GUIDE

HF659

1.2

(1)

(2)

(3)

(4)

LVD	2014/35/EU	EN 61800-5-1
EMC	2014/30/EU	EN 61800-3

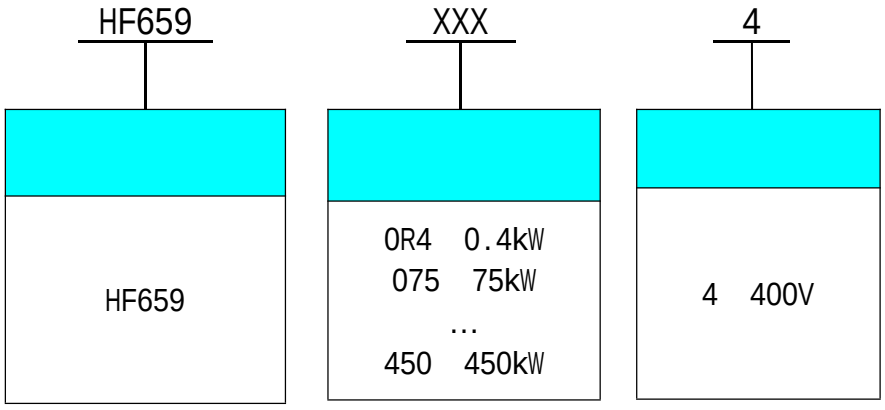
1.3

2.

2.1

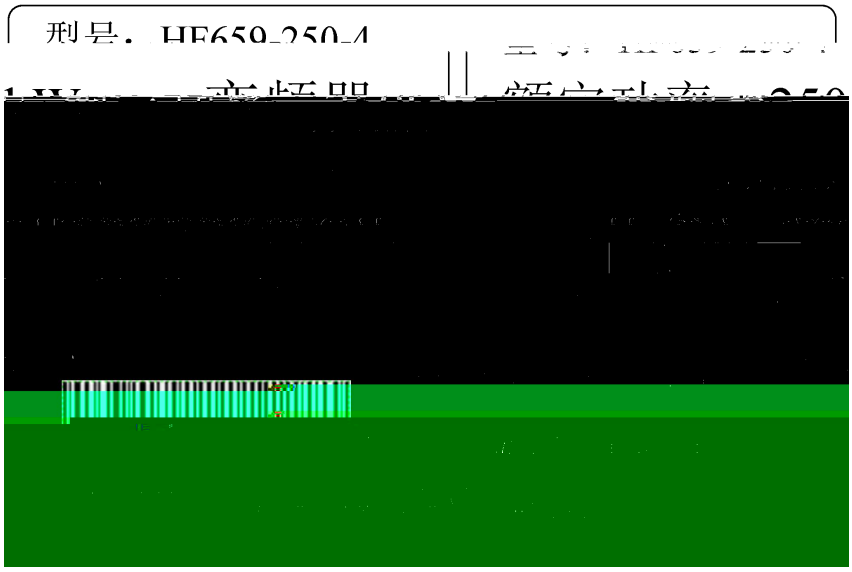
1.
2.
3.
4.

2.2



2-1

HF659 2-2 250kW



2-2

HF659-250-4 HF659 250kW 400V

AC

3PH

380V-480V 50/60Hz

0-480V 0-300Hz

2.3

2-3 HF659

	[A]	[kW]	[A]	[kW]		(kg)
HF659-0R4-4	1.8	0.4	--	--	I1	3
HF659-0R7-4	3.3	0.75	1.8	0.4		
HF659-1R5-4	4.8	1.5	3.3	0.75		
HF659-2R2-4	5.7	2.2	4.8	1.5		
HF659-3R7-4	10.2	3.7	5.7	2.2	I2	3.5
HF659-5R5-4	15	5.5	10.2	3.7		
HF659-7R5-4	18	7.5	15	5.5		
HF659-011-4	24	11	18	7.5		
HF659-015-4	32	15	24	11	I3	4.5
HF659-018-4	41	18.5	32	15		
HF659-022-4	47	22	41	18.5	I4	10.5
HF659-030-4	65	30	47	22		
HF659-037-4	75	37	65	30		
HF659-045-4	94	45	75	37	I5	35
HF659-055-4	115	55	94	45		
HF659-075-4	155	75	115	55		
HF659-090-4	188	90	155	75	I6	52
HF659-110-4	215	110	188	90		
HF659-132-4	265	132	215	110	I7	108.5
HF659-160-4	330	160	265	132		
HF659-185-4	365	185	330	160		
HF659-220-4	438	220	365	185	I8	146
HF659-250-4	485	250	438	220		
HF659-280-4	545	280	485	250		
HF659-315-4	610	315	545	280		
HF659-355-4	668	355	610	315	I9	210
HF659-400-4	720	400	668	355		
HF659-450-4	820	450	720	400		

120% 5 1

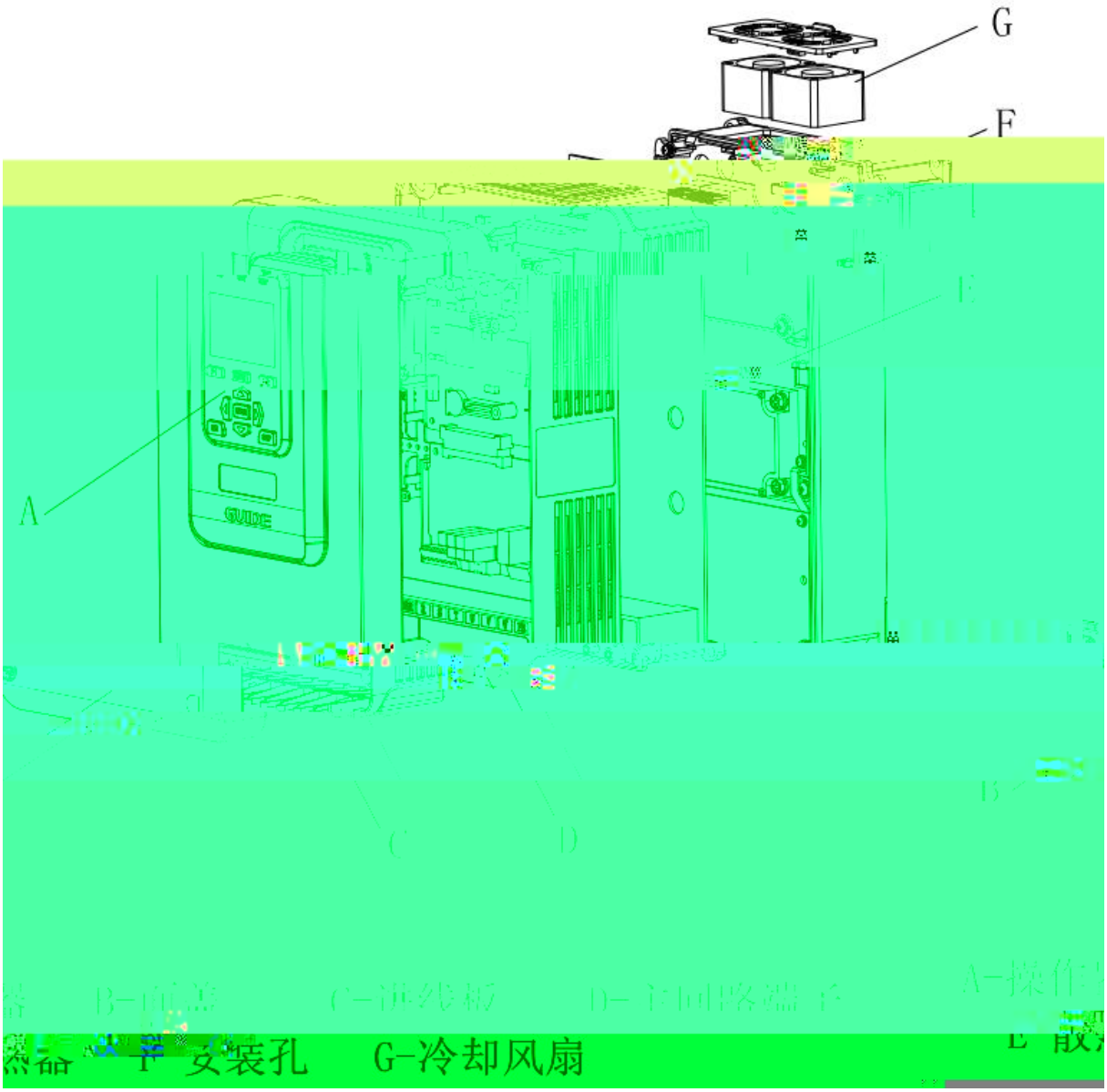
150% 5 1

2.4

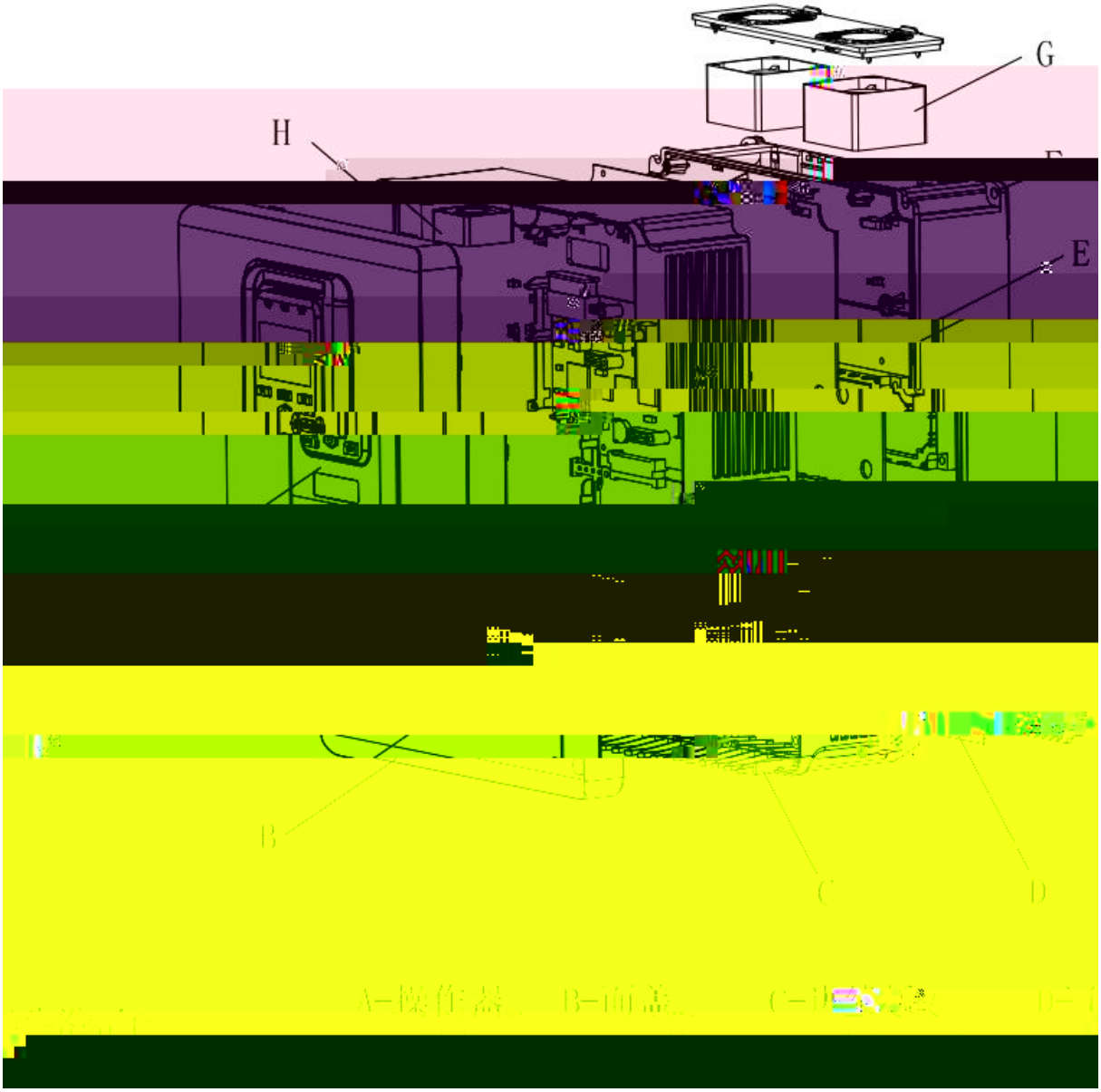
HF659

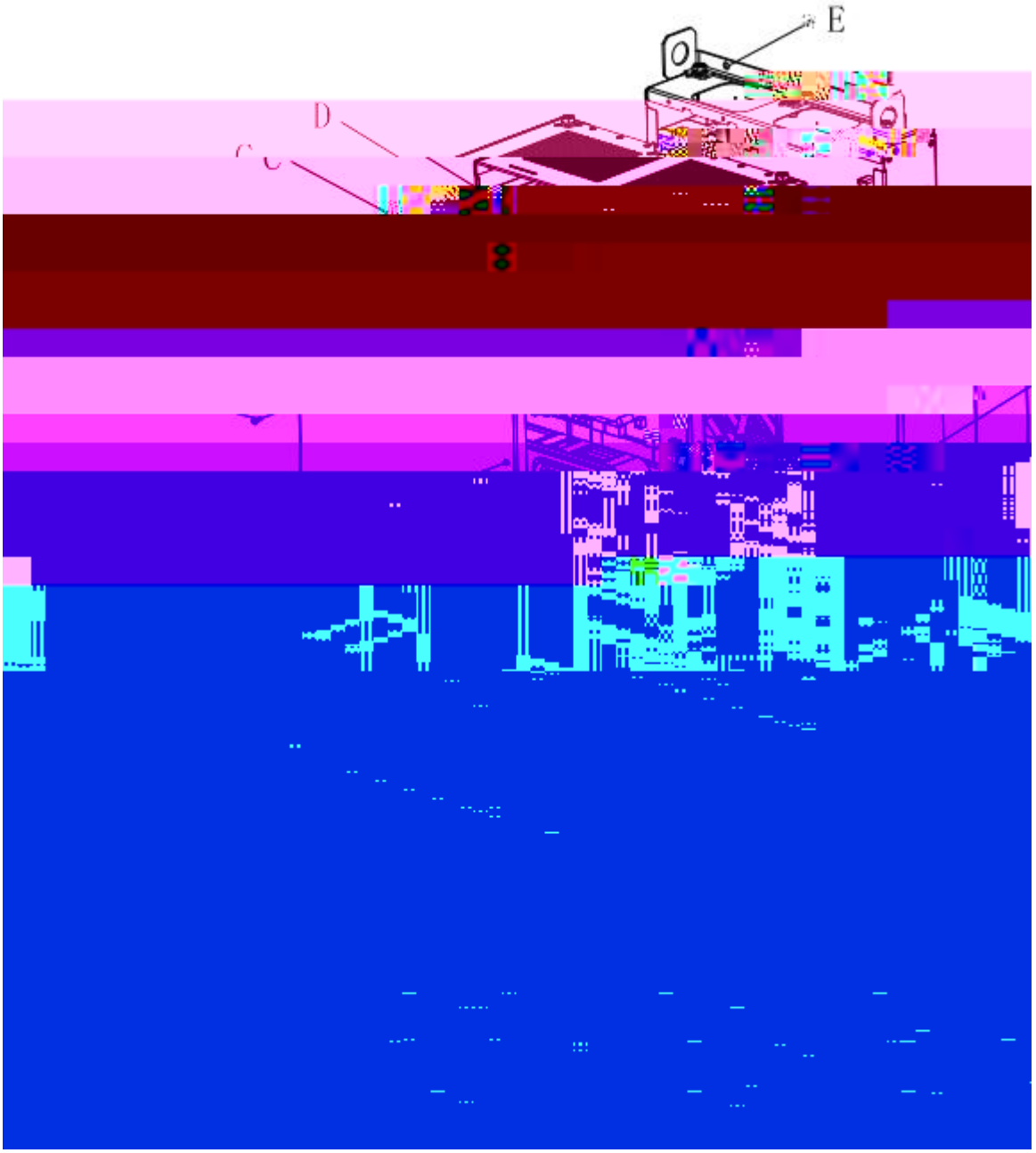
HF659-0R4-4 HF659-011-4

HF659-015-4　HF659-018-4

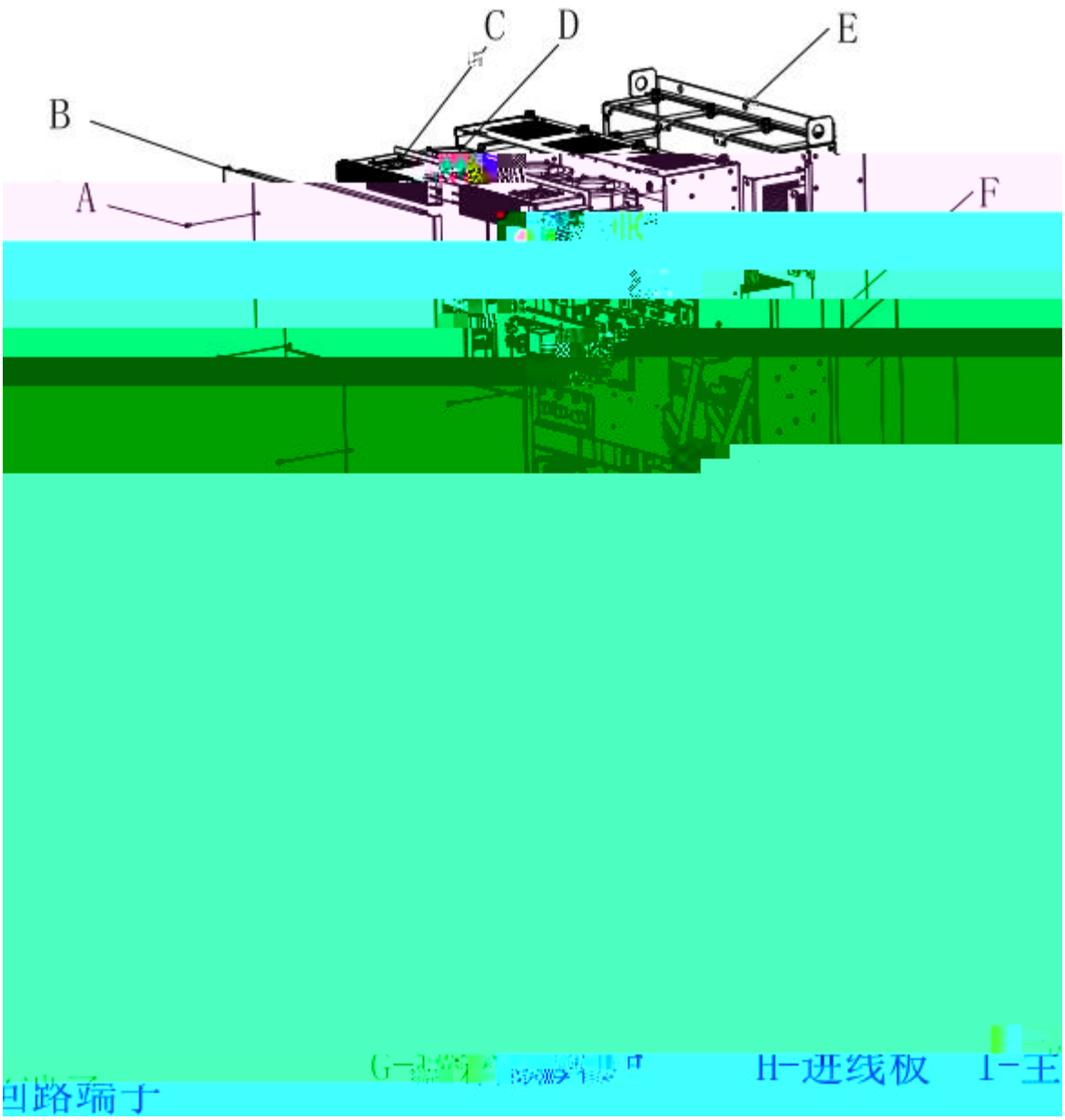


HF659-022-4　HF659-037-4

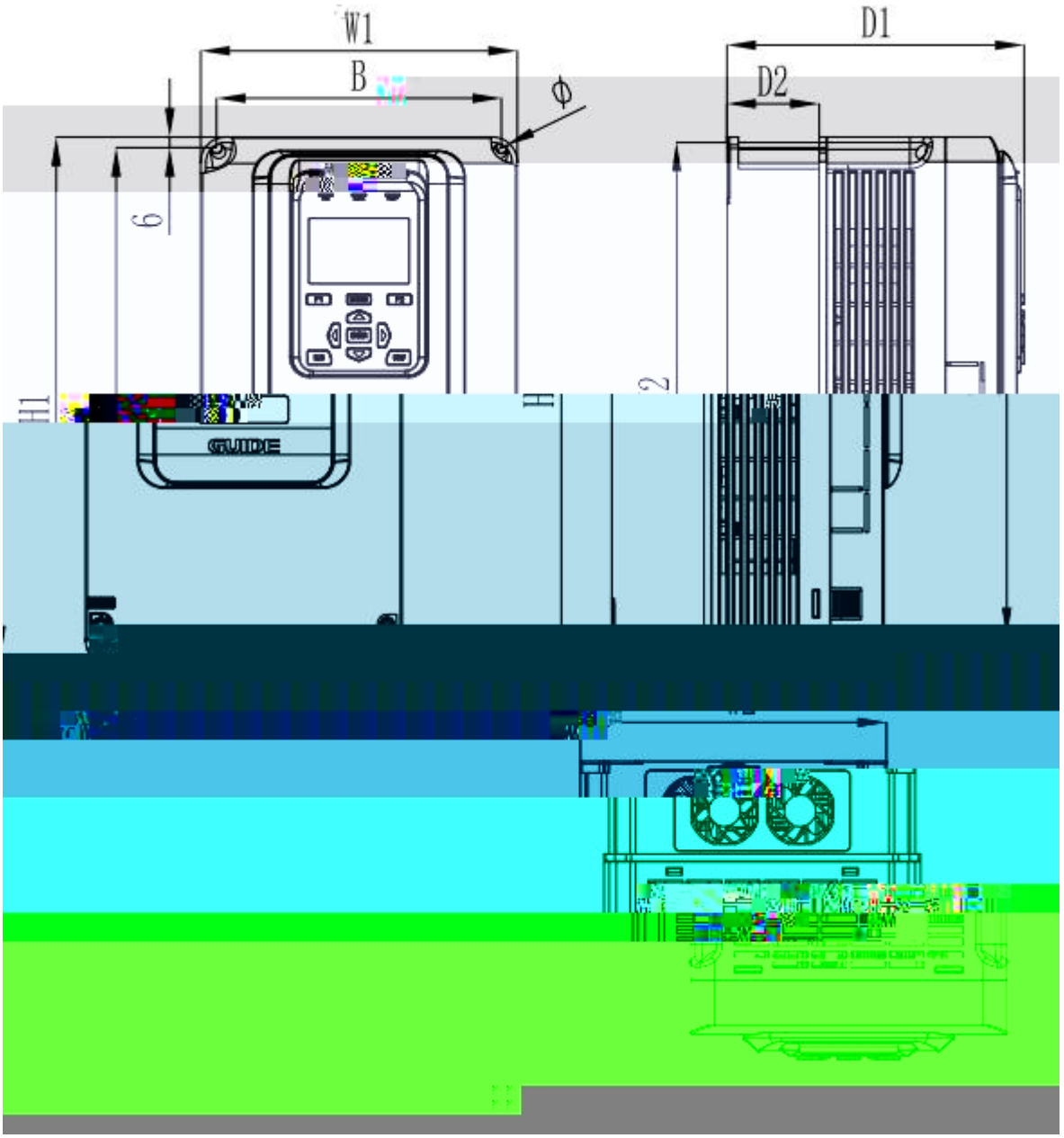


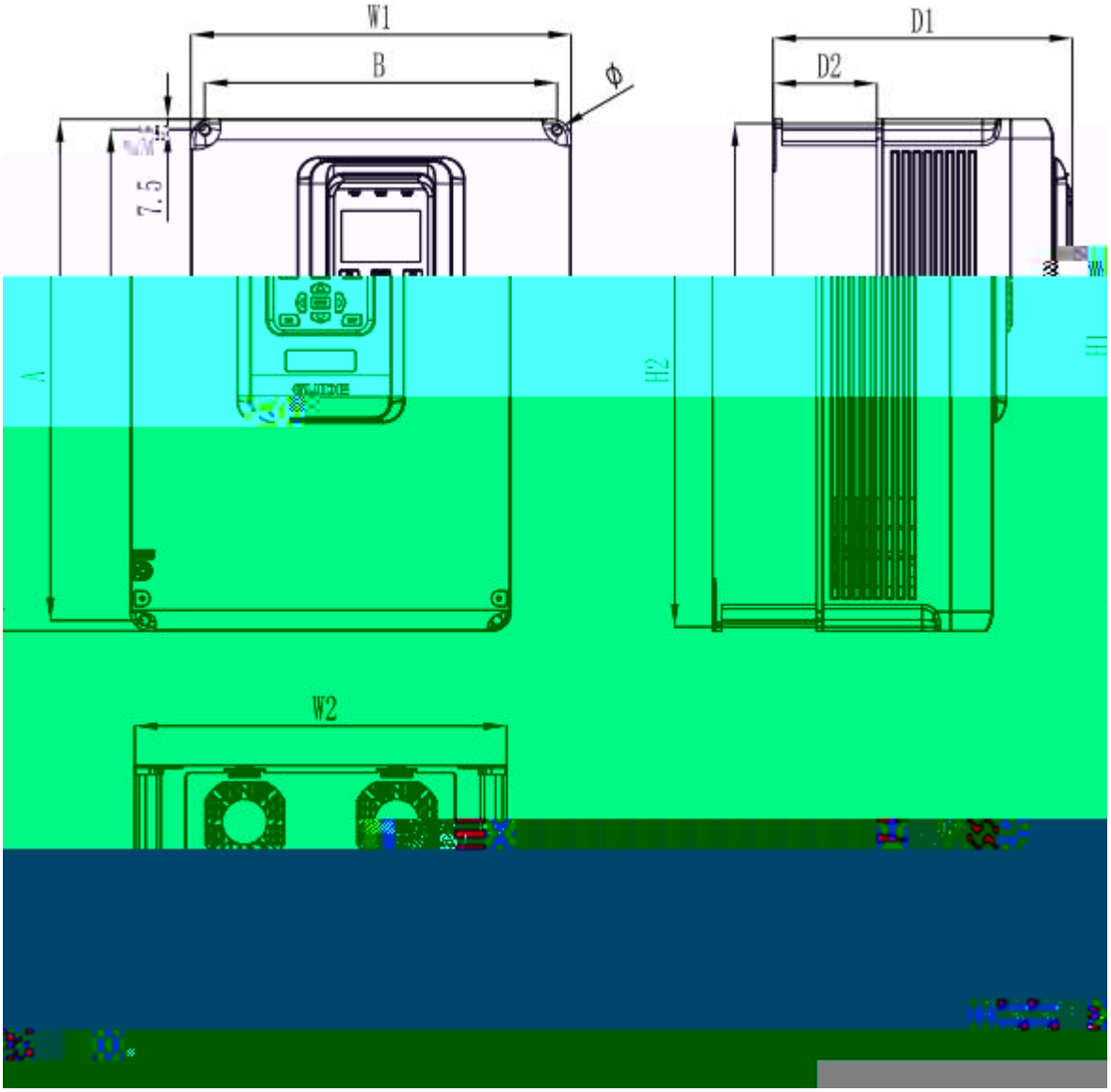

E
D

HF659-090-4　　HF659-450-4

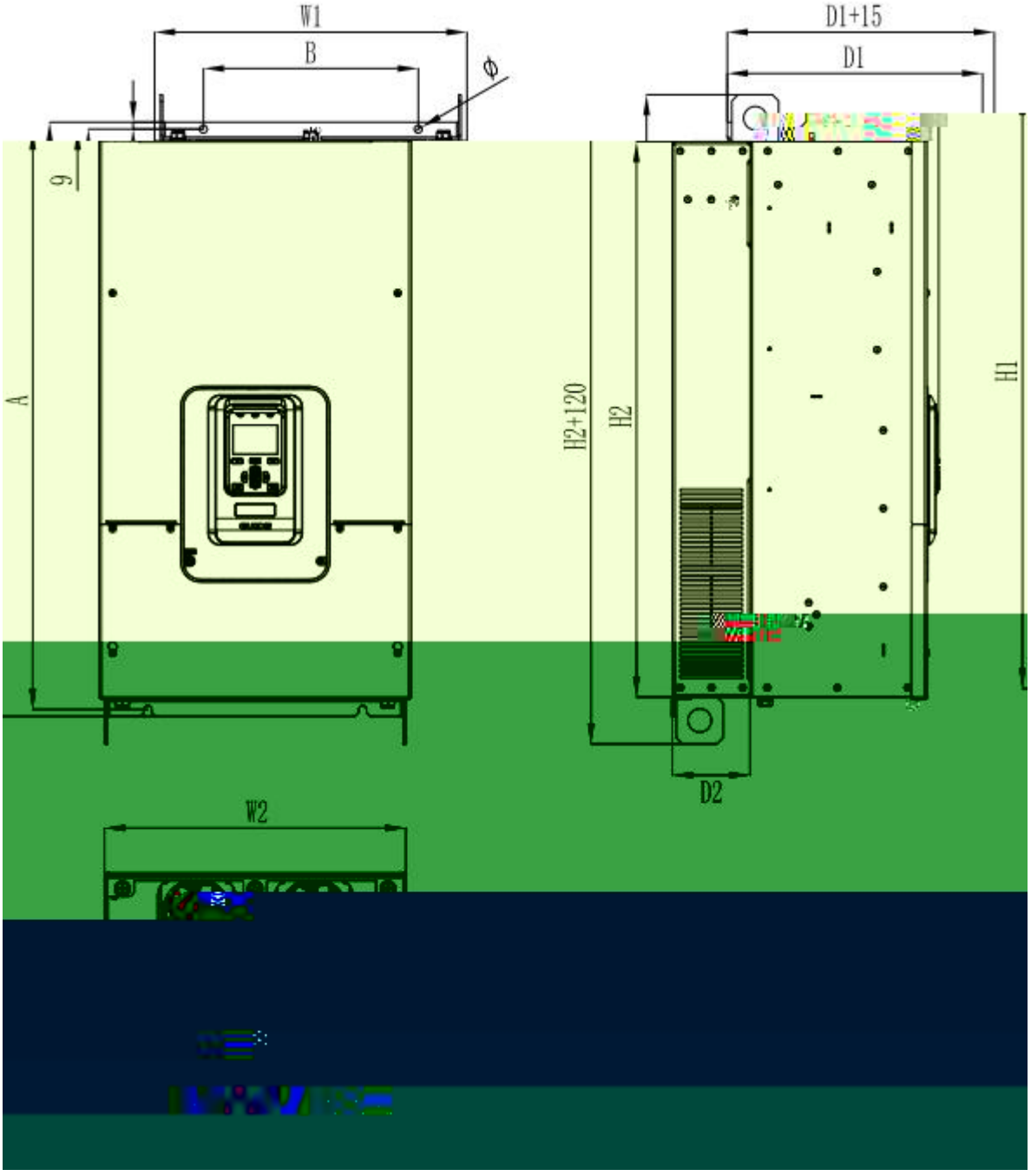


2.5





14



I5-I6

(mm) mm 8.8 Kg

		H1	H2	W1	W2	D1	D2	A	B	φ	M	
I1	0.4KW 0.75KW 1.5KW 2.2KW 3.7KW	260	254	140	134	170	52.5	248	122	4-φ6	4-M5	3
I2	5.5 KW 7.5 KW	260	254	140	134	170	52.5	248	122	4-φ6	4-M5	3.5
I3	11 KW 15 KW 18.5KW 22 KW	300	294	180	174	170	52.5	288	162	4-φ6	4-M5	4.5
I4		370	364	275	269	215	75					

2.6

380V 480V

50/60Hz

-15% +10%

fLN ± 2 ± 4

≤ 2 fLN/s

0

1

0 300Hz

1kHz 10kHz

0.01Hz x0.1%

(VC) (SVC) V/F

V/F

PG PG

300Hz

0Hz/200%(VC SVC) 0.8Hz/150%(V/F)

<5ms(SVC) <5ms(VC)

± 5%(SVC) ± 3%(VC)

1:500(SVC) 1:1000(VC)

± 0.02% (SVC) ± 0.-ﻫ o +

/

8 2 -10 +10V 0mA/4mA 20mA

5 3 2 2

0 +10V 0mA/4mA 20mA

LCD

1000 1000

100 1%

3000

-10 +40 40

1 1% 50

-10

9,

		≤ 80db

2.7

(1) 180%

(2) 40% HF659

(3)

(4)

(5)

(6)

(7)

(8)

(9)

2.8

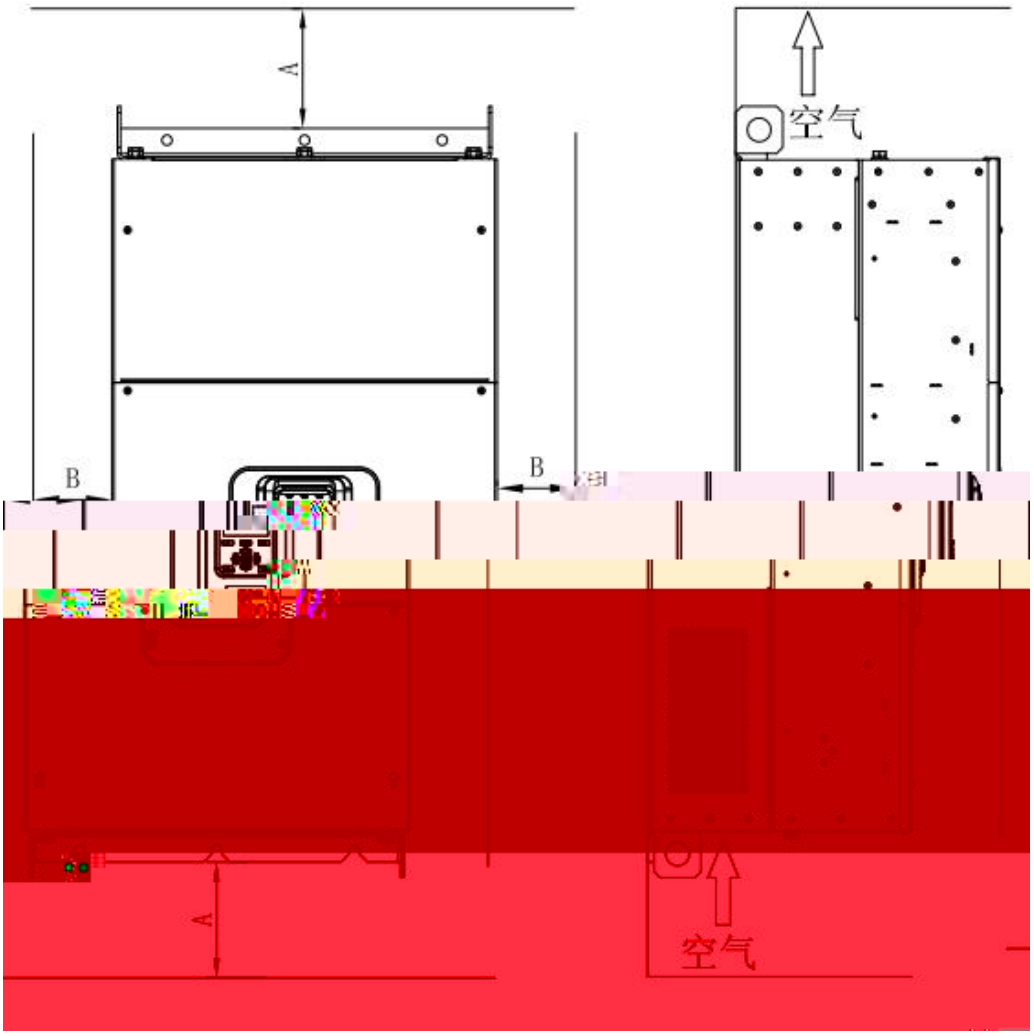
	[kW]	[kW]		[kW]	[kW]
HF659-0R4-4	0.4	0.048	HF659-055-4	55	1.313
HF659-0R7-4	0.7	0.059	HF659-075-4	75	1.486
HF659-1R5-4	1.5	0.079	HF659-090-4	90	1.956
HF659-2R2-4	2.2	0.092	HF659-110-4	110	2.422
HF659-3R7-4	3.7	0.102	HF659-132-4	132	3.1

HF659-5R5-4	5.5	0.151	HF659-160-4	160	3.663
HF659-7R5-4	7.5	0.218	HF659-185-4	185	4.495
HF659-011-4	11	0.277	HF659-220-4	220	4.91
HF659-015-4	15	0.328	HF659-250-4	250	5.88

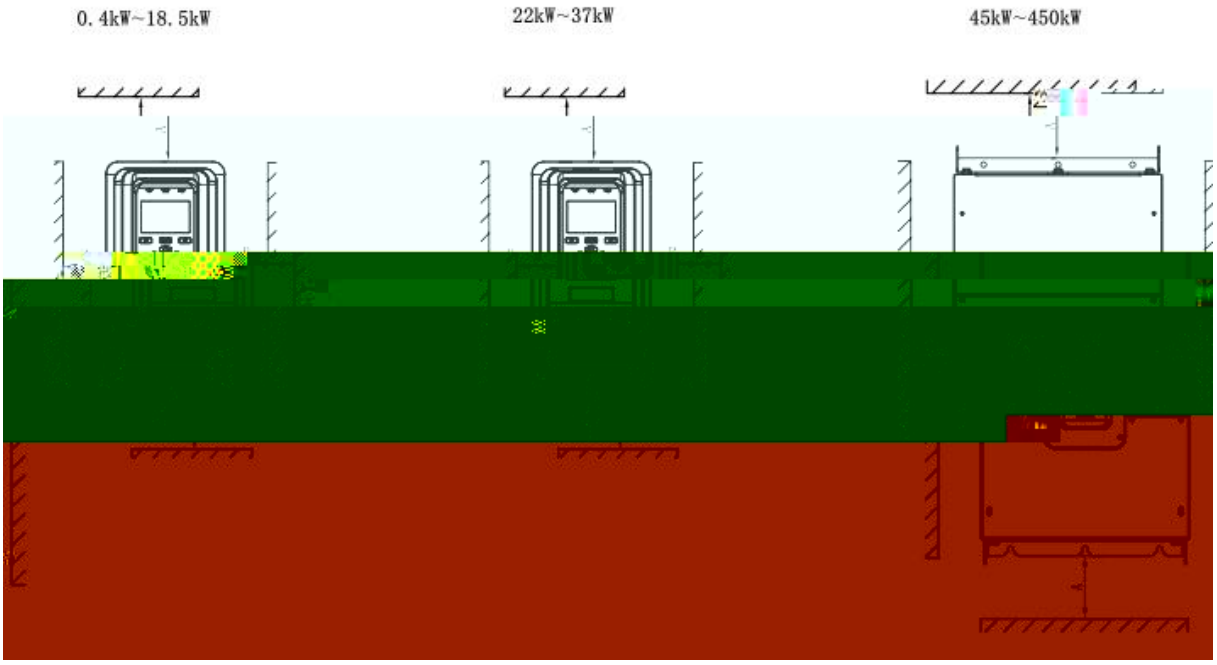
3.2

3.2.2

1

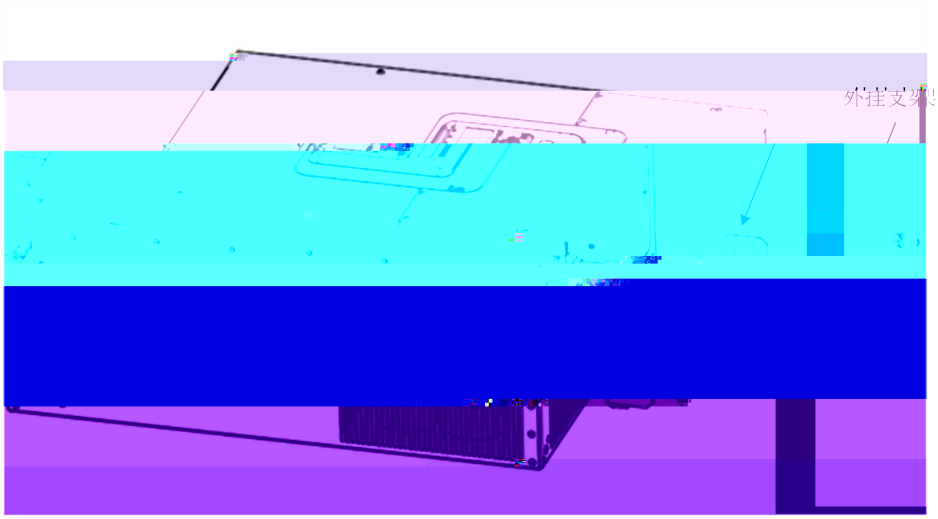


3-1

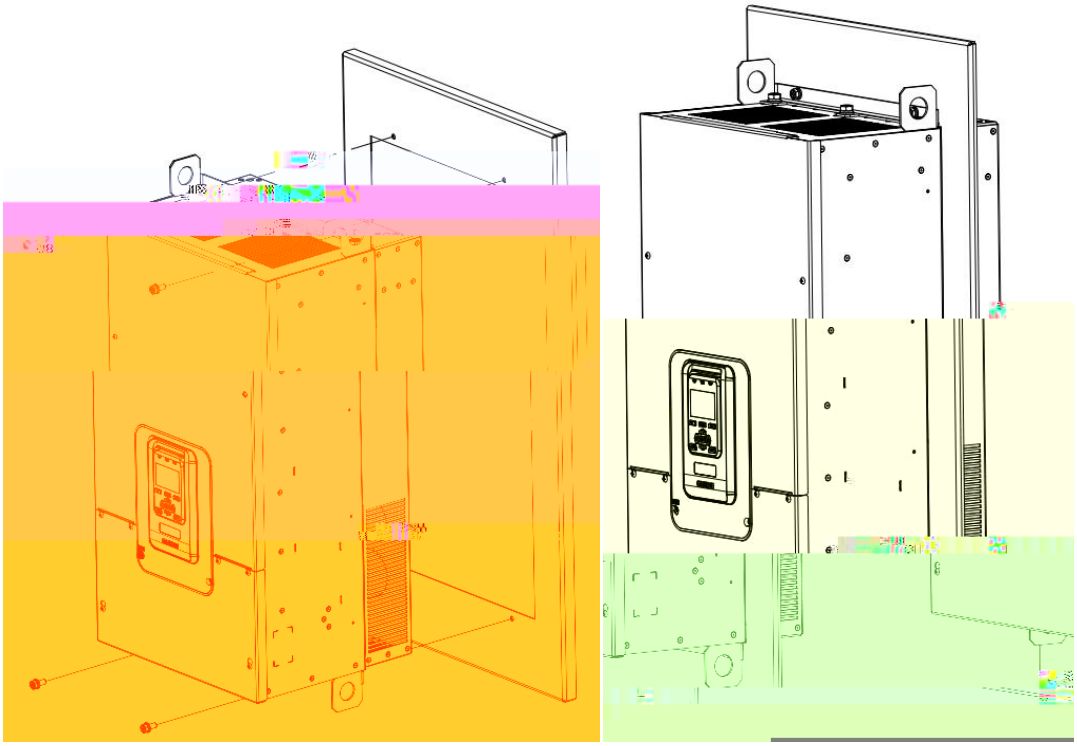


0.4kW~18.5kW	A ≥ 100mm	B ≥ 40mm
22kW~37kW	A ≥ 200mm	B ≥ 50mm
45kW~450kW	A ≥ 300mm	B ≥ 50mm

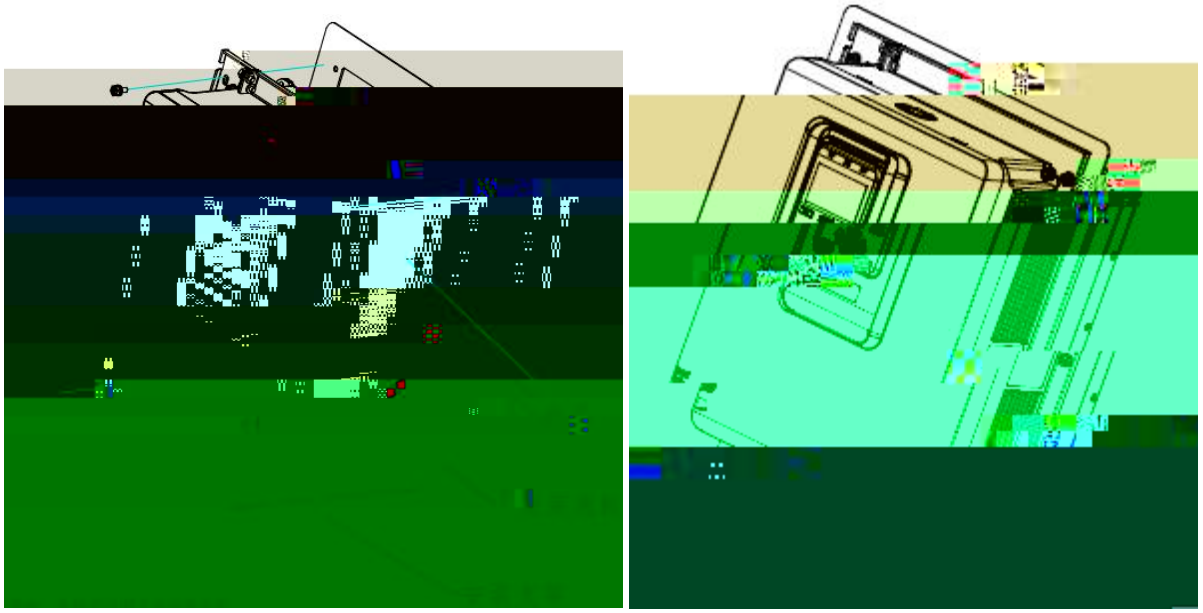
2



3-2

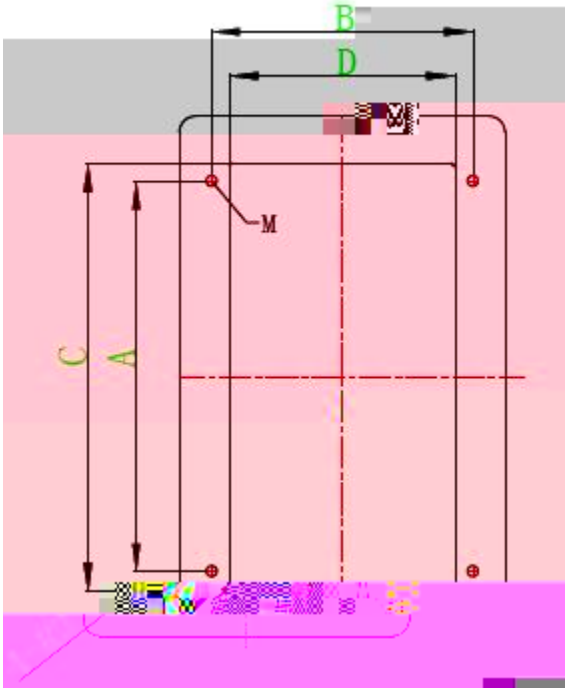


3-3

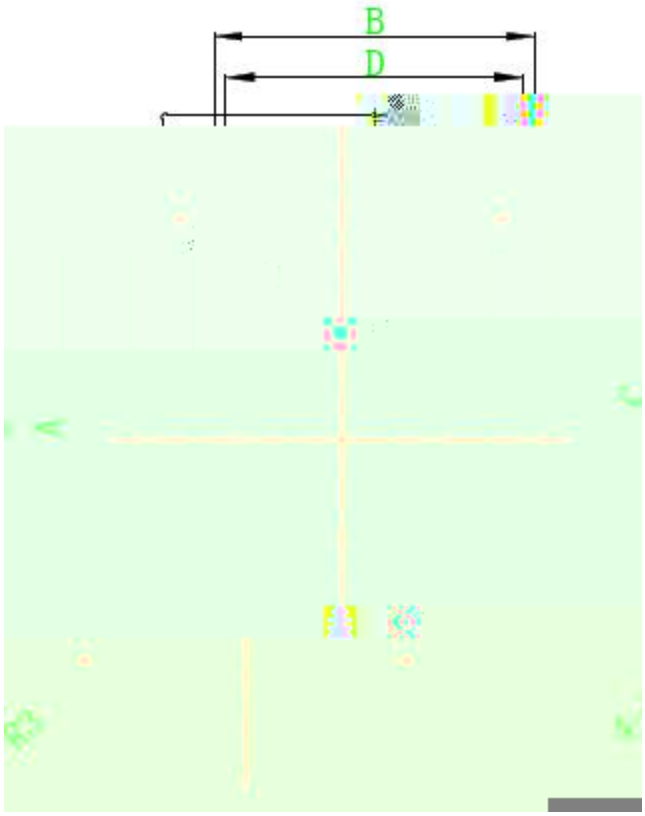


3-4

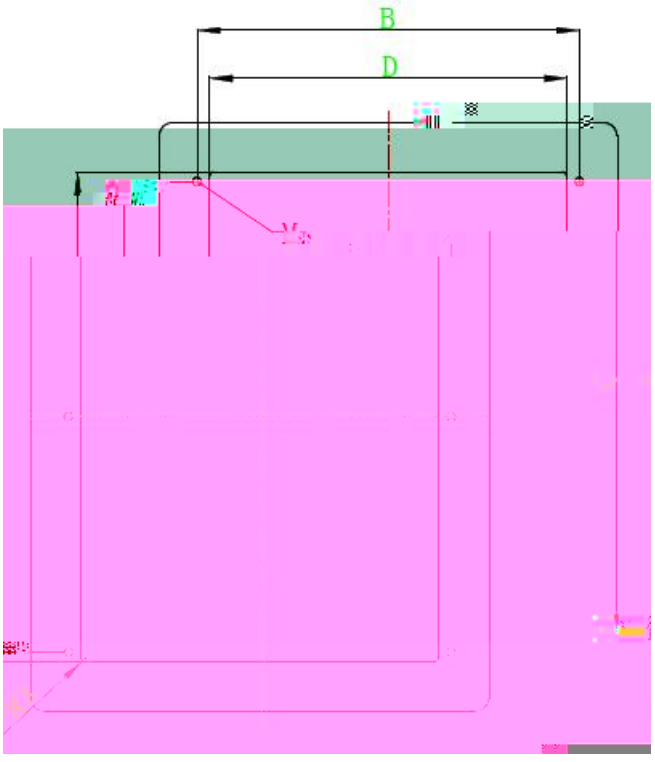
3



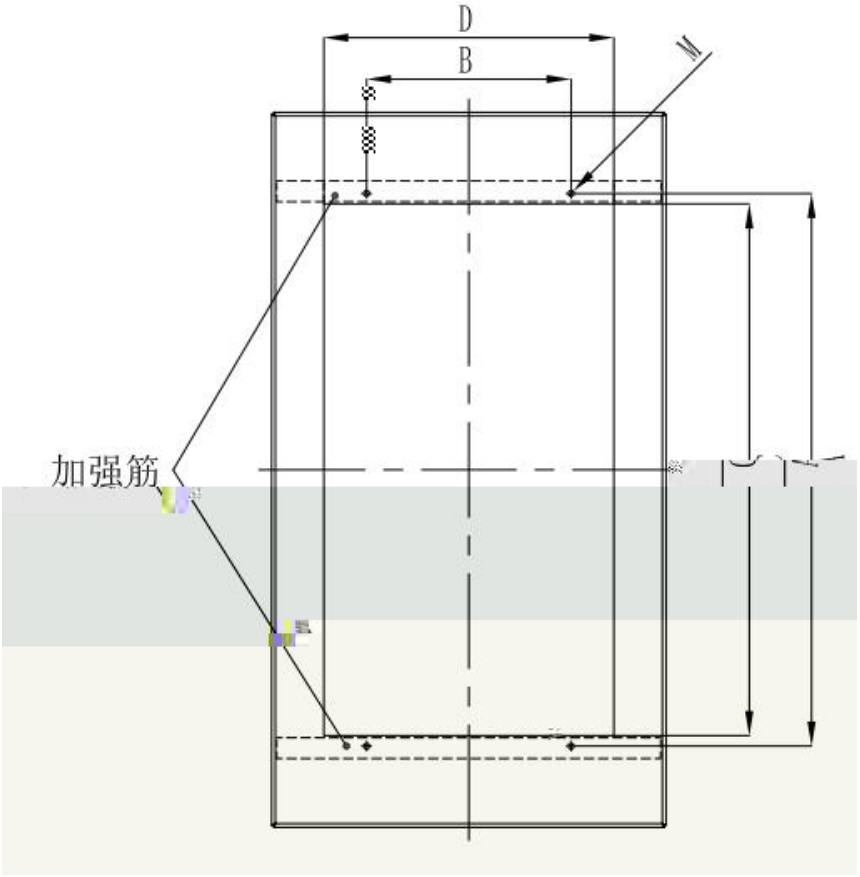
3-5 I1-I2



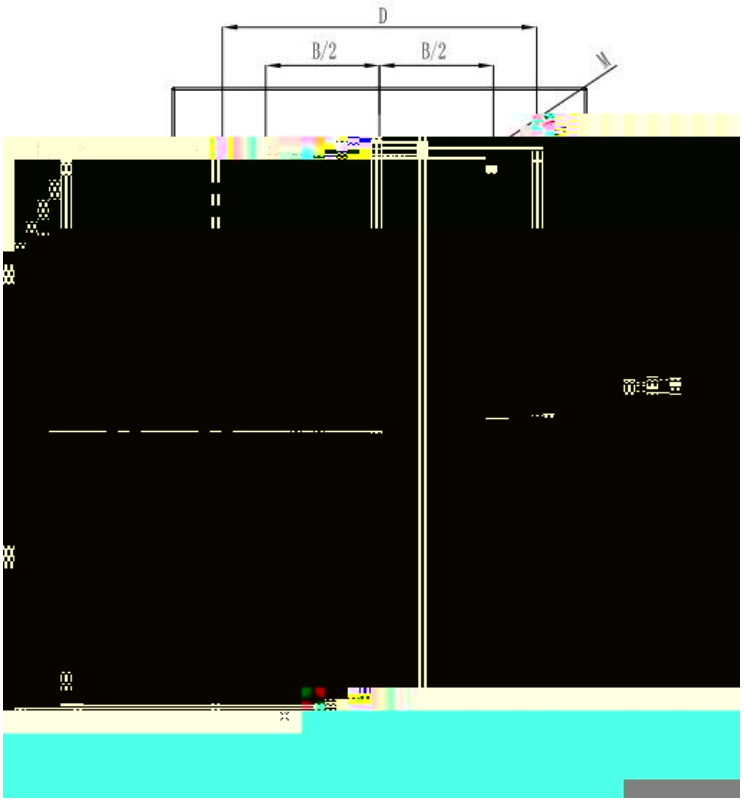
3-6 I3



3-7 I4



3-8 I5-I6



3-9 I7-I9

	(mm)		(mm)		
	A	B	C	D	
I1	240	160	262.5	138	4-M6
I2	240	160	262.5	138	4-M6
I3	270	197	304	182	4-M6
I4	360	292	374	273	6-M6
I5	585	275	570	330	4-M6
I6	742	275	715	390	4-M8
I7	900	350	855	480	6-M12
I8	1110	350	1065	490	6-M12
I9	1245	500	1200	690	6-M14

3.2.3

1

100mm

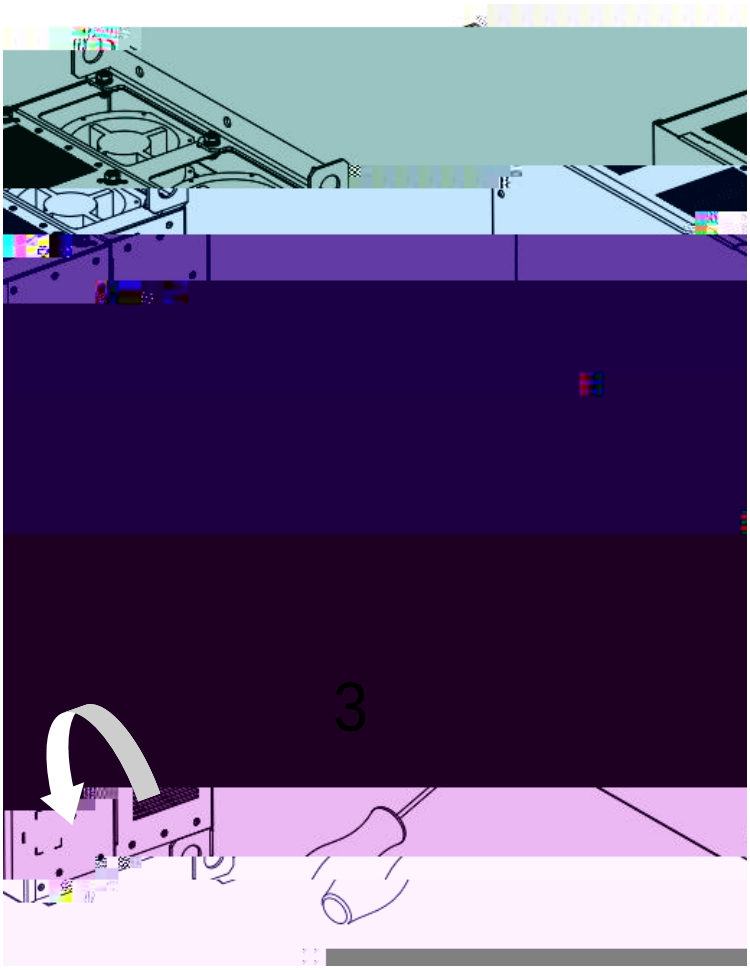
2

3-10

ب

3.3

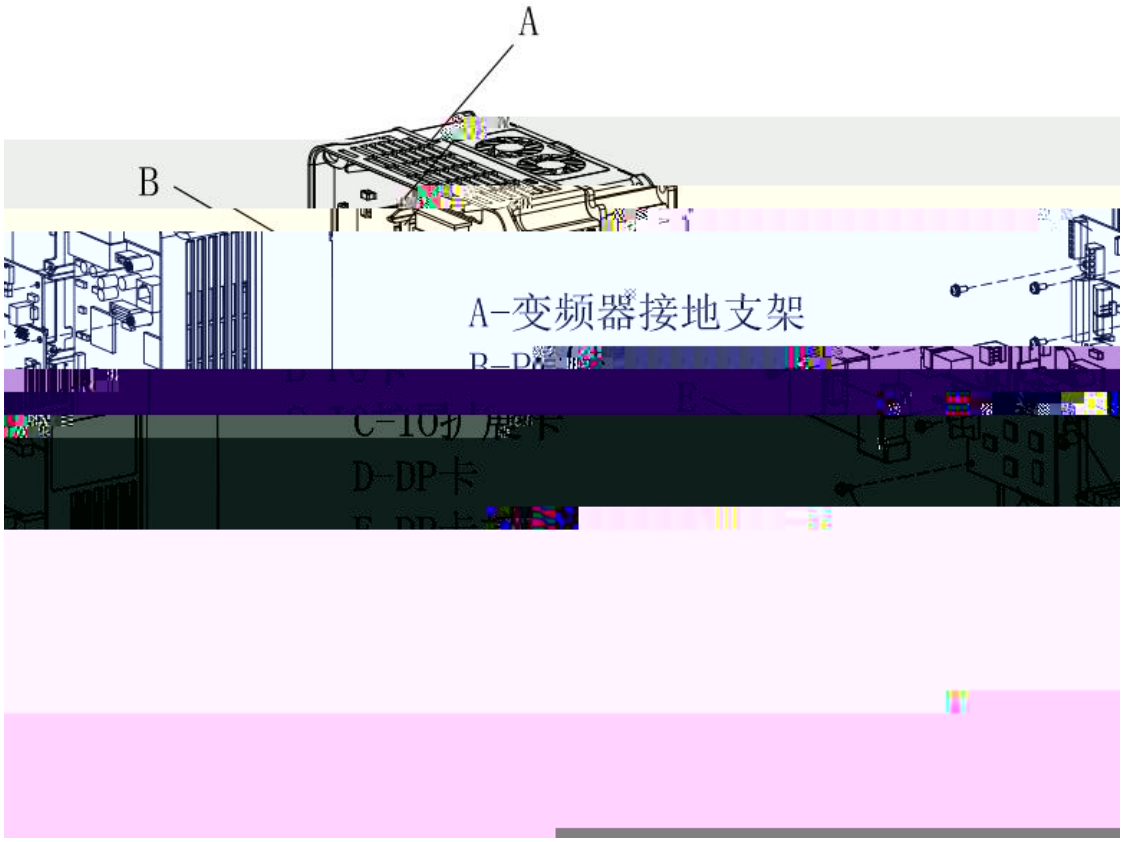
1	1	4	5mm
2	2		
3	3		



3-12

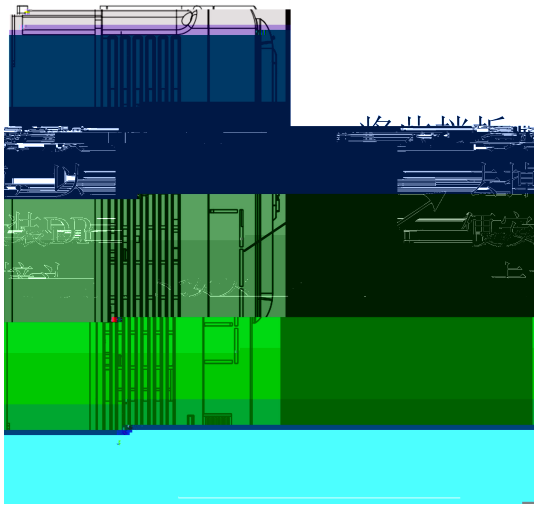
3.4

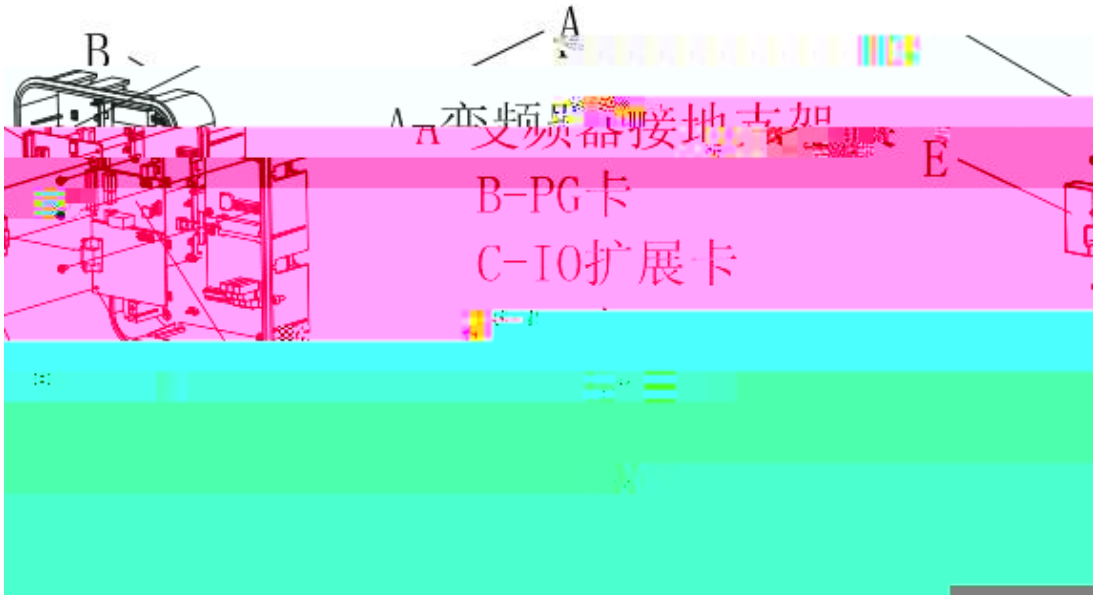
HF659



37kW

18.5KW DP





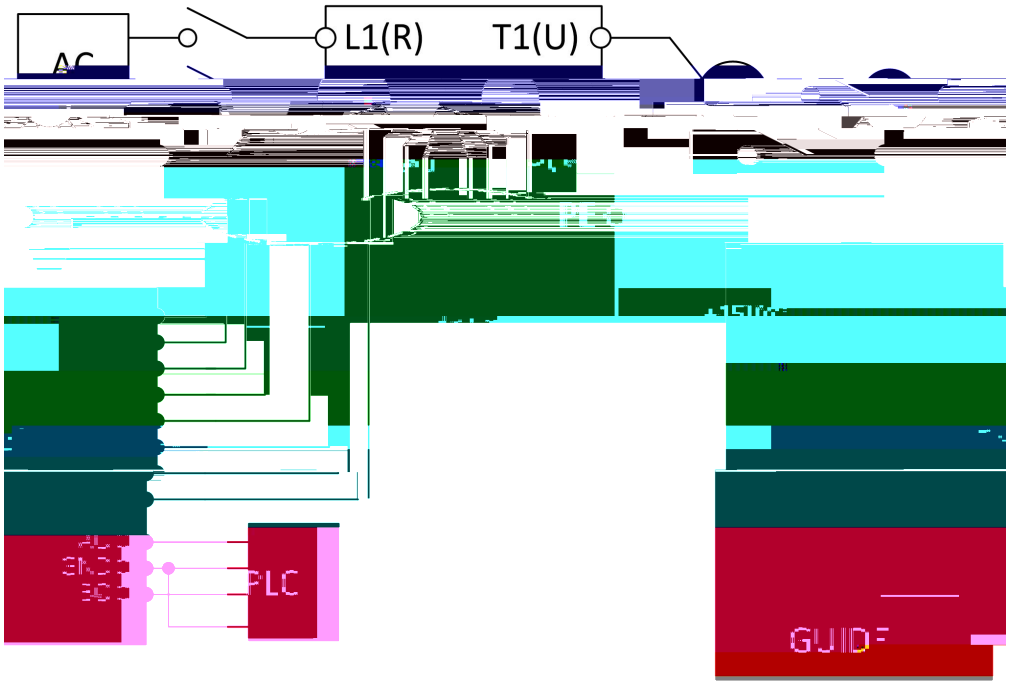
37KW

3.5 PGC2

GDHF-PGC2 PG 11

A+ A

PGC2



1 PG

2 PG

3 PE

4 PG A- B- Z- GND

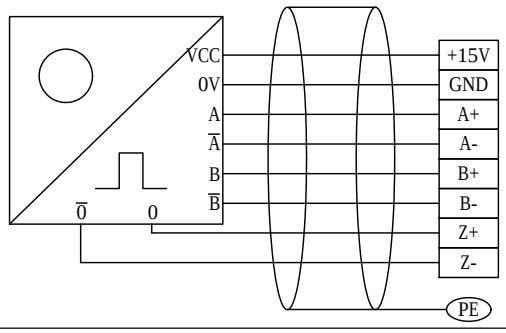
5 PGC2 15V RS-422

PGC2

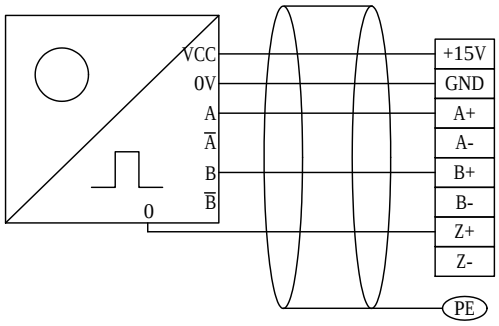
15V

1

a

		
		HLE45-1024-6F.AC
		RHI90N-ONAK1R61N-1024
		EC120P45-H6PR-1024

b

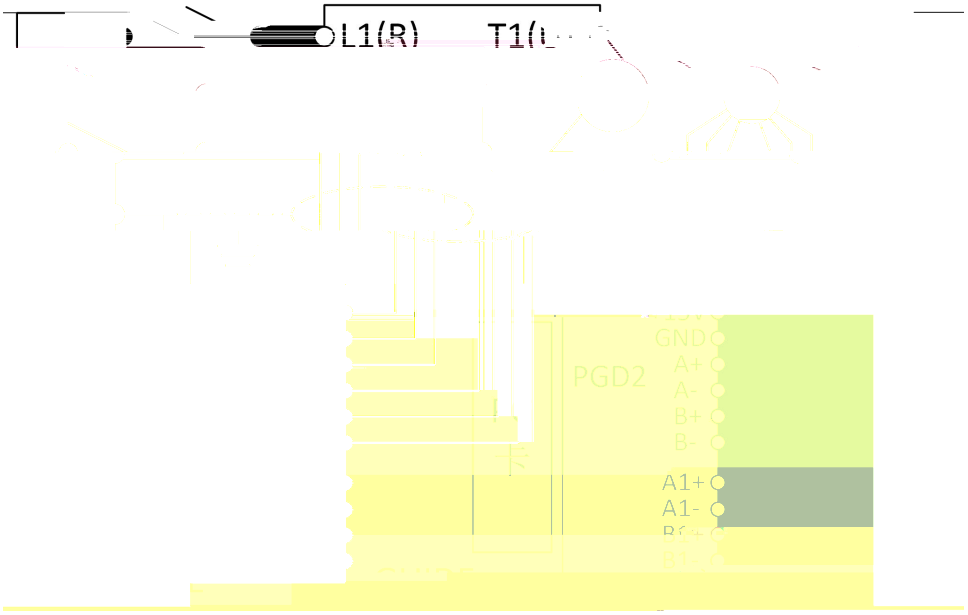


4 15V

C

A

PGD2



1 PG

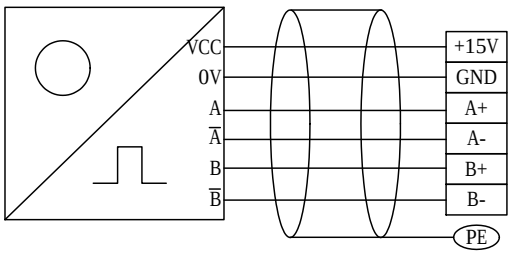
2 PG

3 PE

PGD2

1

a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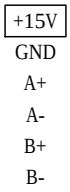
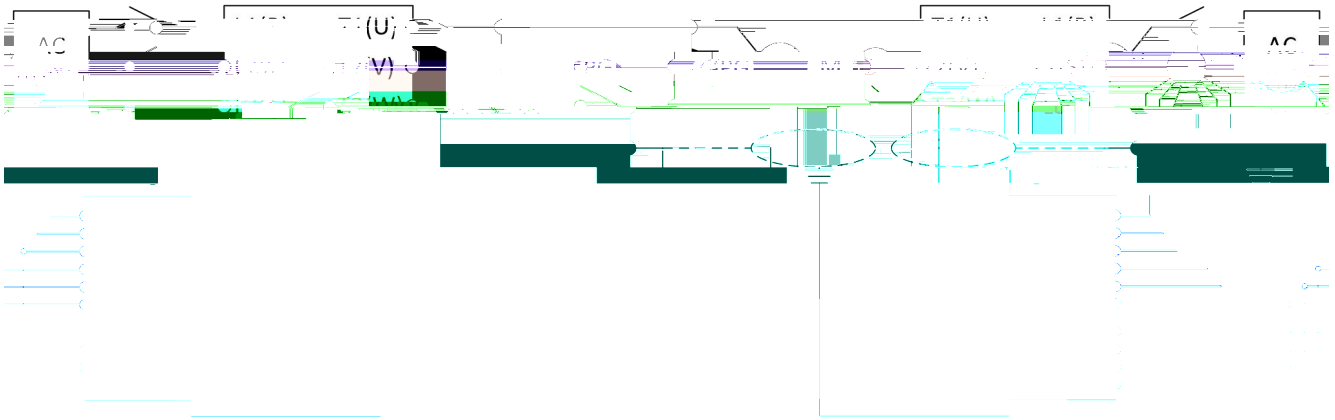
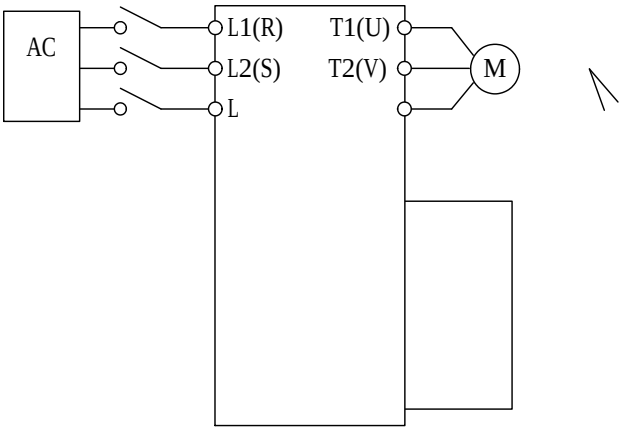
		EC120P45-H6PR-1024

b






AC
L1(R)
L2(S)
L
T1(U)
T2(V)
M

4.

4.1

1

2 10

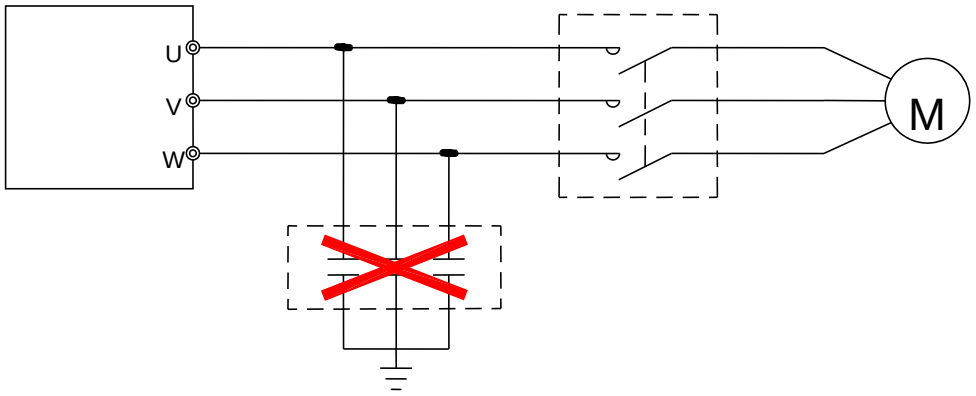
3 U V W

4

5

6

7 U V W 4-1



4-1

8

9

10cm

10 0.75mm² 50m

11 10cm

12 100m 100m

13

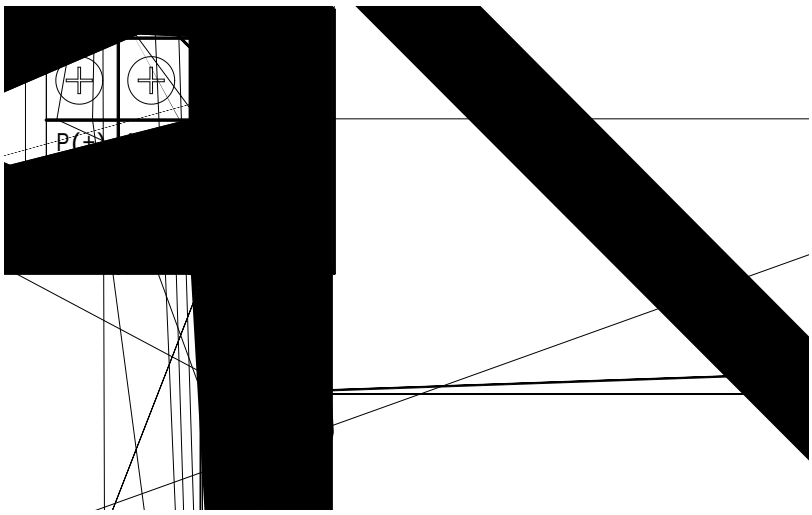
14

15 30 m

4.2

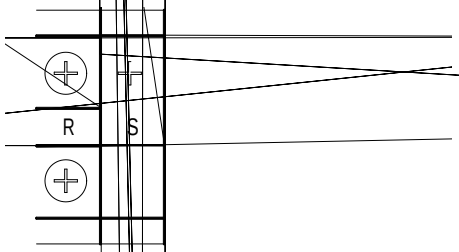
1

0.4kW~75kW +



(3)

220kW~450kW



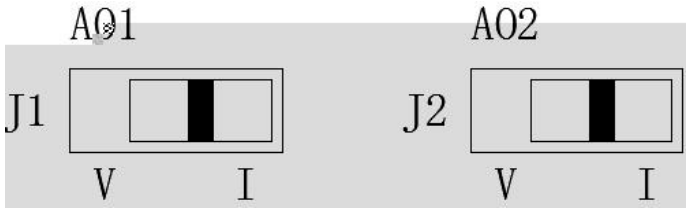
P(+)	
P1	45KW
N(-)	
R S T	
U V W	
DBR	185KW
PE	

4.3

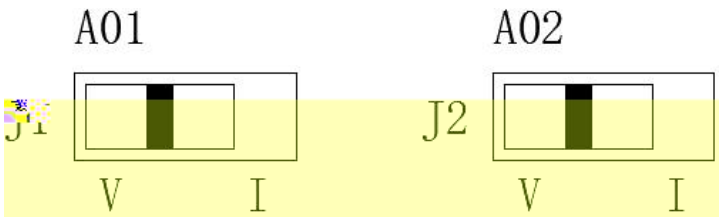
1

	1	2	3	4	5	6	7	8
	+10V	GND	AI1+	AI1-	AI2+	AI2-	AO1	AO2
	9	**10**	**11**	**12**	**13**	**14**	**15**	**16**
	DI1	DI2	DI3	DI4	DI5	DI6	DI7	DI8
	17	**18**	**19**	**20**	**21**	**22**	**23**	**24**
	PW	COM	PW	+24V	+24V	DO1	+24V	DO2
	25	**26**	**27**	**28**	**29**	**30**	**31**	
	+24V	DO3	DO4A	DO4C	DO4B	DO5A	DO5C	

2



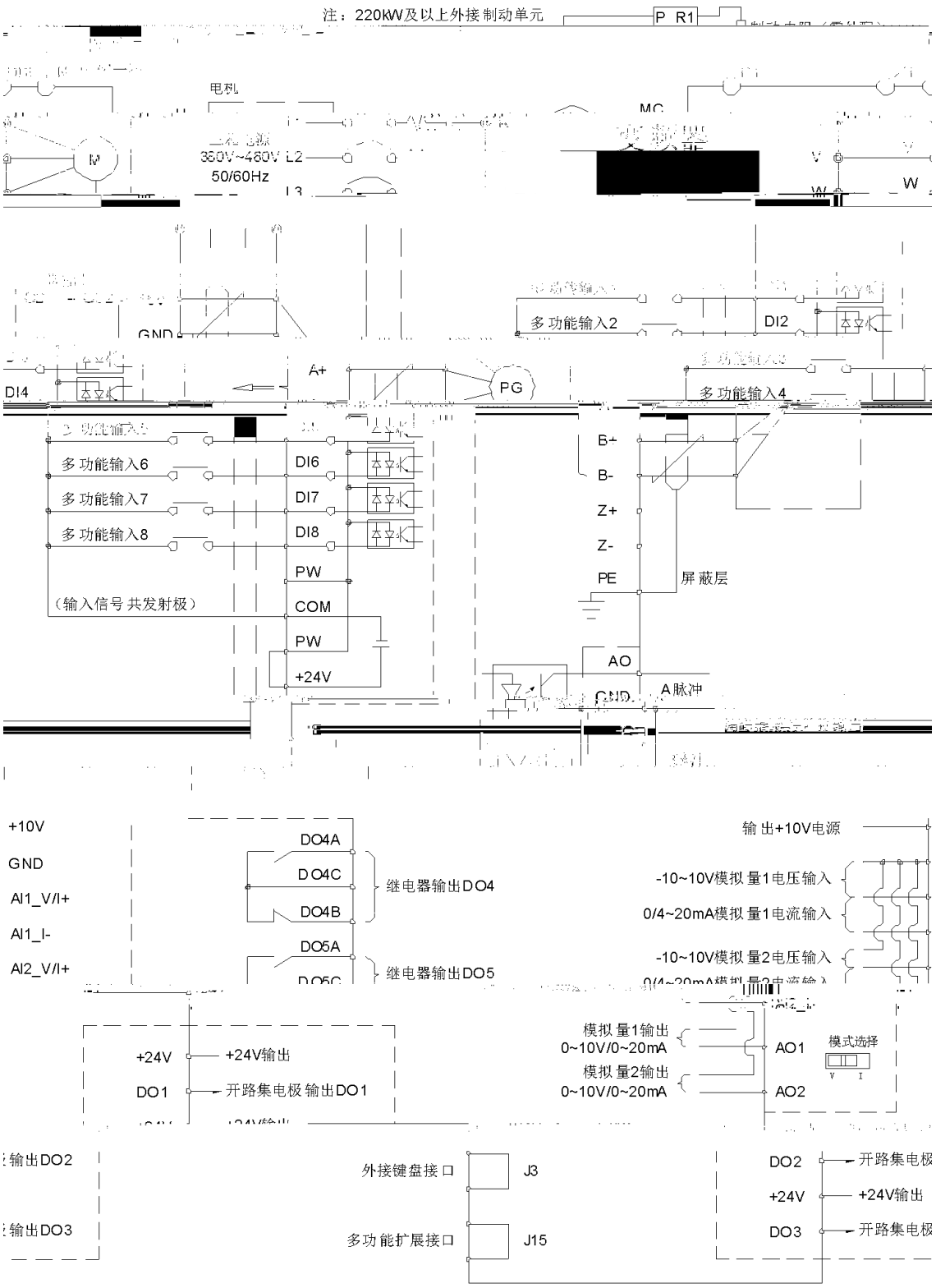
a.



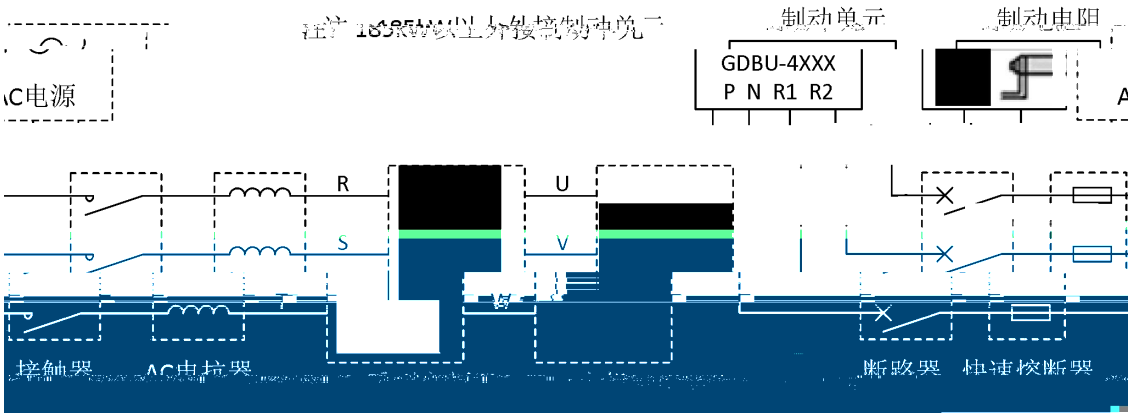
b.

25	+24V	24V				
26	DO3		3			DC24V 50mA
27	DO4A		4			
				250VAC	3A	COSϕ=0.4
		30VDC	1A			
28	DO4C		4			
29	DO4B		4			
				250VAC	3A	COSϕ=0.4
		30VDC	1A			
30	DO5A		5			
				250VAC	2A	COSϕ=0.4
		30VDC	1A			
31	DO5C		5			

4.4


注：220kW及以上外接制动单元
P
R1
电机
M
380V~480V
50/60Hz
L2
L3
MC
V
W
GND
多功能输入2
DI2
DI4
A+
PG
多功能输入4
多功能输入6
多功能输入7
多功能输入8
DI6
DI7
DI8
PW
（输入信号 共发射极）
COM
PW
+24V
B+
B-
Z+
Z-
PE
屏蔽层
AO
GND
A脉冲
+10V
GND
AI1_V/I+
AI1_I-
AI2_V/I+
DO4A
DO4C
DO4B
继电器输出DO4
DO5A
继电器输出DO5
输出+10V电源
-10~10V模拟量1电压输入
0/4~20mA模拟量1电流输入
-10~10V模拟量2电压输入
模拟量1输出
0~10V/0~20mA
模拟量2输出
0~10V/0~20mA
AO1
AO2
模式选择
+24V
+24V输出
DO1
开路集电极输出DO1
外接键盘接口
J3
多功能扩展接口
J15
DO2
+24V
DO3
开路集电极
+24V输出
开路集电极

4.6



4.7

	A	/	mm²	A
		CEFR	40%	(AC-3)
HF659-0R4-4	1.8		2.5	9
HF659-0R7-4	3.3		2.5	9
HF659-1R5-4	4.8		2.5	9
HF659-2R2-4	5.7		2.5	9
HF659-3R7-4	10.2		2.5	12
HF659-5R5-4	15		2.5	18
HF659-7R5-4	18		2.5	18
HF659-011-4	24		2.5	25
HF659-015-4	32		4	32
HF659-018-4	41		4	40
HF659-022-4	47		6	50
HF659-030-4	65		10	65
HF659-037-4	75		10	80
HF659-045-4	94		16	95
HF659-055-4	115		16	115
HF659-075-4	155		25	150
HF659-090-4	188		35	205
HF659-110-4	215		50	245
HF659-132-4	265		70	300
HF659-160-4	330		95	410
HF659-185-4	365		95	410
HF659-220-4	438		120	475
HF659-250-4	485		150	500

4.8

		2%		1%	
HF659-0R4-4	0.4 kW	2.2A	6.4mH	2.2A	3.2mH
HF659-0R7-4	0.7 kW	4A	3.5mH	4A	1.8 mH
HF659-1R5-4	1.5 kW	6A	2.4mH	6A	1.2 mH
HF659-2R2-4	2.2 kW	7A	2.0mH	7A	1.0 mH
HF659-3R7-4	3.7 kW	12A	1.1mH	12A	0.6 mH
HF659-5R5-4	5.5kW	19A	743uH	19A	371 uH
HF659-7R5-4	7.5kW	22A	644 uH	22A	322 uH
HF659-011-4	11kW	28A	493 uH	28A	247 uH
HF659-015-4	15kW	38A	368 uH	38A	184 uH
HF659-018-4	18.5kW	49A	283 uH	49A	141 uH
HF659-022-4	22kW	57A	247 uH	57A	123 uH
HF659-030-4	30kW	76A	184 uH	76A	92 uH
HF659-037-4	37kW	88A	159 uH	88A	79 uH
HF659-045-4	45kW	113A	123 uH	113A	62 uH
HF659-055-4	55kW	131A	106 uH	131A	53 uH
HF659-075-4	75kW	178A	78 uH	178A	39 uH
HF659-090-4	90kW	227A	62 uH	227A	31 uH
HF659-110-4	110kW	259A	54 uH	259A	27 uH
HF659-132-4	132kW	320A	44 uH	320A	22 uH
HF659-160-4	160kW	398A	35 uH	398A	18 uH

HF659-185-4	185kW	446A	31 uH	446A	16 uH
HF659-220-4	220kW	528A	26 uH	528A	13 uH
HF659-250-4	250kW	573A	24 uH	573A	12 uH
HF659-280-4	280KW	657A	21 uH	657A	11 uH
HF659-315-4	315kW	735A	19 uH	735A	10 uH
HF659-355-4	355kW	805A	17 uH	805A	9 uH
HF659-400-4	400kW	856A	16 uH	856A	8 uH
HF659-450-4	450kW	856A	16 uH	856A	8 uH

4.9

		Ω	Ω	KW 30% Kc	KW 50% Kc
HF659-0R4-4	0.4 kW	750	115	≥0.2	≥0.3
HF659-0R7-4	0.7 kW	750	115	≥0.2	≥0.35
HF659-1R5-4	1.5 kW	400	100	≥0.5	≥0.7
HF659-2R2-4	2.2 kW	250	78	≥0.8	≥1
HF659-3R7-4	3.7 kW	100	64	≥2.0	≥2.5
HF659-5R5-4	5.5kW	100	40	≥2.0	≥2.5
HF659-7R5-4	7.5kW	75	40	≥3.0	≥3.5
HF659-011-4	11kW	50	40	≥4.0	≥5.2
HF659-015-4	15kW	40	32	≥5	≥6.5
HF659-018-4	18.5kW	32	24	≥6	≥8.0
HF659-022-4	22kW	24	20	≥8	≥11
HF659-030-4	30kW	22	20	≥10	≥13

HF659-037-4	37kW	21	20	≥ 12	≥ 16
HF659-045-4	45kW	13	8	≥ 15	≥ 20
HF659-055-4	55kW	10	8	≥ 20	≥ 26
HF659-075-4	75kW	7.5	6	≥ 26	≥ 35
HF659-090-4	90kW	6.8	3.5	≥ 29	≥ 38
HF659-110-4	110kW	5.1	3.5	≥ 38	

20cm

90

c

EMC

d

50m

e

5.

5.1

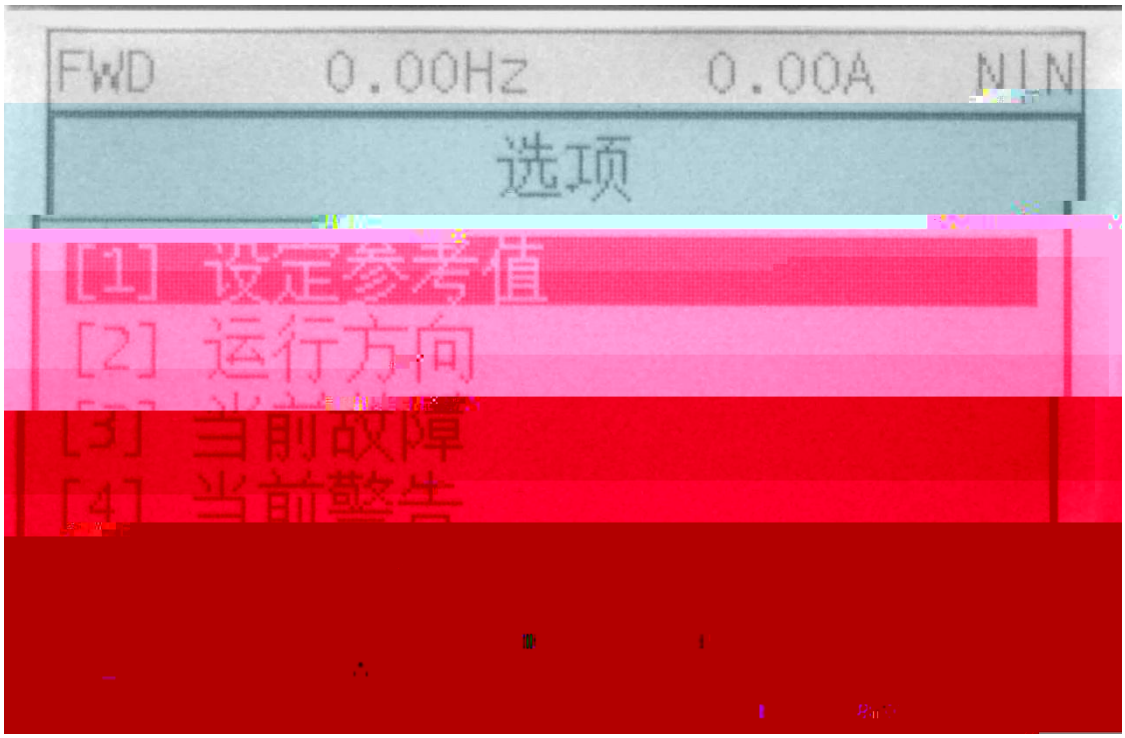
HF659 F1

LOCAL/REMOTE F2 RUN STOP /RESET فذ

3

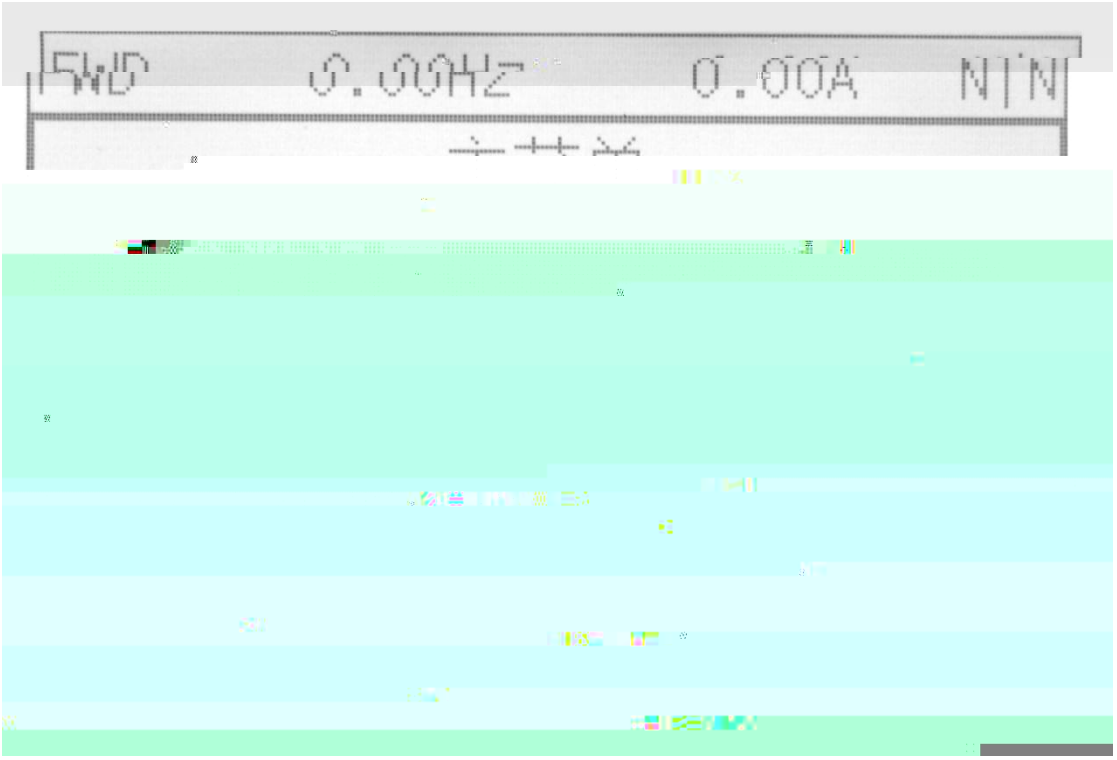
F1 F2 “ ” “ ” “ ” “ ” “ ”

ENTER



1	Reference Set	
2	Change Direction	
3	Current Error	
4	Current Warnning	

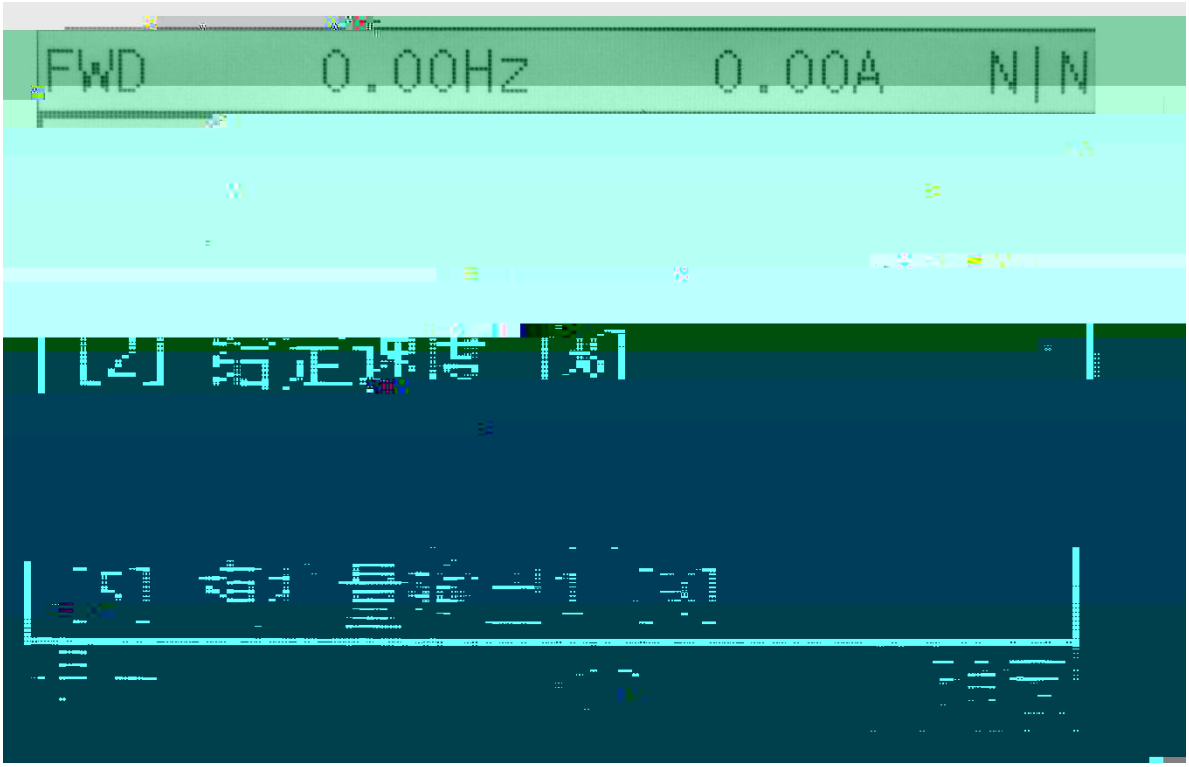
5	Reset Error	
6	Monitor Setting	
7	Firmware Version	
8	Menu Language	



1	Parameter Setting	
2	Function Setting	

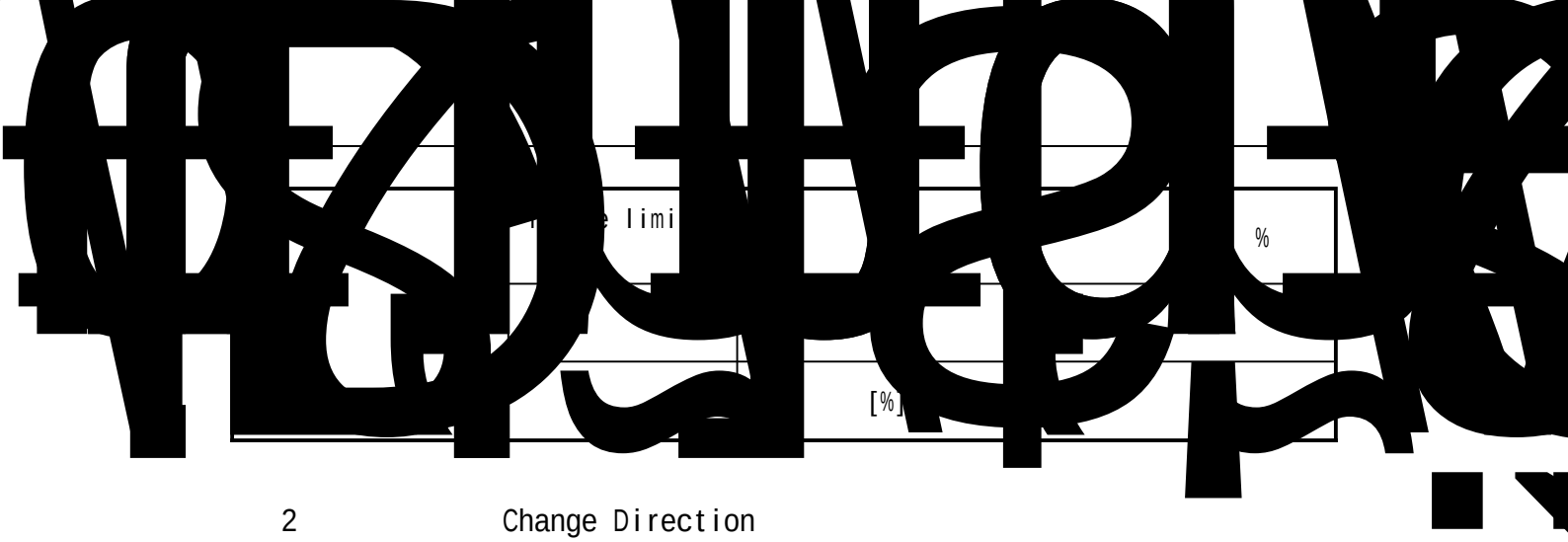
3	Fault Record	
4	Access Permissions	
5	Display Setting	

5.4



1 Reference Set

Reference Set	Speed	[Hz]	Hz
		[%]	%
	Torque	[%]	%



2 Change Direction

3 Current Error

4 Current Warnning

5 Reset Error

6 Motor Setting

7 Firmware Version

Menu Language

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	

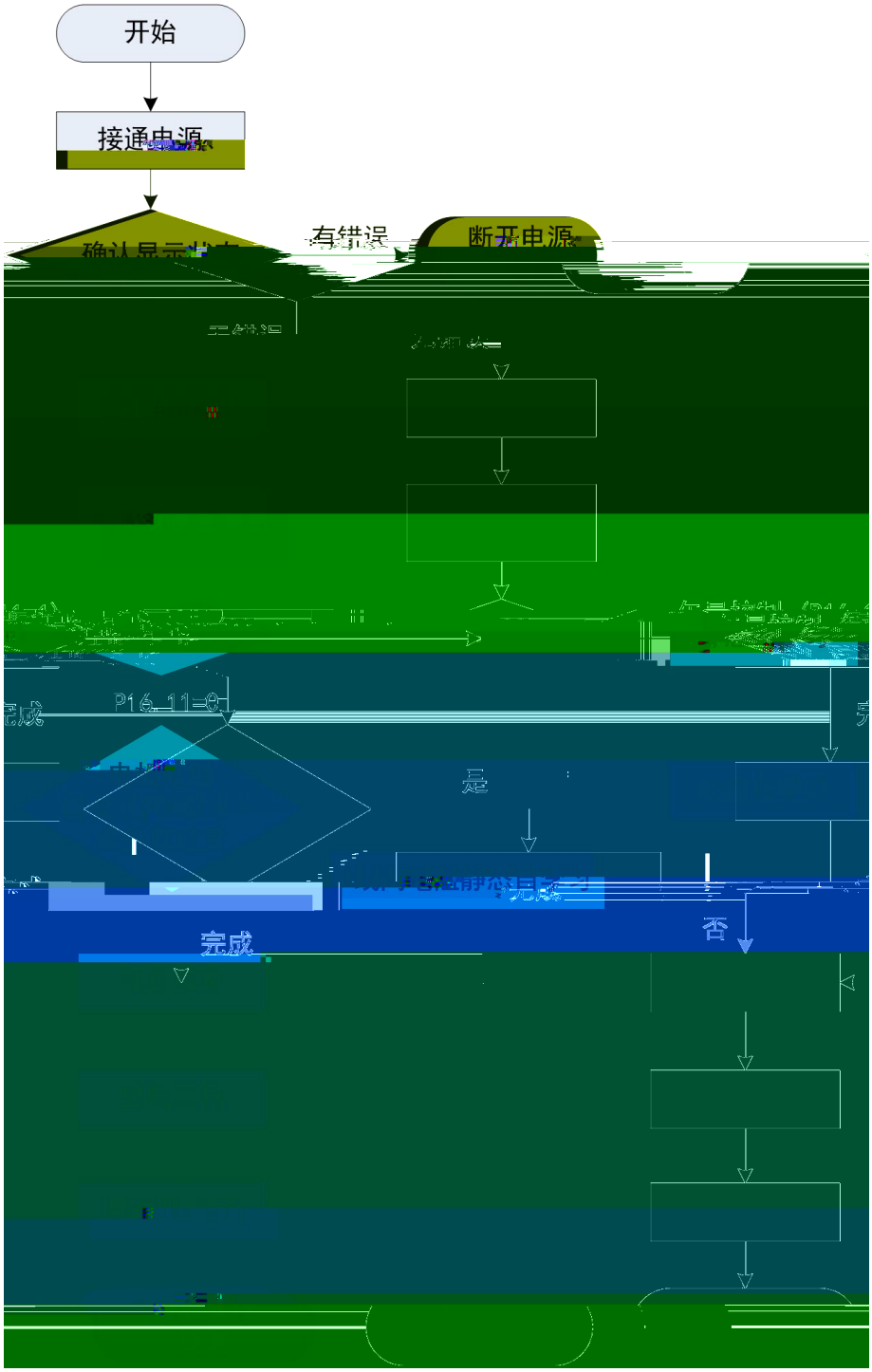
1

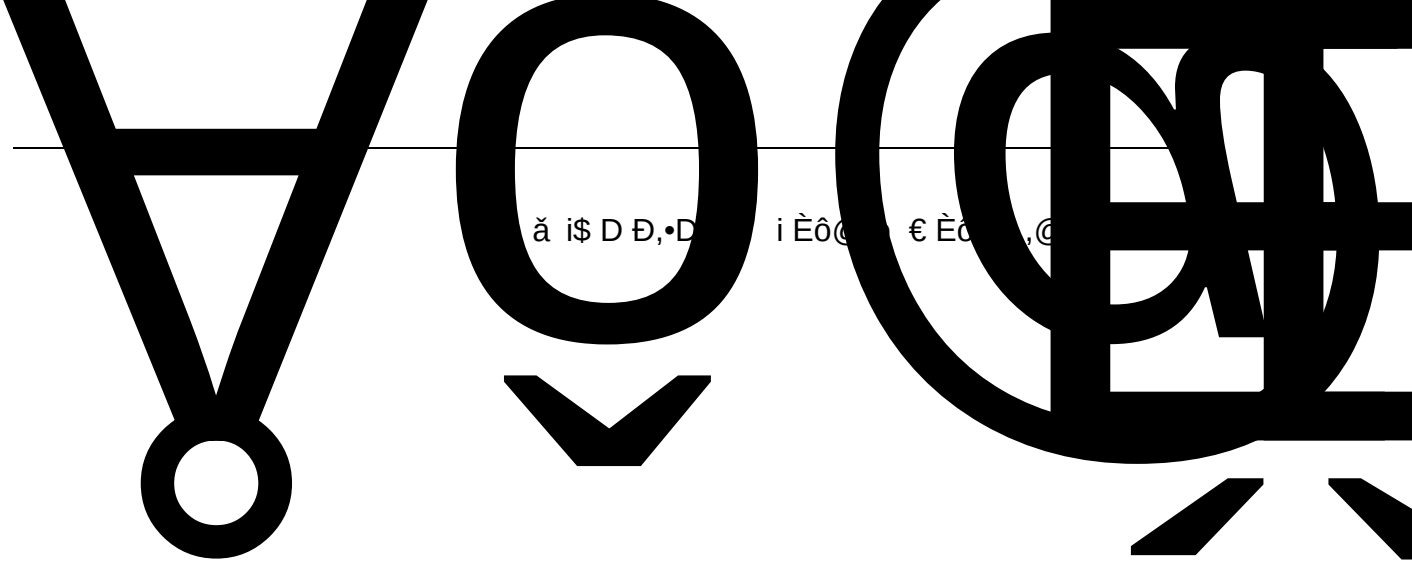
2

5

6.

6.1





P3.4	5		0 41	7	
P3.5	6		0 41	8	
P3.6	7		0 41	0	
P3.7	8		0 41	0	
P3.12		[0] [1]	0 1	0	

0

7.4 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 m "

18		1		2		
19		2		3		
20		3		4		
21	31	FUNC 21	FUNC 31			
32			AFE			
33	48	FUNC 33	FUNC 48			
49		PROFIBUS 1	PROFIBUS	1	1	
50		PROFIBUS 2	PROFIBUS	2	1	
51		PROFIBUS 3	PROFIBUS	3	1	
52		PROFIBUS 4	PROFIBUS	4	1	
53		PROFIBUS 5	PROFIBUS	5	1	
54	56	FUNC 54	FUNC 56			
57		1		1	1	
58		2		2	1	
59		3		3	1	
60		4		4	1!" 1 € ' 9 xCž YSXBæx9‰RU ^ R" o! Ÿñ	
6-						

7.5 P5

P

P5.19	AI2	AI2	0.0 1000.0 [ms]	0.0 [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 [%]	

7.6 P6

P6.0	AO1			7-1		0 14	2
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 [13]	(P6.0 AO1	0.0 100.0 [%]	0.0 [%]
P6.8	AO1					0.0 1000.0 [ms]	10.0 [ms]
P6.14	AO2			7-1		0 14	4
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			

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. 3 ø

7.7 P7

P7.0	[1]	1	0.0 [%]	300.0 [%]	180.0 [%]	8.6
P7.1	[2]	2	0.0 [%]	300.0 [%]	180.0 [%]	8.6
P7.2	[3]	3	0.0 [%]	300.0 [%]	180.0 [%]	8.6
P7.3	[4]	4	0.0 [%]	300.0 [%]	180.0 [%]	8.6
P7.4	[1]	1	0.0			

P7.22	[4]	4		100.0 [%]	720.0 [%]	120.0	8.6

P7.59		[0] [1]	0 1	1	
P7.60			0.10 3.00 [s]	0.30 [s]	
P7.64		[0] [1]	0 1	0	8.6
P7.65			-25 150 [V]	50 [V]	8.6
P7.66			-25 150 [V]	100 [V]	8.6
P7.69		[0] [1]	0 1	0	8.6
P7.70			-25 150 [V]	100 [V]	8.6
P7.71	1	[0] [1]	0 1	0	8.6
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]	

7.8 1 P8

		[0]			
		[1]			
P8.0		[2]DP	0	4	0
		[3]MODBUS			
		[4]			
P8.3		[0] [1]	0	1	0
P8.6			0.00 [s]	300.00	0.00 [s]
P8.7			ง		

P8.22	4	P8.[illegible]	P8.[illegible]	0.0 [s]	300.0 [s]	10.00 [s]	8.7
P8.23	5			0.0 [%]	300.0 [%]	300.0 [%]	8.7
P8.24	5	P8.21	P8.23	0.0 [s]	300.0 [s]	10.00 [s]	8.7
P8.25	6			0.0 [%]	300.0 [%]	300.0 [%]	8.7
P8.26	6	P8.23	P8.25	0.0 [s]	300.0 [s]	10.00 [s]	8.7
P8.27	7						

P8.41	4	P8.38	P8.40	0.0 [s]	300.0 [s]	10.00	8.7
P8.42	5			0.0 [%]	300.0 [%]	300.0	8.7
P8.43	5	P8.40	P8.42	0.0 [s]	300.0 [s]	10.00	8.7
P8.44	6			0.0 [%]	300.0 [%]	300.0	8.7
P8.45	6	P8.42	P8.44	0.0 [s]	300.0 [s]	10.00	8.7
P8.46	7			0.0 [%]	300.0 [%]	300.0	8.7
P8.47	7	P8.44	P8.46	0.0 [s]	300.0 [s]	10.00	8.7
P8.48	8			0.0 [%]	300.0 [%]	300.0	8.7
P8.49	8	P8.46	P8.48	0.0 [s]	300.0 [s]	10.00	8.7
P8.53		[0] [1]		0	1	0	8.7
P8.54				0.0 [%]	300.0 [%]	0.0	8.7
P8.55		[0] [1]		0	1	0	8.7
P8.56				0.00 [s]	300.00 [s]	1.50	8.7
P8.57		[0] [1]		0	1	1	
P8.58				0.00 [s]	300.00 [s]	1.50	
P8.59				0.00	100.00	0.00	8.12
P8.60				0.00	50.00	0.00	8.12
P8.61		[0] [1]		0	1	0	

P8.67	0

7.9 2 P9

	[0]			
	[1]			
P9.0	[2]DP	0	4	0
	[3]MODBUS			
	[4]			

P9.4

P9.68	16		0	65535	0	8.12
P9.69	16		0	65535	0	8.12
P9.70			0	1000	100	8.12
P9.71		[0] [1]	0	1	0	8.12
P9.72	T					

P10.23	5			0.0 300.0 [%]	300.0 [%]	8.7
P10.24	5	P10.21	P10.23	0.0 300.0 [s]	10.00 [s]	8.7
P10.25	6			0.0 300.0 [%]	300.0 [%]	8.7
P10.26	6	P10.23	P10.25	0.0 300.0 [s]	10.00 [s]	8.7
P10.27	7			0.0 300.0 [%]	300.0 [%]	8.7
P10.28	7	P10.25	P10.27	0.0 300.0 [s]	10.00 [s]	8.7
P10.29	8			0.0 300.0 [%]	300.0 [%]	8.7
P10.30	8	P10.27	P10.29	0.0 300.0 [s]	10.00 [s]	8.7
P10.32		[0] [1]PROFIBUS [2]MODBUS [3]		0 3	0	8.7
P10.33				0.1 10.0	1.0	8.7
P10.34	1			0.0 300.0 [%]	100.0 [%]	8.7
P10.35	1	P10.34		0.0 300.0 [s]	3.00 [s]	8.7
P10.36	2			0.0 300.0 [%]	200.0 [%]	8.7
P10.37	2	P10.34	P10.36	0.0 300.0 [s]	4.00 [s]	8.7
P10.38	3			0.0 300.0 [%]	240.0 [%]	8.7
P10.39	3	P10.36	P10.38	0.0 300.0 [s]	7.00 [s]	8.7
P10.40	4			0.0 300.0 [%]	300.0 [%]	8.7
P10.41	4					

P10.42	5		0.0 300.0 [%]	300.0 [%]	8.7
P10.43	5	P10.40 P10.42	0.0 300.0 [s]	10.00 [s]	8.7
P10.44	6		0.0 300.0 [%]	300.0 [%]	8.7
P10.45	6	P10.42 P10.44	0.0 300.0 [s]	10.00 [s]	8.7
P10.46	7		0.0 300.0 [%]	300.0 [%]	8.7
P10.47	7	P10.44 P10.46	0.0 300.0 [s]	10.00 [s]	8.7
P10.48	8		0.0 300.0 [%]	300.0 [%]	8.7
P10.49	8	P10.46 P10.48	0.0 300.0 [s]	10.00 [s]	8.7
P10.53		[0] [1]	0 1	0	8.7
P10.54			0.0 300.0 [%]	0.0 [%]	8.7
P10.55		[0] [1]	0 1	0	8.7
P10.56			0.00 300.00 [s]	1.50 [s]	8.7
P10.57		[0] [1]	0 1	1	
P10.58			0.00 300.00 [s]	1.50 [s]	
P10.59			0.00 100.00	0.00	
P10.60			0.00 50.00	0.00	8.12
P10.61		[0] [1]	0 1	0	8.12
P10.66			0.00 100.00 [ ]	0.00	8.12
P10.67		0	0.00 50.00	0.00	8.12

P10.68	16	0	65535	0	8.12
P10.69	16	0	65535	0	8.12
P10.70		0	1000		

7.11 4 P11

P11.0		[0] [1] [2]DP [3]MODBUS [4]	0 4	0	
P11.3		[0] [1]	0 1	0	8.7
P11.6			0.00 300.00 [s]	0.00 [s]	8.7
P11.7			0.00 300.00 [s]	0.00 [s]	8.7
P11.10		[0]I/O [1] 1 [2] 2 [3] [4]DP [5]MODBUS [6]	0 6	0	
P11.15	1		0.0 300.0 [%]	100.0 [%]	8.7
P11.16	1	P11.15	0.0 300.0 [s]	3.00 [s]	8.7
P11.17	2		0.0 300.0 [%]	200.0 [%]	8.7
P11.18	2	P11.15 P11.17	0.0 300.0 [s]	4.00 [s]	8.7
P11.19	3		0.0 300.0 [%]	240.0 [%]	8.7
P11.20	3	P11.17 P11.19	0.0 300.0 [s]	7.00 [s]	8.7
P11.21	4		0.0 300.0 [%]	300.0 [%]	8.7
P11.22	4	P11.19 P11.21	0.0 300.0 [s]	10.00 [s]	8.7

P11.23	5		0.0 300.0 [%]	300.0 [%]	8.7
P11.24	5	P11.21 P11.23	0.0 300.0 [s]	10.00 [s]	8.7
P11.25	6		0.0 300.0 [%]	300.0 [%]	8.7
P11.26	6	P11.23 P11.25	0.0 300.0 [s]	10.00 [s]	8.7
P11.27	7		0.0 300.0 [%]	300.0 [%]	8.7
P11.28	7	P11.25 P11.27	0.0 300.0 [s]	10.00 [s]	8.7
P11.29	8		0.0 300.0 [%]	300.0 [%]	8.7
P11.30	8	P11.27 P11.29	0.0 300.0 [s]	10.00 [s]	8.7
P11.32		[0] [1]PROFIBUS [2]MODBUS [3]	0 3	0	8.7
P11.33			0.1 10.0	1.0	8.7
P11.34	1		0.0 300.0 [%]	100.0 [%]	8.7
P11.35	1	P11.34	0.0 300.0 [s]	3.00 [s]	8.7
P11.36	2		0.0 300.0 [%]	200.0 [%]	8.7
P11.37	2	P11.34 P11.36	0.0 300.0 [s]	4.00 [s]	8.7
P11.38	3		0.0 300.0 [%]	240.0 [%]	8.7
P11.39	3	P11.36 P11.38	0.0 300.0 [s]	7.00 [s]	8.7
P11.40	4		0.0 300.0 [%]	300.0 [%]	8.7
P11.41	4	P11.38 P11.40	0.0 300.0 [s]	10.00 [s]	8.7

P11.42	5			0.0 [%]	300.0 [%]	300.0 [%]	8.7
P11.43	5	P11.40	P11.42	0.0 [s]	300.0 [s]	10.00 [s]	8.7
P11.44	6			0.0 [%]	300.0 [%]	300.0 [%]	8.7
P11.45	6	P11.42	P11.44	0.0 [s]	300.0 [s]	10.00 [s]	8.7
P11.46	7			0.0 [%]	300.0 [%]	300.0 [%]	8.7
P11.47	7	P11.44	P11.46	0.0 [s]	300.0 [s]	10.00 [s]	8.7
P11.48	8			0.0 [%]	300.0 [%]	300.0 [%]	8.7
P11.49	8	P11.46	P11.48	0.0 [s]	300.0 [s]	10.00 [s]	8.7
P11.53		[0] [1]		0	1	0	8.7
P11.54							

7.12 1 P12

P12.0		[0] [1]	0	1	1	8.8
P12.1		[0][%] [1][Hz] [2][rpm]	0	2	1	
P12.2	1		0.0	3000.0	10.0	
P12.3	2		0.0			

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P12.24			0.0 200.0 [%]	30.0 [%]	8.8
P12.25			0.0 200.0 [%]	20.0 [%]	8.8
P12.26			0.00 2.00 [s]	0.00 [s]	8.8
P12.27			0.00 2.00 [s]	0.00 [s]	8.8
P12.28			0.00 2.00 [s]	0.07 [s]	8.8
P12.29			0.00 2.00 [s]	0.07 [s]	8.8
P12.32			0.0 20.0 [%]	0.0 [%]	8.8
P12.33			0.0 20.0 [%]	0.0 [%]	8.8
P12.34			0.00 2.00 [s]	0.00 [s]	8.8
P12.35			0.00 2.00 [s]	0.00 [s]	8.8
P12.36			0.00 2.00 [s]	0.50 [s]	8.8
P12.37			0.00 2.00 [s]	0.50 [s]	8.8
P12.38		[0] [1]	0 1	0	8.12
P12.40			0.0 100.0 [%]	10.0 [%]	8.12
P12.41			0.00 100.00 [s]	0.10 [s]	8.12
P12.42			0 3000 [s]	3 [s]	8.12
P12.43			0.0 50.0 [%]	20.0 [%]	8.12
P12.44			0.00 5.00 [s]	0.20 [s]	8.12

P12.45	20.0 100.0 [%]	25.0 [%]	8.12
P12.46	0.00 5.00 [s]	0.10 [s]	8.12
P12.47	0 30.0 [%]	10.0 [%]	8.12
P12.48	0.00 5.00 [s]	0.00 [s]	8.12
P12.49	0.00~1.00	0.1	8.12
P12.50	0.0 10.0 [%]	10.0 [%]	8.12

P13.24		0.0 [%]	200.0 [%]	30.0 [%]	8.8
P13.25		0.0 [%]	200.0 [%]	20.0 [%]	8.8
P13.26		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P13.27		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P13.28		0.00 [s]	2.00 [s]	0.07 [s]	8.8
P13.29		0.00 [s]	2.00 [s]	0.07 [s]	8.8
P13.32		0.0 [%]	20.0 [%]	0.0 [%]	8.8
P13.33		0.0 [%]	20.0 [%]	0.0 [%]	8.8
P13.34		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P13.35		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P13.36		0.00 [s]	2.00 [s]	0.50 [s]	8.8
P13.37		0.00 [s]	2.00 [s]	0.50 [s]	8.8
P13.38	[0] [1]	0	1	0	8.12
P13.40		0.0	- .00		

P13.45		20.0 [%]	100.0 [%]	25.0 [%]	8.12
P13.46		0.00 [s]	5.00 [s]	0.10 [s]	8.12
P13.47	0.				

7.14 3 P14

P14.0		[0] [1]		0 1	1	8.8
P14.1		[0][%] [1][Hz] [2][rpm]		0 2	1	
P14.2	1			0.0 3000.0	10.0	
P14.3	2			0.0 3000.0	20.0	
P14.4	3			0.0 3000.0	35.0	
P14.5	4			0.0 3000.0	50.0	
P14.6	5			0.0 3000.0	50.0	
P14.7	6			0.0 3000.0	50.0	
P14.8	7			0.0 3000.0	50.0	
P14.9	8			0.0 3000.0	50.0	
P14.10	9			0.0 3000.0	50.0	
P14.11	10			0.0 3000.0	50.0	
P14.12	11			0.0 3000.0	50.0	
P14.13	12			0.0 3000.0	50.0	
P14.14	13			0.0 3000.0	50.0	
P14.15	14			0.0 3000.0	50.0	
P14.16	15			0.0 3000.0	50.0	
P14.17	16			0.0 3000.0	50.0	
P14.18	FCD LSW_2X		16	0 65535	1000	8.12
P14.19	FCD MSW_2X		16	0 100	2	8.12
P14.20	FCD _2X	m/min	m/min	0.0 100.0	5.0	8.12
P14.22				0.0 20.0 [%]	2.0 [%]	8.8
P14.23						

P14.24			0.0 200.0 [%]	30.0 [%]	8.8
P14.25			0.0 200.0 [%]	20.0 [%]	8.8
P14.26			0.00 2.00 [s]	0.00 [s]	8.8
P14.27			0.00 2.00 [s]	0.00 [s]	8.8
P14.28			0.00 2.00 [s]	0.07 [s]	8.8
P14.29			0.00 2.00 [s]	0.07 [s]	8.8
P14.32			0.0 20.0 [%]	0.0 [%]	8.8
P14.33			0.0 20.0 [%]	0.0 [%]	8.8
P14.34			0.00 2.00 [s]	0.00 [s]	8.8
P14.35			0.00 2.00 [s]	0.00 [s]	8.8
P14.36			0.00 2.00 [s]	0.50 [s]	8.8
P14.37			0.00 2.00 [s]	0.50 [s]	8.8
P14.38		[0] [1]	0 1	0	8.12
P14.40			0.0 100.0 [%]	10.0 [%]	8.12
P14.41			0.00 100.00 [s]	0.10 [s]	8.12
P14.42			0 3000 [s]		8.12
P14.43			0.0 50.0 [%]	20.0 [%]	8.12
P14.44			0.00 5.00 [s]	0.20 [s]	8.12

P14.45	20.0 100.0 [%]	25.0 [%]	8.12
P14.46	0.00 5.00 [s]	0.10 [s]	8.12
P14.47	0 30.0 [%]	10.0 [%]	8.12
P14.48	0.00 5.00 [s]	0.00 [s]	8.12
P14.49	0.00~1.00	0.1	8.12
P14.50	0.0 10.0 [%]	10.0 [%]	8.12

7.15 4 P15

P15.0		[0] [1]	0	1	1	8.8
P15.1		[0][%] [1][Hz] [2][rpm]	0	2	1	
P15.2	1		0.0	3000.0	10.0	
P15.3	2		0.0			

P15.24		0.0 [%]	200.0 [%]	30.0 [%]	8.8
P15.25		0.0 [%]	200.0 [%]	20.0 [%]	8.8
P15.26		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P15.27		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P15.28		0.00 [s]	2.00 [s]	0.07 [s]	8.8
P15.30		0.00 [s]	2.00 [s]	0.07 [s]	8.8
P15.32		0.0 [%]	20.0 [%]	0.0 [%]	8.8
P15.33		0.0 [%]	20.0 [%]	0.0 [%]	8.8
P15.34		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P15.35		0.00 [s]	2.00 [s]	0.00 [s]	8.8
P15.36		0.00 [s]	2.00 [s]	0.50 [s]	8.8
P15.37		0.00 [s]	2.00 [s]	0.50 [s]	8.8
P15.38	[0] [1]	0	1	0	8.12
P15.40					

P15.45			20.0 100.0 [%]	25.0 [%]	8.12
P15.46			0.00 5.00 [s]	0.10 [s]	8.12
P15.47			0 30.0 [%]	10.0 [%]	8.12
P15.48			0.00 5.00 [s]	0.00 [s]	8.12
P15.49			0.00~1.00	0.1	8.12
P15.50			0.0 10.0 [%]	10.0 [%]	8.12

P16.23	V/F	0.00 300.00 [Hz]	0.00 [Hz]	
P16.24	V/F	0.00 300.00 [Hz]	50.00 [Hz]	
P16.25		0.0 120.0 [%]	100.0 [%]	
P16.26 V/F	V/F	0.00 10.00 [%]	0.75 [%]	8.9
P16.27		0.0[200.0 [%]	100.0 [%]	8.9
P16.30		0.0 100.0 [%]	0.0 [%]	8.9
P16.33 V/F	V/F	0 6	2	8.9
P16.34 V/F 1		0.0 300.0 [Hz]	5.0 [Hz]	
P16.35 V/F 1		0.0 125.0 [%]	11.5 [%]	
P16.36 V/F 2		0.0 300.0 [Hz]	50.0 [Hz]	
P16.37 V/F 2		0.0 125.0 [%]	100.0 [%]	
P16.38 V/F 3		0.0 300.0 [Hz]	50.0 [Hz]	
P16.39 V/F 3		0.0 125.0 [%]	100.0 [%]	
P16.40 V/F 4		0.0 300.0 [Hz]	50.0 [Hz]	
P16.41 V/F 4		0.0 125.0 [%]	100.0 [%]	
P16.42 V/F 5		0.0 300.0 [Hz]	50.0 [Hz]	
P16.43 V/F 5		0.0 125.0 [%]	100.0 [%]	
P16.44 V/F 6		0.0 300.0 [Hz]	50.0 [Hz]	
P16.45 V/F 6		0.0 125.0 [%]	100.0 [%]	
	[0]			
P16.48				

P16.51			0.0 150.0 [%]	70.0 [%]	8.9
P16.52			0.00 5.00 [Hz]	0.00 [Hz]	8.9
P16.54			0.00 300.00 [s]	0.00 [s]	8.9
P16.55			0.0 150.0 [%]	75.0 [%]	8.9
P16.56			0.00 5.00 [Hz]	0.00 [Hz]	8.9
P16.59			0.0 1000.0 [%]	100.0 [%]	
P16.60			0.0 1000.0 [%]	100.0 [%]	
P16.61			0.0 1000.0 [%]	100.0 [%]	
P16.62			0.0 1000.0 [%]	100.0 [%]	
P16.64	V/F	V/F	0.0 1000.0 [%]	100.0 [%]	8.9
P16.66		V/F	0.0 1000.0 [%]	100.0 [%]	
P16.67			0.0 1000.0 [%]	100.0 [%]	
P16.68			0.0 1000.0 [%]	100.0 [%]	
P16.69			0.0 1000.0 [%]	100.0 [%]	
P16.70			0.0 1000.0 [%]	100.0 [%]	

7.17 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]	8.9
P17.9			0 7200 [rpm]	1500 [rpm]	8.9
P17.11		[0]V/F [1] [2]	0 2	0	
P17.12			1.00 10.00 [kHz]	3.00 [kHz]	8.9
P17.14	V/F	[0] V/F [1] V/F [2]	0 2	0	8.9
P17.15		[0] [1]	0 1	0	8.9
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	
P17.22			0.00 100.00 [s]	0.00 [s]	8.9

P17.23	V/F	0.00 300.00 [Hz]	0.00 [Hz]	
P17.24	V/F	0.00 300.00 [Hz]	50.00 [Hz]	
P17.25		0.0 120.0 [%]	100.0 [%]	
P17.26 V/F	V/F	0.00 10.00 [%]	0.75 [%]	8.9
P17.27		0.0 200.0 [%]	100.0 [%]	8.9
P17.30		0.0 100.0 [%]	0.0 [%]	8.9
P17.33 V/F	V/F	0 6	2	8.9
P17.34 V/F 1		0.0 300.0 [Hz]	/F V	

P17.51	0.0 150.0 [%]	70.0 [%]	8.9
P17.52	0.00 5.00 [Hz]	0.00 [Hz]	8.9
P17.54	0.00 300.00 [s]	0.00 [s]	8.9
P17.55	0.0 150.0 [%]	75.0 [%]	8.9
P17.56	0.00 5.00 [Hz]	0.00 [Hz]	8.9
P17.59	0.0		

P18.23		V/F	0.00 300.00 [Hz]	0.00 [Hz]	
P18.24		V/F	0.00 300.00 [Hz]	50.00 [Hz]	
P18.25			0.0 120.0 [%]	100.0 [%]	
P18.26	V/F	V/F	0.00 10.00 [%]	0.75 [%]	8.9
P18.27			0.0 200.0 [%]	100.0 [%]	8.9
P18.30			0.0 100.0 [%]	0.0 [%]	8.9
P18.33	V/F	V/F	0 6	2	8.9
P18.34					

P18.51	0.0 150.0 [%]	70.0 [%]	8.9
P18.52	0.00 5.00 [Hz]	0.00 [Hz]	8.9
P18.54			

7.19 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]	8.9
P19.9		0 7200 [rpm]	1500 [rpm]	8.9
P19.11	[0]V/F [1] [2]	0 2	0	
P19.12		1.00 10.00 [kHz]	3.00 [kHz]	8.9
P19.14 V/F	[0] V/F [1] V/F [2]	0 2	0	8.9
P19.15	[0] [1]	0 1	0	8.9
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	. ₈ ⊥			

P19.23		V/F	0.00 300.00 [Hz]	0.00 [Hz]	
P19.24		V/F	0.00 300.00 [Hz]	50.00 [Hz]	
P19.25			0.0 120.0 [%]	100.0 [%]	
P19.26	V/F	V/F	0.00 10.00 [%]	0.75 [%]	8.9
P19.27			0.0 200.0 [%]	100.0 [%]	8.9
P19.30			0.0 100.0 [%]	0.0 [%]	8.9
P19.33	V/F	V/F	0 6	2	8.9
P19.34	V/F	1			

P19.51			0.0 150.0 [%]	70.0 [%]	8.9
P19.52			0.00 5.00 [Hz]	0.00 [Hz]	8.9
P19.54			0.00 300.00 [s]	0.00 [s]	8.9
P19.55			0.0 150.0 [%]	75.0 [%]	8.9
P19.56			0.00 5.00 [Hz]	0.00 [Hz]	8.9
P19.59			0.0 1000.0 [%]	100.0 [%]	
P19.60			0.0 1000.0 [%]	100.0 [%]	
P19.61			0.0 1000.0 [%]	100.0 [%]	
P19.62			0.0 1000.0 [%]	100.0 [%]	
P19.64	V/F	V/F	0.0 1000.0 [%]	100.0 [%]	8.9
P19.66		V/F	0.0 1000.0 [%]	100.0 [%]	
P19.67			0.0 1000.0 [%]	100.0 [%]	
P19.68			0.0 1000.0 [%]	100.0 [%]	
P19.69			0.0 1000.0 [%]	100.0 [%]	
P19.70			0.0 1000.0 [%]	100.0 [%]	

7.20 1 P20

P20.0		[0] [1]	0 1	0	8.10
P20.1		[0] [1] 1 [2] 2 [3] [4] P20.3 [5]DP [6]MODBUS [7]	0 7	0	8.10
P20.2			0 7	0	
P20.3			-300.0 300.0 [%]	0.0 [%]	8.10
P20.5			0 1000 [ms]	0 [ms]	
P20.6			0.0 200.0 [%]	100.0 [%]	8.10
P20.7		[0] [1] P20.8 P20.9 [2] 1 [3] 2 [4] [5]DP [6]MODBUS [7]	0 7	0	8.10
P20.8		P20.7 [1]	0.0 300.0 [%]	200.0 [%]	8.10
P20.9		P20.7 [1]	0.0 300.0 [%]	200.0 [%]	8.10
P20.11			0 1000 [ms]	0 [ms]	
P20.13			20.0 500.0 [ms]	100.0 [ms]	8.10
P20.14		1	0 60000	1024	

P20.15	[0] [1]	0 1	0	8.10
P20.16		0.0 300./		

P20.34	[0] [1]	0 1	0	8.10
P20.35		0.0 100.0 [s]	0.0 [s]	
P20.36		50.0 150.0 [%]	110.0 [%]	
P20.37		0.0 150.0 [%]	100.0 [%]	8.10
P20.38		0.0 100.0 [%]	25.0 [%]	8.10
P20.39		0.0 120.0 [%]	100.0 [%]	8.10
P20.40		0.0 150.0 [%]	100.0 [%]	8.10
P20.41		0.0 150.0 [%]	135.0 [%]	
P20.42	[0] [1]	0 1	1	
P20.43		25 1000 [ms]	75 [ms]	
P20.44		25 1000 [ms]	250 [ms]	
P20.45		0.0 100.0 [%]	22.0 [%]	
P20.46		0.0 100.0 [%]	18.0 [%]	
P20.47		0.0 200 [%]		
P20.48		Å		

[º

P20.55			0.0 1000.0 [%]	100.0 [%]	8.10
P20.56			0.0 1000.0 [%]	100.0 [%]	8.10
P20.60	DROOP	0 DROOP	0.0 100.0 [%]	0.0 [%]	8.10
P20.61	DROOP	DROOP	30 2000 [ms]	50 [ms]	8.10
P20.62			0.0 1000.0 [%]	100.0 [%]	8.10
P20.63			0.0 1000.0 [%]	100.0 [%]	8.10
P20.64	2	2	0.0 100.0 [%]	0.0 [%]	8.10
P20.65	2	2	30 2000.0 ms	50 ms	
P20.98		( )	0.01 300.00 [s]	0.75 [s]	
P20.99			0.00 10.00 [%]	0.00 [%]	

P21.15	[0] [1]	0 1	0	8.10
P21.16		0.0 300.0 [%]	100.0 [%]	
P21.17		0.0 300.0 [%]	100.0 [%]	
P21.18		0.0 300.0 [%]	0.0 [%]	
P21.19		0.0 300.0 [%]	0.0 [%]	
P21.20	[0] [1]	0 1	0	
P21.21	[0] [1]	0 1	0	

P21.34	[0] [1]	0 1	0	8.10
P21.35		0.0 100.0 [s]	0.0 [s]	
P21.36		50.0 150.0 [%]	110.0 [%]	
P21.37		0.0 150.0 [%]	100.0 [%]	8.10
P21.38	Gÿ	0.0 100.0 [%]	25.0 [%]	8.10

P21.55			0.0 1000.0 [%]	100.0 [%]	8.10
P21.56			0.0 1000.0 [%]	100.0 [%]	8.10
P21.60	DROOP	0 DROOP	0.0 100.0 [%]	0.0 [%]	8.10
P21.61	DROOP	DROOP	30 2000 [ms]	50 [ms]	8.10
P21.62			0.0 1000.0 [%]	100.0 [%]	8.10
P21.63			0.0 1000.0 [%]	100.0 [%]	8.10
P21.64	2	2	0.0 100.0 [%]	0.0 [%]	8.10
P21.65	2	2	30 2000.0 ms	50 ms	
P21.98		( )	0.01 300.00 [s]	0.75 [s]	
P21.99			0.00 10.00 [%]	0.00 [%]	

7.22 3 P22

P22.0		[0] [1]	0 1	0	8.10
P22.1		[0] [1] 1 [2] 2 [3] [4] P22.3 [5]DP [6]MODBUS [7]	0 7	0	8.10
P22.2			0 7	0	
P22.3			-300.0 300.0 [%]	0.0 [%]	8.10
P22.5			0 1000 [ms]	0 [ms]	
P22.6			0.0 200.0 [%]	100.0 [%]	8.10
P22.7		[0] [1] P22.8 P22.9 [2] 1 [3] 2 [4] [5]DP [6]MODBUS [7]	0 7	0	8.10
P22.8		P22.7 [1]	0.0 300.0 [%]	200.0 [%]	8.10
P22.9		P22.7 [1]	0.0 300.0 [%]	200.0 [%]	8.10
P22.11			0 1000 [ms]	0 [ms]	
P22.13			20.0 500.0 [ms]	100.0 [ms]	8.10
P22.14		1	0 60000	1024	

P22.15	[0] [1]	0 1	0	8.10
P22.16		0.0 300.0 [%]	100.0 [%]	
P22.17		0.0 300.0 [%]	100.0 [%]	
P22.18		0.0 300.0 [%]		

P22.34		[0] [1]	0 1	0	8.10
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 [%]	8.10
P22.38			0.0 100.0 [%]	25.0 [%]	8.10
P22.39			0.0 120.0 [%]	100.0 [%]	8.10
P22.40			0.0 150.0 [%]	100.0 [%]	8.10
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 [%]	
P22.53	Kp		0.0 1000.0 [%]	100.0 [%]	
P22.54	Ki		0.0 1000.0 [%]	100.0 [%]	

P22.55			0.0 1000.0 [%]	100.0 [%]	8.10
P22.56			0.0 1000.0 [%]	100.0 [%]	8.10
P22.60	DROOP	0 DROOP	0.0 100.0 [%]	0.0 [%]	8.10
P22.61	DROOP	DROOP	30 2000 [ms]	50 [ms]	8.10
P22.62			0.0 1000.0 [%]	100.0 [%]	8.10
P22.63			0.0 1000.0 [%]	100.0 [%]	8.10
P22.64	2	2	0.0 100.0 [%]	0.0 [%]	8.10
P22.65	2	2	30 2000.0 ms	50 ms	
P22.98		( )	0.01 300.00 [s]	0.75 [s]	
P22.99			0.00 10.00 [%]	0.00 [%]	

P23.15	[0] [1]	0 1	0	8.10
P23.16		0.0 300.0 [%]	100.0 [%]	
P23.17		0.0 300.0 [%]	100.0 [%]	
P23.18		0.0 300.0 [%]		

P23.34		[0] [1]	0 1	0	8.10
P23.35	شغ ت		000 100.0 [s]		

P27.27	DO_8		0	6	0	8.13
P27.28	DI_1_	[0] [1]	0	1	1	8.13
P27.29	DI_2_	[0] [1]	0	1	1	8.13
P27.30	DI_3_					

P27.43	DI_16_	[0] [1]	0	1	0	8.13
P27.44	DI_17_	[0] [1]	0	1	0	8.13
P27.45	DI_18_	[0] [1]	0	1	0	8.13
P27.46	DI_19_	[0] [1]	0	1	1	8.13
P27.47	DI_20_	[0] [1]	0	1	1	8.13
P27.48	DI_21_	[0] [1]	0	1	0	8.13
P27.49	DI_22_	[0] [1]	0	1	1	8.13
P27.50	DI_23_	[0] [1]	0	1	0	8.13
P27.51	110%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0	6	1	

8.13

P27.52	110%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0 6	2	8.13
P27.53	100%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0 6	1	8.13
P27.54	100%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0 6	2	8.1 3

P27.55	90%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0	6	5	8.1	3
P27.56	90%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0	6	6	8.1	3
P27.57	100%_	[0] [1] [2] ` ∃ [6] 5					

P27.58	100%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0 6	2	8.1 3
P27.59	90%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0 6	4	8.1 3
P27.60	90%_	[0] [1] [2] 1 [3] 2 [4] 3 [5] 4 [6] 5	0 6	4	8.1 3

0		
1		
2		ON
3	90% / _	90% /
4		
5		
6		

7.25 CAN P31

P31.0	CAN	[0] [1]	0 1	0	
P31.1	Canopen ID		1 127	1	
P31.2		[0] 20 Kbps [1] 50 Kbps [2] 125 Kbps [3] 250 Kbps [4] 500 Kbps [5] 800 Kbps [6] 1000 Kbps	0 6	5	
P31.3	Can		0 60 [s]	0 [s]	
P31.4	Can	[0] [1] [2] [3]	0 3	0	

7.26 MODBUS P32

P32.0	MODBUS	[0] [1]	0 1	0	
P32.1	MODBUS ID		1 255	1	
P32.2		[0]RS485 [1]RS232	0 1	0	
P32.3		[0] 9600 BPS [1] 14400 BPS [2] 19200 BPS [3] 38400 BPS [4] 56000 BPS [5] 57600 BPS [6] 115200 BPS	0 6	3	
P32.4		[0] None_8_1_CFG [1] Even_8_1_CFG [2] Odd_8_1_CFG [3] None_8_2_CFG [4] Even_8_2_CFG [5] Odd_8_2_CFG	0 5	0	
P32.5	Modbus	Modbus 0 Modbus	0 100 [s]	0 [s]	0s

7.27 P33

P33.0 Profibus	[0] [1]	0	1	0
P33.1	PLC	1	255	1
P33.2	[0]PPO1 [1]PPO2 [2]PPO5 [3]GUIDE	0	3	2
P33.3		0	16	14
P33.4		0	16	14
P33.5	[0] [1] [2] [3]	0		

P33.18	[W2]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.19	[W3]	7-2	0 37	0	
P33.20	[W3]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.21	[W4]	7-2	0 37	1	
P33.22	[W4]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0	
P33.23	[W5]	7-2	0 37	18	
P33.24	[W5]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	2	
P33.25	[W6]	7-2	0 37	21	
P33.26	[W6]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	1	
P33.27	[W7]	7-2	0 37	22	
P33.28	[W7]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	1	
P33.29	[W8]	7-2	0 37	23	
P33.30	[W8]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	1	

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			

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	

7-2

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	[%]
22	[%]
23	[Hz]
24	
25	
26	1[%]
27	2[%]
28	
29	
30 37	SET_W12 19

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	Mwh
42	Kwh
43	Mwh
44	Kwh
45 48	AW26 29

8.

8.1

450kW 800kW 400kW

P2.0

8.2

1

P12.0 [0] [1]

A. [0]

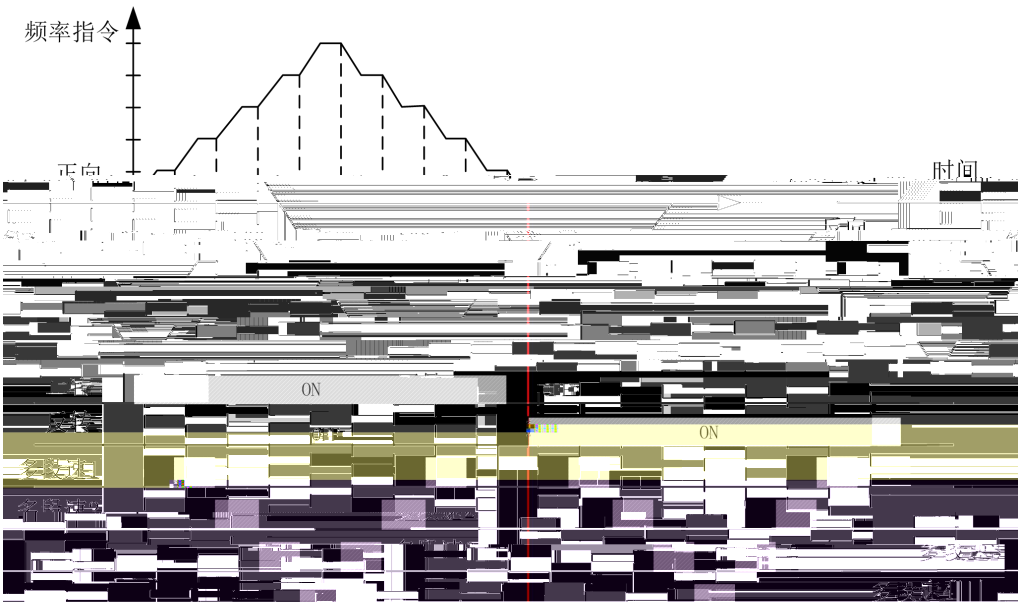
[1] [2] ---1

[6] 1 0 ---2

[7] 2 1 ---3

[8] 3 2 ---4

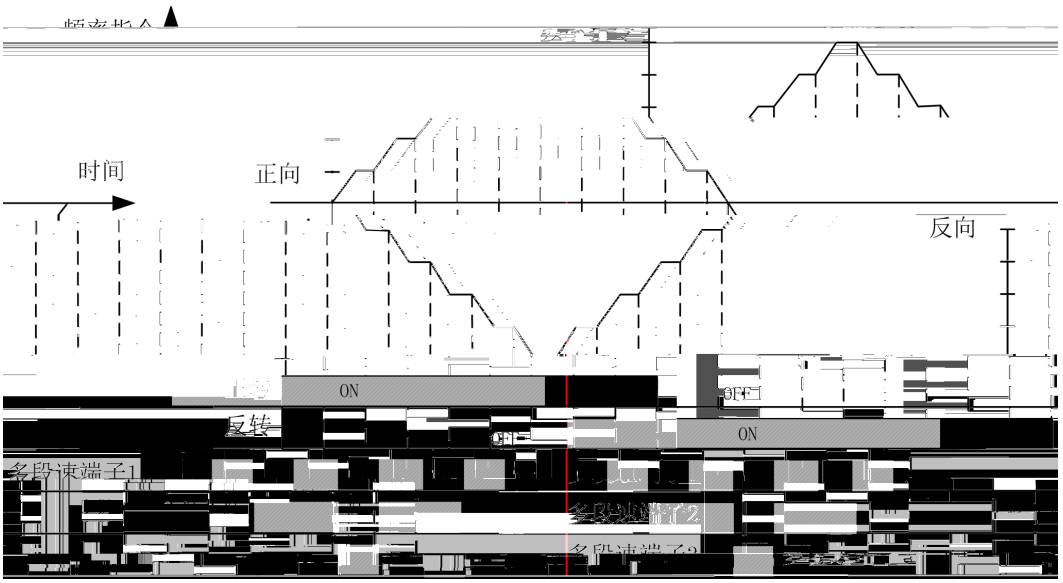
[9] 4 3 ---5



B. [1]

4 16 (8421)

(FORWARD) (REVERSE) P12.2(1)



2

DI 22 “ ”

10Hz E106 “ 1 ”

10Hz 2s E107

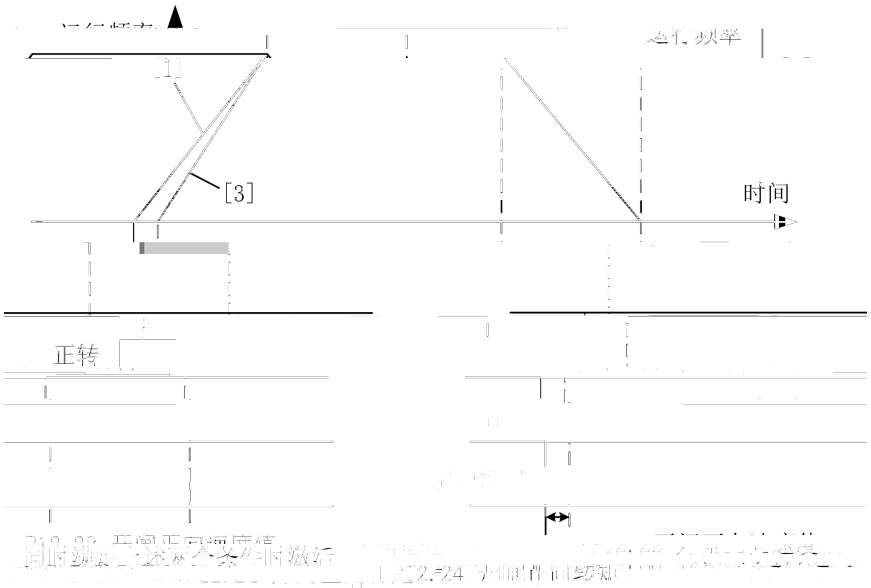
“ 2 ”

8.3

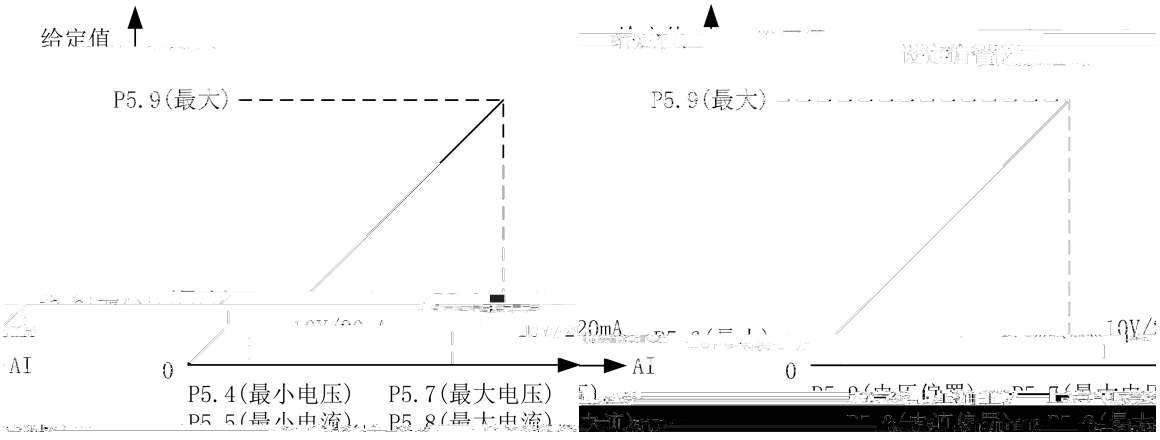
/

[1] [3] [3]

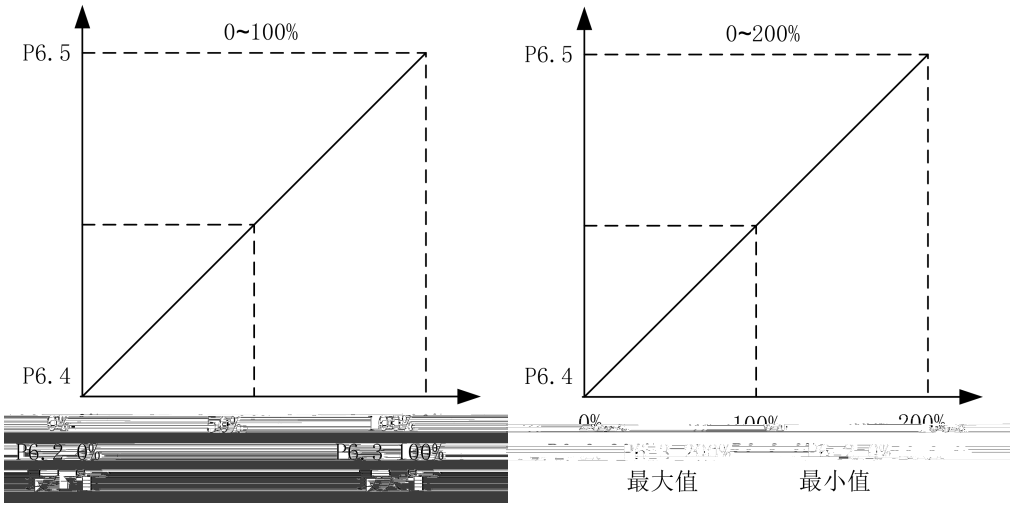
[1] [3]



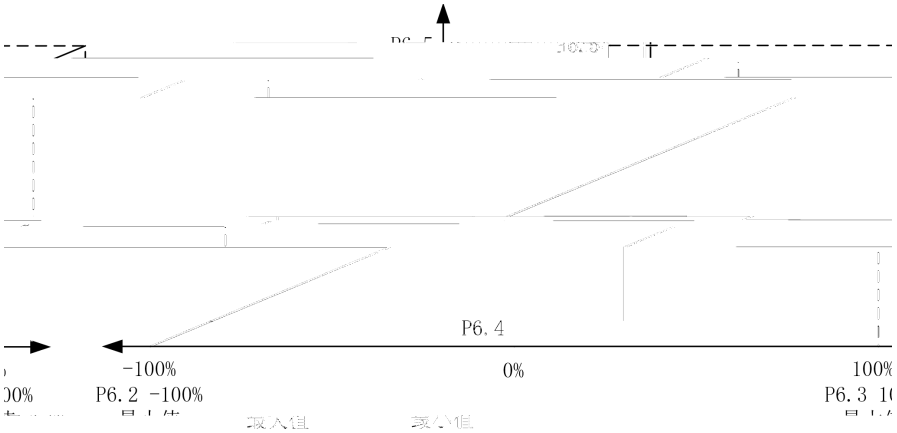
8.4



8.5



(a) 0~100% b 0~200%



c -100~100%

8.6

1

P7.0 P7.1 P7.2 P7.3

2

P7.4 P7.5 P7.6 P7.7 P7.4 P16.4

3

P7.8 P7.9 P7.10 P7.11

P16.4 $\frac{(\qquad)}{3}$ 7.8 16.4 1.414

4

P7.12 P7.13 P7.12

P7.13

5

P7.14 IGBT P7.14

P7.15 IGBT P7.15

m"

P7.19 P7.20 P7.21 P7.22 P7.19

P7.19 P7.22

7

P7.23 P16.11=1 P7.23

P7.23

P7.24 P7.2- אn P17.11=1 P18.11=1 P19.11=1

8

P7.31 P7.32 P16.11=2

P7.31 100% P7.32

P7.31 P7.32

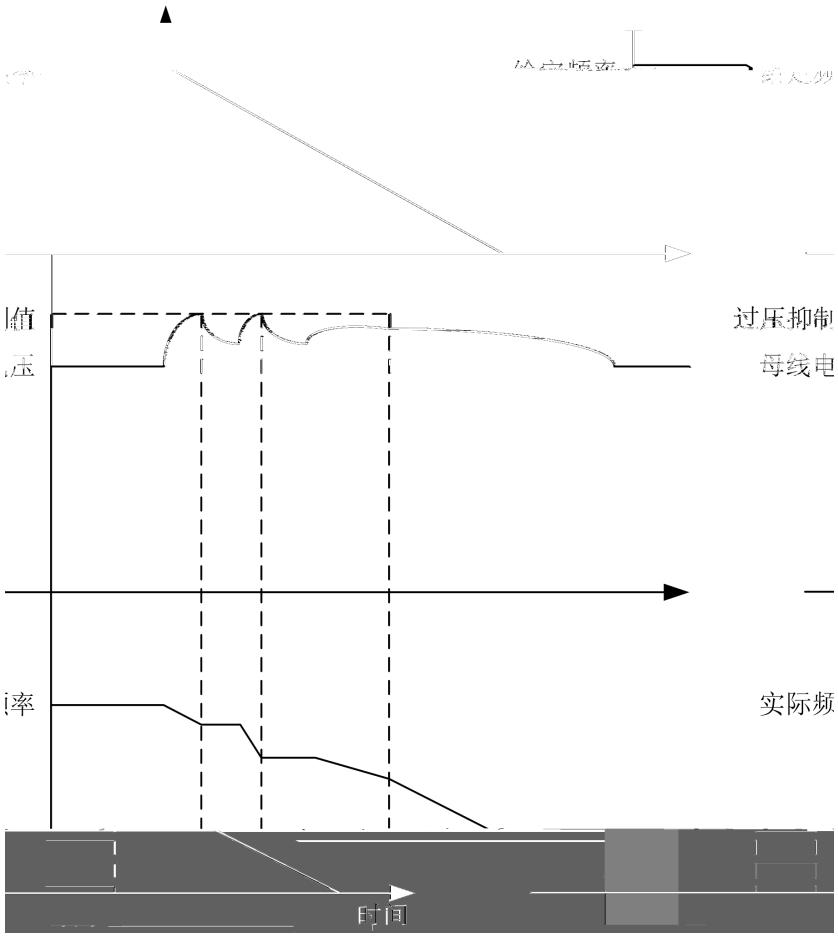
9

P7.33

P7.69 P7.70 P7.71 P7.69

0 P16.0 380V P7.70 100V

711V = 1.1 $\sqrt{2}$ P16.0 20 P7.70



P7.71 P7.71

8.7

1

P8.3

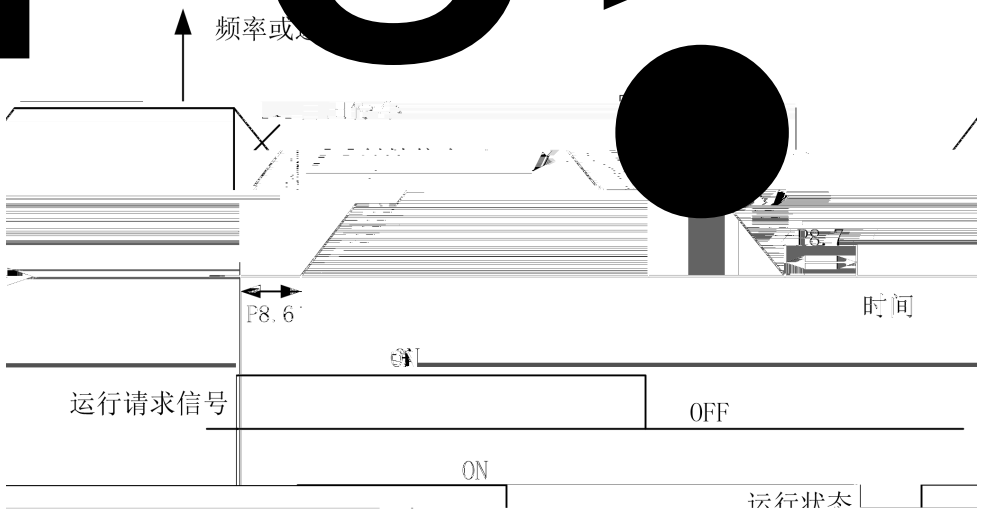
[0]

[1]

P8.6 P8.6

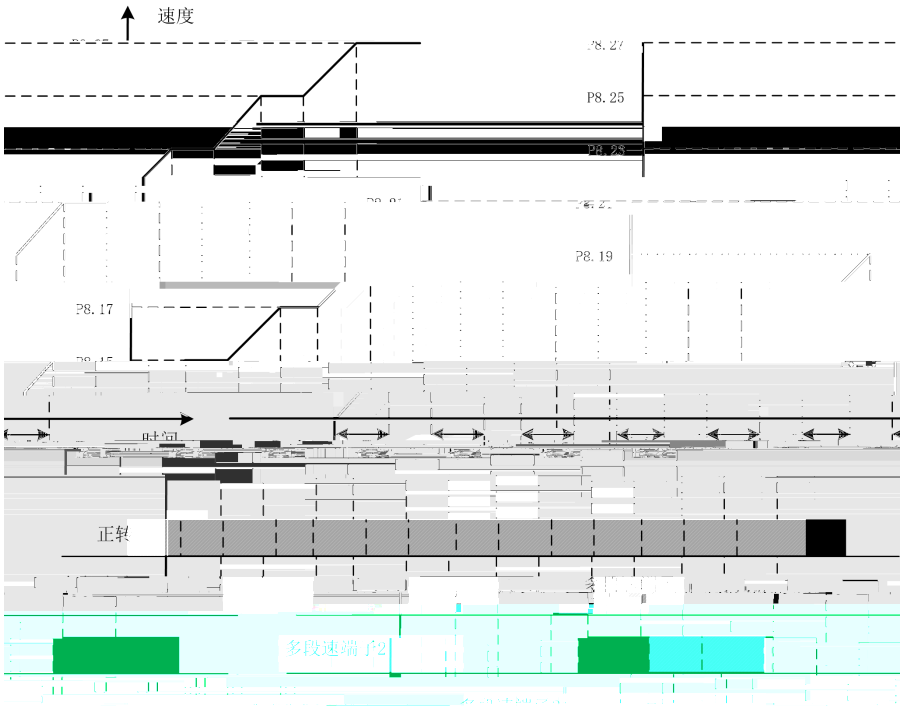
3.7

ÑB



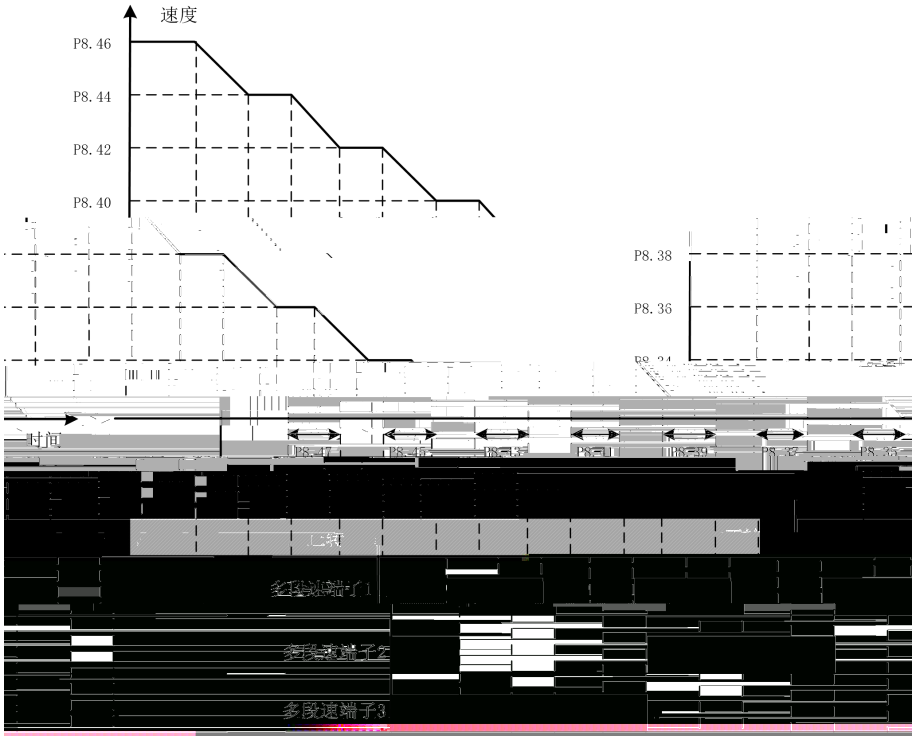
P8.54 0 P8.3 [0]

P8.54



P8.15<P8.17<P8.19<P8.21<P8.23<P8.25<P8.27

P8.15　　P8.17　　P8.19　　P8.21　　P8.233



P8.34<P8.36<P8.38<P8.40<P8.42<P8.44<P8.46

P8.34　　P8.36　　P8.38　　P8.40

P12.2 P12.17

P12.0=[1]

	1	2	3	4
1	0	0	0	0
2	1	0	0	0
3	0	1	0	0
4	1	1	0	0
5	0	0	1	0
6	1	0	1	0
7	0	1	1	0
8	1	1	1	0
9	0	0	0	1
10	1	0	0	1
11	0	1	0	1
12	1	1	0	1
13	0	0	1	1
14	1	0	1	1
15	0	1	1	1
16	1	1	1	1

0 OFF 1 ON

2

P12.22 P12.37

[3]

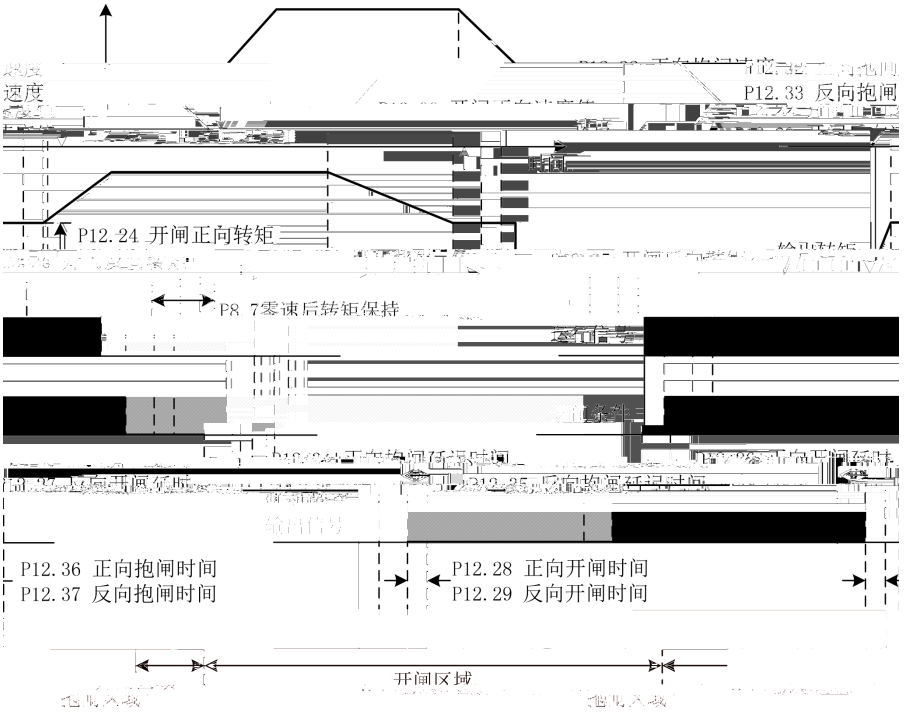
P12.22 P12.23 P12.24 P12.25

P12.32[ ] P12.33[ ]

P12.28 P12.29

P12.36 P12.37

P16



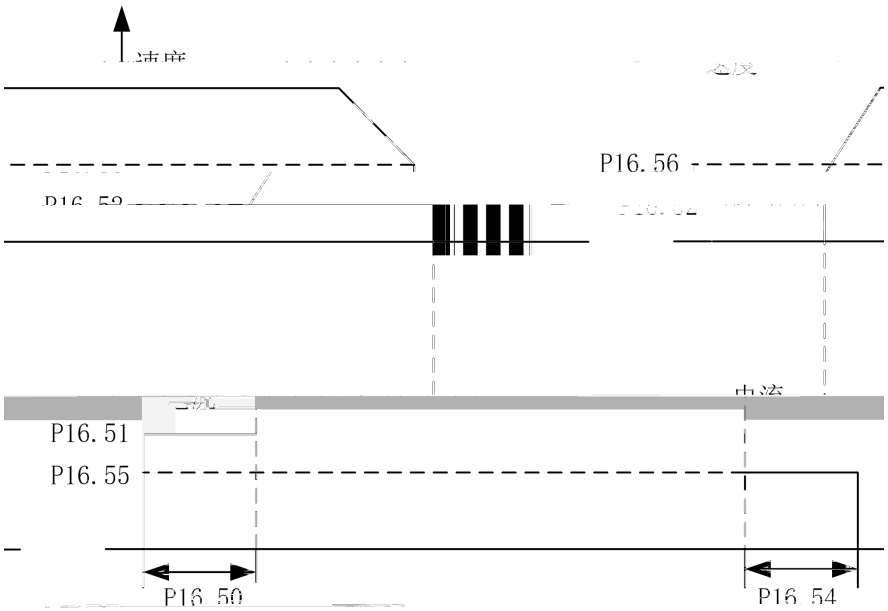
8.9 V/F

1

P16.0 P16.9

P16.50 .51

P16.54 P16 P16.56 ,¶• ŠT„ •15HE 3 h ز



P20.0=1 P20.1≠0 P20.2≠0 1

0

P16.11 [1] [2]

P20.3 P20.1 [4]

2

P12.24 P12.25 0%

3

P20.7

P20.8 P20.9 P20.7=1

4

P20.15 A B

A B U V W

[0]

[1] A B

5

GDHF-PGD2 PG

GDHF-PGD2 PG

DI “[10] ” DP “CW0.9 ”

P20.26 P20.27 0

2%

P20.34 [0] 1

0 P20.26 P20.27 0

P20.26 50% 100% P20.27 3% 5%

P20.34 [1] 2

200 P20.26 P20.27 0

HF659 P20.34 [1]

HF659 P20.34 [0]

6 DROOP

DROOP DROOP

P20.60 0

DROOP P20.61 DROOP

7 1

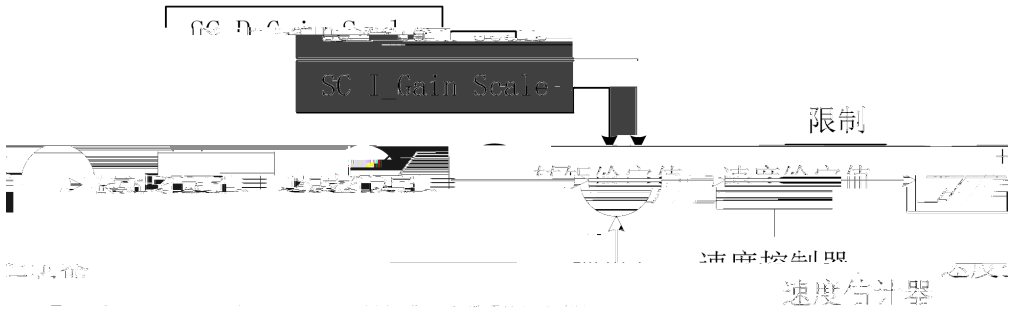
8 2

P20.1 P20.2 [0]

9

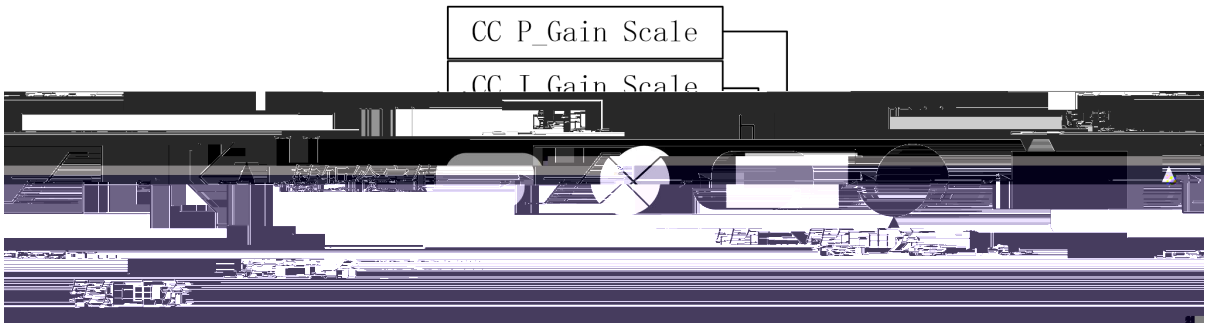
PGD1

PLC



13

P20.62 P20.63 %



8.11

V/F	P16.64 V/F	(10 40Hz)	100	80 150	
	P16.12				
	P16.15				
	P16.26 V/F		0.75	0.5 1.2	
	P7.0		150	150 220	
	P16.12				
	P7.0		150	150 220	
	P20.43		75	50 100	
	P20.56		100	80 150	

@E

P12.40 Å

ò @ñ R˜ 7#0 Đ @ L$ P12.41

P8.7	0.5		0.5
P12.22	8;	0.	0.8
	5;	1.	
P12.23	8;	0.	
	5;	1.	
P12.24		30;	
		5;	
P12.25		20;	
		5;	
P12.32	0.5%		0.5
P12.33	0.5%		0.5
P12.40	10	100%	P16.6 10 %
P12.41	0.1s		0.3s 0.1s
P12.42	xxx s		

2

4

V/F

1 FCD LSW FCD MSW

101.62 1 32 LSW 102.63 1 32 MSW

2 40

30HZ

3 “ ” 2

4 “ ”

6

“ ”

“ ” 5

P27.10-P27.24	DI9-DI23	22	DI DI “ ”
P12.8	7	Hz	
P12.9	8	Hz	
P12.10	9	Hz	
P12.11	10	Hz	
P12.12	11	Hz	

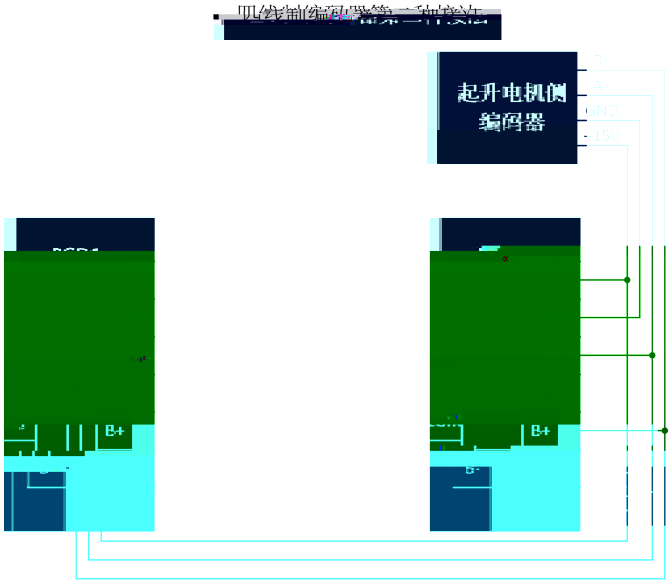
7

PGD1 PGD1 A1+

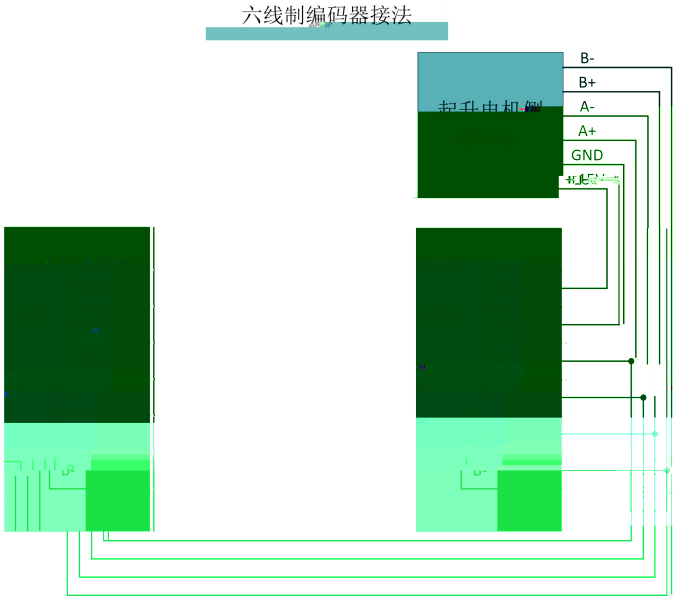
A1- B1+, B1-

a

1



2



P20.14

101.64 101.65

b

P3.6	7	21	DI
P3.7	8	29	1
P8.8		15s	8
P8.59			
P8.60		15	P8.60

c

8.13

1

DI “ ” “ ” “2 ”

“3 ” “4 ” “5 ” 6 DI

“ ” “ ”

	2	3	4	5	
	/	/	/	/	
					1
					2
	/				3
	/	/			4
	/	/	/		5
/:					

2

P08.00 3 MODBUS

P08.10 5 MODBUS

Vx.xxMT AI_1

0VDC-10VDC

P05.00 AI_1 1 0~10V

P12.2 – P12.6 1-5 5 1-5

DI

Hz

Vx.xxMT 5

1 – 5 Hz

P12.07 0V ~ 10V

6		P27.62
25%		P27.63
7		P27.64

110% 1 ~ 25% 7

7 P27.51 ~ P27.64

0		
1		
2 1	1	1
3 2	2	2
4 3	3	3
5 4	4	4
6 5	5	5
	Vx.xxMT	

110% 100% 7

110% 1

P27.51 110%_ 1

P27.52 110%_ 2 1

110%

P27.51 110%_ 1

P27.52 110%_ 1

6

P27.00 2

DO

P27.65

7

P27.66

DO

GDHF-GY01

9.

9.1

WO

9.2

[E051]	U IGBT ERR_UT not reset	IGBT IGBT
[E053]	V IGBT ERR_UT not reset	IGBT IGBT
[E054]	W IGBT ERR_UT not reset	IGBT IGBT
[E056]	ERR_SLAVE_FAULT not reset	
[E057]	ERR_DB not reset	IGBT IGBT
[E100]	OV	P8.35(1) P7.12( )
[E105]	UV	P7.13( )
[E106]	1 Brake abnormal 1	DI
[E107]	2 Brake abnormal 2	DI
[E108]	DC switch open	
[E109]	15V DC15V fail	15V 15V
[E110]	OC	P7.4( )
[E111]	OL	P7.48(1) P7.49(1)

P7.48 P7.49

P7.8

[E112] ZC

[E113] MIP

[E114] MOP

P7.19

[E115] OS P7.19
2

[E116] SLVC Fail P7.23

[E117] MOTOR STALL 0.15 P20.14 P2

P20.14 P20.15

[E118] PG ERROR

P20.14 P20.15

[E119] SPEED ABNORMAL P7.31 P7.32

[E120]

[E143]	Line SW Fail	DI
[E144]	Line SW SHORT	
[E145]	(AFE) Line OV	P16.0
[E146]	(AFE) Line Over_Freq	
[E152]	U IGBT PDP[U]	IGBT IGBT
[E154]	V IGBT PDP[V]	IGBT IGBT
[E155]	W IGBT PDP[W]	IGBT IGBT
[E156]	Hardware OC	
[E157]	PDP[DB]	
[E160]	SLAVE FAULT	
[E161]	SLV_NOT_RDY	
[E162]	1 CAN SLV1_CAN_ERR	1
[E167]	CAN CAN_ERR	
[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 CW0.4
[E203]	DRIVE DISABLED	DP
[E204]	DI ERR DUPLICATE DI SET	DI
[E210]	Panel Error	
[E220]	CRC MEMORY CRC ERR	
[E221]	PARAMETER ERROR	

9.3

		• • ON • COM	• • ON • COM
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10.

10.2

10.4

5

5

(400-0077-570)

1 40

2 80%

3 24 /

10.5

1

2

5

+e& Ä