-C HF650A-800-4-C



HF650A-1200-4-C



HF650A-1600-4-C

www.gdetec.com

250kW 315KW 400kW

		mm						kg
		H1	H2	W1	W2	D1	Z	
1	HF650A-250-4-C HF650A-250-4-C-Z1	2200	2440	/	800	700	100	1000
	HF650A-315-4-C HF650A-315-4-C-Z1							
	HF650A-400-4-C HF650A-400-4-C-Z1							
2	HF650A-250-4-C-Z2	2200	2540	/	800	700	200	1000
	HF650A-315-4-C-Z2							
	HF650A-400-4-C-Z2							
3	HF650A-250-4-C-Z3	2200	2590	/	800	700	250	1000
	HF650A-315-4-C-Z3							
	HF650A-400-4-C-Z3							
4	HF650A-250-4-C-Z4	2200	2640	/	800	700	300	1000
	HF650A-315-4-C-Z4							
	HF650A-400-4-C-Z4							

500kW 630kW 800kW

		mm						kg
		H1	H2	W1	W2	D1	Z	
1	HF650A-500-4-C HF650A-500-4-C-Z1	2200	2440	1600	800	700	100	1800
	HF650A-630-4-C HF650A-630-4-C-Z1							
	HF650A-800-4-C HF650A-800-4-C-Z1							
2	HF650A-500-4-C-Z2	2200	2540	1600	800	700	200	1800
	HF650A-630-4-C-Z2							
	HF650A-800-4-C-Z2							
3	HF650A-500-4-C-Z3	2200	2590	1600	800	700	250	1800
	HF650A-630-4-C-Z3							
	HF650A-800-4-C-Z3							
4	HF650A-560-4-C-Z4	2200	2640	1600	800	700	300	1800
	HF650A-630-4-C-Z4							
	HF650A-800-4-C-Z4							

1200kW

		mm						kg
		H1	H2	W1	W2	D1	Z	
1	HF650A-1200-4-C HF650A-1200-4-C-Z1	2200	2440	2400	800	700	100	2800
2	HF650A-1200-4-C-Z2	2200	2540	2400	800	700	200	2800
3	HF650A-1200-4-C-Z3	2200	2590	2400	800	700	250	2800
4	HF650A-1200-4-C-Z4	2200	2640	2400	800	700	300	2800

1600kW

		mm						kg
		H1	H2	W1	W2	D1	Z	
1	HF650A-1600-4-C HF650A-1600-4-C-Z1	2200	2440	3200	800	700	100	3800
2	HF650A-1600-4-C-Z2	2220	2540	3200	800	700	200	3800
3	HF650A-1600-4-C-Z3	2200	2590	3200	800	700	250	3800
4	HF650A-1600-4-C-Z4	2200	2640	3200	800	700	300	3800

2000kW

		mm						kg
		H1	H2	W1	W2	D1	Z	
1	HF650A-2000-4-C HF650A-2000-4-C-Z1	2200	2440	4000	800	700	100	4800
2	HF650A-2000-4-C-Z2	2200	2540	4000	800	700	200	4800
3	HF650A-2000-4-C-Z3	2200	2590	4000	800	700	250	4800
4	HF650A-2000-4-C-Z4	2200	2640	4000	800	700	300	4800

2400 ï0 א n

5.3



(160KW~400KW)

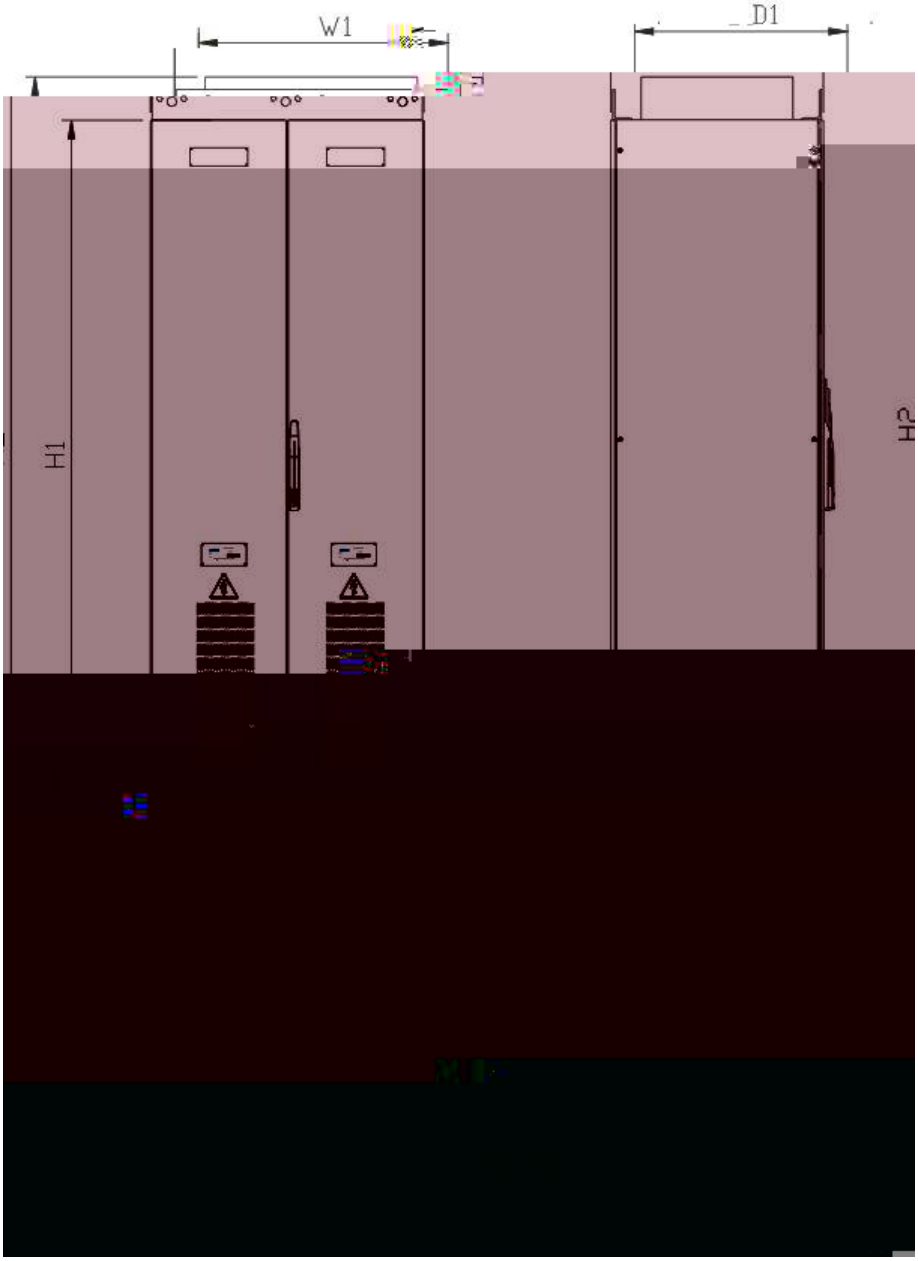
160kW~400kW

	mm			mm				8.8	kg
	H1	W1	D1	A1	B1	B2			
HF650B-160-4-D	1316	300	520	1295	150	100	4- φ 10	4-M8	120
HF650B-185-4-D									
HF650B-200-4-D									
HF650B-220-4-D									
HF650B-250-4-D									
HF650B-280-4-D	1316	300	620	1295	150	100	4- φ 10	4-M8	150

HF650B-315-4-D									
HF650B-355-4-D									
HF650B-400-4-D									

500kW

5.4

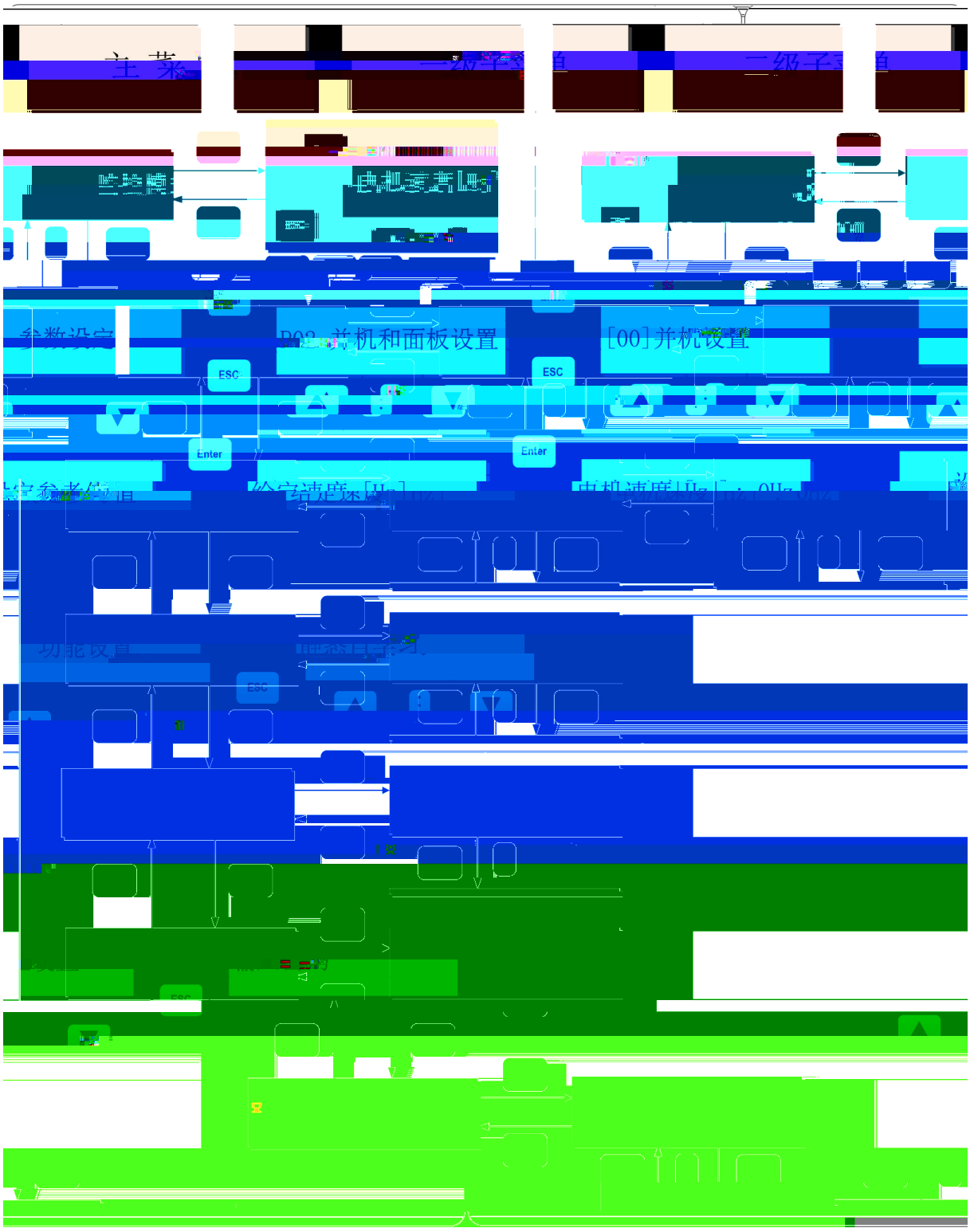


		mm					kg
		H1	H2	W1	D1	Z	
1	HF650B-500-4-C HF650B-500-4-C-Z1	2200	2440	800	700	100	900
	HF650B-560-4-C HF650B-560-4-C-Z1						
	HF650B-630-4-C HF650B-630-4-C-Z1						
	HF650B-800-4-C HF650B-800-4-C-Z1						
2	HF650B-500-4-C-Z2	2200	2540	800	700	200	900
	HF650B-560-4-C-Z2						
	HF650B-630-4-C-Z2						
	HF650B-800-4-C-Z2						
3	HF650B-500-4-C-Z3	2200	2590	800	700	250	900
	HF650B-560-4-C-Z3						
	HF650B-630-4-C-Z3						
	HF650B-800-4-C-Z3						
4	HF650B-500-4-C-Z4	2200	2640	800	700	300	900
	HF650B-560-4-C-Z4						
	HF650B-630-4-C-Z4						
	HF650B-800-4-C-Z4						

6.2

▼

▲


主菜单
一级子菜单
二级子菜单
参数设定
电机参数[01]
P02 并机和面板设置
[00]并机设置
ESC
Enter
ESC
Enter
电机速度[Hz]
功能设置
电机自学习
ESC
ESC

6.4

1 Drive Monitor

2 Parameter Edit

ṕ

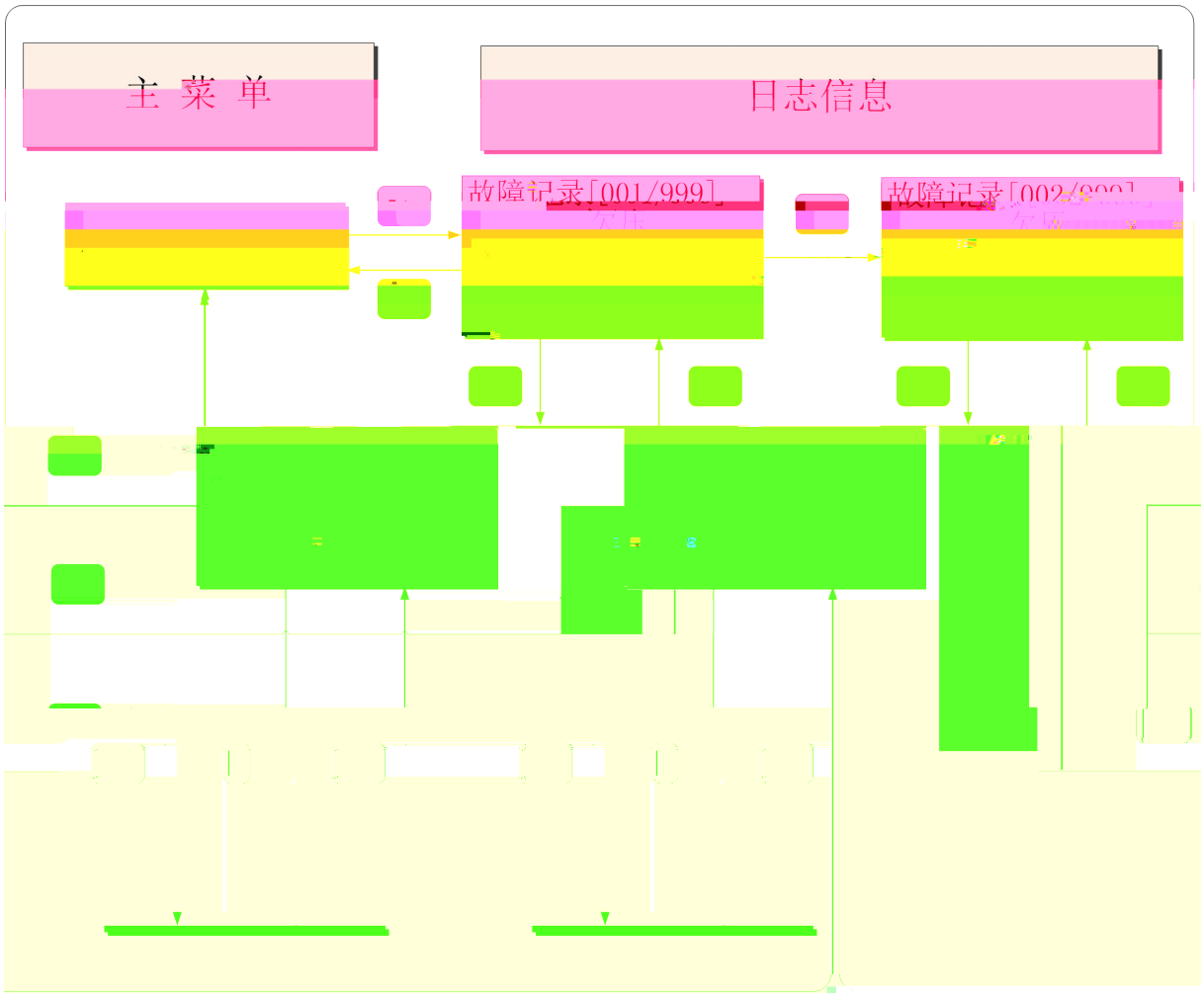
4 Function Set

Function Set

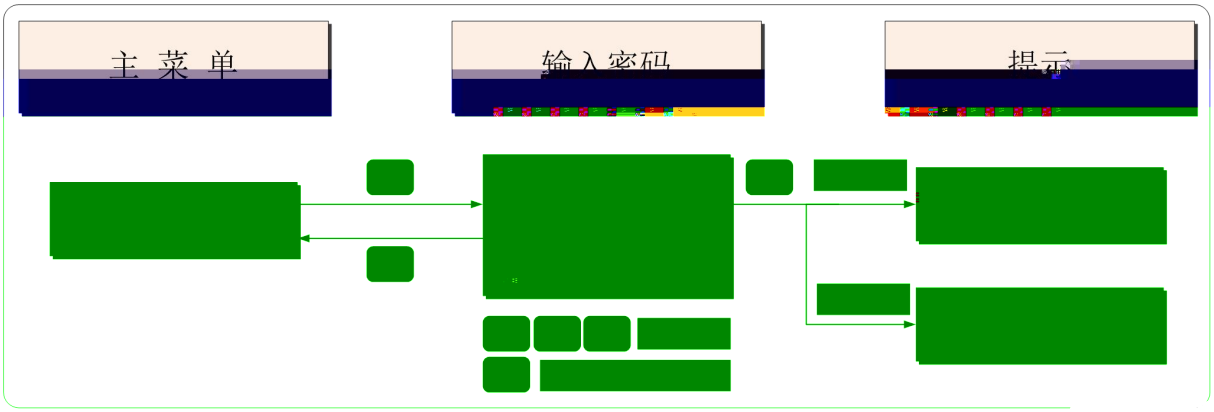
Function Set		
	AFE	AFE



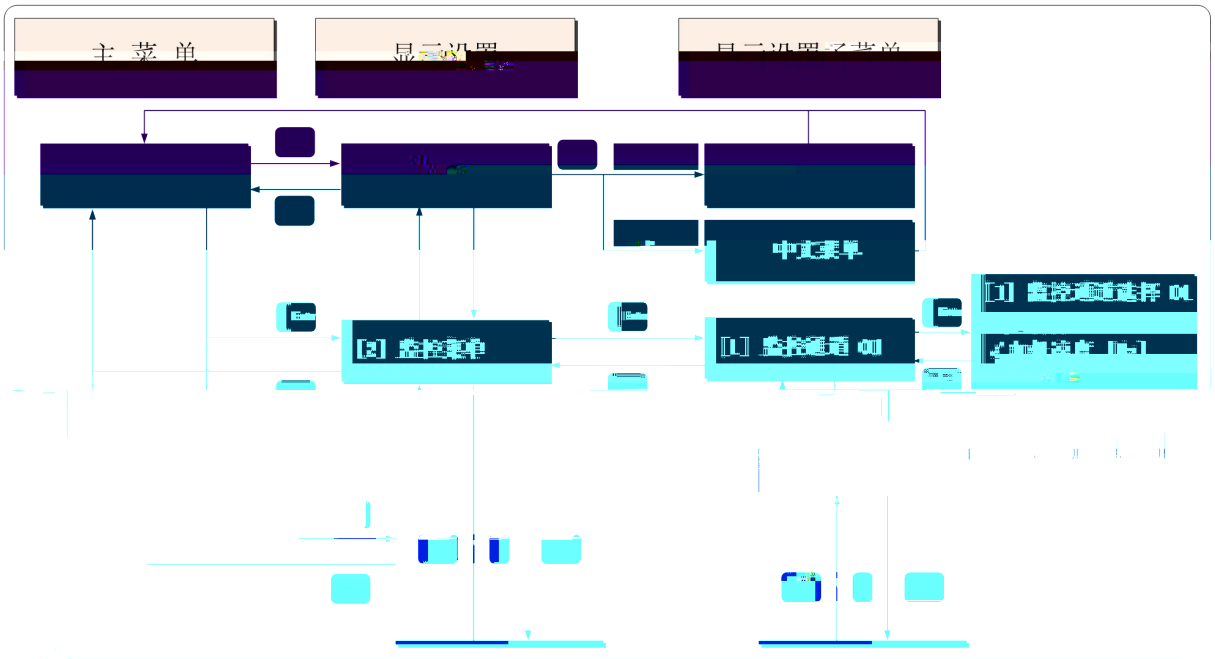
5 Error Event Log



6 Security

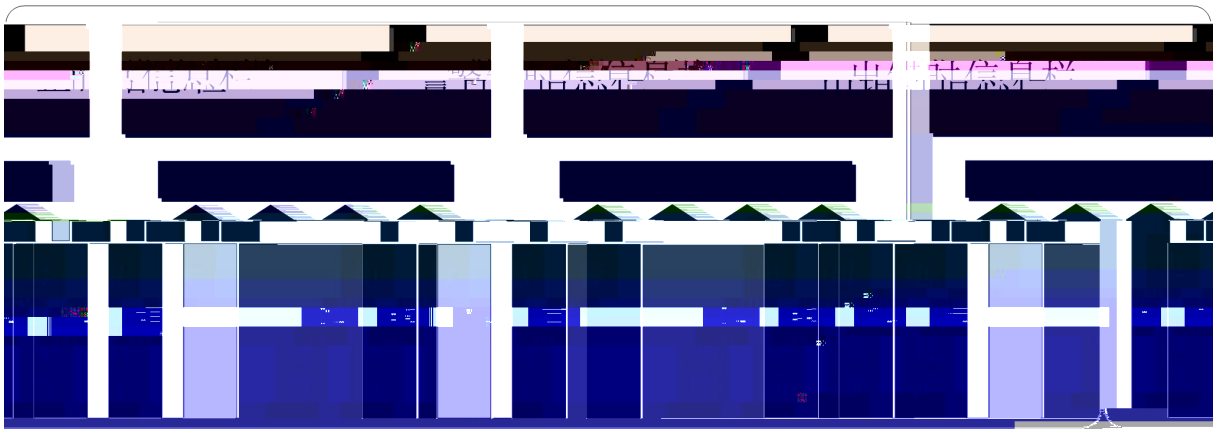


7 Display Setting



Display Set		
		4 4 1 4 5 8 “ ”
		“ ”

8 Information Bar



9 Warning and Error

“ RESET ” “ ESC ”

“ ” “ ”

“ RESET ”

“ ” “

” “ RESET ” 15



P7.0	180%	
P7.4	200%	
P7.12	730V	430V 800V
P8.6	300s	300s 0.5s
P16.0	380V	
P16.2		400kW 400kW
P16.4		400kW 640A
P16.11	3	
P16.12	3	3K
P24.7	0V	ADJ

P16.0 P24.7 =P16.0
+P24.7 P16.0

P16.0 ≤ 375V 580V
375V P16.0 ≤ 400V 600V
400V P16.0 ≤ 430V 630V
430V P16.0 ≤ 450V 665V
450V P16.0 ≤ 460V 680V
P16.0 460V 700V
620V P16.0 380V P24.7
20V 620V

380V Local/Remote Local Run
IGBT 300s
“ AFE ” 49-51Hz “ AFE ”
Stop

P8.6 **0.5s** Run

A B C

Stop

P N P N Local/Remote

Local

P3.0	1	
P3.1	20	
P3.3	5	
P4.1 DO2	2	
P4.3 DO4	0	DO
P4.4 DO5	32	
P7.0	180%	
P7.4	200%	
P7.12	730V	430V 800V
P8.6	300s	300s 0.5s
P16.0	380V	
P16.2		400kW 400kW
P16.4		400kW 640A
P16.11	3	
P16.12	3	3K
P24.7	0V	ADJ

P16.0 P24.7 =P16.0 +P24.7 P16.0

P16.0 ≤ 375V	580V
375V P16.0 ≤ 400V	600V
400V P16.0 ≤ 430V	630V
430V P16.0 ≤ 450V	665V
450V P16.0 ≤ 460V	680V

P16.0 460V 700V

620V P16.0 380V P24.7

20V 620V

380V “ / ” “ ”

运行 103.23

IGBT 300s 103.31 AFE

49-51Hz 103.30 AFE

停止

P8.6 0.5s 运行 103.23

102.54 102.55 102.56

停止

P N P N

“ / ” “ ” **P24.21** **0**

电容自学习 停止

P24.28 **P24.21** **1**

“ / ” “ ”

PLC

7.1.2

500kW 630kW 800kW

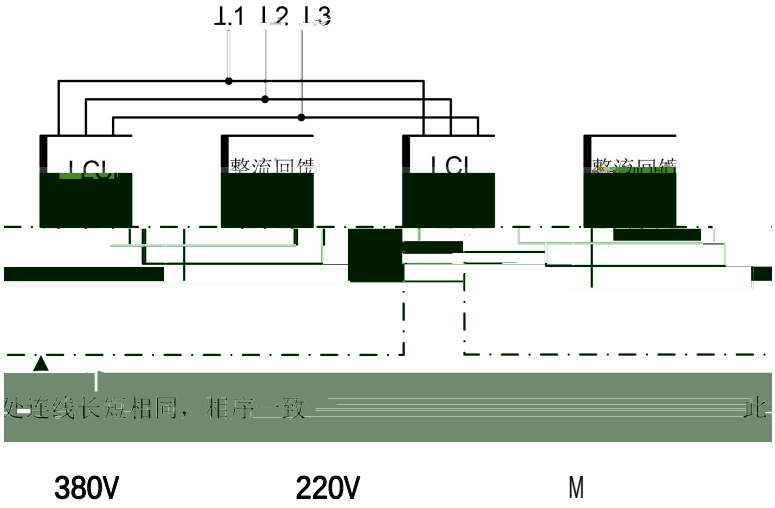
DI1 DI2 DI4

DO2

DO4 DO

DO5

1


L1 L2 L3
整流回馈
380V
220V
M

P4.1 DO2	2	
P7.0	180%	
P7.4	200%	
P7.12	730V	430V 800V
P16.0	380V	
P16.2	1/2	800kW 400kW
P16.4	1/2	800kW 608A
P16.11	3	
P16.12	3	3K

P2.0	1	
P2.3	1	
P3.0	1	
P3.1	20	
P3.3	5	
P4.1 DO2	2	
P4.3 DO4	0	DO
P4.4 DO5	32	
P7.0	180%	
P7.4	200%	
P7.12	730V	430V 800V
P8.6	300s	300s 0.5s

P16.0	380V	
P16.2		800kW 800kW
P16.4		800kW 1216A
P16.11	3	
P16.12	3	3K
P24.7	0V	ADJ

P16.0 P24.7 =P16.0



P N P N Local/Remote

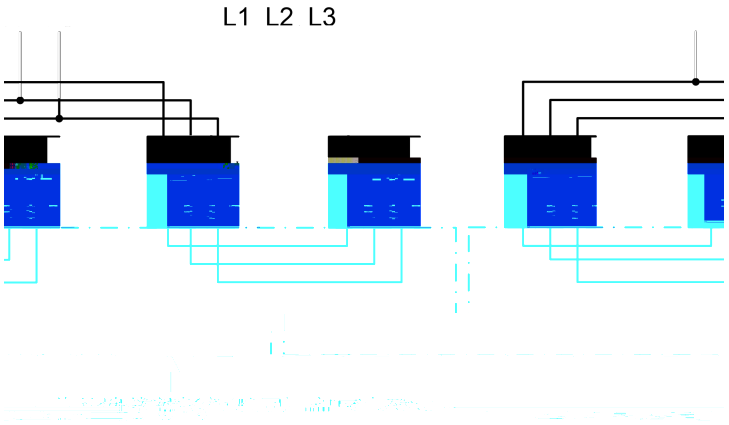
Local P24.21 0 “ ”

“ ” Stop P24.28

P24.21 1

Local/Remote Remote PLC

2



380V 220V P0.1

DI DO

DO

P16.11 0 V/F P4.1 57 P4.3 58 P4.4

59

100.15 100.16 100.17 1

100.15 100.16 100.17 0 DO2

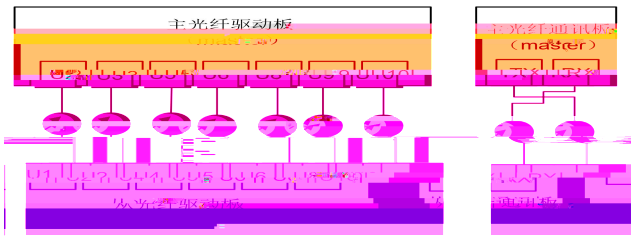
PLC DO4 DO5

参数	名称	值	单位
100.15	DO 功能本地测试 1	1	
100.16	DO 功能本地测试 2	0	
100.17	DO 功能本地测试 3	0	

P3.0-P3.7 0 PLC DI DI

DI 1





P2.0	2	
P4.3 DO4	0	DO
P4.4 DO5	32	
P4.1 DO2	2	
P7.0	180%	
P7.4	200%	
P7.12	730V	430V 800V
P16.0	380V	
P16.2	1/2	800kW 400kW
P16.4	1/2	800kW 608A
P16.11	3	
P16.12	3	3K

7.2



7.3

6

7.3.4

	[0]	
	[1]	
P8.0	[2]DP	1
	[3]MODBUS	
	[4]	
P8.3	[0]	1
	[1]	
P8.6	0 300s	0
P8.7		

P16.0		380V
P16.2		
P16.3		
P16.4		
P16.5		
P16.6		
P16.7		(120×P16.5 / P16.6)
P16.9		(120×P16.5 / P16.7)
P16.11		[0]V/F [1] [2]

7.3.5

1

P16.11 [1] [2]

[0] V/F

2

V/F (P20.74)

P20.74

P20.78 P20.79 P20.84

“

” “ ”

3

P20.79 P20.84

P20.85~P20.97

“

” “ ”

4

50%

P20.98 P20.98

7.3.6

HF650

7.5%

5

0% 50%

7.3.7

, ш " n

1

2 LOCAL/REMOTE LOCAL LOCAL

3 RUN RUN

5Hz

4 د تمی ț ج ضخ

5 4 50Hz

6 STOP

7.3.8

1

2 n , m

1

2

1

2

7.3.9

8.

8.1

8.1.1

P2.0		[0] [1] [2]	0 2	0	450kW [0] 450kW [1] [2]
P2.2		[0] [1]	0 1	0	
P2.3			0 5	1	

8.1.2

P3.0	1		0 32	1	
P3.1	2		0 32	2	
P3.2	3		0 32	5	
P3.3	4		0 32	6	
P3.4	5		0 32	7	
P3.5	6		0 32	8	
P3.6	7		0 32	0	
P3.7	8		0 32	0	

0		
1		
5		</RST
14		
15	.NC	
20		

8.1.3

P4.0	1		0 64	0	
P4.1	2		0 64	0	
P4.2	3		0 64	0	
P4.3	4		0 64	0	
P4.4	5		0 64	0	[32]

0		
1		
2		ON
32		

8.1.4

P7.0	[1]		0.0 300.0 [%]	180.0 [%]	
P7.4	[1]		0.0 300.0 [%]	235.0 [%]	
P7.12			600 820 [V]	800 [V]	
P7.13			300 500 [V]	350 [V]	
P7.14			60.0 100.0 [ ]	87.5 [ ]	
P7.47			0.0 300.0 [%]	100.0 [%]	
P7.48	1	1	0.0 300.0 [%]	150.0 [%]	
P7.49	1	1	0.00 60.00 [s]	60.00 [s]	
P7.50	2	2	0.0 300.0 [%]	200.0 [%]	
P7.51	2	2	0.00 5.00 [s]	5.00 [s]	
P7.95			0.0 20.0 [s]	15.00 [s]	

8.1.5

P8.0		[0] [1] [2]DP [3]MODBUS [4]	0 4	0	

P8.6			0.00 300.00 [s]	0.00 [s]	IGBT

8.1.6

P16.0			320 460 [V]	380 [V]	
P16.2			0.0 4000.0 [kW]	[kW]	
P16.4			0.0 6500.0 [A]	[A]	
P16.11		[0]V/F [1] [2] [3] [4]	0 4	0	[3]
P16.12			3 8 [kHz]	3 [kHz]	3 8kHz

8.1.7 AFE

P24.0		[0] [1] 1 [2] 2 [3] [4]DP [5]MODBUS [6]	0 6	0	AFE [0]
P24.1	@		0 347	0	

P24.2		[0] [1] 1 [2] 2 [3] DP [4]MODBUS [5]	0 5	0	AFE [0]
P24.3	@		0 347	0	
P24.7	ADJ		-30 30[V]	0[V]	
P24.12	Kp		0 1000[%]	100[%]	
P24.13	Ki		0 1000[%]	100[%]	
P24.14	@		0 1000[%]	200[%]	
P24.15	@		0 1000[%]	200[%]	
P24.16	Kp		0 1000[%]	100[%]	
P24.17	Ki		0 1000[%]	100[%]	
P24.21		[0] [1]	0 1	0	
P24.22			0 300[ms]	30[ms]	
P24.25		[0] [1]	0 1	1	
P24.26			0 150[%]	100[%]	
P24.27	PWM LB	LB	0 65 [mH]	0	AFE

9.

9.1

WO1 SYS_NOT_RDY (Ready)

[

WO2 NO_DRV_ENABLE]

9.2

IGBT

U

[E050] ERR_UT not reset

[E113]	MIP	
[E114]	MOP	
[E115]	OS	P7.19 P7.19
[E116]	SLVC Fail	P7.23
[E117]	MOTOR STALL	P20.14 P20.15
[E118]	PG ERROR	P2

[E138]

[E160]	SLVE FAULT	
[E161]	SLV_NOT_RDY	
[E162]	1 SLV1_CAN_ERR	1
[E163]	2 SLV2_CAN_ERR	2
[E164]	3 SLV3_CAN_ERR	3
[E165]	4 SLV4_CAN_ERR	4
[E166]	5 SLV5_CAN_ERR	5
[E170]	MOTOR TUNING FAIL	P7.33
[E180]	DP P/B ERROR	
[E181]	DP P/B_EM	CW0.4
[E200]	LOCAL_EM	[ ] P3
[E201]	REMOTE_EM	[ ] P3
[E202]	Modbus MODBUS EMERGENCY	Modbus
[E203]	DRIVE DISABLED	DP
[E210]	Panel Error	
[E220]	CRC MEMORY CRC ERR	
[E221]	PARAMETER ERROR	

9.3

		•	• DC15V
		•	• D05 • D05 •
		•	• D04 •

		• • ON • COM	• • ON • COM ( )
		•	•
		•	• •
		•	•
		•	•
		•	• •
		•	•
		•	•
		•	•
		• ON	• ON
		•	• V W
		•	• /
		•	• •

10.


1 2 3 4

1 CMOS 2 3

10.1

10.2

	1. 2.	1. > 40 < 95% 2.
	1. 2.	1. 2.
	1. 2. 3.	1. 2. 3.
	1. 2.	1. 2.
	1. 2.	1. 2.

10.3

	2	1 2
PCB		

10.4

5

5

(400-0077-570)

1 40

2 80%

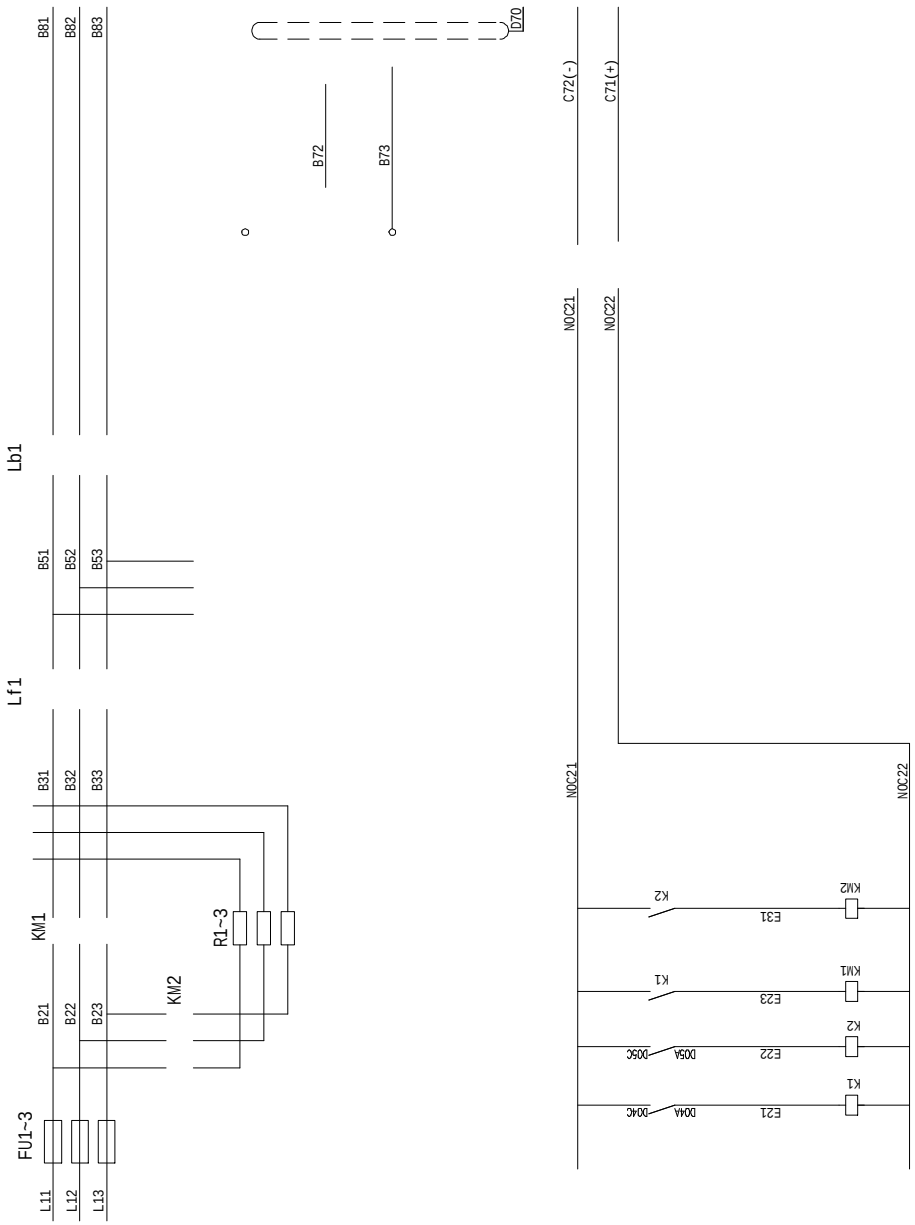
3 24 /

10.5

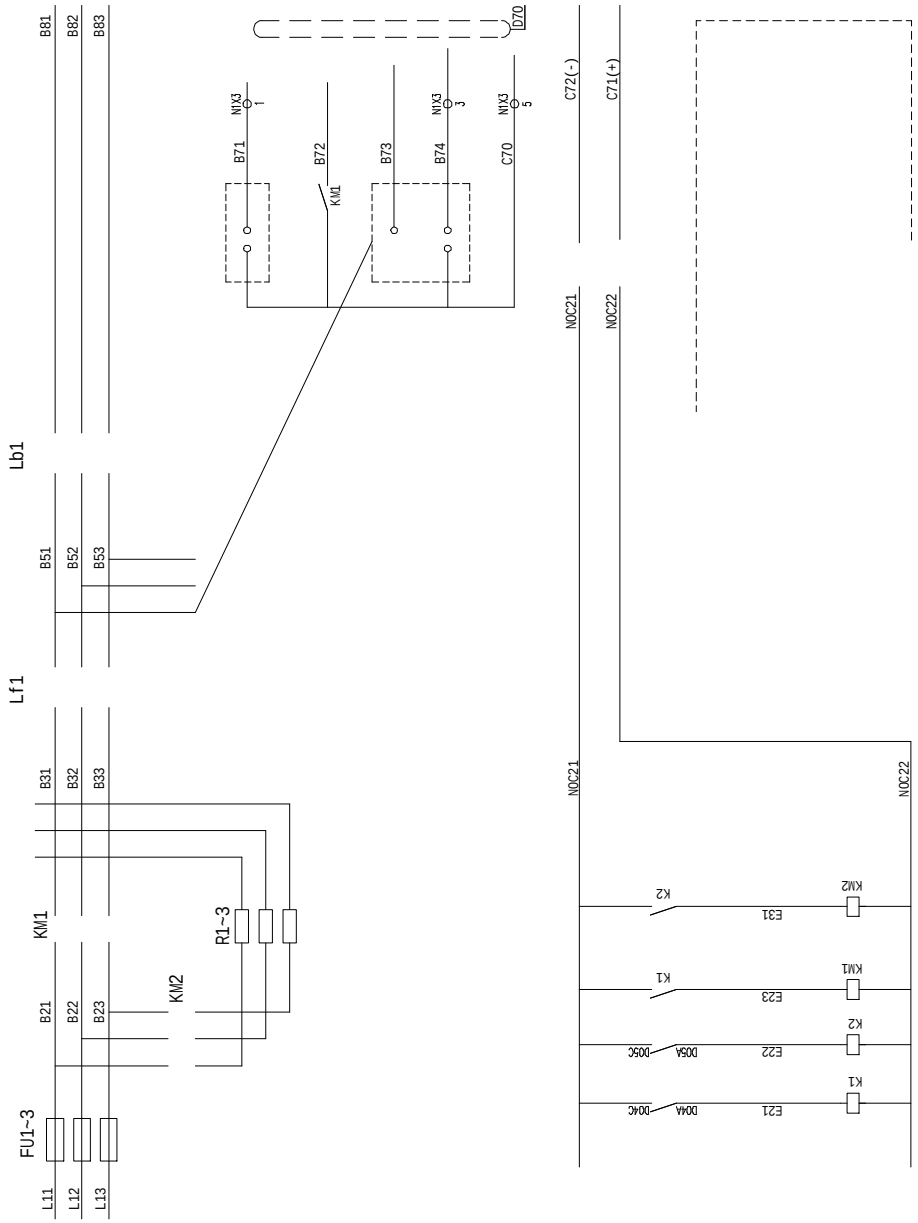
1

2

5


B81
B82
B83
D70
B72
B73
C72(-)
C71(+)
Lb1
B51
B52
B53
Lf1
B31
B32
B33
KM1
R1-3
KM2
B21
B22
B23
FU1-3
L11
L12
L13
NOC21
NOC22
NOC21
NOC22
KM2
K2
E31
KM1
K1
E23
K2
D05A
D05C
E22
K1
D04A
D04C
E21

B81
B82
B83
D70
C72(-)
C71(+)
B71
B72
B73
B74
C70
KM1
NOC21
NOC22
PLC
Lb1
B51
B52
B53
Lf1
B31
B32
B33
NOC21
NOC22
KM1
R1~3
KM2
B21
B22
B23
FU1~3
L11
L12
L13
K2
KM2
E31
K1
KM1
E23
K2
E22
D05A
D05C
K1
E21
D04A
D04C


B81
B82
B83
D70
N1X3
1
N1X3
3
N1X3
5
B71
B72
KM1
B73
B74
C70
C72(-)
C71(+)
Lb1
B51
B52
B53
Lf1
B31
B32
B33
KM1
R1~3
KM2
B21
B22
B23
FU1~3
L11
L12
L13
NOC21
NOC22
NOC21
NOC22
K2
KM2
E31
K1
KM1
E23
K2
E22
D05A
D05C
K1
E21
D04A
D04C