GUIDE

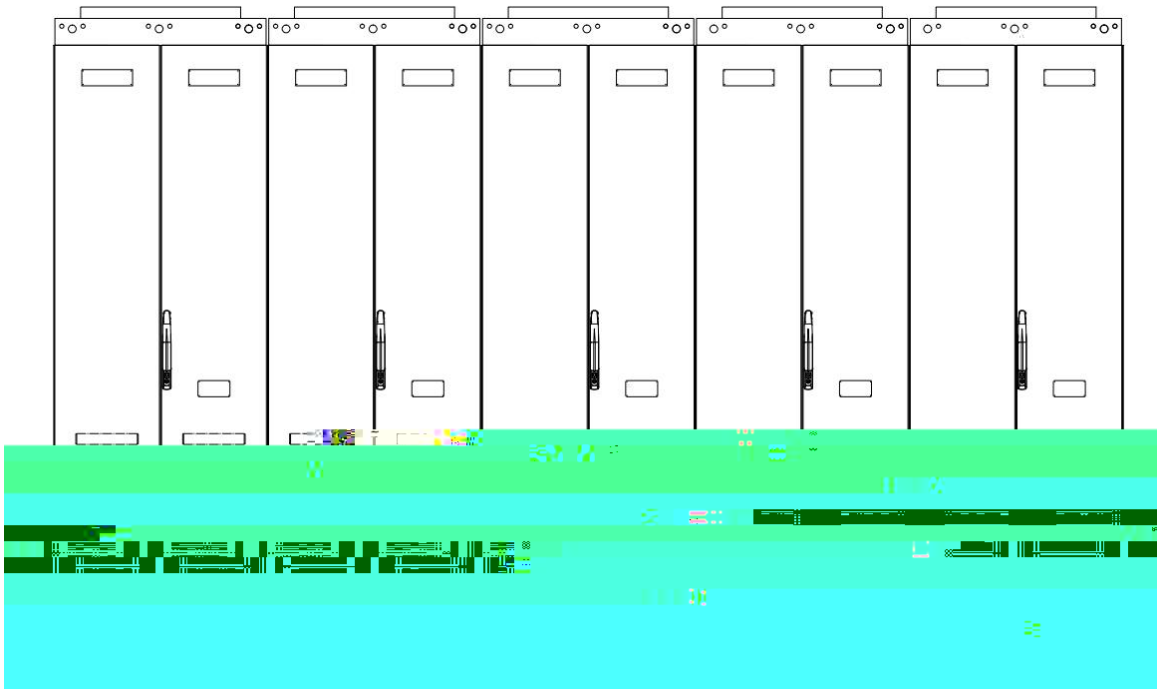
J HF680N Δ

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Wuhan Guide Technology Co.,Ltd.



HF680N

1. 1
1.1
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1.3
2. 6
2.1
2.2
2.3
2.4
2.4.1
2.4.2
2.4.3
2.4.4
3. 14
3.1
3.2
3.3
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3.5
3.6
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3.9
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4.1
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4.6
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4.8
5. 44
5.1
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5.3
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6. 63
6.1
6.2
6.3 64
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7.1
7.2

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7.2.3
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8.1.3
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9.1.7 AFE
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10.1 P2
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10.3 P4
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10.5 P6
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10.7 1 P8
10.8 2 P9
10.9 3 P10
10.10 4 P11
10.11 1 P12
10.12 2 P13
10.13 3 P14
10.14 4 P15
10.15 1 V/F P16
10.16 2 V/F P17
10.17 3 V/F P18
10.18 4 V/F P19

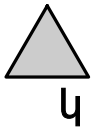
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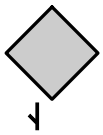
1.

1.1









1

RCD

RCM RCD

RCM

B RCD RCD

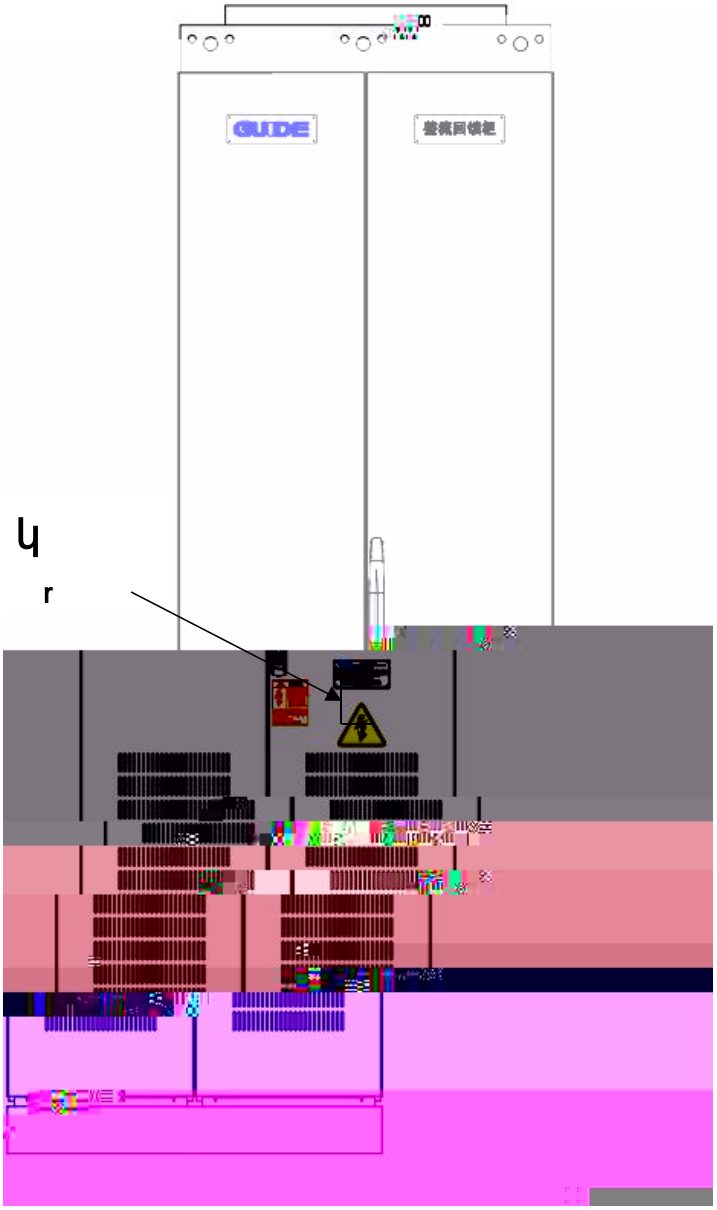
RCD RCD

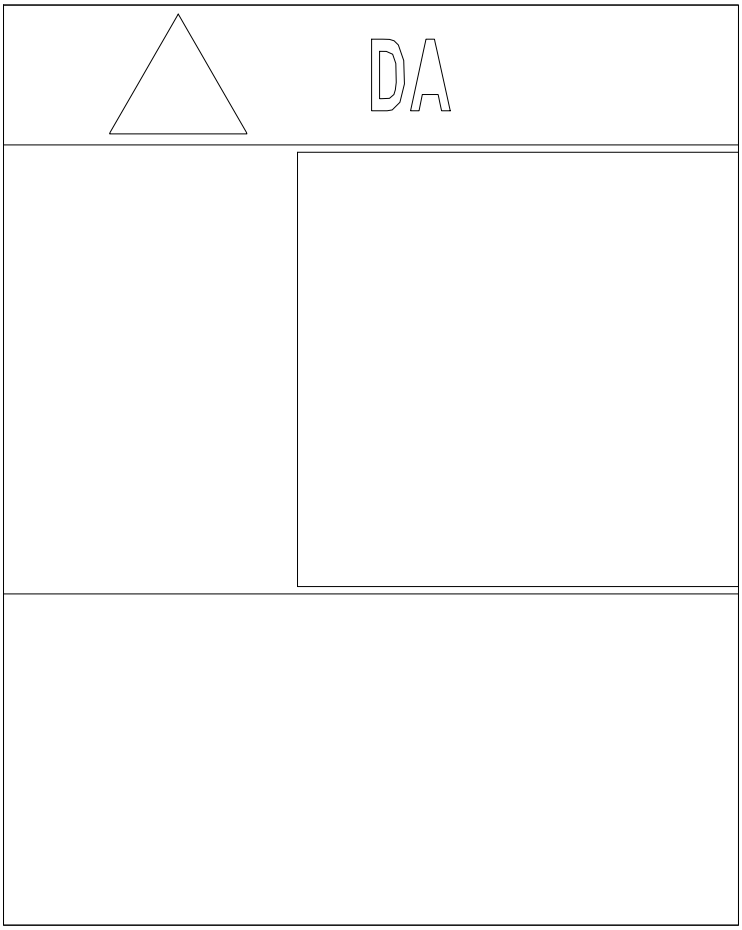
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500V 5MΩ

3

HF680N02C-400-4




DA

1.2

(1)

(2)

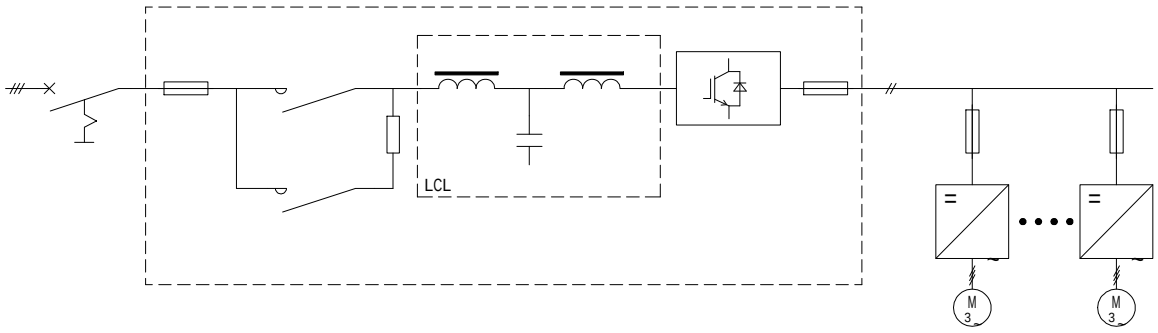
(3)

1.3

2.

2.1

HF680N LCL



IGBT AFE

DC24V

IGBT

2.2

1

AFE

V/F

2

		PID
		/
		/
		/
		/

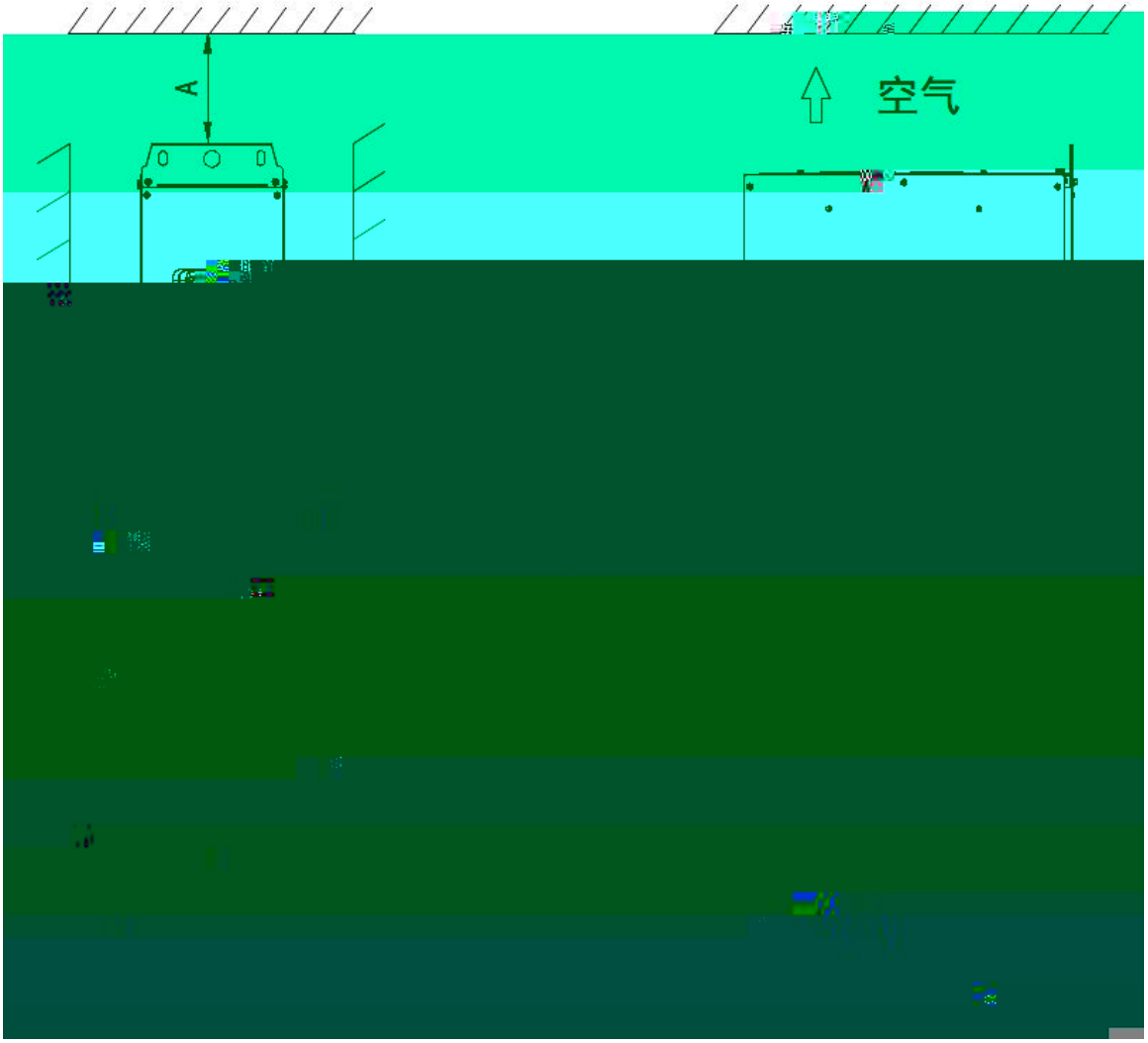
2.3

DP	GDHF-ADPX1	GDHF-ADPX1 DP Profibus HF680N02M HF680N03M
PG	GDHF-APGX1	GDHF-APGX1 PG HF680N03M 15V PG
PN	GDHF-APNX1	GDHF-APNX1 Profinet HF680N02M HF680N03M
	GDHF-AKZY1	GDHF-AKZY1 HF680N02M HF680N03M
2	GDHF-KL2	GDHF-KL2 2 HF680N02M HF680N03M 2

2.4.2

-
- -10 +40 +40 +50 1
  2% 50
- 95%RH
-
-
-
-
-
- 1000 1000 100 1%
  3000

2.4.3



	A ≥ 200mm	B ≥ 50mm

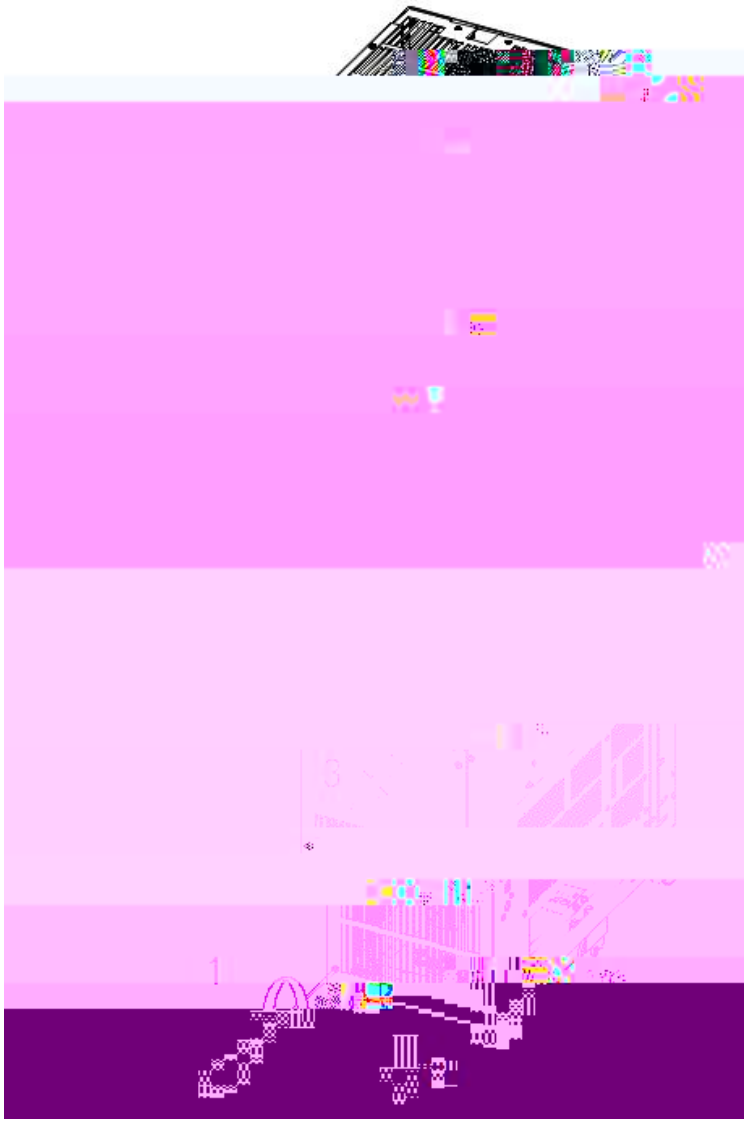
50mm

2.4.4

1

2 LCL

3



3.

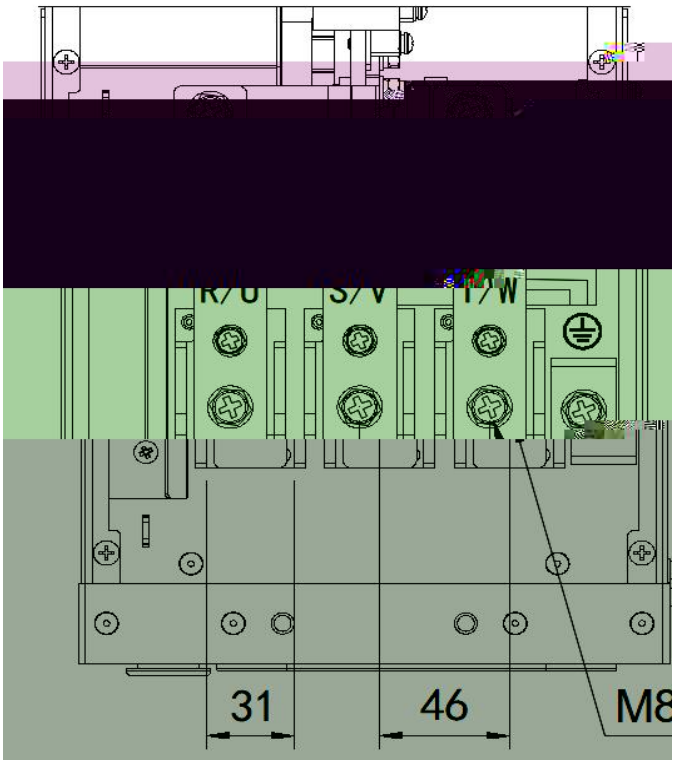
3.1

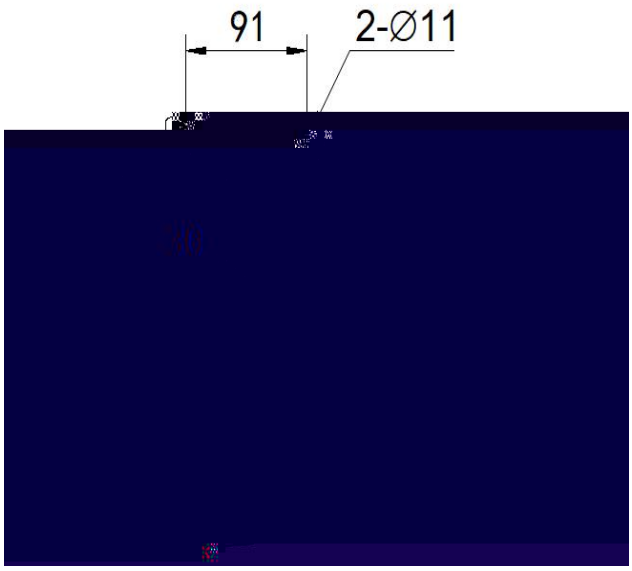
LCL h mAĐ

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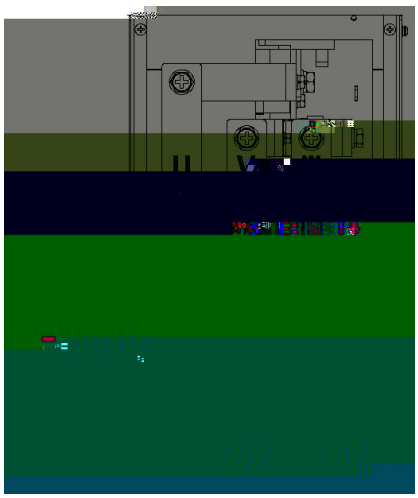
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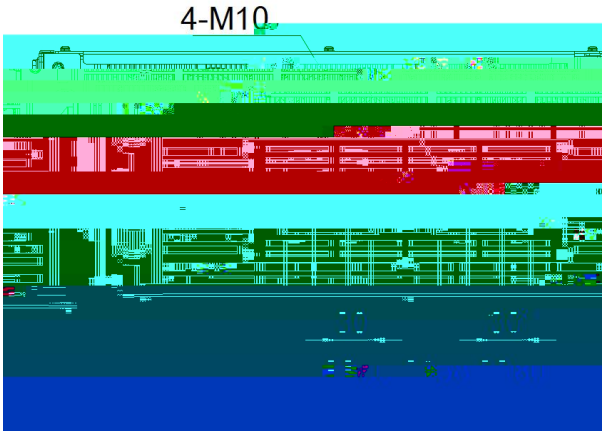
B4



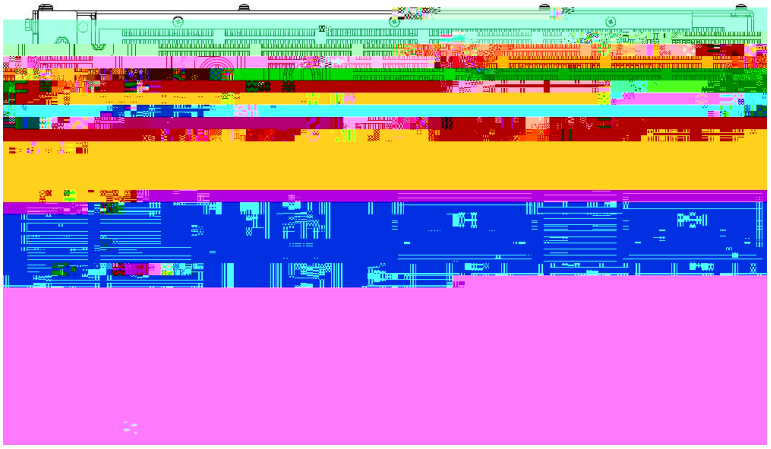


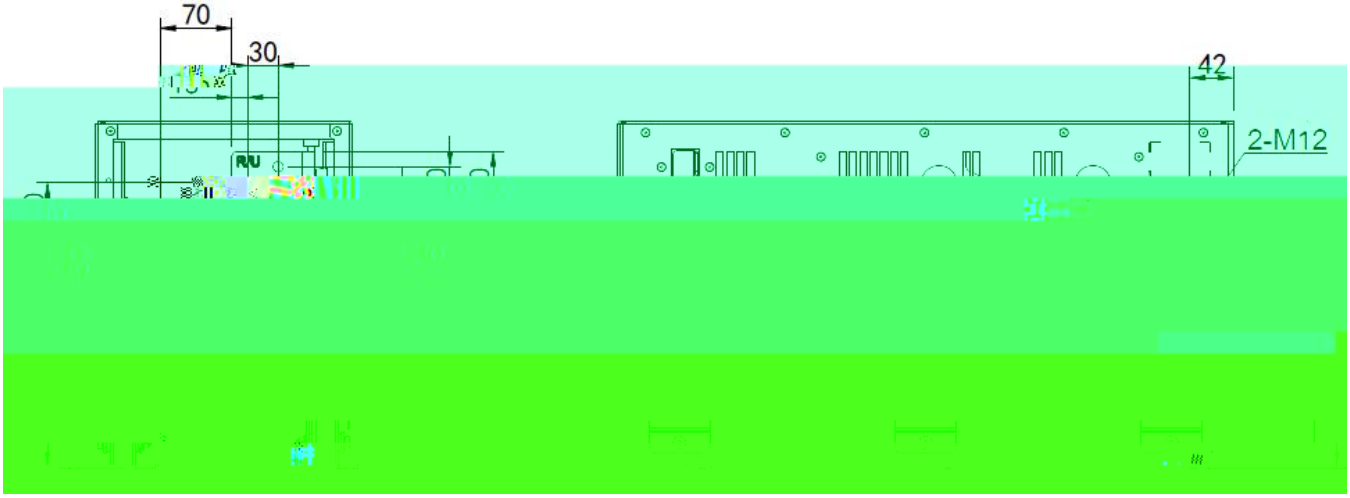
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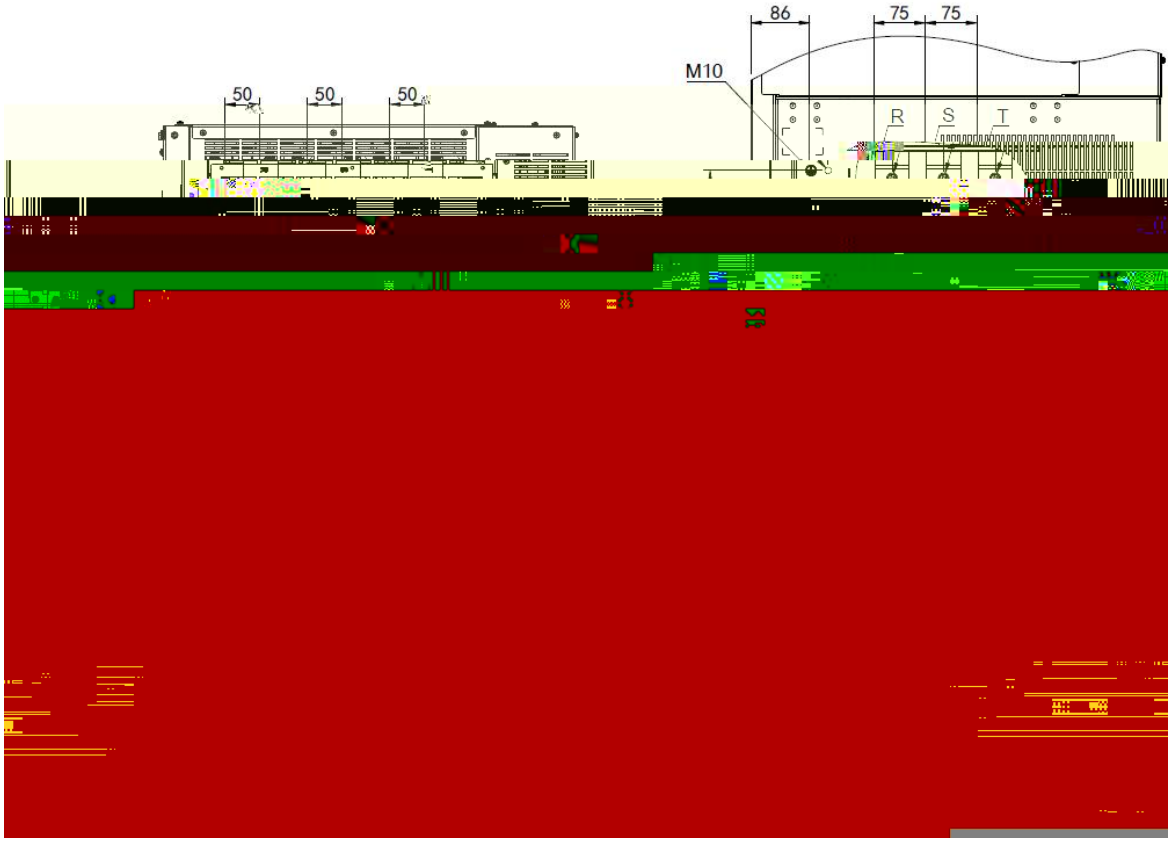
B6





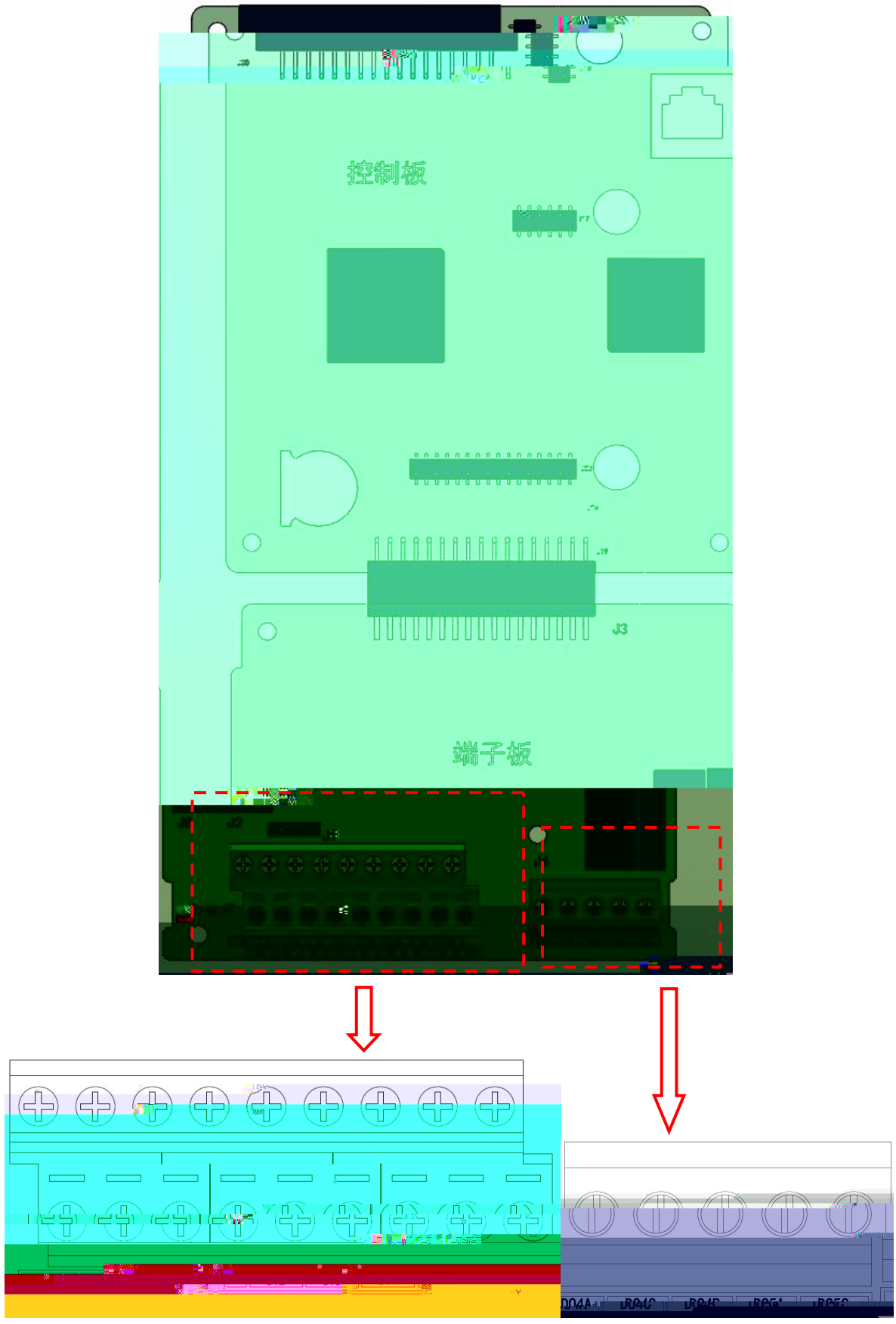
2 LCL

R S T	LCL
	LCL
P + N -	LCL
PTC	LCL



B6 LCL

2

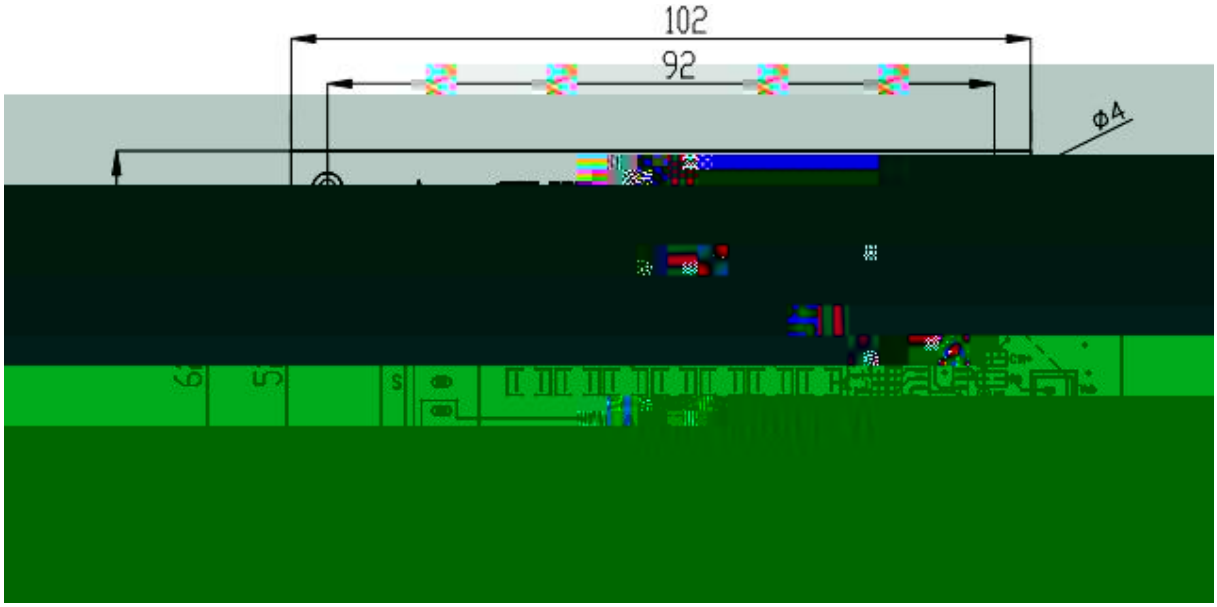


+10V-GND	10V	+10V 50mA 1kΩ~5kΩ
+24V-COM	24V	+24V 200mA
PW		24V DI1~DI5 DO1 PW 24V
AI1-GND	1	DC -10V~10V 100kΩ
AI2-GND	2	-10VDC~10VDC/0mA~20mA J1 100kΩ 500Ω
DI1- PW	1	
DI2- PW	2	3.3kΩ
DI3- PW	3	9V~30V DI1-DI4
DI4- PW	4	500Hz DI5 20KHz
DI5- PW	5	
AO1-GND	1	J2 0V~10V 0mA~20mA
AO2-GND	2	J8 0V~10V 0mA~20mA
DO1-COM	1	0V~24V 0mA~50mA

q

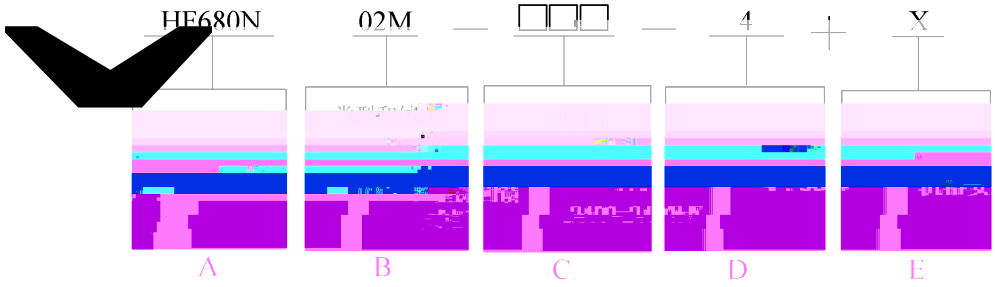


DC+24V	CN4	+24V-GND	
	CN1		L1/L2/L3



	J1	1121S-7P	
	J2	2001S-5P(T)	

3.3



A	
B	02M 02C
C	132 132kW 2400 2400kW
D	4 380V
E	

MB01	Modbus RTU	DP01	Profibus DP
PN01	Profinet	CAN01	CANopen

Z1/ 100mm

Z2 200mm

Z3 250mm Î "

Z4 300mm

HF680N02C-o

620V

	Iac A	Idc A	Pdc kW	Idch A	Pdch kW	Pdch kW	
HF680N02M-132-4	265	308	191	213	132	132	B4
HF680N02M-185-4	330	384	238	298	185	185	B5
HF680N02M-250-4	485	564	350	403	250	250	
HF680N02M-315-4	545	634	393	508	315	315	
HF680N02M-355-4	610	710	440	573	355	355	B6
HF680N02M-400-4	668	777	482	645	400	400	
HF680N02M-450-4	720	838	519	726	450	450	
HF680N02C-250-4	485	564	350	403	250	250	
HF680N02C-315-4	545	634	393	508	315	315	
HF680N02C-355-4	610	710	440	573	355	355	B6
HF680N02C-400-4	668	777	482	645	400	400	
HF680N02C-450-4	720	838	519	726	450	450	
HF680N02C-500-4	840	978	606	806	500	500	
HF680N02C-630-4	1090	1268	786	1016	630	630	2*B6
HF680N02C-800-4	1440	1676	1039	1290	800	800	
HF680N02C-1200-4	2160	2514	1558	1935	1200	1200	3*B6
HF680N02C-1600-4	2880	3352	2078	2581	1600	1600	4*B6

	Iac A					Pdch kW	
		Idc A	Pdc kW	Idch A	Pdch kW		
HF680N02C-2000-4	3600	4190	2597	3226	2000	2000	5*B6
HF680N02C-2400-4	4320	5027	3117	3871	2400	2400	6*B6

GDHF680N02M

HF680N02M

HF680N02M

3

3.4

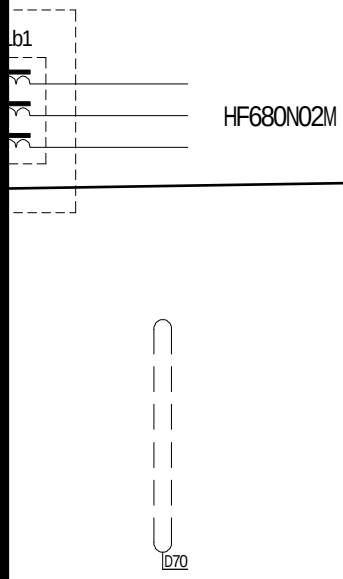
LCL

LCL

Lf Lb Cf

		Lf	Lb	Cf	
HF680N02M-132-4	GDHF680N-LCL-132-4	ACL-132-4	PWM-132-4	CAP-132-4	3 × 7R5
HF680N02M-185-4	GDHF680N-LCL-185-4	ACL-185-4	PWM-185-4	CAP-185-4	3*7R5
HF680N02M-250-4	GDHF680N-LCL-250-4	ACL-250-4	PWM-250-4	CAP-250-4	3 × 4R
HF680N02M-315-4	GDHF680N-LCL-315-4	ACL-315-4	PWM-315-4	CAP-315-4	3 × 2R5
HF680N02M-355-4	GDHF680N-LCL-355-4	ACL-355-4	PWM-355-4	CAP-355-4	3 × 2R5
HF680N02M-400-4	GDHF680N-LCL-400-4	BP-3i-3-4 ٨			

B6-4


b1
HF680N02M
D70

“ ”

LCL

3.6

		380V 480V
		50 / 60Hz
		-15% +10%
		<AC320V 15ms
		AFE
		0.999
		3%
		150% 5 1 180% 5 1
		570V 710V
		1kHz 10kHz

3.7

+LCL		kW
HF680N02M-132-4+GDHF680N-LCL-132-4	B4	3.4
HF680N02M-185-4+GDHF680N-LCL-185-4	B5	5.6
HF680N02M-250-4+GDHF680N-LCL-250-4		7.5
HF680N02M-315-4+GDHF680N-LCL-315-4	B6	9.5
HF680N02M-355-4+GDHF680N-LCL-355-4		10.7
HF680N02M-400-4+GDHF680N-LCL-400-4		12.0
HF680N02M-450-4+GDHF680N-LCL-450-4		13.5

3.8

IGBT

50%

0.999

3% GB/T 24337-2009

380V 480V -15% +10%

DP PN

75kW 2400kW

3.9

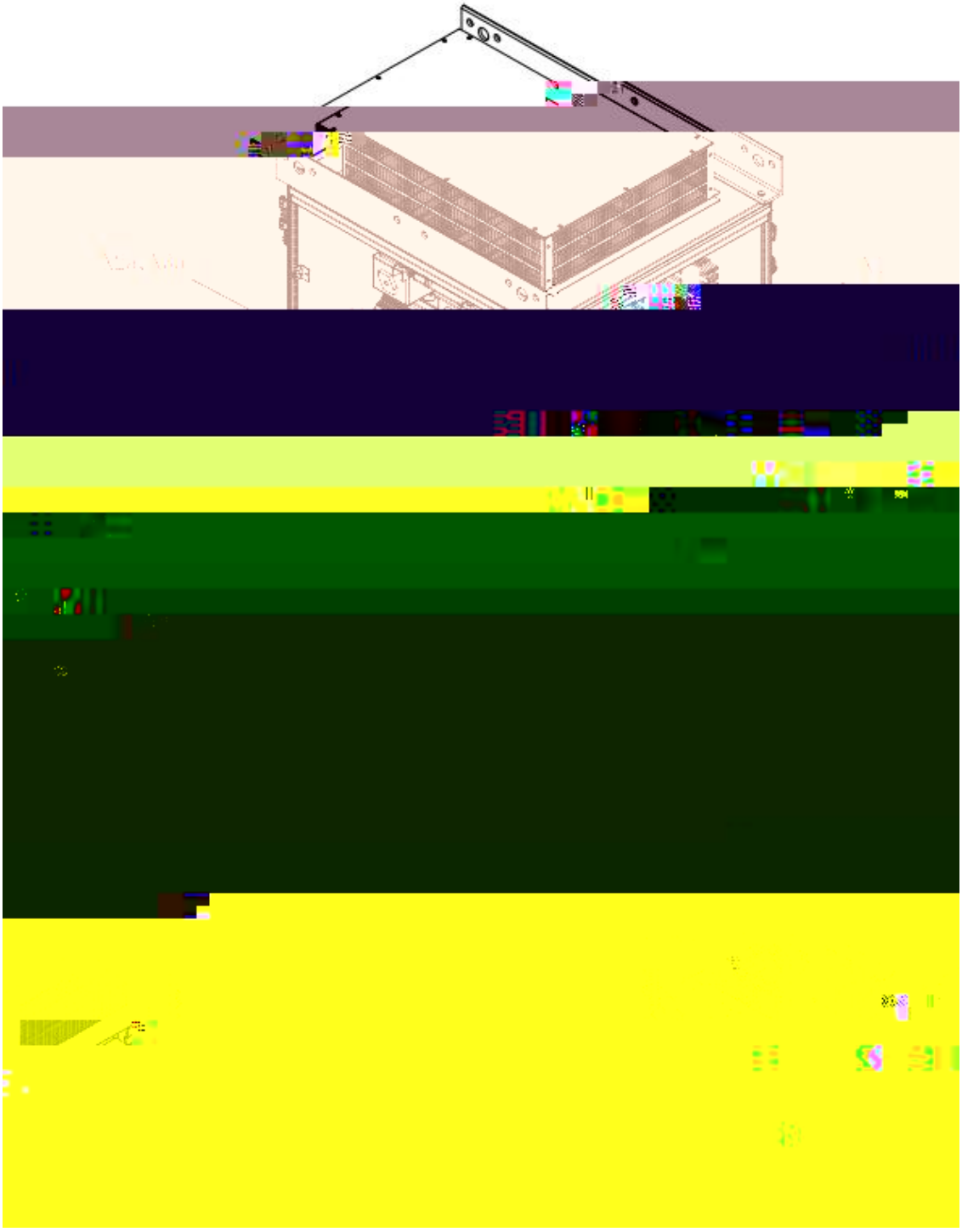
1

2 450kW

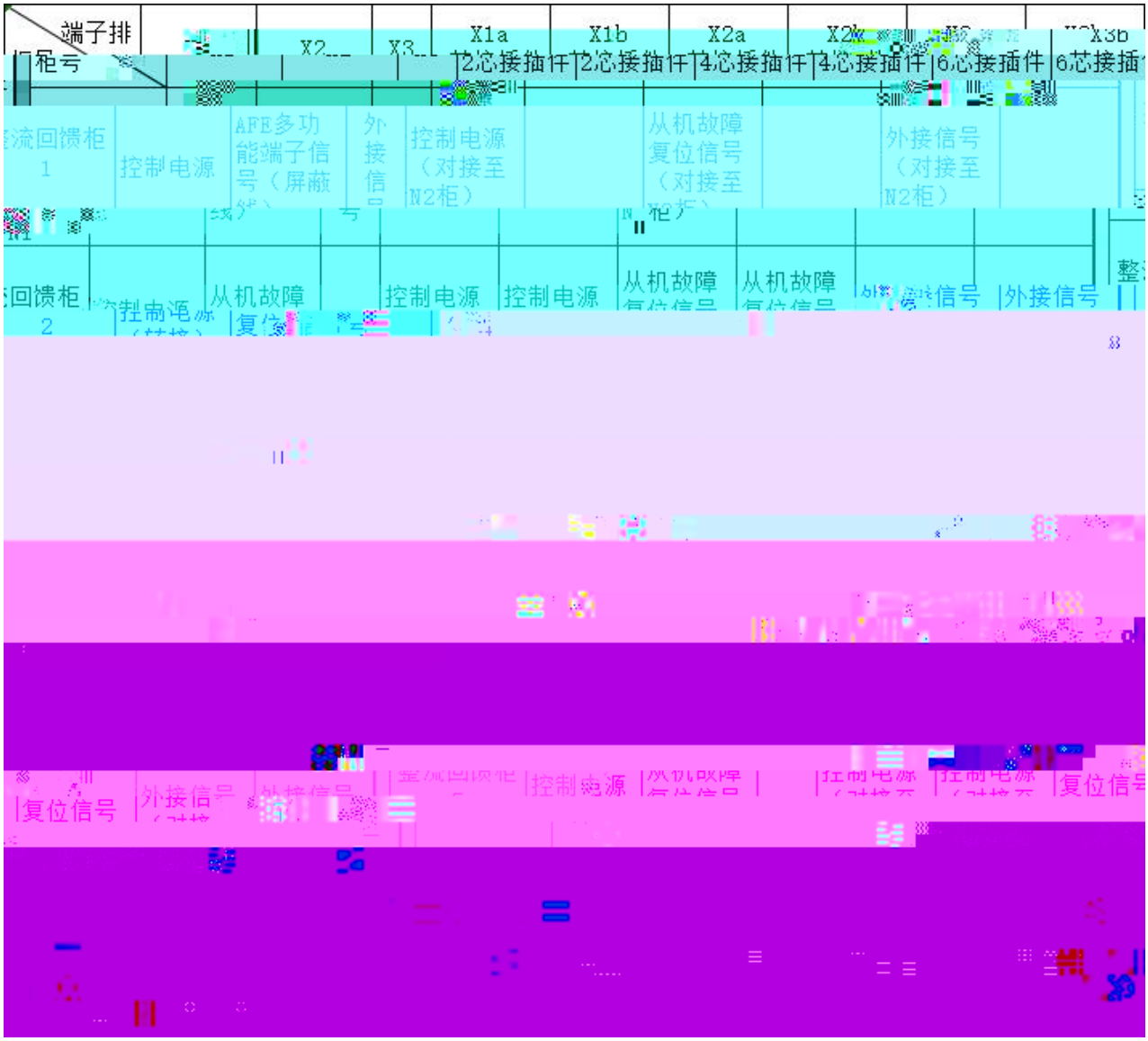
450kW



1 ( ) a



2 b


端子排
柜号
X1a
X1b
X2a
6芯接插件
控制电源
从机故障
外接信号
复位信号

4.

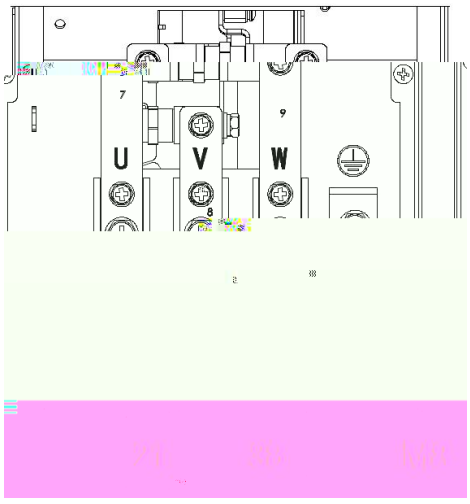
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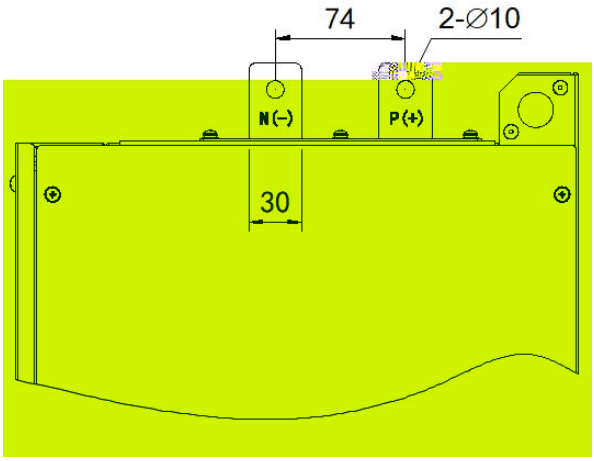
4.2

1

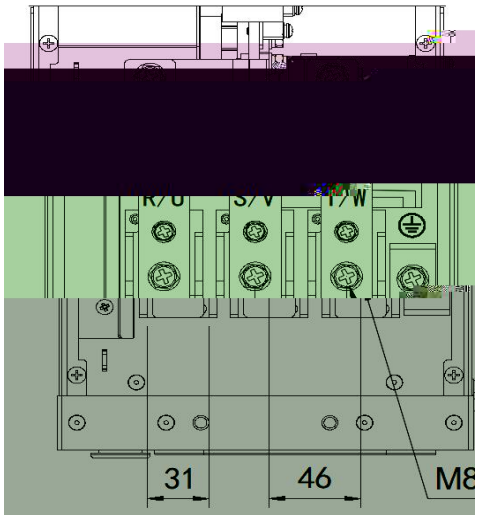
P +	
N -	
U V W	

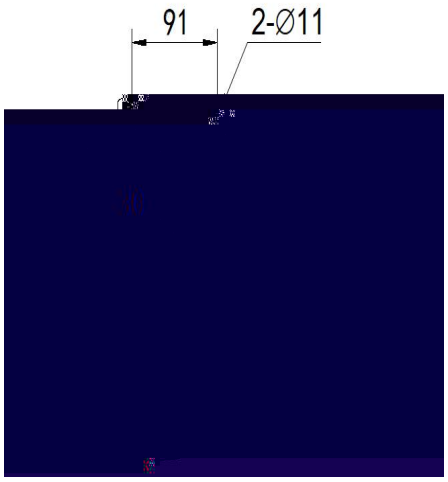
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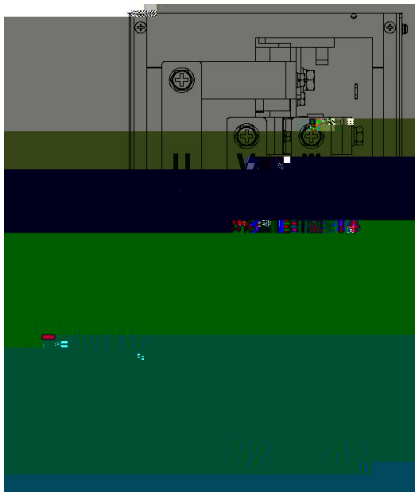


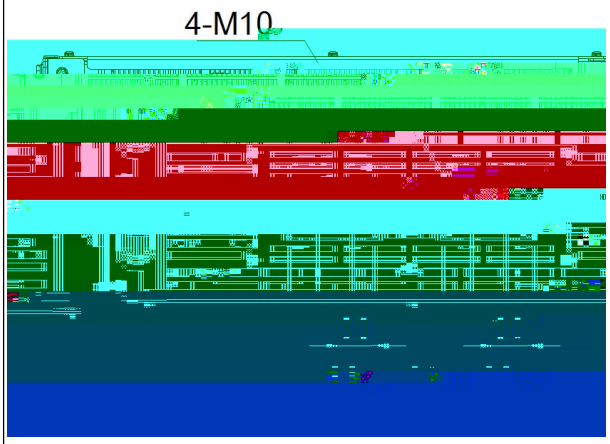
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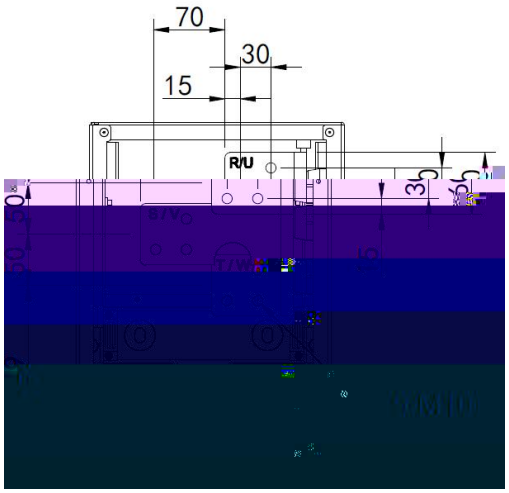


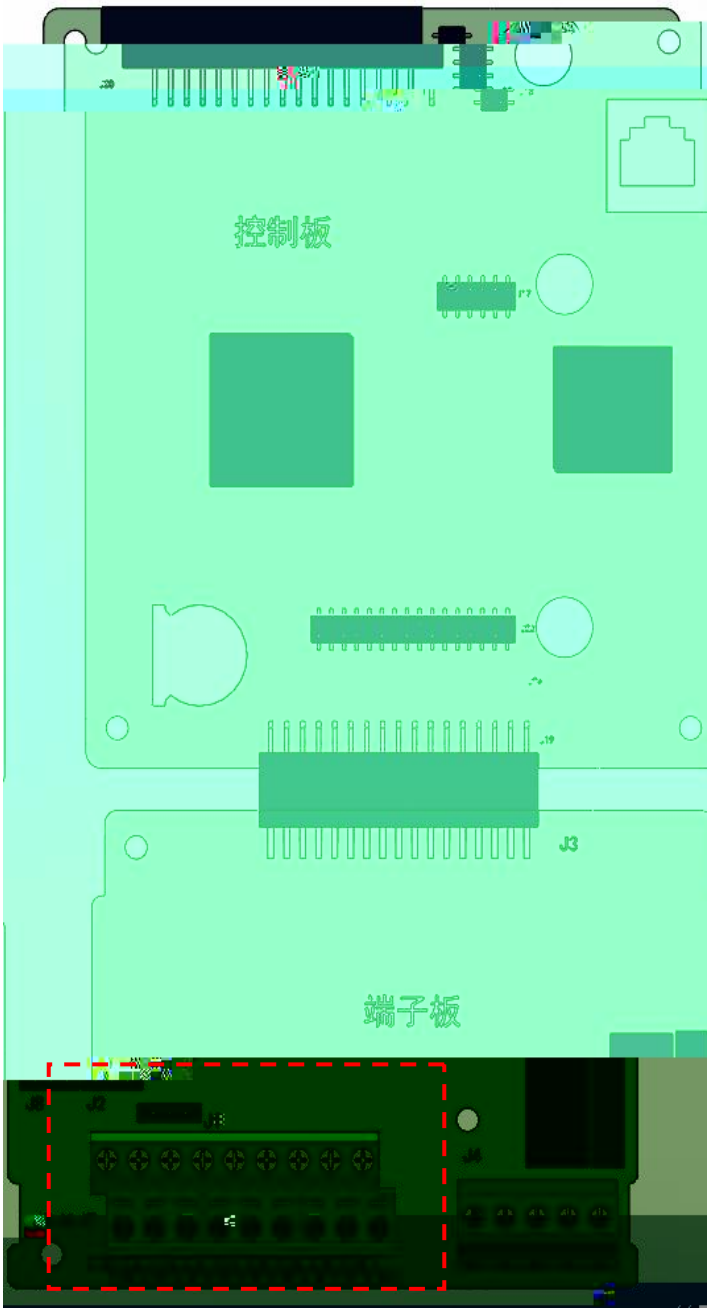


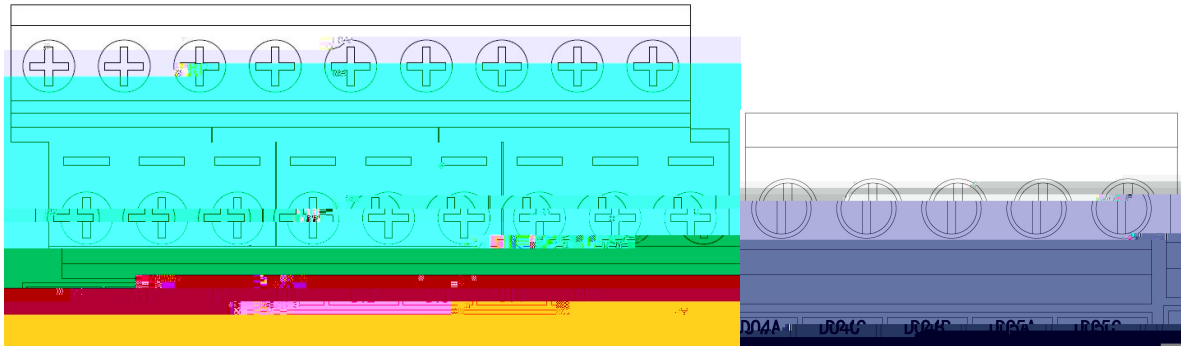
B5





B6	
	

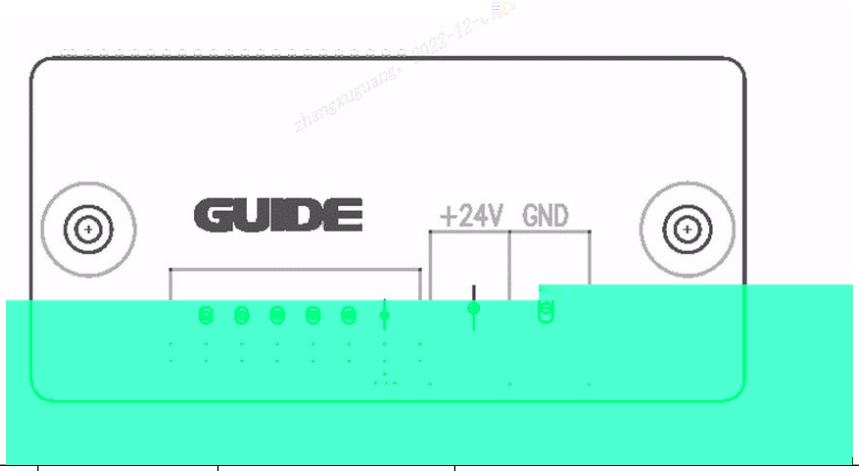

控制板
J3
端子板



	+10V-GND	10V	+10V 50mA 1kΩ~5kΩ
	+24V-COM	24V	+24V 200mA
	PW		24V DI1~DI5 DO1 PW 24V
	AI1-GND	1	DC -10V~10V 100kΩ
	AI2-GND	2	-10VDC~10VDC/0mA~20mA J1 100kΩ 500Ω
	DI1- PW	1	3.3kΩ 9V~30V DI1-DI4 500Hz DI5 20KHz
	DI2- PW	2	
	DI3- PW	3	
	DI4- PW	4	
	DI5- PW	5	
	AO1-GND	1	J2 0V~10V 0mA~20mA
	AO2-GND	2	J8 0V~10V 0mA~20mA
	DO1-COM	1	0V~24V 0mA~50mA
	DO4A-DO4C	1	250VAC 3A COS =0.4 30VDC 1A
	DO4B-DO4C	2	
	DO5A-DO5C	3	250VAC 2A COS =0.4 30VDC 1A

	J1	AI2	
	J2	AO1	
	J8	AO2	

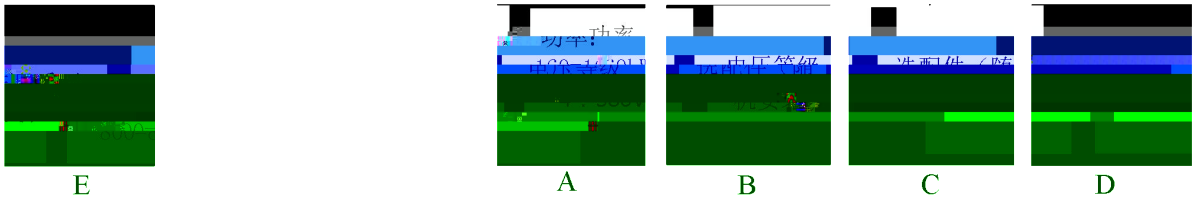
2



DC+24V	CN4	+24V-GND	
	CN1		L1/L2/L3

4.3

HF680N 03M — □□□ — 4 + X



A	
B	03M 03C
C	160 160kW 800 800kW
D	4 380V
E	

MBO1	Modbus RTU	DPO1	Profibus DP
PNO1	Profinet	CANO1	CANopen
PGO2			

Z1/Ď ž ď / Ē

	[A]	[kW]	[A]	[kW]	
HF680N03M-200-4	415	200	367	185	
HF680N03M-220-4	438	220	418	200	
HF680N03M-250-4	485	250	440	220	
HF680N03M-280-4	545	280	487	250	B6
HF680N03M-315-4	610	315	548	280	
HF680N03M-355-4	668	355	615	315	
HF680N03M-400-4	720	400	670	355	
HF680N03M-450-4	820	450	725	400	
HF680N03C-500-4	970	500	823	450	2*B5
HF680N03C-500-4+PG02					
HF680N03C-560-4	1090	560	975	500	2*B6
HF680N03C-560-4+PG02					
HF680N03C-630-4	1220	630	1095	560	
HF680N03C-630-4+PG02					
HF680N03C-710-4	1336	710	1230	630	
HF680N03C-710-4+PG02					
HF680N03C-800-4	1440	800	1340	710	
HF680N03C-800-4+PG02					
HF680N03C-900-4	1620	900	1445	800	
HF680N03C-900-4+PG02					

4.4

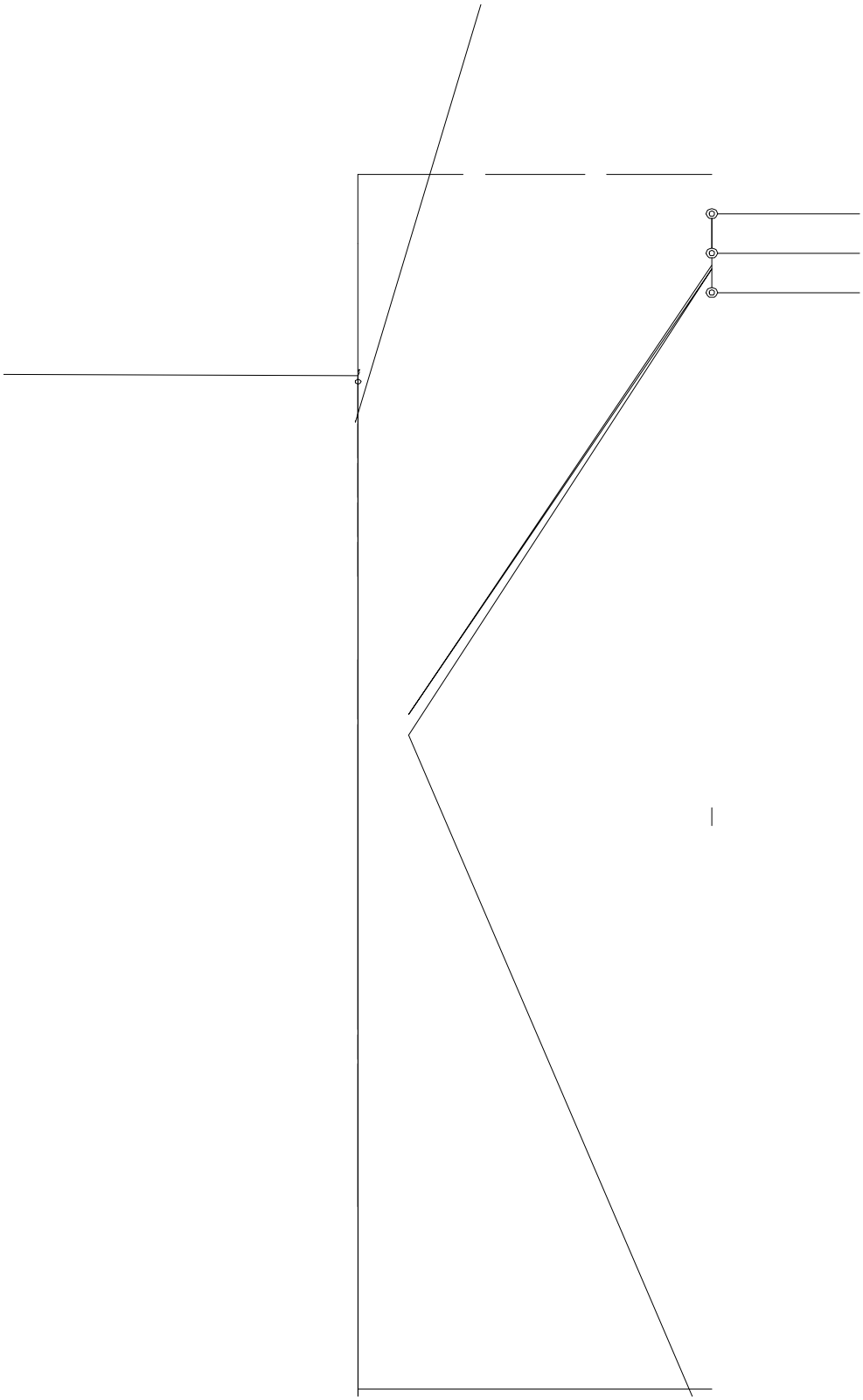
	1%			1%	
	A	mH		A	mH
37kW	75	0.09	200kW	396	0.02
45kW	94	0.07	220kW	438	0.02
55kW	115	0.06	250kW	485	0.01
75kW	155	0.05	280KW	545	0.01
90kW	188	0.04	315kW	610	0.01
110kW	215	0.03	355kW	668	0.01
132kW	265	0.03	400kW	720	0.01
160kW	303	0.02	450kW	820	0.01
185kW	365	0.02	/	/	/

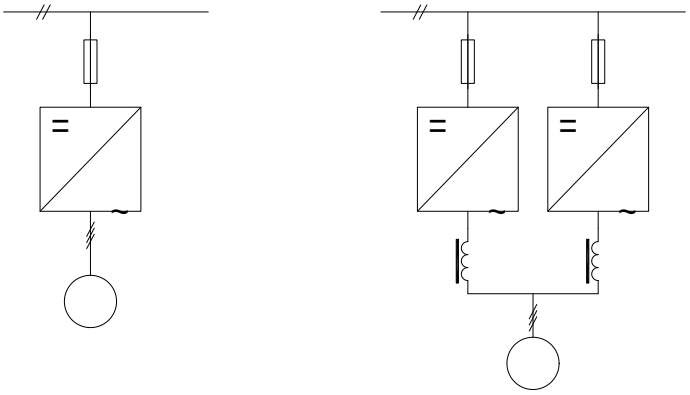
1. 100m

100m

2. 450kW

4.5





	mm² 40%	A
HF680N03M-037-4	10	117
HF680N03M-045-4	16	147
HF680N03M-055-4	16	180
HF680N03M-075-4	25	243
HF680N03M-090-4	35	294
HF680N03M-110-4	50	338
HF680N03M-132-4	70	416
HF680N03M-160-4	95	476
HF680N03M-185-4	95	572
HF680N03M-200-4	120	621
HF680N03M-220-4	120	687
HF680N03M-250-4	70*2	761
HF680N03M-280-4	70*2	854
HF680N03M-315-4	95*2	956
HF680N03M-355-4	120*2	1047
HF680N03M-400-4	120*2	1128
HF680N03M-450-4	150*2	1285

1. 400kW

2. HF680N

4.6

540V 700V

(VC) (SVC) V/F

Profibus DP

380V 460V 5%

0 300Hz

0Hz/200%(VC

4.8

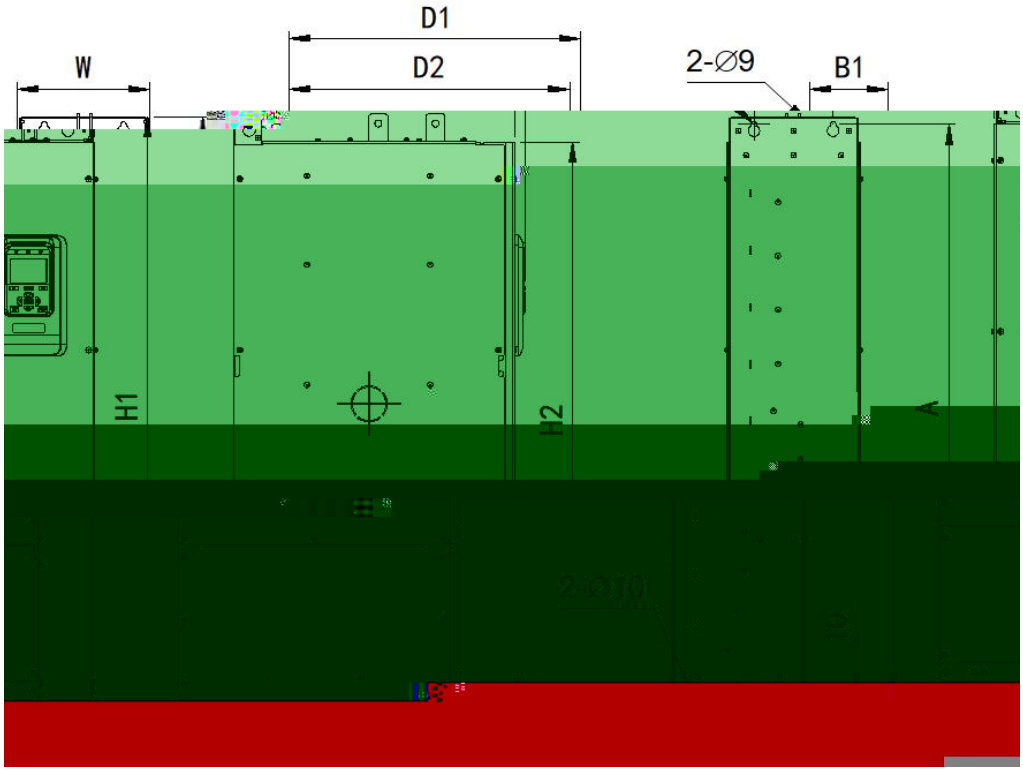
(1) 200%

(2) 50% HF680N

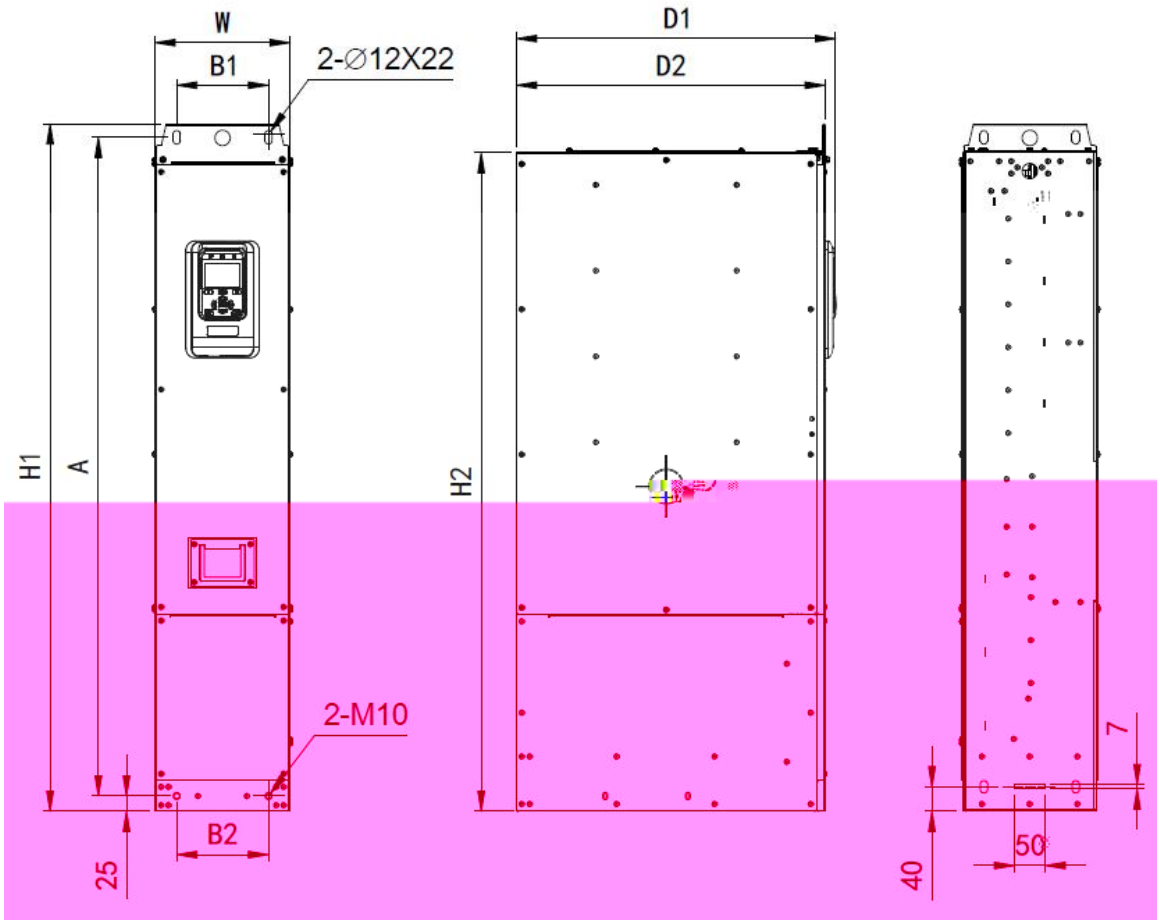
(3) HF680N

5.

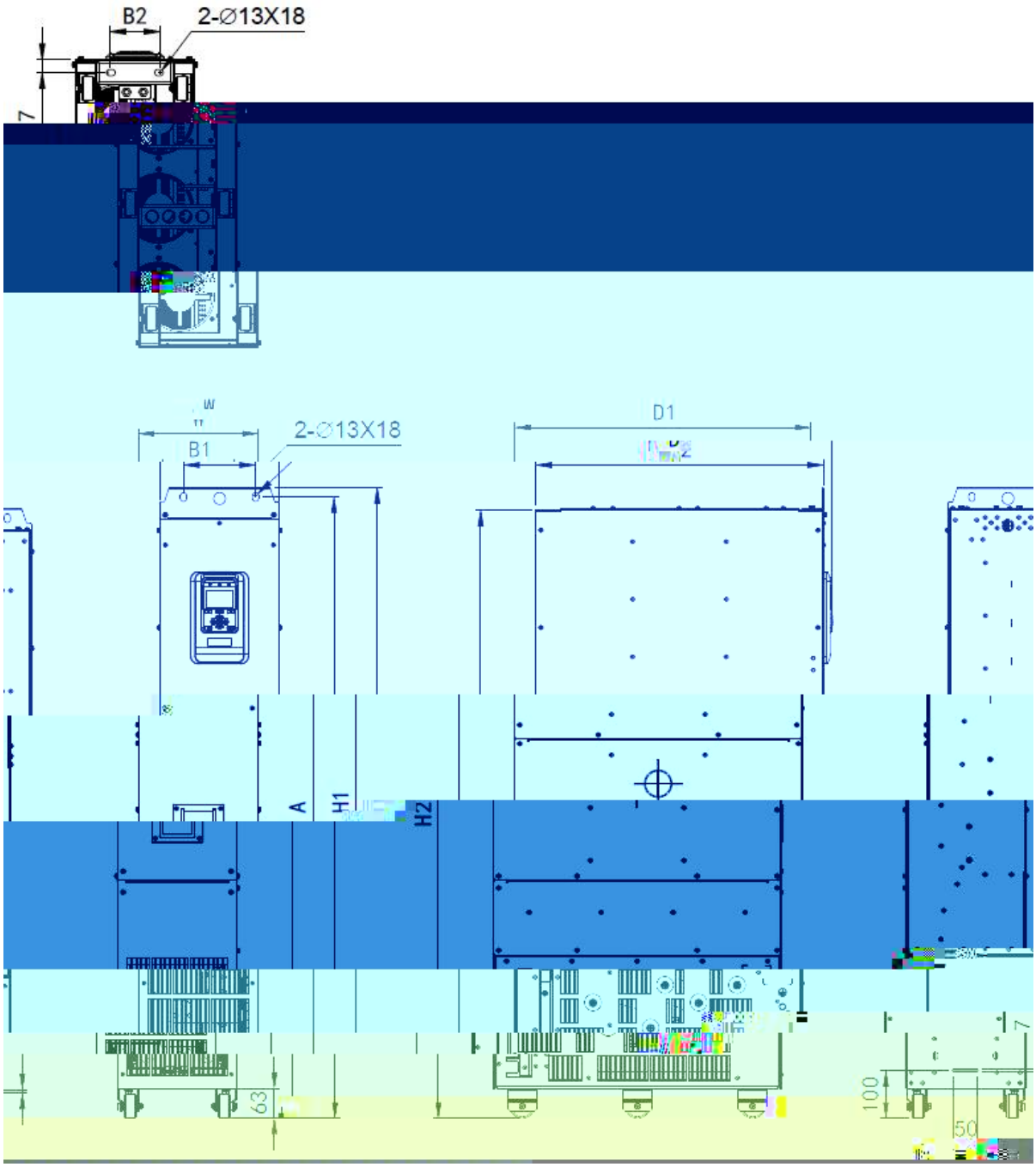
5.1



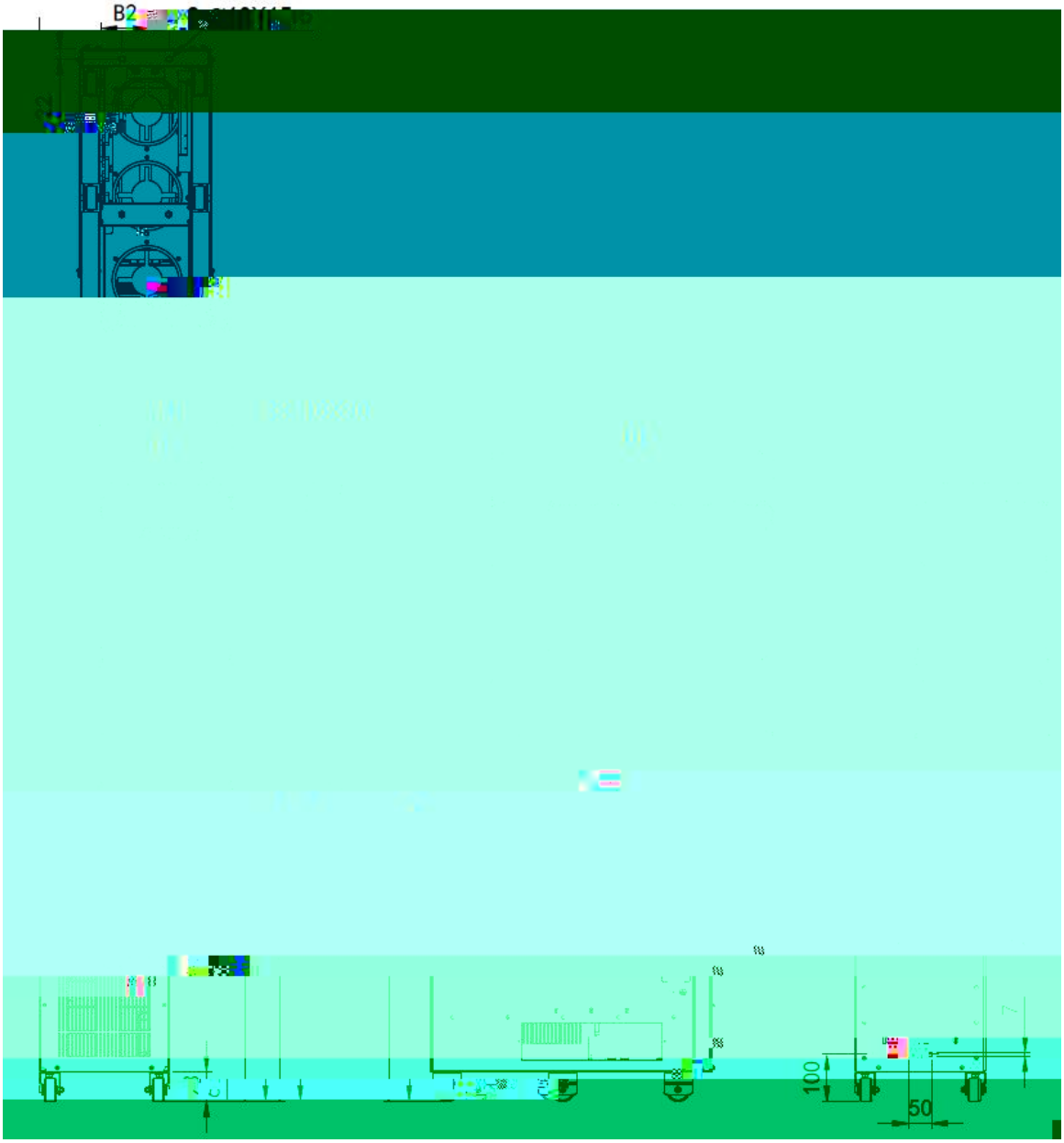
B4



B5



B6



LCL

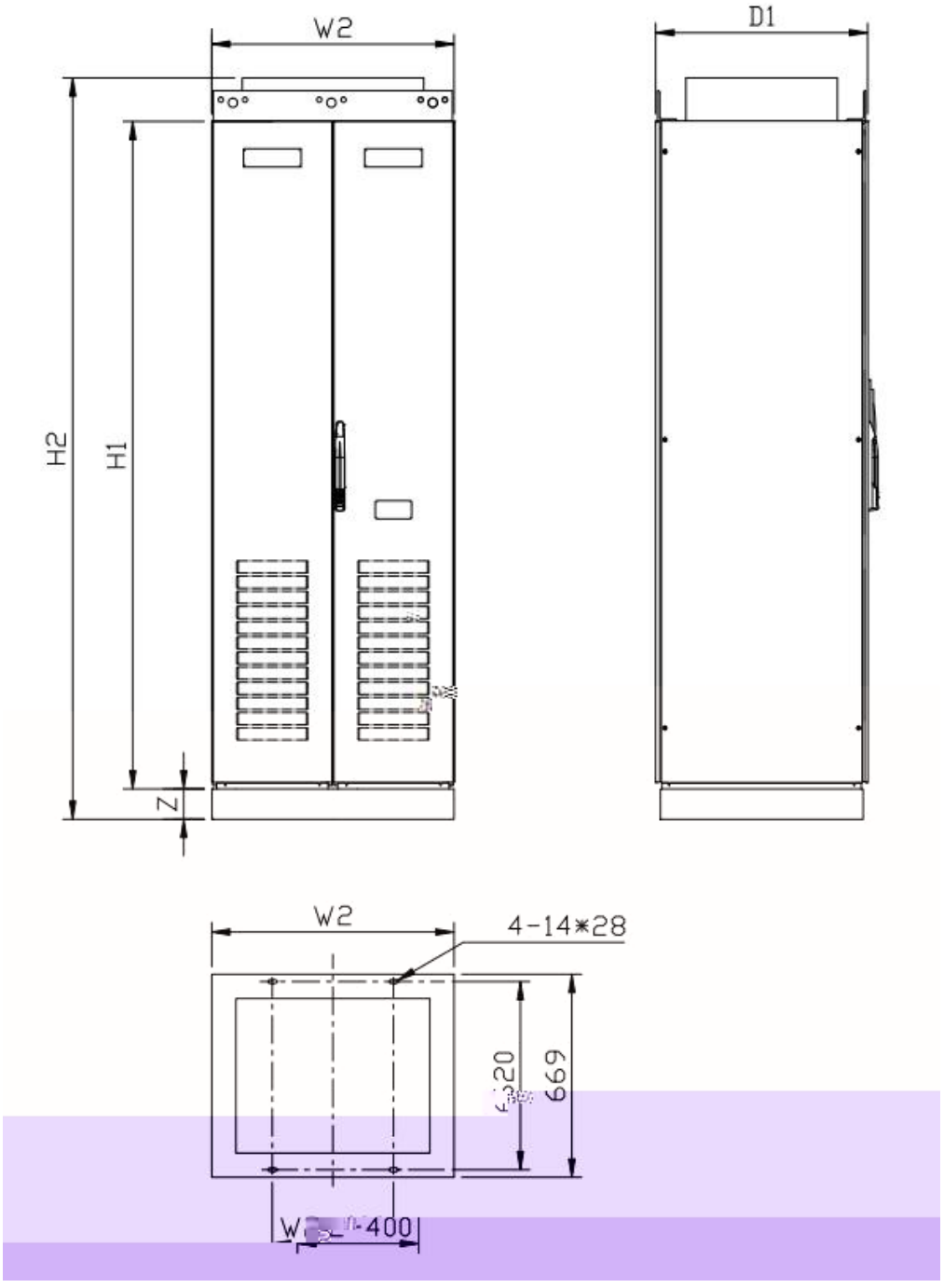
		mm					mm			8.8	kg
		H1	H2	W	D1	D2	A	B1	B2		
HF680N02M-075-4	B4	920	880	210	462	444	899	125	150	4-M8	55
HF680N02M-132-4											
HF680N02M-185-4	B5	1125	1075	220	520	505	1075	150	150	4-M10	80
HF680N02M-250-4	B6	1315	1268	250	618	600	1295	150	100	4-M12	120
HF680N02M-315-4											
HF680N02M-355-4											
HF680N02M-400-4											
HF680N02M-450-4											

LCL

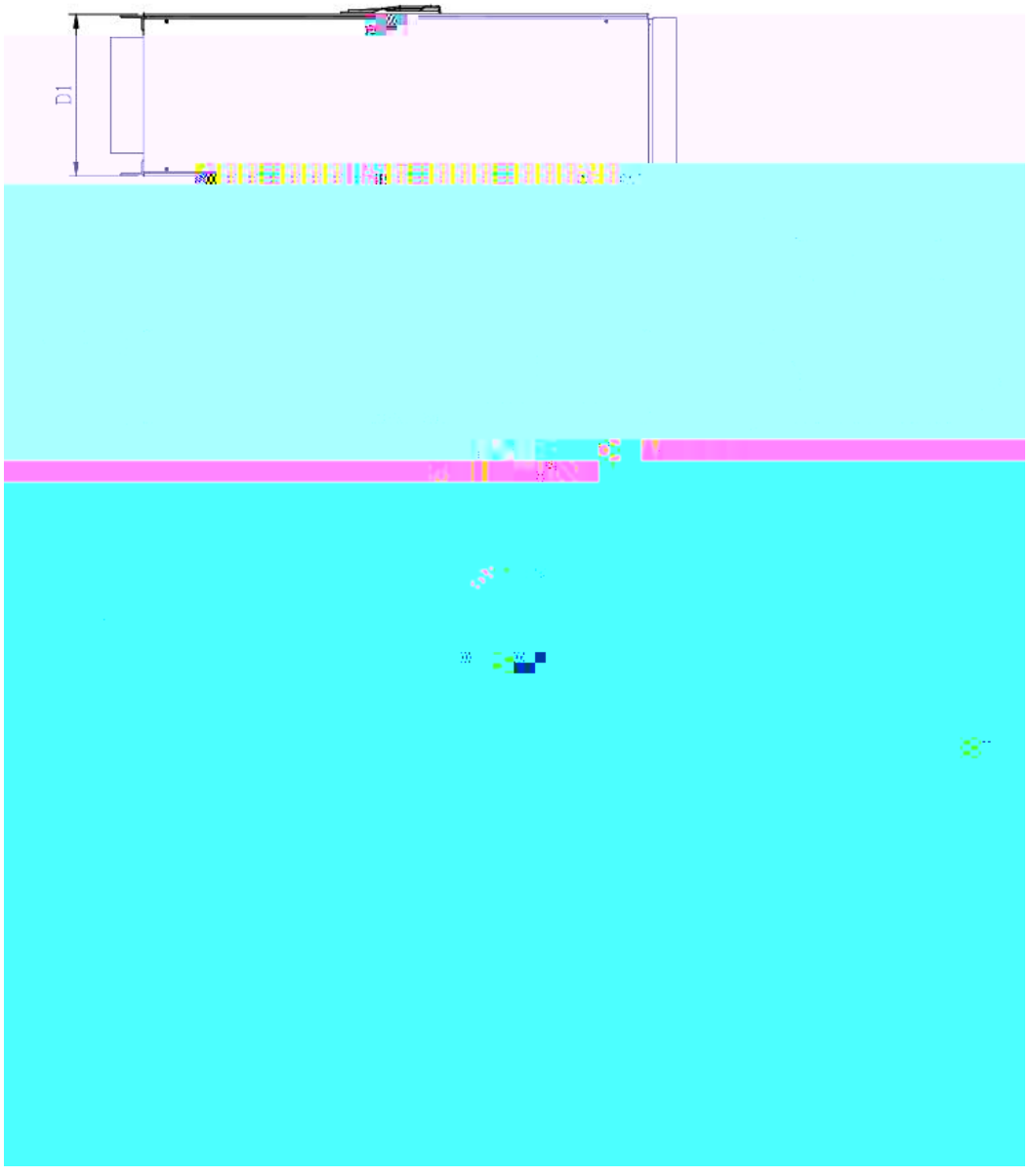
		mm					mm			8.8	kg
		H1	H2	W	D1	D2	A	B1	B2		
GDHF680-LCL-250-4	/	1315	1269	280	600	/	1295	150	100	4-M8	320
GDHF680-LCL-315-4											
GDHF680-LCL-450-4											

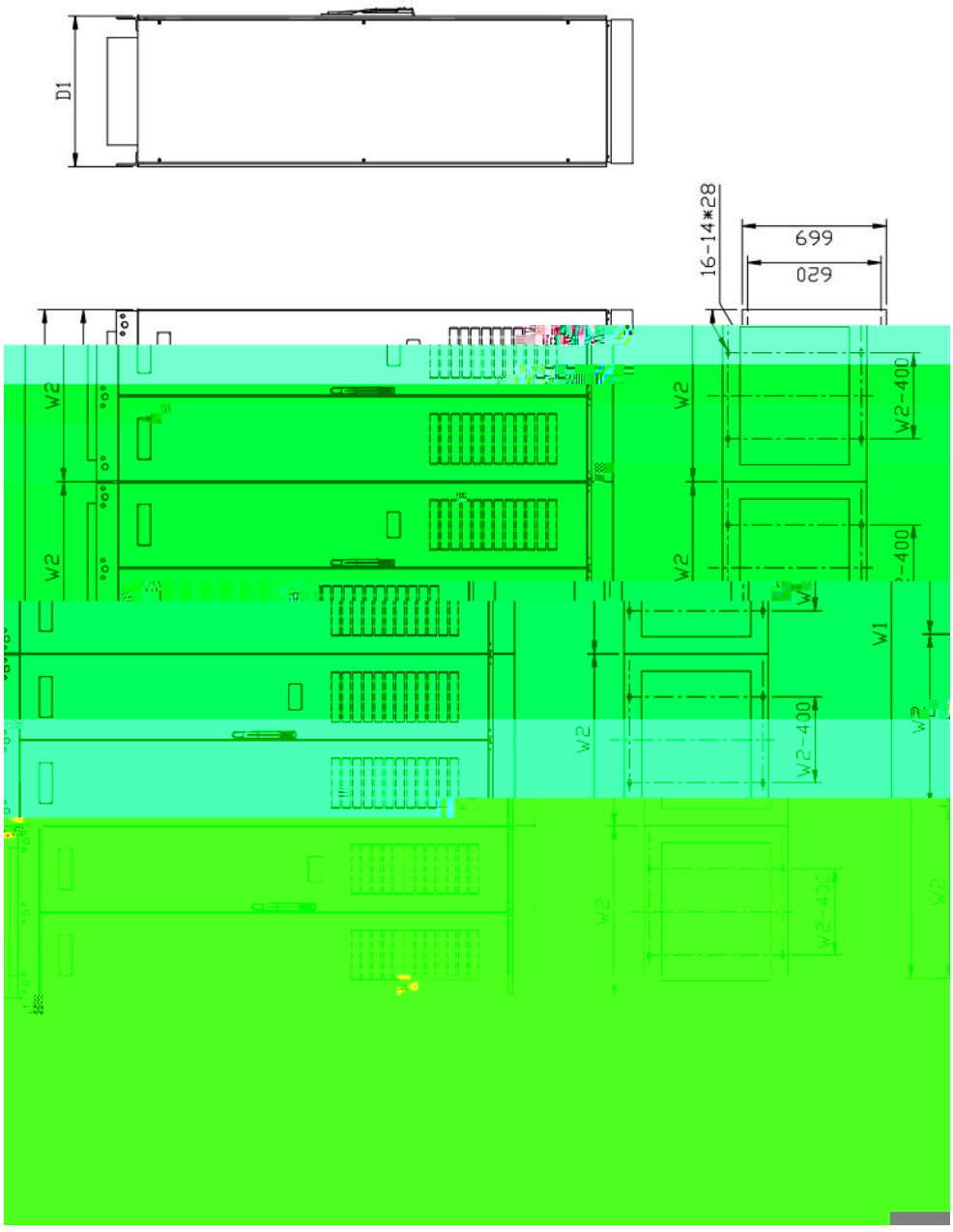
5.2

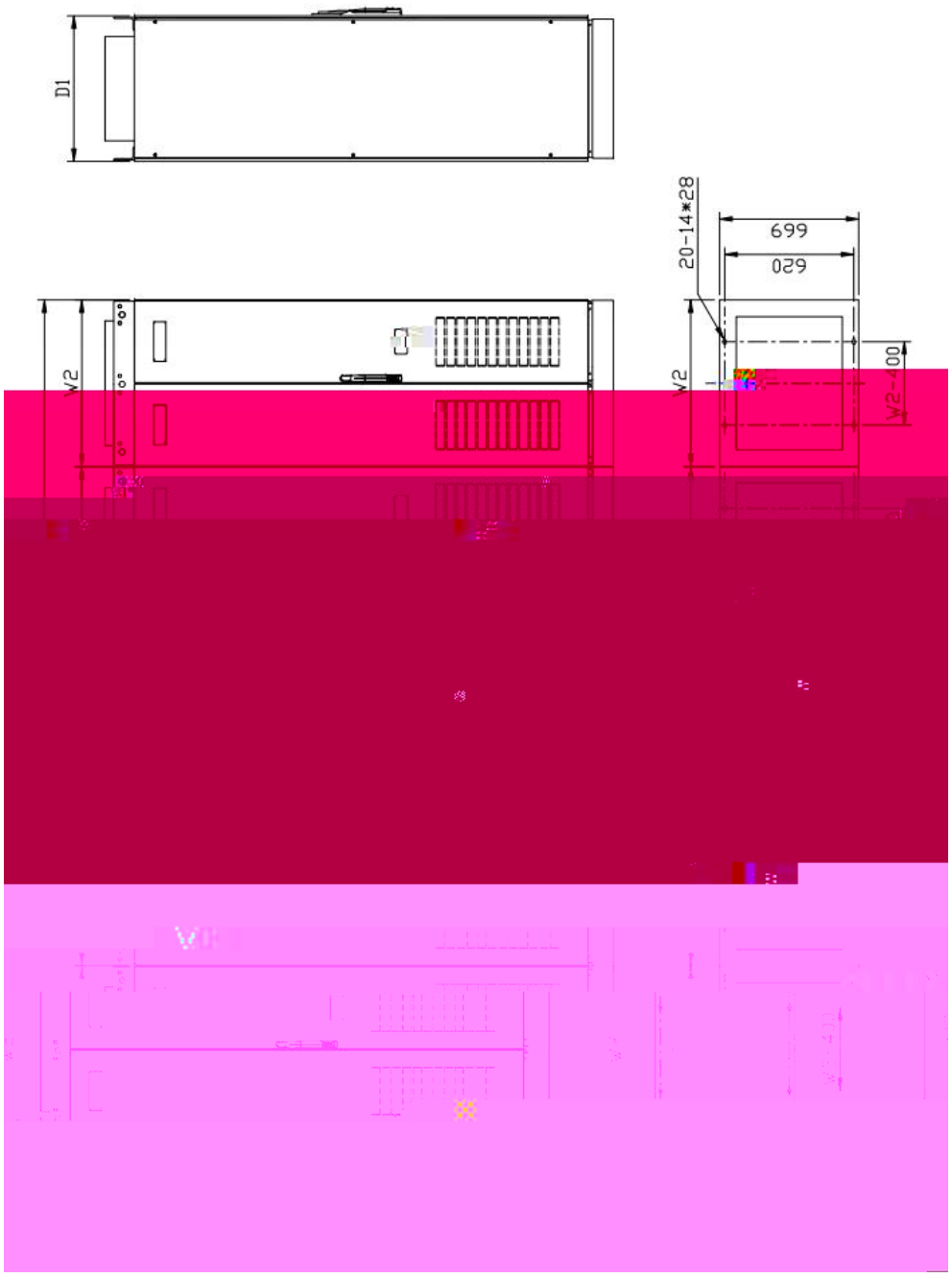
250kW~2400kW

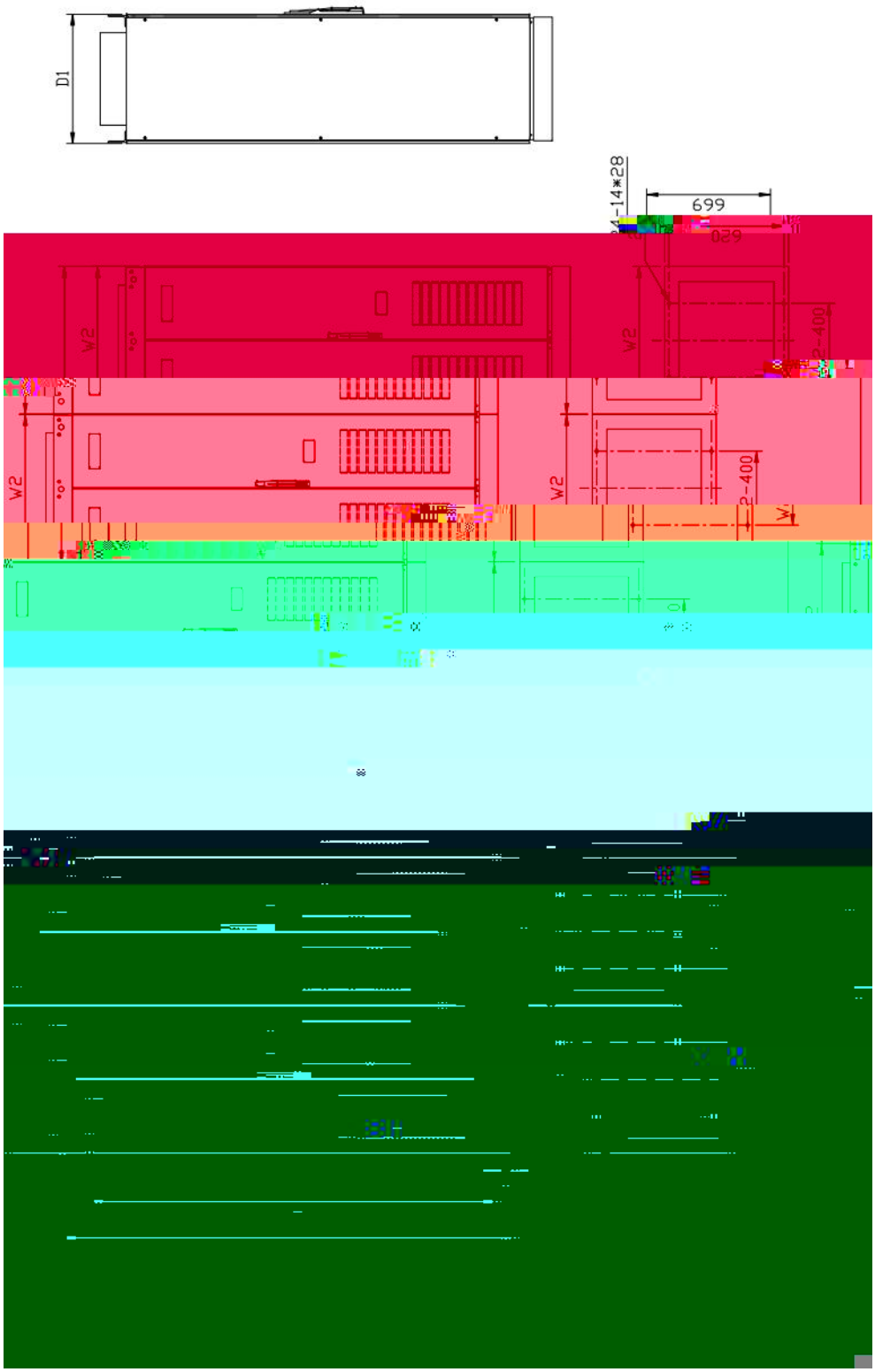


HF680N02C-250-4 HF680N02C-315-4 HF680N02C-400-4 HF680N02C-450-4


D1


D1
16-14*28
699
620
W2
W2-400
W1

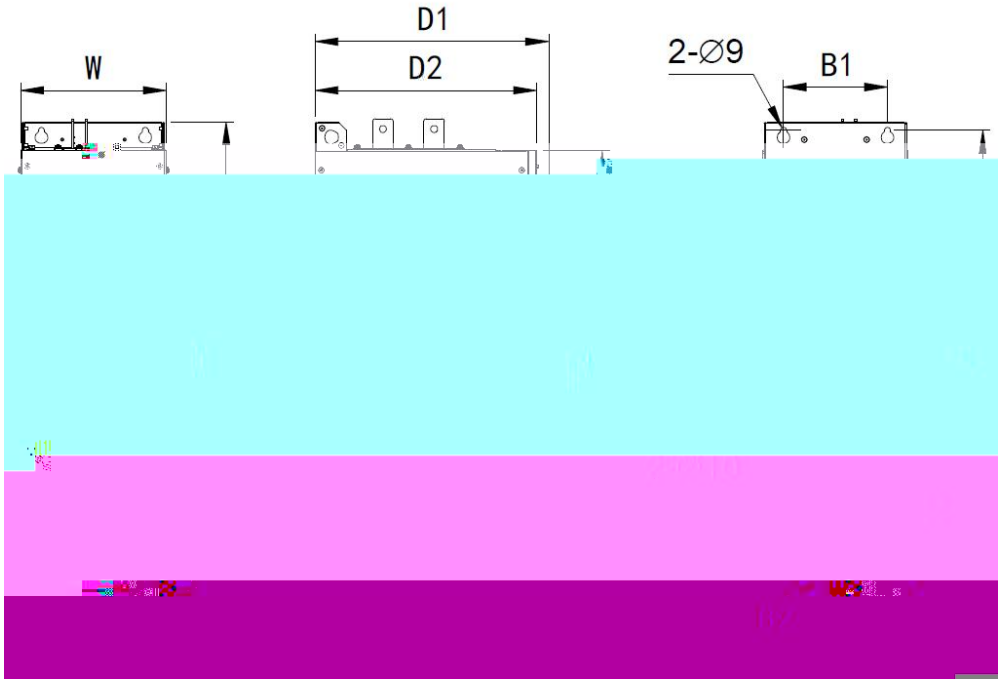

D1
20-14*28
699
620
W2
W2
W2-400


D1
699
W2
W2
W2
W2

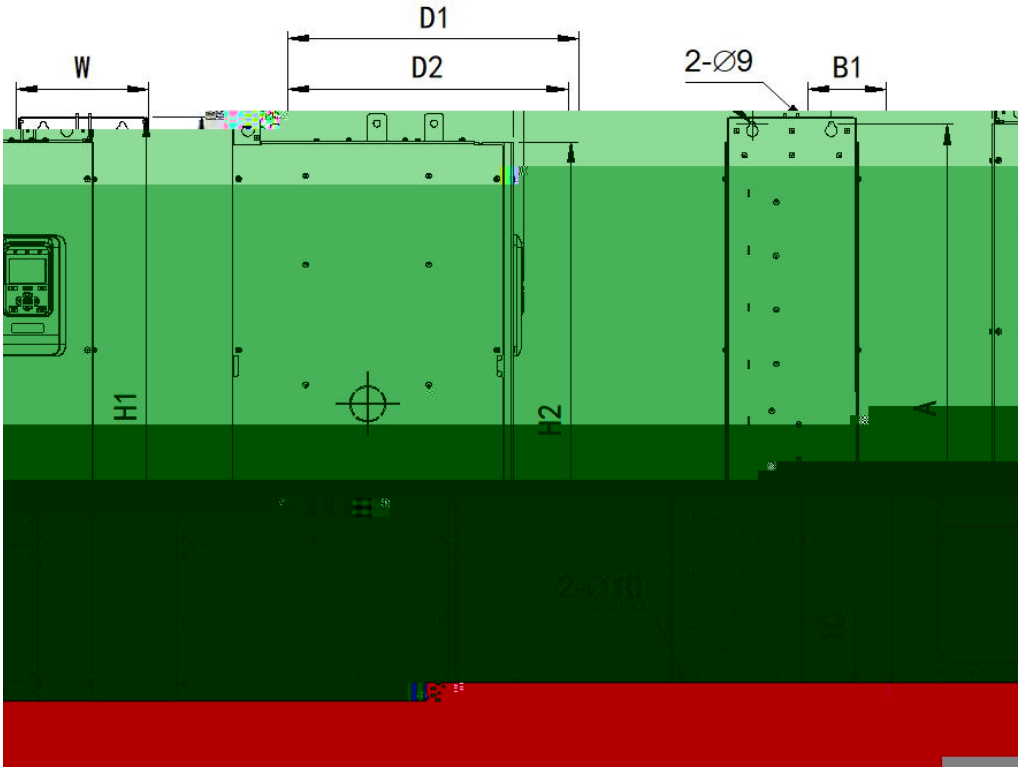
250kW 3[illegible]kW 400kW (450kW

		mm						
		H1	H	W1	W2	D1	Z	kg
1	HF680N02C-250-4 HF680N02C-250-4+Z1 HF680N02C-315-4 HF680N02C-315-4+Z1	2200	2440	/	800	700	100	1000
2	HF680N02C-250-4+Z2 HF680N02C-315-4+Z2 HF680N02C-400-4+Z2	2200	2540	/	800	700	200	1000
3	HF680N02C-250-4+Z3 HF680N02C-315-4+Z3 HF680N02C-400-4+Z3	2200	2590	/	800	700	250	1000
4	HF680N02C-250-4+Z4 HF680N02C-315-4+Z4 HF680N02C-400-4+Z4 HF680N02C-450-4+Z4	2200	2640	/	800	[illegible]	300	[illegible]

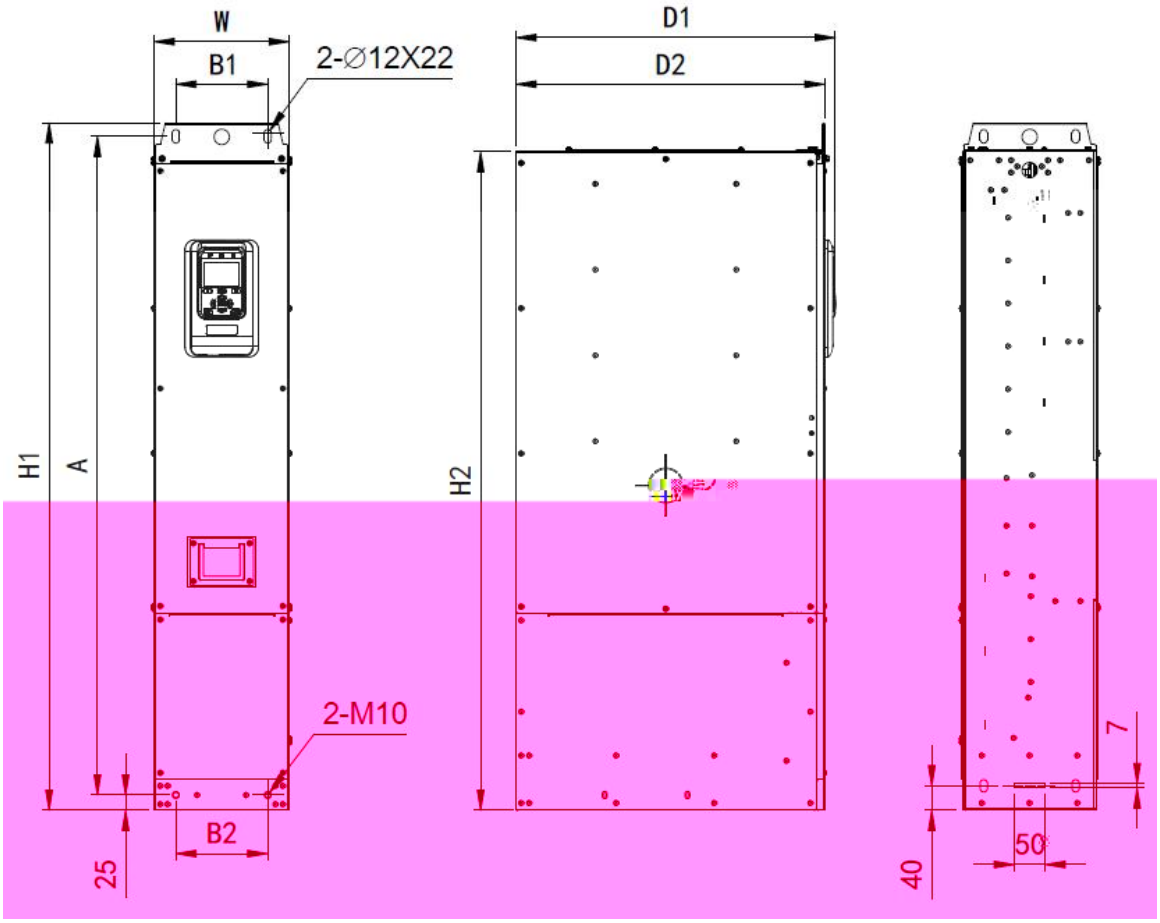
5.3



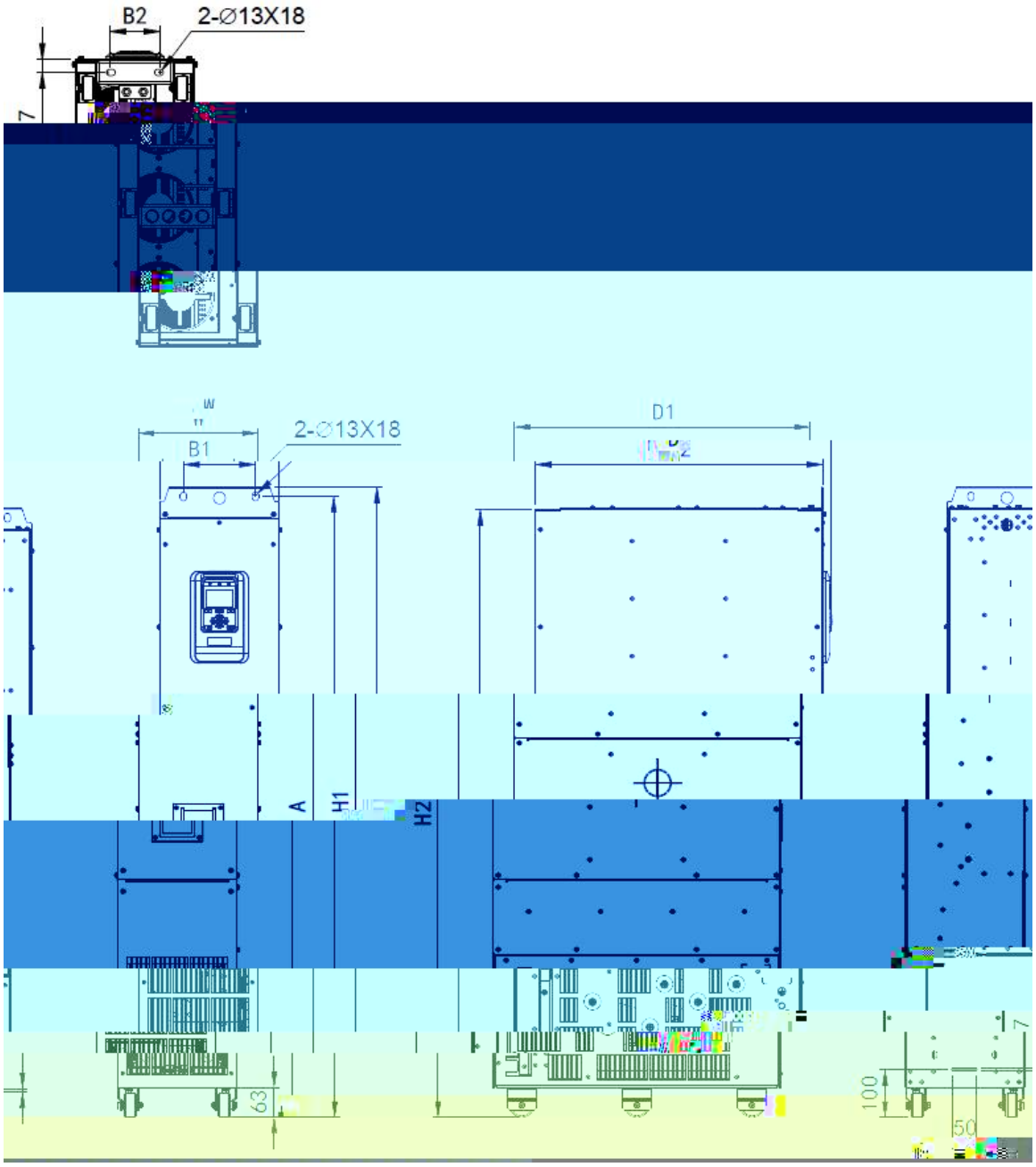
B3



B4



B5



B6

mm

mm

8.8 kg

H1 H2 W D1 D2 A B1 B2

		mm					kg
		H1	H2	W1	D1	Z	
1	HF680N03C-500-4 HF680N03C-500-4+Z1	2200	2440	800	700	100	900
	HF680N03C-560-4 HF680N03C-560-4+Z1						
	HF680N03C-630-4 HF680N03C-630-4+Z1						
	HF680N03C-800-4 HF680N03C-800-4+Z1						
2	HF680N03C-500-4+Z2	2200	2540	800	700	200	900
	HF680N03C-560-4+Z2						
	HF680N03C-630-4+Z2						
	HF680N03C-800-4+Z2						
3	HF680N03C-500-4+Z3	2200	2590	800	700	250	900
	HF680N03C-560-4+Z3						
	HF680N03C-630-4+Z3						
	HF680N03C-800-4+Z3						
4	HF680N03C-500-4+Z4	2200	2640	800	700	300	900
	HF680N03C-560-4+Z4						
	HF680N03C-630-4+Z4						
	HF680N03C-800-4+Z4						

6.

6.1

HF680N F1

LOCAL/REMOTE F2 RUN STOP /RESET ENTER



6	Security	

6.4.1

1	Choose Direction
2	Reset Error
3	Menu Language
4	Monitor Setting
5	LCD Contrast
6	Time Setting

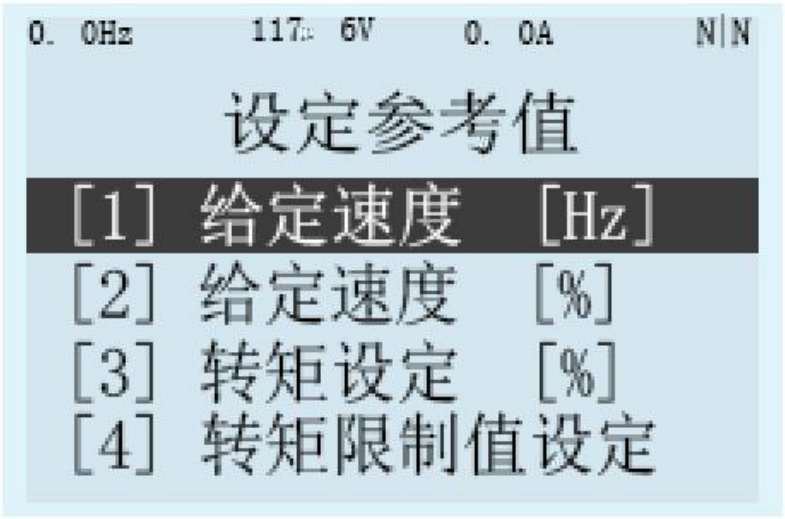
7	Version	
8	OLD COM	

6.4.2



Parameter Setting

6.4.3



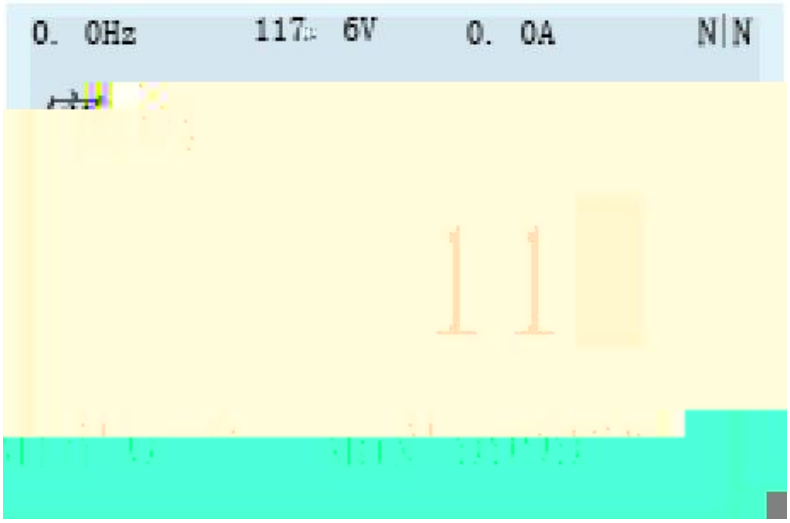
Reference Set

Referen_e n

1	MotoTuning I	
2	MotoTuning II	
3	MotoTuning III	
4	DC-Link Tuning (AFE)	AFE
5	Shortcut Paras Setting	
6	Parameter Initialization	
7	Delete Fault Records	
8	System Restart	
9	Backup Parameter	
10	Recover Parameter	
11	Compare Parameter	
12	Backup Para DSP DSP	DSP

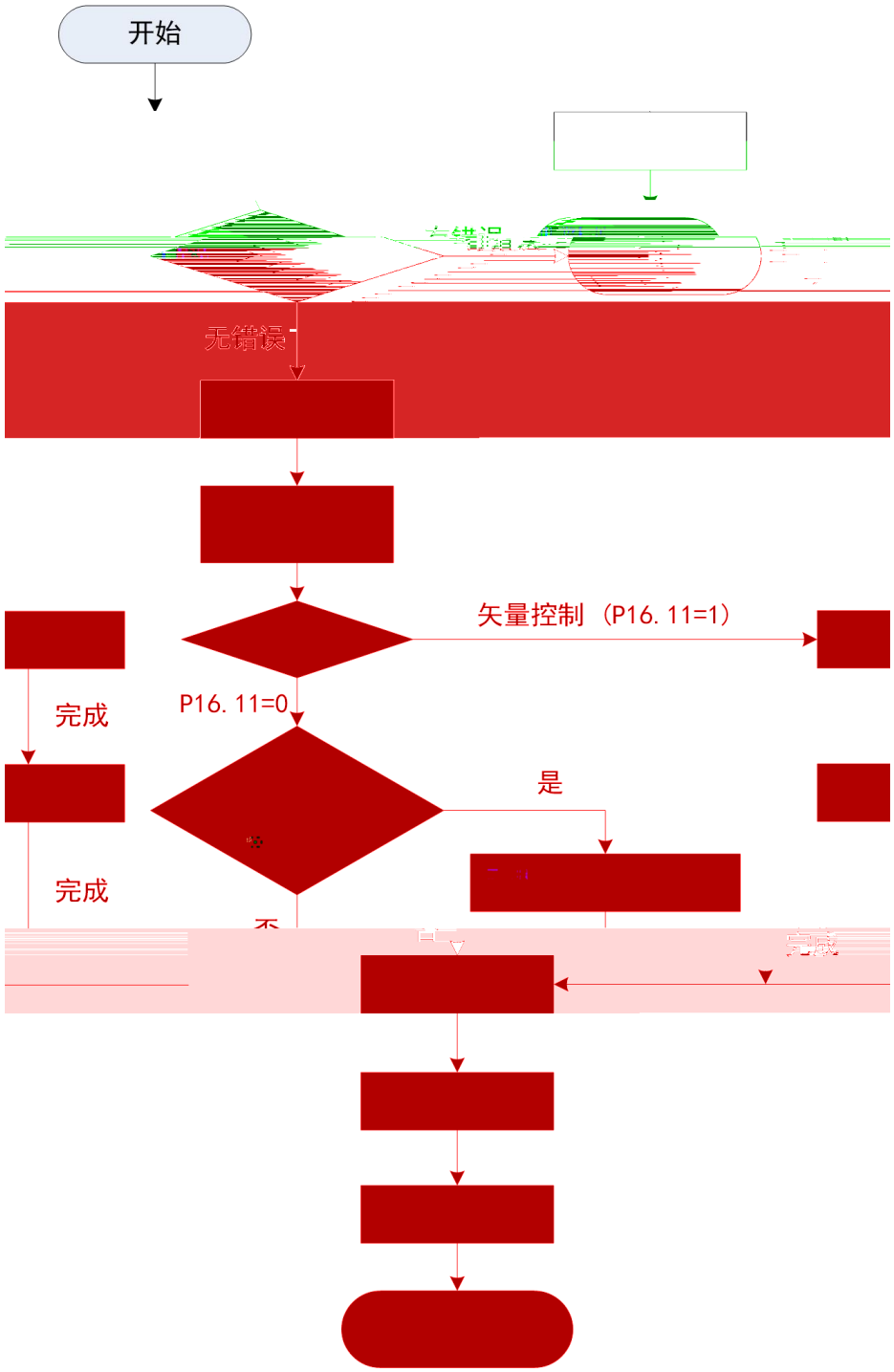
6.4.6

Access Permissions



7.

7.1



/

V/F P16.11=0 V/F

P16.11=2 P16.11=1

7.2.1

5.4 “ ”

7.2.2

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]	0
P16.14	V/F	[0] V/F [1] V/F [2]	0
P16.24		V/F	50 [Hz]
P8.16	1	P8.15	3
P8.35	1	P8.34	3
P8.0		[0] [1] [2]DP [3]MODBUS [4]	1

4

50%

7.2.4

HF680N

1

2 LOC/REM LOCAL LOCAL

3 ENTER [1] RUN

RUN 5Hz

8.

8.1

8.1.1

DI1 DI2

DI3: 14 DI4

DO2 DO3:

DO4 DO

DO5

1 א

P4.3	DO4	0
P4.4	DO5	32
P7.0		180%
P7.4		200%
P7.12		730V
P8.6		300s
P16.0		380V
P16.2		

DO

430V

800V

300s

0.5s

FE Stop

Ru

A B C

Stop

P N P N Local/Remote

Local P24.21 0 “ ”

“ ” Stop P24.28

P24.21 1

Local/Remote Remote PLC

2

380V 220V

参数	名称	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
101.5	数字量输入端子 [01 ~ 16]																
101.6	数字量输出端子 [01 ~ 16]																

P3.0 1

P3.1 20

P3.2 14 LCL

P3.3 5

P4.1 DO2 2

P4.2 DO3 1

P4.3 DO4 0 DO

P4.4 DO5 32

P7.0 180%

P7.4 200%

430V

P7.12 730V 800V

300s

P8.6 300s 0.5s

P16.0 380V

P16.2

P16 375V 580V

375V 16.0≤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

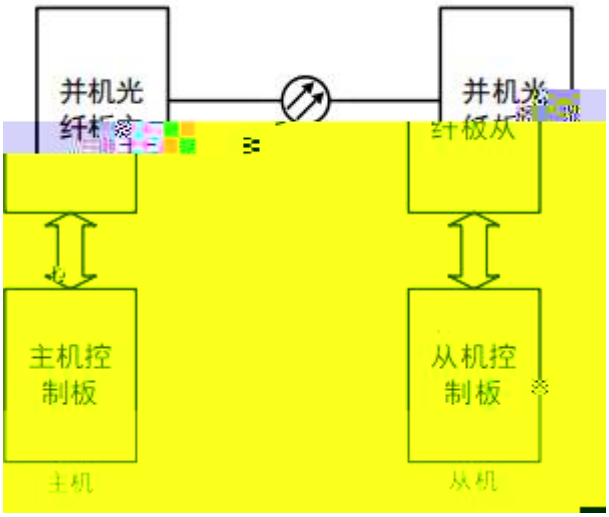
停止

D02

D04 D0

D05

1



380V **220V** P0.1

DI DO

DO

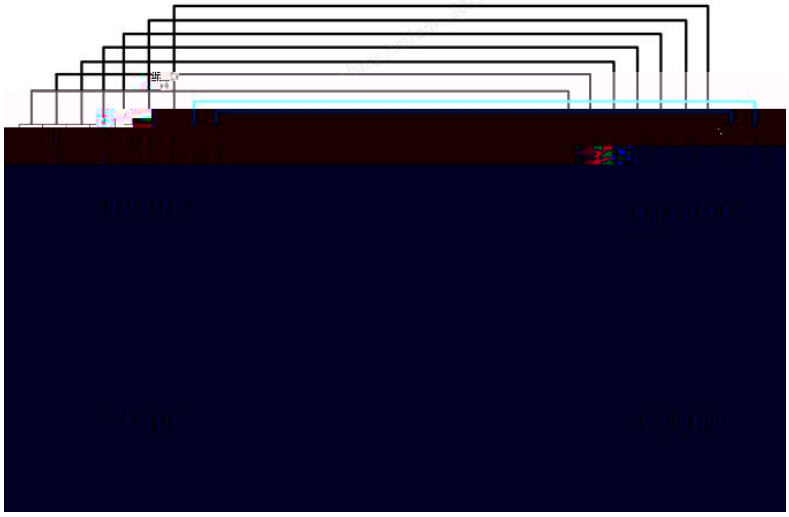
“ D04A ” “ D04C ” “ D05A ”

“ D05C ” D02 PLC

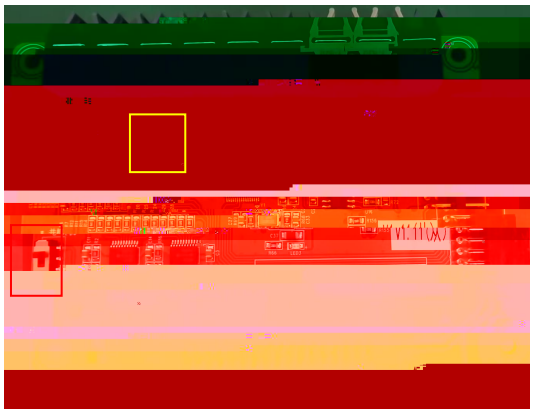
1

P3.0-P3.7 0 PLC DI “

” “ H:L ” DI 1







“ ”

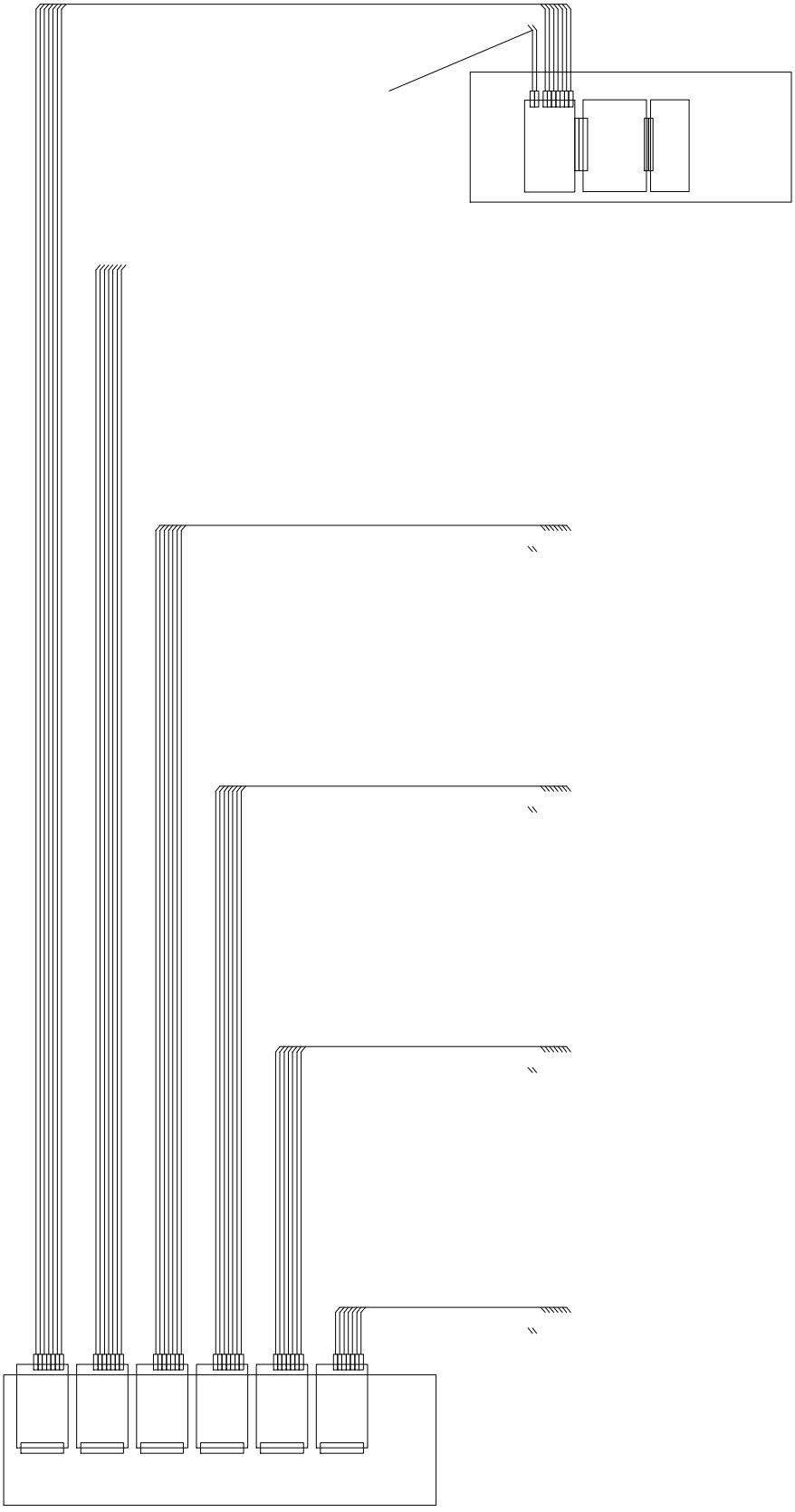
P2.0	2	
P3.2	14	LCL
P4.3 D04	0	DO
P4.4 D05	32	
P4.1 D02	2	
P7.0	180%	
P7.4	200%	
P7.12	730V	430V 800V

P16.0	380V	
P16.2		1

P16.11	3
P16.12	3 3K
	ADJ
P24.7	0V

P3.0		1	
P3.1		20	
P3.2		14	LCL
P3.3		5	
P4.1	DO2	2	
P4.2	DO3	1	
P4.3	DO4	0	DO
P4.4	DO5	32	
P7.0		180%	
P7.4		200%	
P7.12		730V	2 430V 800V
P8.6		300s	

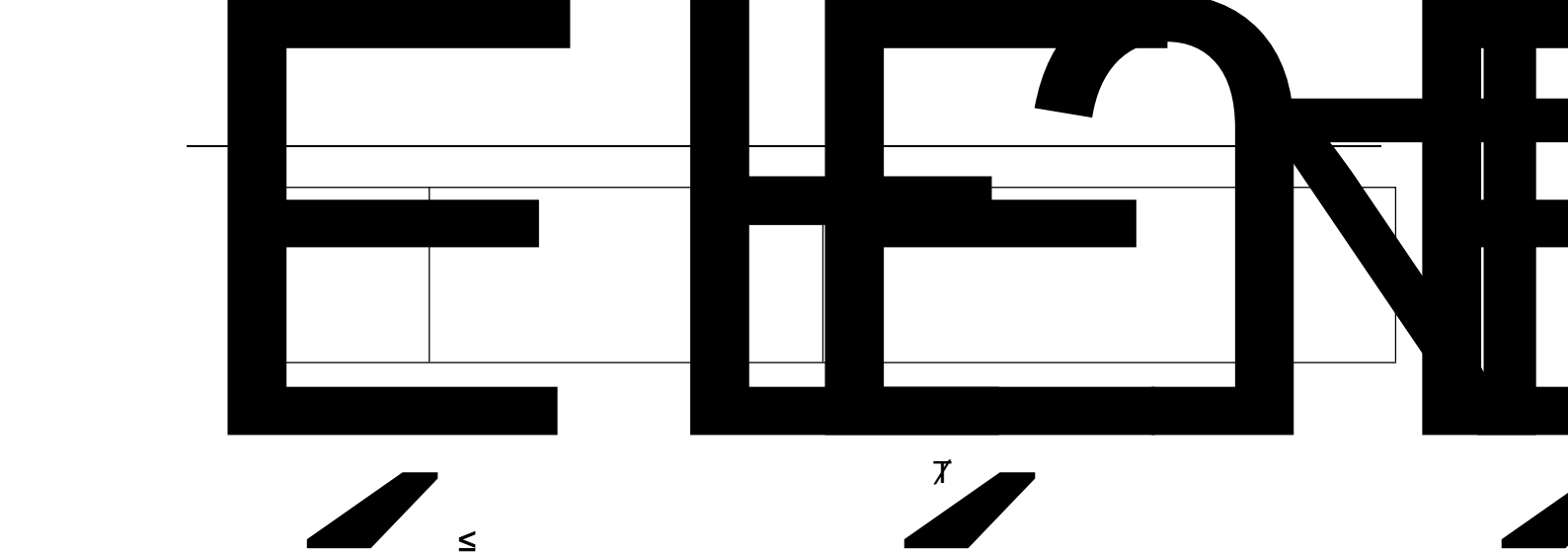
400V	P16.0 ≤ 430V	630V
430V	P16.0 ≤ 450V	665V
450V	P16.0 ≤ 460V	680V
P16.0	460V	700V



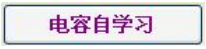


参数	名称	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
101.5	数字量输入端子 [01 ~ 16]																
101.6	数字量输出端子 [01 ~ 16]																

ЬЕ



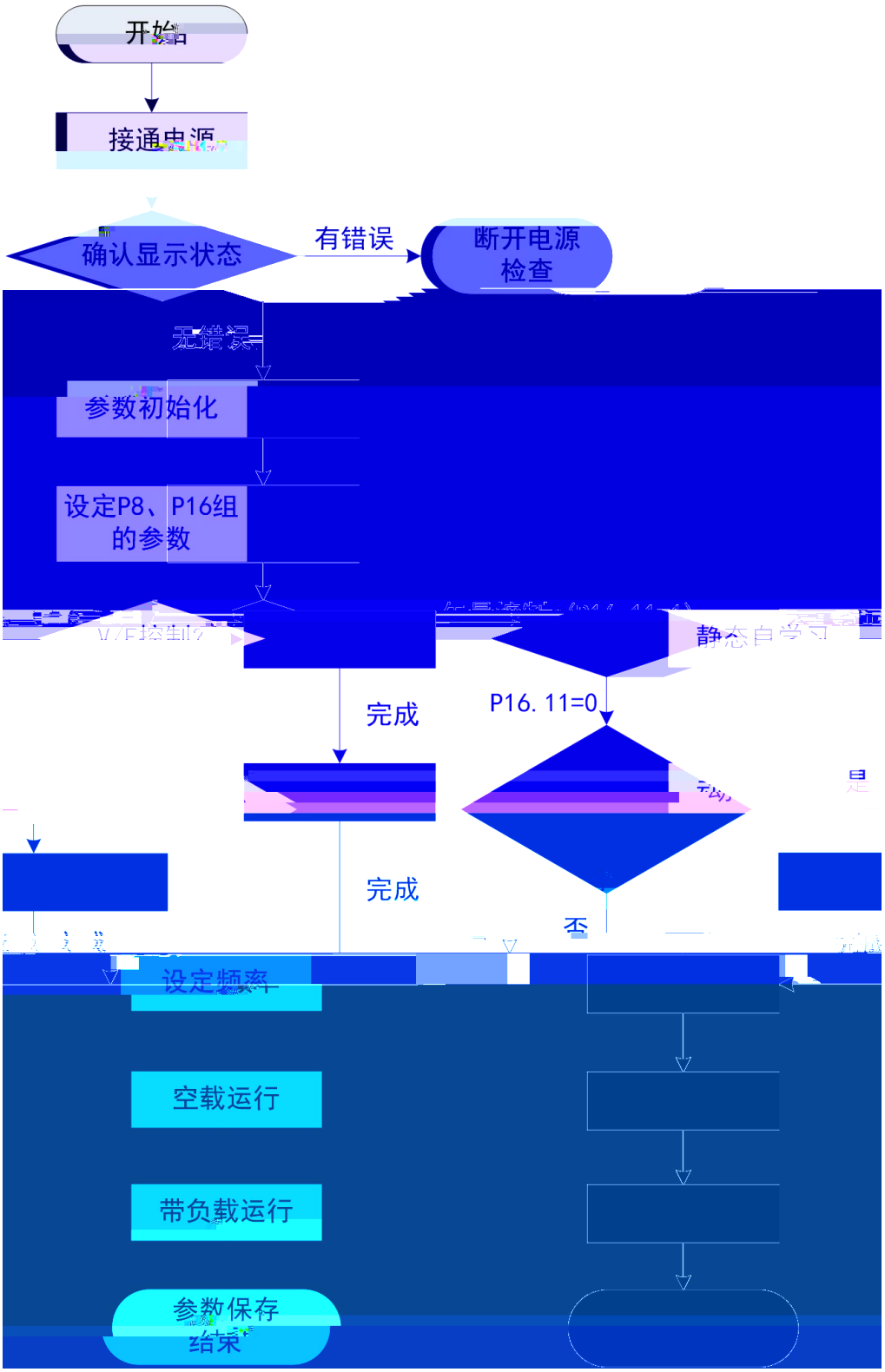
“ ” “ ”


电容自学习


停止

“ ” “ ”

8.2


开始
接通电源
确认显示状态
有错误
断开电源
检查
无错误
参数初始化
设定P8、P16组
的参数
完成
P16. 11=0
是
完成
否
设定频率
空载运行
带负载运行
参数保存
结束

/

V/F P16.11=0 V/F

P16.11=2 P16.11=1

8.3

8.3.1

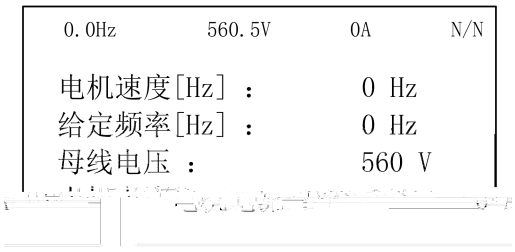
1 ±5V

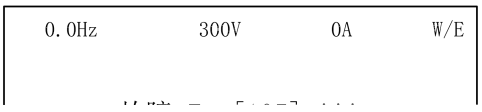
2 U,V,W

3

4 PG PG

8.3.2





8.3.3

6

8.3.4

1

1.1 1

P16.11	Basic Control Function	0: V/F 1:	0 V/F
P16.57	Flying Start CL	0-100%	75%
P16.58	Flying Start Mode	0: FWD 1: REV 2: REV-FWD 3: FWD-REV	0:FWD
P16.71	Flying Start IsFlt	0-500.0ms	0.0ms
P16.72	Flying Start FeType	0: 1 1: 2	0: 1
P16.73	Flying Start FeAdjE	0: 1:	1:
1. DI 21 2. P8.06 [ ] = 5.0 5. P16.71 6.P16.72 0 P16.73 1			

1.2 2

P17.11	Basic Control Function	0: V/F 1: 2: 3: :

1.3 3

P18.11	Basic Control Function	0: V/F 1: 2: 3: 4:	0 V/F
P18.57	Flying Start CL	0-100%	75%
P18.58	Flying Start Mode	0: FWD 1: REV 2: REV-FWD 3: FWD-REV	0:FWD
P18.71	Flying Start IsFlt	0-500.0ms	0.0ms
P18.72	Flying Start FeType	0: 1 1: 2	0: 1
P18.73	Flying Start FeAdjE	0: 1:	1:

1. DI 21
2. P8.06 [ ] = 5.0
3.P18.11 0 V/F
4. P18.58
2 3
5. P18.71

6.P18.72 0 P18.73 1

1.4 4

P19.11	Basic Control Function	0: V/F 1: 2: 3: 4:	0 V/F
P19.57	Flying Start CL	0-100%	75%
P19.58	Flying Start Mode	0: FWD 1: REV 2: REV-FWD 3: FWD-REV	0:FWD
P19.71	Flying Start IsFlt	0-500.0ms	0.0ms
P19.72	Flying Start FeType	0: 1 1: 2	0: 1
P19.73	Flying Start FeAdjE	0: 1:	1:

1. DI 21
2. P8.06 [ ] = 5.0
3.P19.11 0 V/F
4. P19.58
2 3
5. P19.71

6.P19.72 0 P19.73 1

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]

8.3.5

5

P16.11 [1] [2]

[0] V/F

6

V/F (P20.74)

P20.74

P20.78 P20.79 P20.84

“

” “ ”

7

P20.79 P20.84

P20.85~P20.97

“

” “ ”

8

50%

P20.98 P20.98

8.3.6

HF680N

	7.5% 50% 50%
	1/5
	P16
	V/F

8.3.7

1

2 LOCAL/REMOTE LOCAL LOCAL

3 RUN RUN

5Hz

4

5 4 50Hz

6 STOP

8.3.8

1

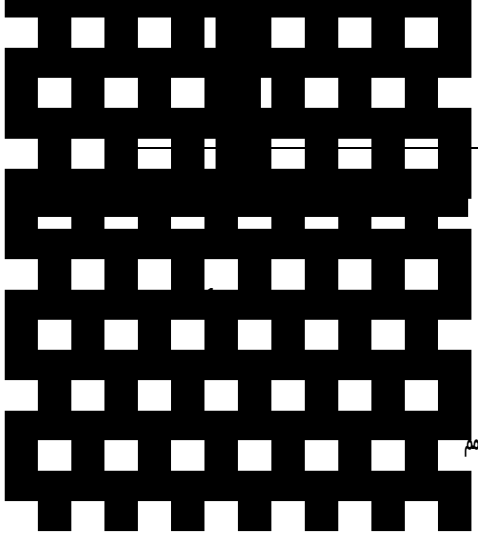
2

3

4

5

6 STOP



0

9.

0		
1		
5		</RST
14		
15	.NC	
20		

9.1.3

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		

9.1.4

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]	

9.1.5

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

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

9.1.6

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

9.1.7 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

P24.28			0 6500 [mF]	0[mF]	
P24.29			0 6500 [mF]	0	AFE
P24.30			0 6.5 [mH]	0	AFE

10.

10.1 P2

P2.0		[0] [1] [2]	0 2	0	
P2.1		[0] [1]DP	0 1	0	
P2.2		[0] [1]	0 1	0	
P2.3			0 5	1	

10.2 P3

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	
P3.12		[0] [1]	0 1	0	

0		
1		

2

3

.NC

4

</RST

5

10.3 P4

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	
P4.16	1		0 500	0	
P4.17	2		0 500	0	
P4.18	3		0 500	0	
P4.19	4		0 500	0	

0		
1		8.3
2		ON
3		8.3
4		
5		
6	1	[6] [9]
7	2	
8	3	
9	4	
10	FUNC 10	
11		
12		
13		
14		
15		
16	FUNC 16	
17	0	1

18		1	2		
19		2	3		
20		3	4		
21	FUNC 21				
22					
23					
24 31	FUNC 24 FUNC 31				
32			AFE		
33 48	FUNC 33 FUNC 48				
49	PROFIBUS	1		PROFIBUS	1
50	PROFIBUS	2		PROFIBUS	2
51	PROFIBUS	3		PROFIBUS	3
52	PROFIBUS	4		PROFIBUS	4
53	PROFIBUS	5		PROFIBUS	5
54 56	FUNC 54 FUNC 56				
57		1			
58		2			
59		3			
60		4			
61			1		1
62			2		2
63			3		3
64			4		4

10.4 P5

P5.0	AI1	[0] [1]0 +10V [2]-10 +10V [3]0 20mA	0 3	1	
P5.1	AI1	AI1	0.0 1000.0 [ms]	25.0 [ms]	
P5.2	AI1	AI1	-10.00 10.00 [V]	0.000 [V]	
P5.3	AI1	AI1	-20.00 20.00 [mA]	0.000 [mA]	
P5.4	AI1	AI1	-10.00 10.00 [V]	0.000 [V]	
P5.5	AI1	AI1	0.00 20.00 [mA]	0.000 [mA]	
P5.6	AI1	AI1	-300.0 300.0 [%]	0.0 [%]	
P5.7	AI1	AI1	-10.00 10.00 [V]	10.000 [V]	
P5.8	AI1	AI1	0.00 20.00 [mA]	20.000 [mA]	
P5.9	AI1	AI1	-300.0 300.0 [%]	100.0 [%]	
P5.18	AI2	[0] [1]0 +10V [2]-10 +10V [3]0 20mA	0 3	3	

P5.19	AI2	AI2	0.0 1000.0 [ms]	25.0 [ms]	
P5.20	AI2	AI2	-10.00 10.00 [V]	0.000 [V]	
P5.21	AI2	AI2	-20.00 20.00 [mA]	0.000 [mA]	
P5.22	AI2	AI2	-10.00 10.00 [V]	0.000 [V]	
P5.23	AI2	AI2	0.00 20.00 [mA]	0.000 [mA]	
P5.24	AI2	AI2	-300.0 300.0 [%]	0.0 [%]	
P5.25	AI2	AI2	-10.00 10.00 [V]	10.000 [V]	
P5.26	AI2	AI2	0.00 20.00 [mA]	20.000 [mA]	
P5.27	AI2	AI2	-300.0 300.0 [%]	100.0 [%]	

10.5 P6

P6.0	AO1	7-1	0 14	2	
P6.1	1		0 1000	0	
P6.2	AO1	AO1	-300.0 300.0 [%]	0.0 [%]	
P6.3	AO1	AO1	-300.0 300.0 [%]	100.0 [%]	
P6.4	AO1 [mA V]	AO1	0.0 100.0 [%]	0.0 [%]	
P6.5	AO1 [mA V]	AO1	0.0 100.0 [%]	100.0 [%]	
P6.6	AO1	AO1	-100.00 100.00 [%]	0.00 [%]	
P6.7	AO1	AO1 (P6.0 [13])	0.0 100.0 [%]	0.0 [%]	
P6.8	AO1	AO1	0.0 1000.0 [ms]	10.0 [ms]	
P6.14	AO2	7-1	0 14	4	
P6.15	2		0 1000	0	
P6.16	AO2	AO2	-300.0 300.0 [%]	0.0 [%]	
P6.17	AO2	AO2	-300.0 300.0 [%]	100.0 [%]	
P6.18	AO2 [mA V]	AO2	0.0 100.0 [%]	0.0 [%]	
P6.19	AO2 [mA V]	AO2	0.0 100.0 [%]	100.0 [%]	
P6.20	AO2	AO2	-100.00 100.00 [%]	0.00 [%]	

P6.21	AO2	AO2 (P6.14 [13])	0.0 100.0 [%]	0.0 [%]	
P6.22	AO2	AO1	0.0 1000.0 [ms]	10.0 [ms]	

7-1

0		
1		
2		
3		
4		
5		
6		
7		
8	(%)	( )
9		
10		
11	(%)	(150)
12	DP	Profibus
13		P6.7 P6.21
14		

10.6 P7

P7.0	[1]	1	0.0 [%]	300.0 [%]	180.0 [%]
P7.1	[2]	2	0.0 [%]	300.0 [%]	180.0 [%]
P7.2	[3]	3	0.0 [%]	300.0 [%]	180.0 [%]
P7.3	[4]	4	0.0 [%]	300.0 [%]	180.0 [%]
P7.4	[1]	1	0.0 [%]	300.0 [%]	235.0 [%]
P7.5	[2]	2	0.0 [%]	300.0 [%]	235.0 [%]
P7.6	[3]	3	0.0 [%]	300.0 [%]	235.0 [%]
P7.7	[4]	4	0.0 [%]	300.0 [%]	235.0 [%]
P7.8	[1]	1	0.0 [%]	100.0 [%]	20.0 [%]
P7.9	[2]	2	0.0 [%]	100.0 [%]	20.0 [%]
P7.10	[3]	3	0.0 [%]	100.0 [%]	20.0 [%]
P7.11	[4]	4	0.0 [%]	100.0 [%]	20.0 [%]

P7.

P7.60			0.10 3.00 [s]	0.30 [s]	
P7.64		[0] [1]	0 1	0	
P7.65			-25 100 [V]	0 [V]	
P7.66			-25 100 [V]	0 [V]	
P7.69		[0] [1]	0 1	0	
P7.70			-25 100 [V]	0 [V]	
P7.73		[0] [1]	0 1	0	
P7.74			300 500 [V]	460 [V]	
P7.75			0.0 1000.0 [%]	100.0 [%]	
P7.76			0.00 300.00 [s]	1.00 [s]	
P7.77			0.0 200.0 [%]	15.0 [%]	
P7.94		[0] [1]	0 1	1	
P7.95		AFE	0.0 3000.0 [s]	15.0 [s]	
P7.96			0.00 300.00 [s]	0.00 [s]	

10.7 1 P8

	[0]			
	[1]			
P8.0	[2]DP	0	4	0
	[3]MODBUS			
	[4]			
P861				
P8.2				
	[0]			
P8.3	[1]	0	1	0
		0.00	300.00	0.00
P8.6			[s]	

[]

30.00 000 80 0

8€2‡

8.Σ

8.0

[

[

[ ]

[]

°80

0

8.00 0 "

P8.18	2	P8.15 P8.17	0.0 300.0 [s]	4.00 [s]	
P8.19	3		0.0 300.0 [%]	240.0 [%]	
P8.20	3	P8.17 P8.19	0.0 300.0 [s]	7.00 [s]	
P8.21	4		0.0 300.0 [%]	300.0 [%]	
P8.22	4	P8.19 P8.21	0.0 300.0 [s]	10.00 [s]	
P8.23	5		0.0 300.0 [%]	300.0 [%]	
P8.24	5	P8.21 P8.23	0.0 300.0 [s]	10.00 [s]	
P8.25	6		0.0 300.0 [%]	300.0 [%]	
P8.26	6	P8.23 P8.25	0.0 300.0 [s]	10.00 [s]	
P8.27	7		0.0 300.0 [%]	300.0 [%]	
P8.28	7	P8.25 P8.27	0.0 300.0 [s]	10.00 [s]	
P8.29	8		0.0 300.0 [%]	300.0 [%]	
P8.30	8	P8.27 P8.29	0.0 300.0 [s]	10.00 [s]	
P8.32		[0] [1]PROFIBUS [2]MODBUS [3]	0 3	0	
P8.33			0.1 10.0	1.0	
P8.34	1		0.0 300.0 [%]	100.0 [%]	
P8.35	1	P8.34	0.0 300.0 [s]	3.00 [s]	
P8.36	2		0.0 300.0 [%]	200.0 [%]	

10.8 2 P9

[0]

[1]

P9.0 [2]DP

[3]MOD]D

P9.18	2	P9.15 P9.17	0.0 300.0 [s]	4.00 [s]	
P9.19	3		0.0 300.0 [%]	240.0 [%]	
P9.20	3	P9.17 P9.19	0.0 300.0 [s]	7.00 [s]	
P9.21	4		0.0 300.0 [%]	300.0 [%]	
P9.22	4	P9.19 P9.21	0.0 300.0 [s]	10.00 [s]	
P9.23	5		0.0 300.0 [%]	300.0 [%]	
P9.24	5	P9.21 P9.23	0.0 300.0 [s]	10.00 [s]	
P9.25	6		0.0 300.0 [%]	300.0 [%]	
P9.26	6	P9.23 P9.25	0.0 300.0 [s]	10.00 [s]	
P9.27	7		0.0 300.0 [%]	300.0 [%]	
P9.28	7	P9.25 P9.27	0.0 300.0 [s]	10.00 [s]	
P9.29	8		0.0 300.0 [%]	300.0 [%]	
P9.30	8	P9.27 P9.29	0.0 300.0 [s]	10.00 [s]	
P9.32		[0] [1]PROFIBUS [2]MODBUS [3]	0 3	0	
P9.33			0.1 10.0	1.0	
P9.34	1		0.0 300.0 [%]	100.0 [%]	
P9.35	1	P9.34	0.0 300.0 [s]	3.00 [s]	
P9.36	2		0.0 300.0 [%]	200.0 [%]	

P9.37	2	P9.34 P9.36	0.0 300.0 [s]	4.00 [s]	
P9.38	3		0.0 300.0 [%]	240.0 [%]	
P9.39	3	P9.36 P9.38	0.0 300.0 [s]	7.00 [s]	
P9.40	4		0.0 300.0 [%]	300.0 [%]	
P9.41	4	P9.38 P9.40	0.0 300.0 [s]	10.00 [s]	
P9.42	5		0.0 300.0 [%]	300.0 [%]	
P9.43	5	P9.40 P9.42	0.0 300.0 [s]	10.00 [s]	
P9.44	6		0.0 300.0 [%]	300.0 [%]	
P9.45	6	P9.42 P9.44	0.0 300.0 [s]	10.00 [s]	
P9.46	7		0.0 300.0 [%]	300.0 [%]	
P9.47	7	P9.44 P9.46	0.0 300.0 [s]	10.00 [s]	
P9.48	8		0.0 300.0 [%]	300.0 [%]	
P9.49	8	P9.46 P9.48	0.0 300.0 [s]	10.00 [s]	
P9.54			0.0 300.0 [%]	0.0 [%]	
P9.55		[0] [1]	0 1	0	
P9.56			0.00 300.00 [s]	3.00 [s]	
P9.57		[0] [1]	0 1	1	
P9.58			0.00 300.00 [s]	1.50 [s]	

10.9 3 P10

P10.0	[0] [1] [2]DP [3]MODBUS [4]	0	4	0	
P10.1					
P10.2					
P10.3	[0] [1]	0	1	0	
P10.6		0.00	300		

P10.37	2	P10.34 P10.36	0.0 300.0 [s]	4.00 [s]	
P10.38	3		0.0 300.0 [%]	240.0 [%]	
P10.39	3	P10.36 P10.38	0.0 300.0 [s]	7.00 [s]	
P10.40	4		0.0 300.0 [%]	300.0 [%]	
P10.41	4	P10.38 P10.40	0.0 300.0 [s]	10.00 [s]	
P10.42	5		0.0 300.0 [%]	300.0 [%]	
P10.43	5	P10.40 P10.42	0.0 300.0 [s]	10.00 [s]	
P10.44	6		0.0 300.0 [%]	300.0 [%]	
P10.45	6	P10.42 P10.44	0.0 300.0 [s]	10.00 [s]	
P10.46	7		0.0 300.0 [%]	300.0 [%]	
P10.47	7	P10.44 P10.46	0.0 300.0 [s]	10.00 [s]	
P10.48	8		0.0 300.0 [%]	300.0 [%]	
P10.49	8	P10.46 P10.48	0.0 300.0 [s]	10.00 [s]	
P10.54			0.0 300.0 [%]	0.0 [%]	
P10.55		[0] [1]	0 1	0	
P10.56			0.00 300.00 [s]	3.00 [s]	
P10.57		[0] [1]	0 1	1	
P10.58			0.00 300.00 [s]	1.50 [s]	

P11.18	2	P11.15	P11.17	0.0 [s]	300.0 [s]	4.00 [s]
P11.19	3			0.0 [%]	300.0 [%]	240.0 [%]
P11.20	3	P11.17	P11.19	0.0 [s]	300.0 [s]	7.00 [s]
P11.21	4			0.0 [%]	300.0 [%]	300.0 [%]
P11.22	4	P11.19	P11.21	0.0 [s]	300.0 [s]	10.00 [s]
P11.23	5			0.0 [%]	300.0 [%]	300.0 [%]
P11.24	5	P11.21	P11.23	0.0 [s]	300.0 [s]	10.00 [s]
P11.25	6			0.0 [%]	300.0 [%]	300.0 [%]
P11.26	6	P11.23	P11.25	0.0 [s]	300.0 [s]	10.00 [s]
P11.27						

10.11 1 P12

P12.0	[0] [1]	0 1	1	
P12.1				

P12.27	0.00 2.00 [	

10.12 2 P13

P13.0		[0] [1]	0 1	1
P13.1		[0][%] [1][Hz] [2][rpm]	0 2	1
P13.2	1		0.0 3000.0	10.0
P13.3	2		0.0 3000.0	20.0
P13.4	3		0.0 3000.0	35.0
P13.5	4		0.0 3000.0	50.0
P13.6	5		0.0 3000.0	50.0
P13.7	6		0.0 3000.0	50.0
P13.8	7		0.0 3000.0	50.0
P13.9	8		0.0 3000.0	50.0
P13.10	9		0.0 3000.0	50.0
P13.11	10		0.0 3000.0	50.0
P13.12	11		0.0 3000.0	50.0
P13.13	12		0.0 3000.0	50.0
P13.14	13		0.0 3000.0	50.0
P13.15	14		0.0 3000.0	50.0
P13.16	15		0.0 3000.0	50.0
P13.17	16		0.0 3000.0	50.0
P13.22			0.0 20.0 [%]	2.0 [%]
P13.23			0.0 20.0 [%]	0.0 [%]
P13.24			0.0 200.0 [%]	30.0 [%]
P13.25			0.0 200.0 [%]	20.0 [%]
P13.26			0.00 2.00 [s]	0.00 [s]

P13.27			0.00 2.00 [s]	0.00 [s]	
P13.28			0.00 2.00 [s]	0.07 [s]	
P13.29			0.00 2.00 [s]	0.07 [s]	
P13.32			0.0 20.0 [%]	0.0 [%]	
P13.33			0.0 20.0 [%]	0.0 [%]	
P13.34			0.00 2.00 [s]	0.00 [s]	
P13.35			0.00 2.00 [s]	0.00 [s]	
P13.36			0.00 2.00 [s]	0.50 [s]	
P13.37			0.00 2.00 [s]	0.50 [s]	

10.13 3 P14

P14.0

P1400

P14.27		0.00	2.000.
			[

10.14 4 P15

P15.0		[0] [1]	0	1	1
P15.1		[0][%] [1][Hz] [2][rpm]	0	2	1
P15.2	1		0.0	3000.0	10.0
P15.3	2		0.0	3000.0	20.0
P15.4	3		0.0	3000.0	35.0
P15.5	4		0.0	3000.0	50.0
P15.6	5		0.0	3000.0	50.0
P15.7	6		0.0	3000.0	50.0
P15.8	7		0.0	3000.0	50.0
P15.9	8		0.0	3000.0	50.0
P15.10	9		0.0	3000.0	50.0
P15.11	10		0.0	3000.0	50.0
P15.12	11		0.0	3000.0	50.0
P15.13	12		0.0	3000.0	50.0
P15.14	13		0.0	3000.0	50.0
P15.15	14		0.0	3000.0	50.0
P15.16	15		0.0	3000.0	50.0
P15.17	16		0.0	3000.0	50.0
P15.22			0.0	20.0	2.0 [%]
P15.23			0.0	20.0	0.0 [%]
P15.24			0.0	200.0	30.0 [%]
P15.25			0.0	200.0	20.0 [%]
P15.26			0.00	2.00	0.00 [s]

P15.27			0.00 2.00 [s]	0.00 [s]	
P15.28			0.00 2.00 [s]	0.07 [s]	
P15.29			0.00 2.00 [s]	0.07 [s]	
P15.32			0.0 20.0 [%]	0.0 [%]	
P15.33			0.0 20.0 [%]	0.0 [%]	
P15.34			0.00 2.00 [s]	0.00 [s]	
P15.35			0.00 2.00 [s]	0.00 [s]	
P15.36			0.00 2.00 [s]	0.50 [s]	
P15.37			0.00 2.00 [s]	0.50 [s]	

P16

10.16 2 V/F P17

P17.0			320 460 [V]	380 [V]	
P17.2			0.0 4000.0 [kW]	 [kW]	
P17.3			320 460 [V]	380 [V]	
P17.4			0.0 6500.0 [A]	 [A]	
P17.5			0.0 300.0 [Hz]	50.0 [Hz]	
P17.6			0 6000 [rpm]	1465 [rpm]	
P17.7			2 12 [pole]	4 [pole]	
P17.9			0 7200 [rpm]	1500 [rpm]	
P17.11		[0]V/F [1] [2] [3] [4]	0 4	0	
P17.12			1.00 10.00 [kHz]	3.00 [kHz]	
P17.14	V/F	[0] V/F [1] V/F [2]	0 3	0	
P17.15		[0] [1]	0 1	0	
P17.16			2 500 [ms]	500 [ms]	
P17.17	V/F	[0] [1]	0 1	0	
P17.18			10 1000 [ms]	200 [ms]	
P17.19		[0] [1]	0 1	0	

P18.48		[0] [1]PID 1 [2]PID 2 [3]	0 3	0	
P18.49	@		0 300	0	
P18.50			0.00 300.00 [s]	0.00 [s]	
P18.51			0.0 150.0 [%]	70.0 [%]	
P18.52			0.00 5.00 [Hz]	0.00 [Hz]	
P18.54			0.00 300.00 [s]	0.00 [s]	
P18.55			0.0 150.0 [%]	75.0 [%]	
P18.56			0.00 5.00 [Hz]	0.00 [Hz]	
P18.59			0.0 1000.0 [%]	100.0 [%]	
P18.60			0.0 1000.0 [%]	100.0 [%]	
P18.61			0.0 1000.0 [%]	100.0 [%]	
P18.62			0.0 1000.0 [%]	100.0 [%]	
P18.64	V/F	V/F	0.0 1000.0 [%]	100.0 [%]	
P18.66		V/F	0.0 1000.0 [%]	100.0 [%]	
P18.67			0.0 1000.0 [%]	100.0 [%]	
P18.68			0.0 1000.0 [%]	100.0 [%]	
P18.69			0.0 1000.0 [%]	100.0 [%]	
P18.70			0.0 1000.0 [%]	100.0 [%]	

10.18 4 V/F P19

P19.0			320 460 [V]	380 [V]	
P19.2			0.0 4000.0 [kW]	 [kW]	
P19.3			320 460 [V]	380 [V]	
P19.4			0.0 6500.0 [A]	 [A]	
P19.5			0.0 300.0 [Hz]	50.0 [Hz]	
P19.6			0 6000 [rpm]	1465 [rpm]	
P19.7			2 12 [pole]	4 [pole]	
P19.9			0 7200 [rpm]	1500 [rpm]	
P19.11		[0]V/F [1] [2] [3] [4]	0 4	0	
P19.12			1.00 10.00 [kHz]	3.00 [kHz]	
P19.14	V/F	[0] V/F [1] V/F [2]	0 3	0	
P19.15		[0] [1]	0 1	0	
P19.16			2 500 [ms]	500 [ms]	
P19.17	V/F	[0] [1]	0 1	0	
P19.18			10 1000 [ms]	200 [ms]	
P19.19		[0] [1]	0 1	0	

10.19 1 P20

P20.0		[0] [1]	0 1	0	
P20.1		[0] [1] 1 [2] 2 [3] [4] P20.3 [5]DP [6]MODBUS [7]	0 7	0	
P20.2			0 7	0	
P20.3			-300.0 300.0 [%]	0.0 [%]	
P20.4	@		0 300	0	
P20.5			0 1000 [ms]	0 [ms]	
P20.6			0.0 200.0 [%]	100.0 [%]	
P20.7		[0] [1] P20.8 P20.9 [2] 1 [3] 2 [4] [5]DP [6]MODBUS [7]	0 7	0	
P20.8		P20.7 [1]	0.0 300.0 [%]	200.0 [%]	
P20.9		P20.7 [1]	0.0 300.0 [%]	200.0 [%]	
P20.10			0 300	0	
P20.11			0 1000 [ms]	0 [ms]	

P20.13			20.0 500.0 [ms]	100.0 [ms]	
P20.14		1	0 60000	1024	
P20.15		[0] [1]	0 1	0	
P20.16			0.0 300.0 [%]	100.0 [%]	
P20.17			0.0 300.0 [%]	100.0 [%]	
P20.18			0.0 300.0 [%]	0.0 [%]	
P20.19			0.0 300.0 [%]	0.0 [%]	
P20.20		[0] [1]	0 1	0	
P20.21		[0] [1]	0 1	0	
P20.22			0.0 300.0 [%]	160.0 [%]	
P20.23			0.0 200.0 [%]	20.0 [%]	
P20.24			0.0 300.0 [%]	100.0 [%]	
P20.25			0.0 200.0 [%]	100.0 [%]	
P20.26			0.0 1000.0 [%]	0.0 [%]	
P20.27			0.00 15.00 [%]	2.00 [%]	
P20.28		[0] P20.16 P20.17 [1] [2] [3]DP	0 3	0	
P20.30		[0] P20.31 P20.32 [1] 1 [2] 2 [3]	0 3	0	

P20.31		0.0 [%]	100.0 [%]	5.0 [%]
P20.32		0.0 [%]	100.0 [%]	5.0 [%]

P20.53	Kp		0.0 1000.0 [%]	100.0 [%]	
P20.54	Ki		0.0 1000.0 [%]	100.0 [%]	
P20.55			0.0 1000.0 [%]	100.0 [%]	
P20.56			0.0 1000.0 [%]	100.0 [%]	
P20.57		[0] [1]	0 1	0	
P20.58			0.0 125.0 [%]	100.0 [%]	
P20.59			1.0 25.0 [%]	2.5 [%]	
P20.60	DROOP	0 DROOP	0.0 100.0 [%]	0.0 [%]	
P20.61	DROOP	DROOP	30 2000 [ms]	50 [ms]	
P20.62			0.0 1000.0 [%]	100.0 [%]	
P20.63			0.0 1000.0 [%]	100.0 [%]	
P20.66	1	1	0.0 1000.0 [%]	100.0 [%]	
P20.67	2	2	0.0 1000.0 [%]	100.0 [%]	
P20.69			0.00 2.00 [%]	1.00 [%]	
P20.70			0.00 2.00 [%]	1.00 [%]	
P20.71		[0] [1]	0 1	0	
P20.72		[0] [1]	0 1	1	
P20.73		[0] × 1 [1] × 10	0 1	0	
P20.74			0.00 650.00 [mOhm]	0.00 [mOhm]	
P20.75			0.70 1.00	0.90	
P20.76	1	1	90.0 110.0 [%]	100.0 [%]	

P20.77		2		2	90.0 [%] 110.0 [%] 100.0 [%]
P20.78					0.00 [mOhm] 650.00 [mOhm] 0.00 [mOhm]
P20.79					0.00 [mH] 65.50 [mH] 0.000 [mH]
P20.80	1		1		0.800 1.350 1.140
P20.81	2		2		0.800 1.350 0.940
P20.82	3		3		0.800 1.350 1.080
P20.83	4		4		0.800 1.350 0.950
P20.84					0.00 [mH] 655.00 [mH] 0.00 [mH]
P20.85		85%	85%		40.0 [%] 150.0 [%] 108.0 [%]
P20.86		87.5%	87.5%		40.0 [%] 150.0 [%] 106.5 [%]
P20.87		90%	90%		40.0 [%] 150.0 [%] 105.0 [%]
P20.88		92.5%	92.5%		40.0 [%] 150.0 [%] 103.5 [%]
P20.89		95%	95%		40.0 [%] 150.0 [%] 102.0 [%]
P20.90	5%	102.	102.5%		40.0 [%] 150.0 [%] 99.0 [%]
P20.91		105%	105%		40.0 [%] 150.0 [%] 96.5 [%]
P20.92		110%	110%		40.0 [%] 150.0 [%] 93.0 [%]
P20.93		115%	115%		40.0 [%] 150.0 [%] 88.5 [%]
P20.94		120%	120%		40.0 [%] 150.0 [%] 83.0 [%]
P20.95					

10.20 2 P21

P21.0	[0] [1]			0 1	0
P21.1	[0] [1] [2] [3] [4] [5]DP	1 2	[5]D]]2D3 4]	P21.3	

P21.14		1	0	60000	1024
P21.15	[0] [				

P21.54	Ki		0.0 [%]	1000.0 [%]	100.0
P21.55					

P21.78		0.00	650.

10.21 3 P22

P22.0		[0] [1]			0 1	0
P22.1		[0] [1] [2] [3] [4] [5]DP [6]MODBUS [7]	1 2	P22.3	0 7	0
P22.2					0 7	0
P22.3					-300.0 300.0 [%]	0.0 [%]
P22.4	@				0 300	0
P22.5					0 1000 [ms]	0 [ms]
P22.6					0.0 200.0 [%]	100.0 [%]
P22.7		[0] [1] P22.9 [2] [3] [4] [5]DP [6]MODBUS [7]	1 2	P22.8	0 7	0
P22.8		P22.7	[1]		0.0 300.0 [%]	200.0 [%]
P22.9		P22.7	[1]		0.0 300.0 [%]	200.0 [%]
P22.10					0 300	0
P22.11					0 1000 [ms]	0 [ms]

P22.13				20.0 500.0 [ms]	100.0 [ms]
P22.14		1		0 60000	1024
P22.15	[0] [1] .0		æ		

P22.31		0.0 100.0 [%]	5.0 [%]
P22.32		0.0 100.0 [%]	5.0 [%]
P22.34	[0] [1]	0 1	0
P22.35		0.0 100.0 [s]	0.0 [s]
P22.36		50.0 150.0 [%]	110.0 [%]
P22.37		0.0 150.0 [%]	100.0 [%]
P22.38		0.0 100.0 [%]	25.0 [%]
P22.39		0.0 120.0 [%]	100.0 [%]
P22.40		0.0 150.0 [%]	100.0 [%]
P22.41		0.0 150.0 [%]	135.0 [%]
P22.42	[0] [1]	0 1	1
P22.43		25 1000 [ms]	75 [ms]
P22.44		25 1000 [ms]	250 [ms]
P22.45		0.0 100.0 [%]	22.0 [%]
P22.46		0.0 100.0 [%]	18.0 [%]
P22.47		0.0 200.0 [%]	92.0 [%]
P22.48		0.0 200.0 [%]	87.0 [%]
P22.49		0.0 150.0 [%]	100.0 [%]
P22.51		0.0 1000.0 [%]	100.0 [%]
P22.52		0.0 1000.0 [%]	100.0 [%]

P22.77		2		2	90.0 110.0 100.0 [%] [%]
P22.78					0.00 650.00 0.00 [mOhm] [mOhm]
P22.79					0.00 65.50 0.000 [mH] [mH]
P22.80	1		1		0.800 1.350 1.140
P22.81	2		2		0.800 1.350 0.940
P22.82	3		3		0.800 1.350 1.080
P22.83	4		4		0.800 1.350 0.950
P22.84					0.00 655.00 0.00 [mH] [mH]
P22.85		85%	85%		40.0 150.0 108.0 [%] [%]
P22.86		87.5%	87.5%		40.0 150.0 106.5 [%] [%]
P22.87		90%	90%		40.0 150.0 105.0 [%] [%]
P22.88		92.5%	92.5%		40.0 150.0 103.5 [%] [%]
P22.89		95%	95%		40.0 150.0 102.0 [%] [%]
P22.90	5%	102.	102.5%		40.0 150.0 99.0 [%] [%]
P22.91		105%	105%		40.0 150.0 96.5 [%] [%]
P22.92		110%	110%		40.0 150.0 93.0 [%] [%]
P22.93		115%	115%		40.0 150.0 88.5 [%] [%]
P22.94		120%	120%		40.0 150.0 83.0 [%] [%]
P22.95		125%	125%		40.0 150.0 77.0 [%] [%]
P22.96		130%	130%		40.0 150.0 70.5 [%] [%]
P22.97		135%	135%		40.0 150.0 63.5 [%] [%]
P22.98			( )		0.01 300.00 0.75 [s] [s]

10.22 4 P23

P23.0		[0] [1]		0 1	0
P23.1		[0] [1] 1 [2] 2 [3] [4] P23.3 [5]DP [6]MODBUS [7]		0 7	0
P23.2				0 7	0
P23.3				-300.0 300.0 [%]	0.0 [%]
P23.4	@			0 300	0
P23.5					
					0
		[			
		>EÂ	¤ ¨		
				0	

		0.0 [%]	100 [%]
		0	1
P23.35		0.0 [s]	100.0 [s]
P23.36		50.0 [%]	150.0 [%]
P23.37		0.0 [%]	150.0 [%]
P23.38		0.0 [%]	100.0 [%]
P23.39		0.0 [%]	120.0 [%]
P23.40		0.0 [%]	150.0 [%]
P23.41		0.0 [%]	150.0 [%]
P23.42	[0] [1]	0	1
P23.43		25 [ms]	1000 [ms]
P23.44		25 [ms]	1000 [ms]
P23.45		0.0 [%]	100.0 [%]
P23.46		0.0 [%]	100.0 [%]
P23.47		0.0 [%]	200.0 [%]
P23.48		0.0 [%]	200.0 [%]

P23.54	Ki		0.0 [%]	1000.0 [%]	100.0
P23.55					

P23.78			0.00 [mOhm]	650.00 [mOhm]	0.00 [mOhm]
P23.79			0.00 [mH]	65.50 [mH]	0.000 [mH]
P23.80	1	1	0.800		

		[0] × 1 [1] × 10			
P33.18	[W2]	[2] × 100 [3] × 1000 [4] × 10000	0	4	0
P33.19	[W3]	7-2	0	37	0
		[0] × 1 [1] × 10			
P33.20	[W3]	[2] × 100 [3] × 1000 [4] × 10000	0	4	0
P33.21	[W4]	7-2	0	37	1
P33.22	[W4]				

P33.31	[W9]	7-2	0 37	0	
P33.32	[W9]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.33	[W10]	7-2	0 37	0	
P33.34	[W10]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.35	[W11]	7-2	0 37	0	
P33.36	[W11]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.37	[W12]	7-2	0 37	0	
P33.38	[W12]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.39	[W13]	7-2	0 37	0	
P33.40	[W13]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.41	[W14]	7-2	0 37	0	
P33.42	[W14]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.43	[W15]	7-2	0 37	0	

P33.44	[W15]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.45	[W0]	7-3	0 48	0	
P33.46	[W0]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.47	[W1]	7-3	0 48	0	
P33.48	[W1]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.49	[W2]	7-3	0 48	0	
P33.50	[W2]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.51	[W3]	7-3	0 48	0	
P33.52	[W3]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.53	[W4]	7-3	0 48	1	

P33.54	[W4]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.55	[W5]	7-3	0 48	19	
P33.56	[W5]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	2	
P33.57	[W6]	7-3	0 48	26	
P33.58	[W6]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	6	
P33.59	[W7]	7-3	0 48	30	
P33.60	[W7]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	1	
P33.61	[W8]	7-3	0 48	14	

P33.62	[W8]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0	7	0
P33.63		[W9] 7-3	0	48	13
P33.64	[W9]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0	7	0
P33.65		[W10] 7-3	0	48	40
P33.66	[W10]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0	7	6
P33.67		[W11] 7-3	0	48	0
P33.68	[W11]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0	7	0
P33.69		[W12] 7-3	0	48	0

P33.70	[W12]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.71	[W13]	7-3	0 48	0	
P33.72	[W13]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.73	[W14]	7-3	0 48	0	
P33.74	[W14]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	
P33.75	[W15]	7-3	0 48	0	
P33.76	[W15]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5] [%] × 1 [6] [%] × 10 [7] [%] × 100	0 7	0	

0

1 0

2 1

3 2

4 3

5 4

6 [32]

7 [32]

8 32_MSW

9 32_LSW

10

11

12 0 @32bit

13 1 @32bit

14 2 @32bit

15 3 @32bit

16 4 @32bit

17 5 @32bit

18 [Hz]

19 [rpm]

20 [%]

21 M

7-3

0	
1	0
2	1
3	2
4	3
5	4
6	5
7	0 @32bit
8	1 @32bit
9	2 @32bit
10	3 @32bit
11	4 @32bit
12	5 @32bit
13	[32]
14	[32]
15	32bit_MSW
16	32bit_LSW
17	
18	
19	
20	[rpm]
21	[rpm]
22	
23	
24	
25	
26	
27	A
28	B

29	C
30	
31	
32	
33	1
34	2
35	
36	
37	
38	
39	
40	
41 48	AW22 29

11.

11.1

WO1 SYS_NOT_RDY (Ready)

[P3

WO2]

NO_DRV_ENABLE

11.2

IGBT

U

[E050] IGBT

ERR_UT not reset

[E05

[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	P20.14 P20.15
[E119]	SPEED ABNORMAL	P20.14 P20.15 P7.31 P7.32
[E121]	IGBT1 OT1	
[E122]	IGBT2 OT2	
[E123]	IGBT3 OT3	
[E124]	IGBT4 OT4	
[E125]	IGBT5 OT5	
[E126]	IGBT6 OT6	
[E127]	IGBT7 OT7	
[E128]	IGBT8 OT8	
[E137]	FAN STALL	

[E138]	TEMP_SENSING FAIL	
[E139]	Pre_Charging Fail	P7.95
[E140]	Line UV	
[E141]	Line OPEN	
[E142]	Line Detection Error	
[E143]	Line SW Fail	DI
[E144]	Line SW SHORT	
[E145]	Line OV	(AFE) P16.0
[E146]	Line Over_Freq	(AFE)
[E151]	U IGBT PDP [UT]	IGBT IGBT
[E152]	U IGBT PDP [UB]	IGBT IGBT
[E153]	V IGBT PDP [VT]	IGBT IGBT
[E154]	V IGBT PDP [VB]	IGBT IGBT
[E155]	W IGBT PDP [WT]	IGBT IGBT
[E156]	W IGBT PDP [WB]	IGBT IGBT

[E160]	SLVE FAULT	
[E161]	SLV_NOT_RDY	
[E162]	1 SLV1_CAN_ERR	1
[E163]	2	

11.3

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

-
- ON
- COM
-
-
-

12.



1.

2.

3.

4.

1. CMOS

2.

3.

12.1

12.2

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

12.3

	2	1 2
PCB		

12.4

5

5

(400-0077-570)

1	40	"	ط ي ح
2	80%		
3	24	/	

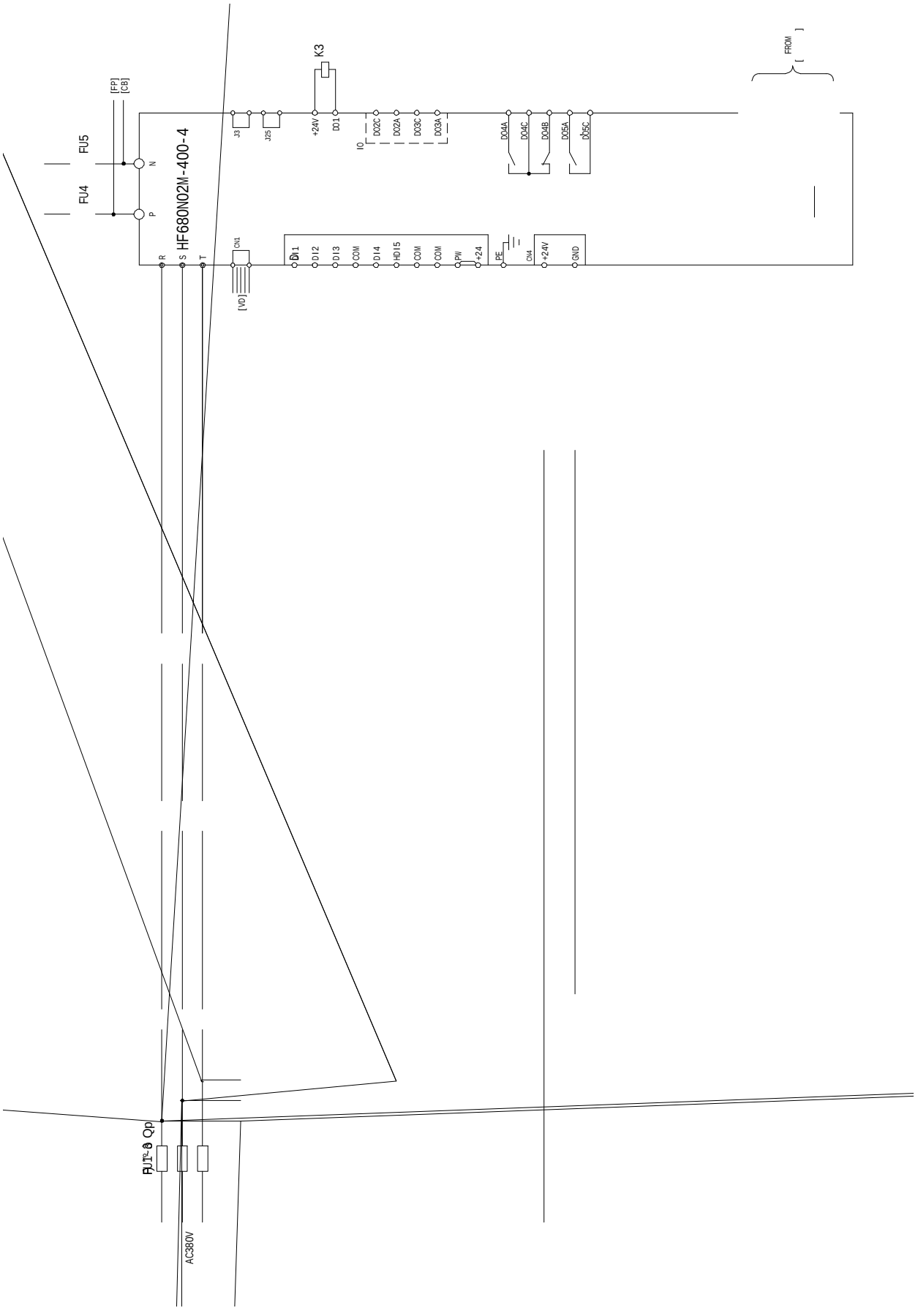
12.5

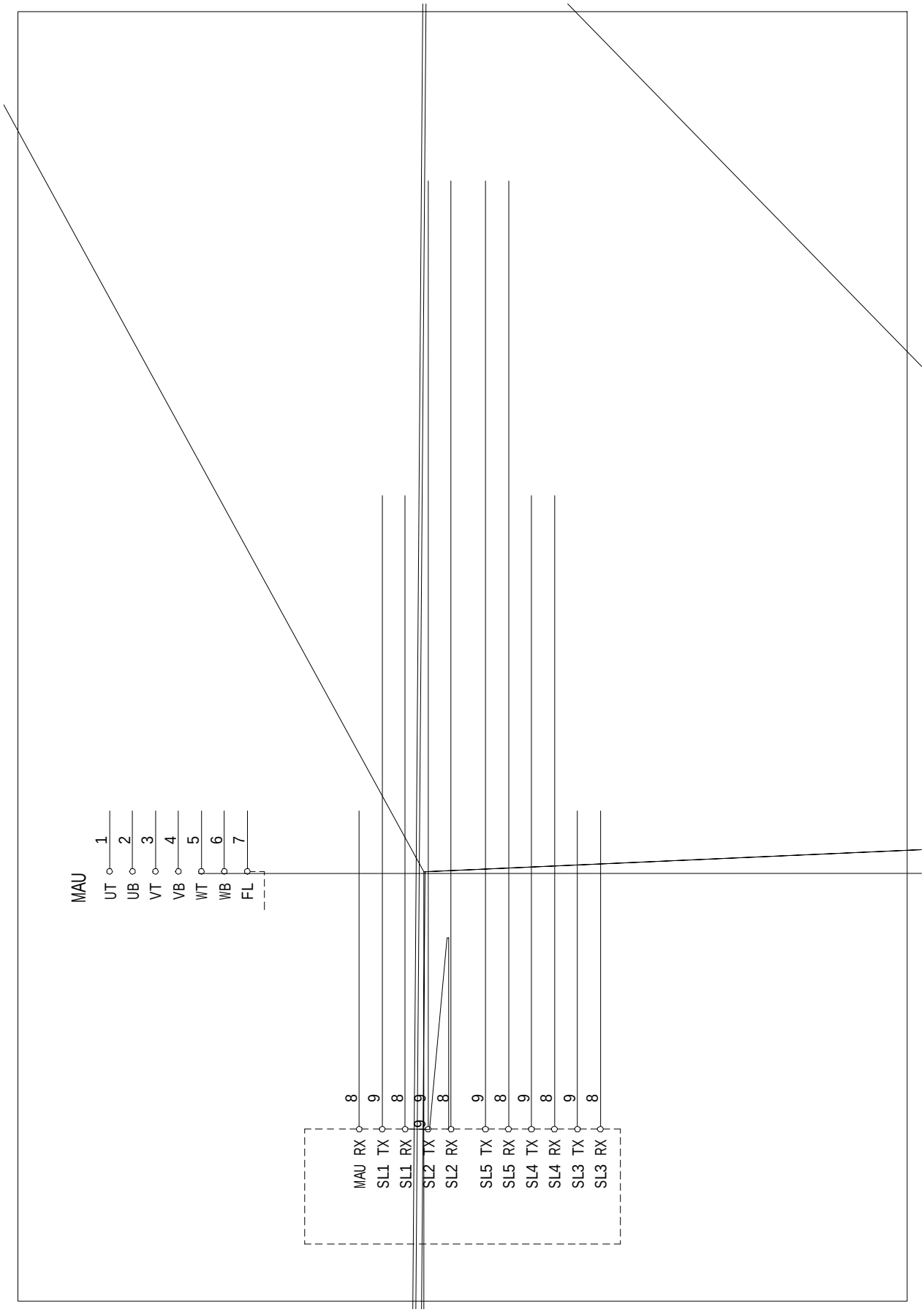
1

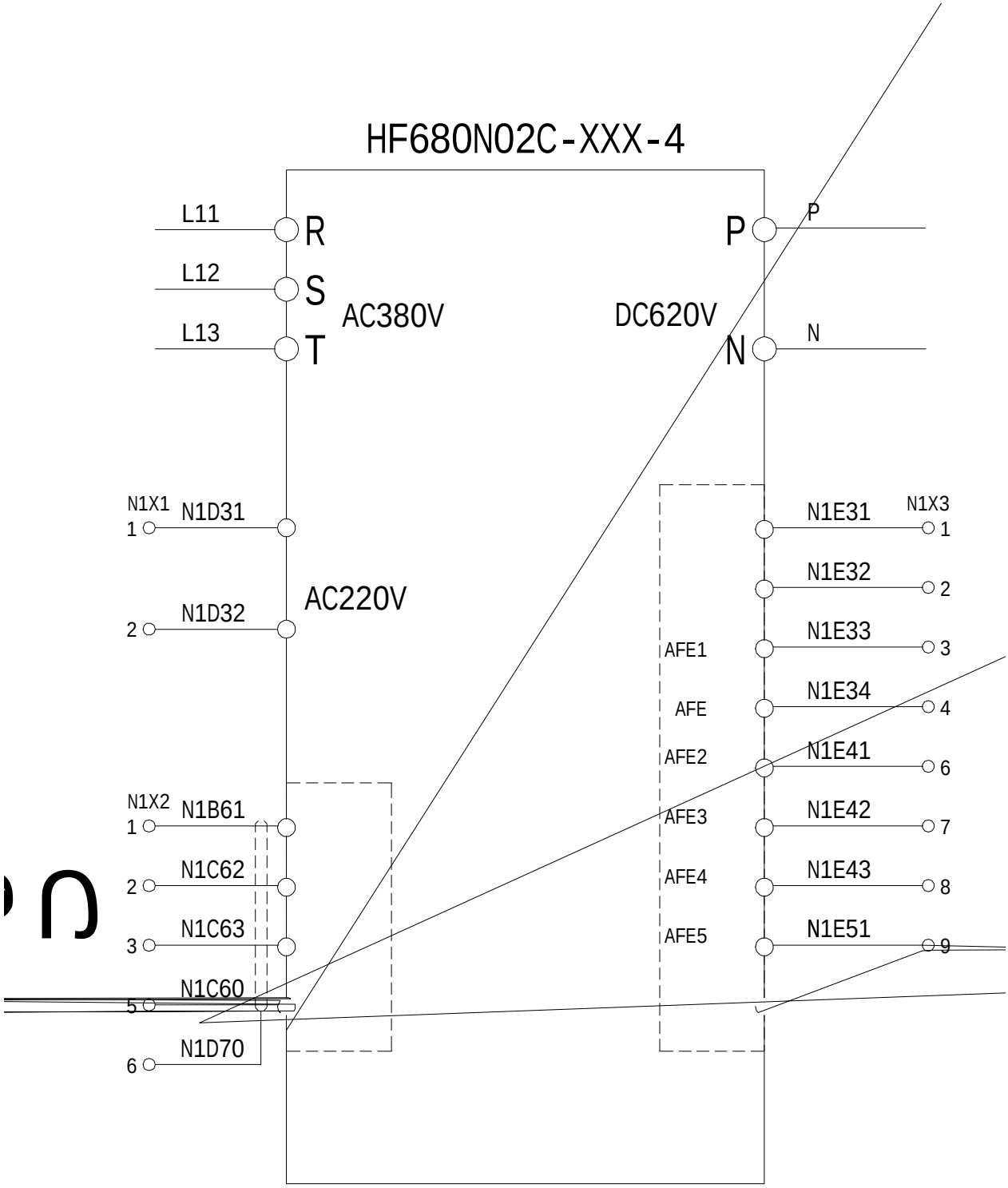
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5

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HF680N02M-400-4
FU5
FU4
K3
[FP]
[CB]
J3
J25
+24V
DO1
DO2C
DO2A
DO3C
DO3A
DO4A
DO4C
DO4B
DO5A
DO5C
FROM
CN1
[VD]
DI1
DI2
DI3
COM
DI4
HDI5
COM
COM
PW
+24
PE
CN4
+24V
GND
R
S
T
N
P
AC380V


MAU
1
2
3
4
5
6
7
UT
UB
VT
VB
WT
WB
FL
8
9
8
9
8
9
8
9
8
9
8
9
MAU RX
SL1 TX
SL1 RX
SL2 TX
SL2 RX
SL5 TX
SL5 RX
SL4 TX
SL4 RX
SL3 TX
SL3 RX


HF680N02C-XXX-4
L11
L12
L13
R
S
T
AC380V
P
N
DC620V
P
N
N1X1
1
N1D31
2
N1D32
AC220V
N1X2
1
N1B61
2
N1C62
3
N1C63
5
N1C60
6
N1D70
AFE1
AFE
AFE2
AFE3
AFE4
AFE5
N1E31
N1E32
N1E33
N1E34
N1E41
N1E42
N1E43
N1E51
N1X3
1
2
3
4
6
7
8
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1
2
3

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