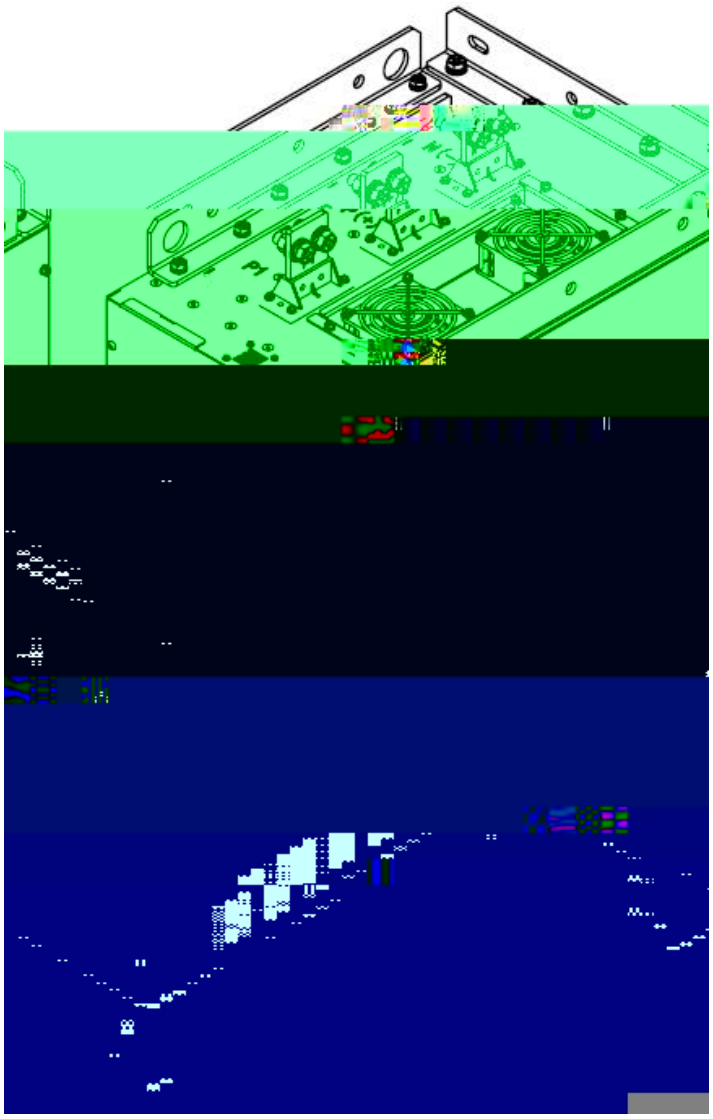
GUIDE



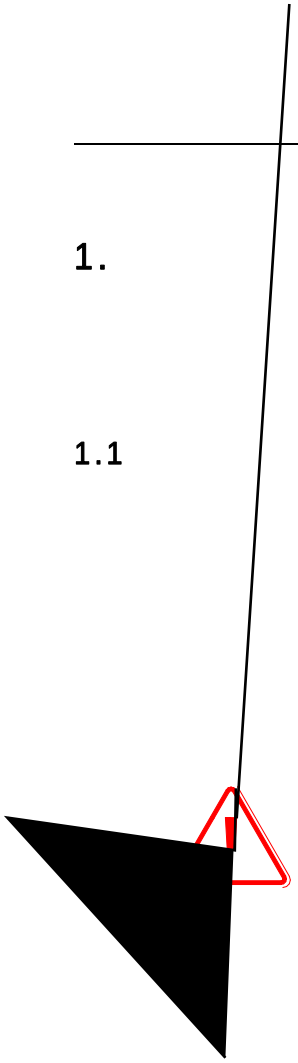
HF650LC

1.
1.1
1.2
1.3
1.4
2.
2.1
2.2
2.3
2.4
2.5
2.6
2.7
2.8
2.9
2.10
3.
3.1
3.2
3.3
3.4
3.5
3.6
3.7 PGC2
3.8 PGD2
4.
4.1
4.2
4.3

6.2.9
7.
7.1 P1
7.2 P2
7.3 P3
7.4 P4
7.5 P5
7.6 P6
7.7 P7
7.8 1 P8
7.9 2 P9
7.10 3 P10
7.11 4 P11
7.12 1 P12
7.13 2 P13
7.14 3 P14
7.15 4 P15
7.16 1 V/F P16
7.17 2 V/F P17
7.18 3 V/F P18
7.19 4 V/F P19
7.20 1 P20
7.21 2 P21
7.22 3 P22
7.23 4 P23
7.24 MODBUS P32
7.25 P33
8.
8.1
8.2
8.3
8.4
8.5
8.6
8.7
8.8
8.9 V/F
8.10
8.11
9.
9.1
9.2
9.3
10.
10.1
10.2
10.3
10.4

1.

1.1



1.2

1

RCD

RCM RCD

RCM

B RCD RCD

RCD RCD

2

500V

5MΩ

3

1.3

(1)

(2)

(3)

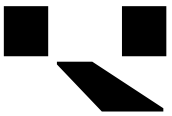
(4)

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

1.4

2.

2.1



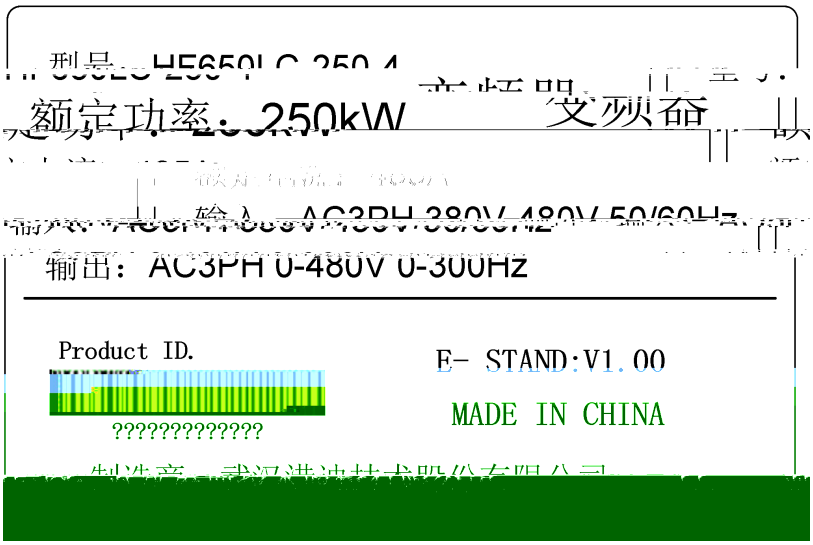
1.
2.
3.
4.

2.2

2-1 m Y ä " r o

A	HF650 LC
B	160=160kW 250=250kW 450=450kW
C	4 400V
D	S

HF650LC 2-2 250kW



2-2

HF650LC-250-4 HF650 250kW

400V

AC

3PH

380V~480V 50/60Hz

0-480V 0-300Hz

2.3

2-3 HF650LC

	1		2			
	[A]	[kW]	[A]	[kW]		
HF650LC-160-4	330	160	265	132		
HF650LC-185-4	360	185	330	160		
HF650LC-220-4	438	220	360	185	12	
HF650LC-250-4	485	250	438	220		
HF650LC-280-4	545	280	485	250		
HF650LC-160-4-S	330	160	265	132		
HF650LC-185-4-S	360	185	330	160		L2
HF650LC-220-4-S	438	220	360	185	6	
HF650LC-;85 İ						

1 150% 5 1

2 180% 5 5

3 HF650LC-160-4 HF650LC-450-4 2 12

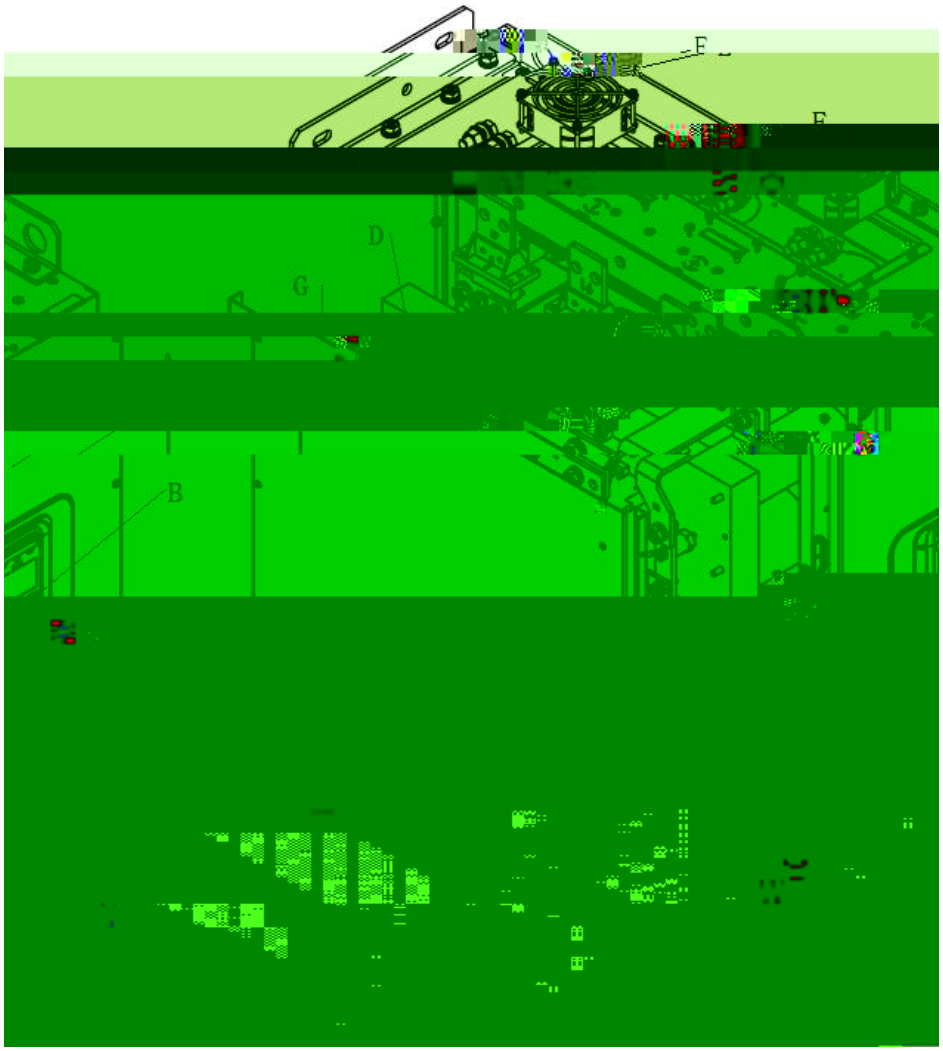
4 HF650LC-160-4-S HF650LC-450-4-S 1

6

2.4

HF650LC

HF650LC-160-4 HF650LC-450-4



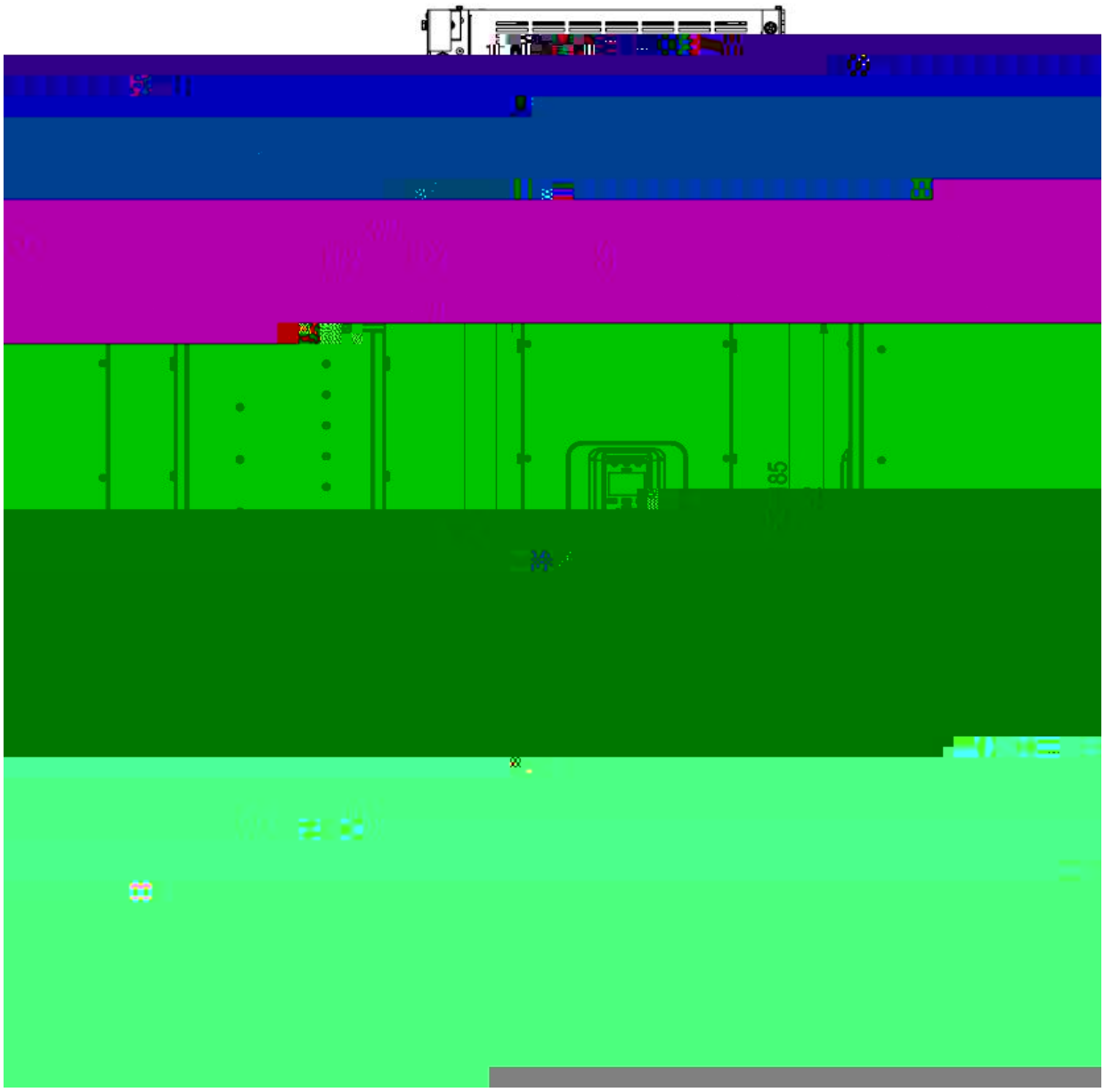
A- B- C- D-

E- 1 F- 2 G-

24 ° DIN2353-L

/ 18mm M26 × 1.5

2.5

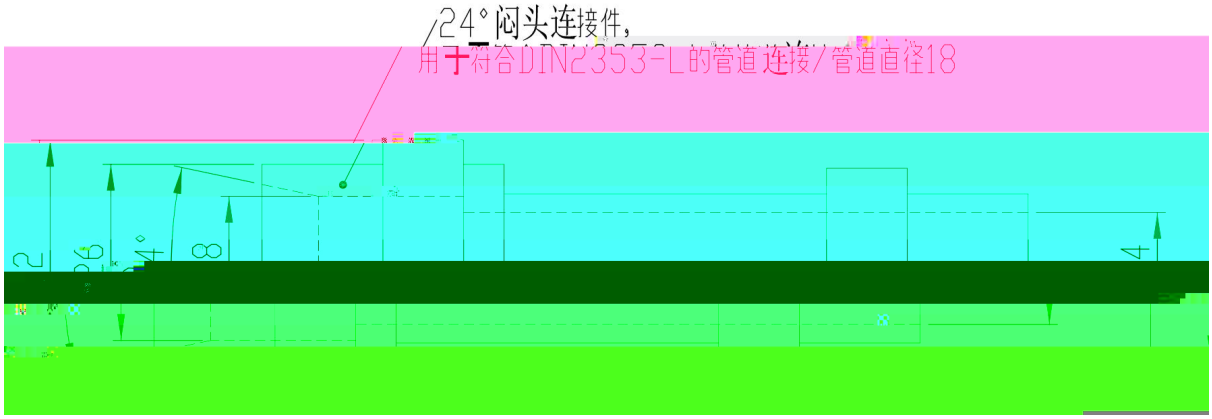


		(mm)			(mm)			D	8.8	kg
		H1	W1	D1	A	B	C			
L2	160 kW	815.5	335	567.5	765	250	275	Φ13	M12	130
	185 kW									
	220 kW									
	250 kW									
	280 kW									
L3	315 kW	993.5	335	567.5	943.5	250	275	Φ13	M12	155
	355 kW									
	400 kW									
	450 kW									

2.6

PID		
		8 2 -10V +10V 0mA/4mA 20mA
		5 3 2 2 0 +10V 0mA/4mA 20mA
LCD		
		1000m
		-15 +50 50 60 0
		95%RH
		-20 +60
		/ / 6 4
	(L/min)	L2 22L/min,L3 24L/min
	( )	55
		5
	MPa	0.6

	(Kpa)	80~150
	(mm)	
		/ PA PEX Teflon



2.7

(1) 200%

(2) 50% HF650LC

(3) HF650LC

2.8

:

HF650LC-160-4 ACR-0200-070U-0.4SC-3058 2

	W	W	W
ACR-0200-070U-0.4SC-3058	140	40	180
ACR-0250-056U-0.4SC-3058	155	44	199

A

3.

1. / “ ”

   /

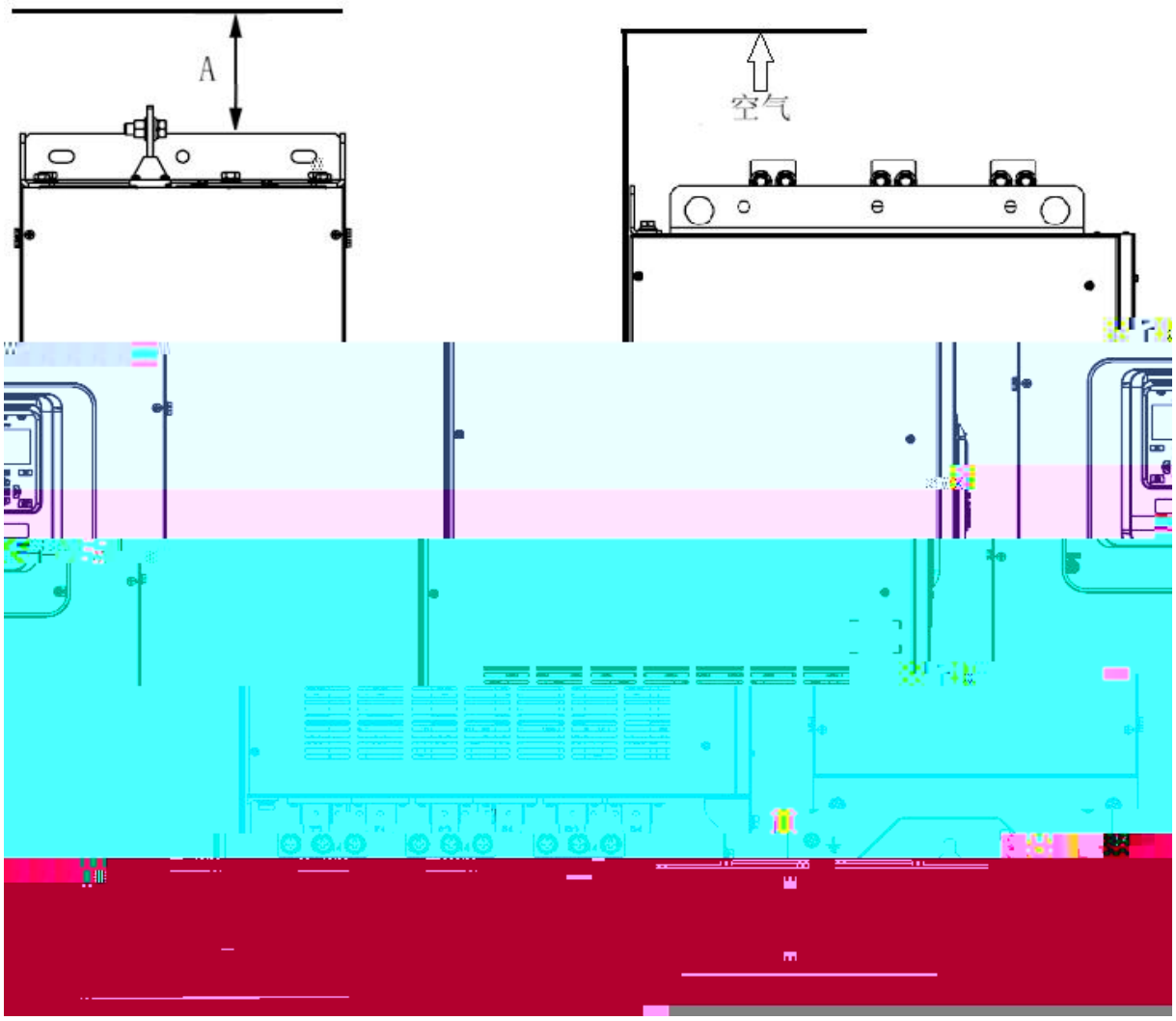
2.
3.

   - R S

3.2

-
- -15 +50 +50 +60
  1%
- 95%RH
-
-
-
-
-

3.3

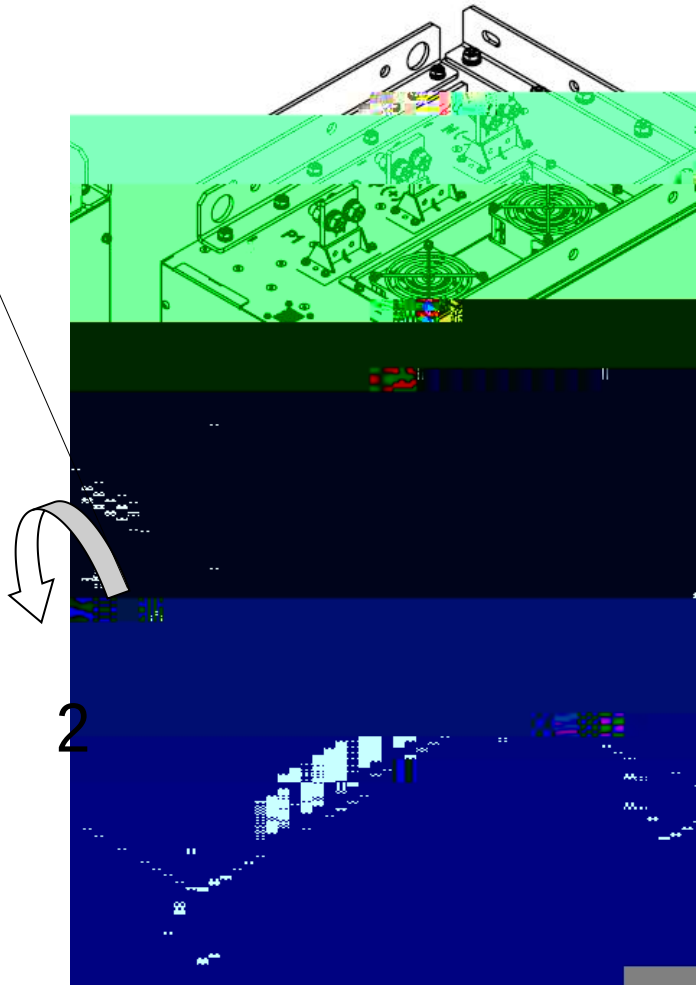


	A ≥ 200mm

3.4

1 1 4 5mm

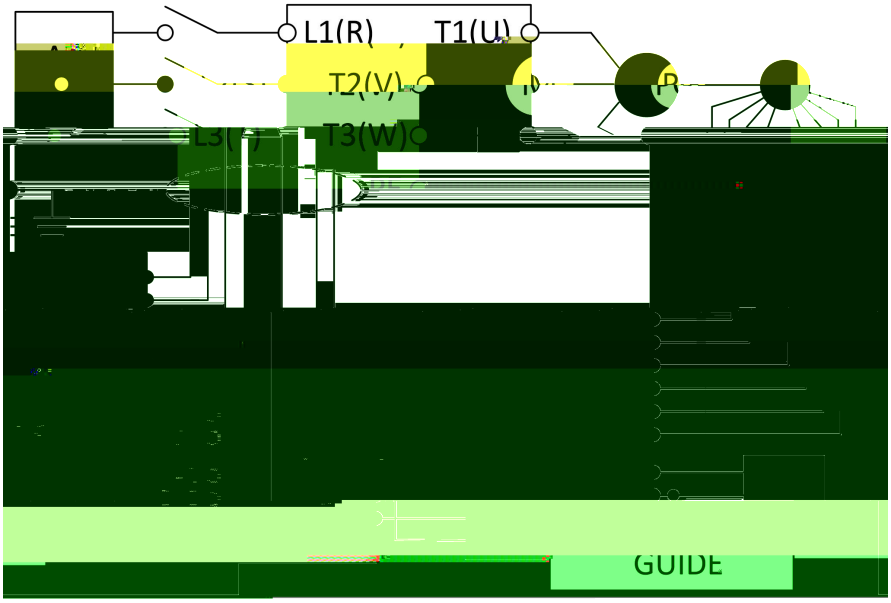
2 2



3-1

m" אל

PGC2



1 PG

2 PG

3 PE

4 PG A- B- Z- GND

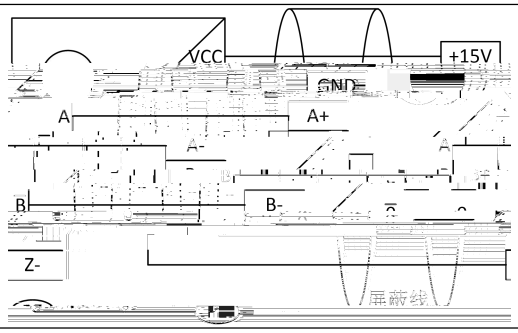
5 PGC2 15V RS-422

PGC1

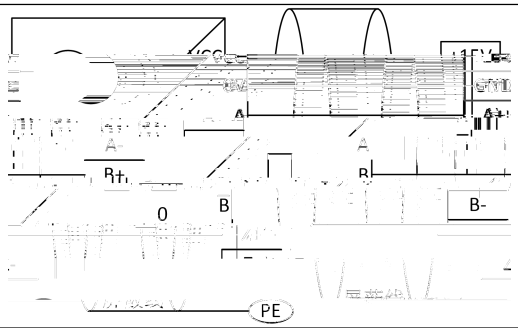
15V

1

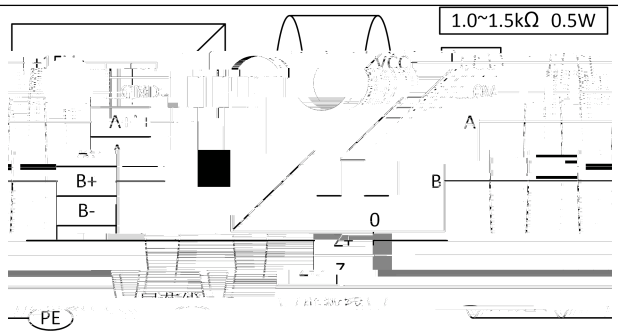
a

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

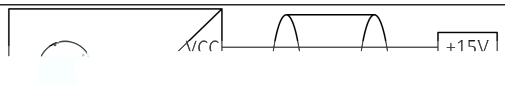
b

		
		HLE45-600L-3F.AC
		RVI78N-10CALA31N-1024
		EC120P45-P6PR-1024

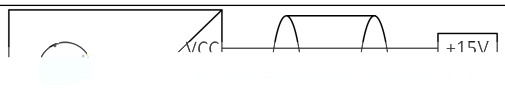
2

		
		HLE45-1024L-30C.AC
		EB38A6-C4PR-1024

3

		
		HLE45-600L-3R.AC
		EB50A8-N4PR-1024

4 15V

		
		HLE-45-600L-6LY.AC
		RHI58N-0BAK1R6XN-1024
		EC120P45-L6TR-1024

4.1

1

2

3

4

5

6

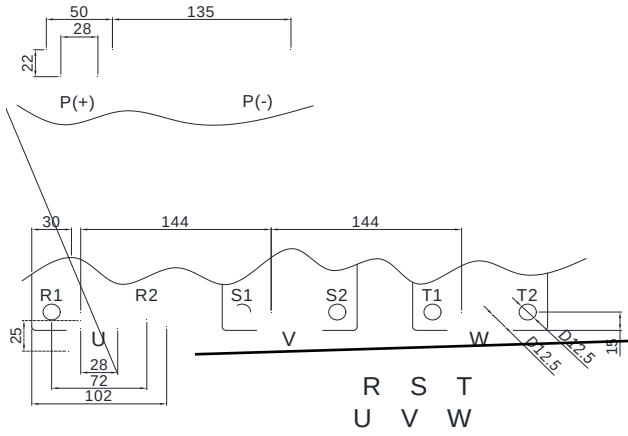
14

15 30 m

4.2

160kW ~280kW :

L2



P	
N	
R S T	
U V W	
	

4.3

1

	1	2	3	4	5	6	7	8
	+10							

3

1	+10V			10V									
2	GND						,						
3	AI1+/AV1			1							0/4	20mA	
					1						-10	10V	
4	AI1-			1									
5	AI2+/AV2			2							0/4	20mA	
					2						-10	10V	
6	AI2-			2									
7	AO1			1							0/4	20mA	J1
			I	a			0	10V	J1		V	b	
8	AO2			2							0/4	20mA	J2
			I	a			0	10V	J2		V	b	
9	DI1				1								
10	DI2				2								
11	DI3				3								
12	DI4				4								
13	DI5				5								
14	DI6				6								
15	DI7				7								
16	DI8				8								
17	PW												
18	COM	24V											
19	PW												
20	+24V	24V			+								
21	+24V	24V											
22	DO1				1						DC24V	50mA	
23	+24V	24V											
24	DO2				2						DC24V	50mA	

+24V	24V	
DO3	3	DC24V 50mA
DOMA	4	

250VAC 3A COSϕ=0.4

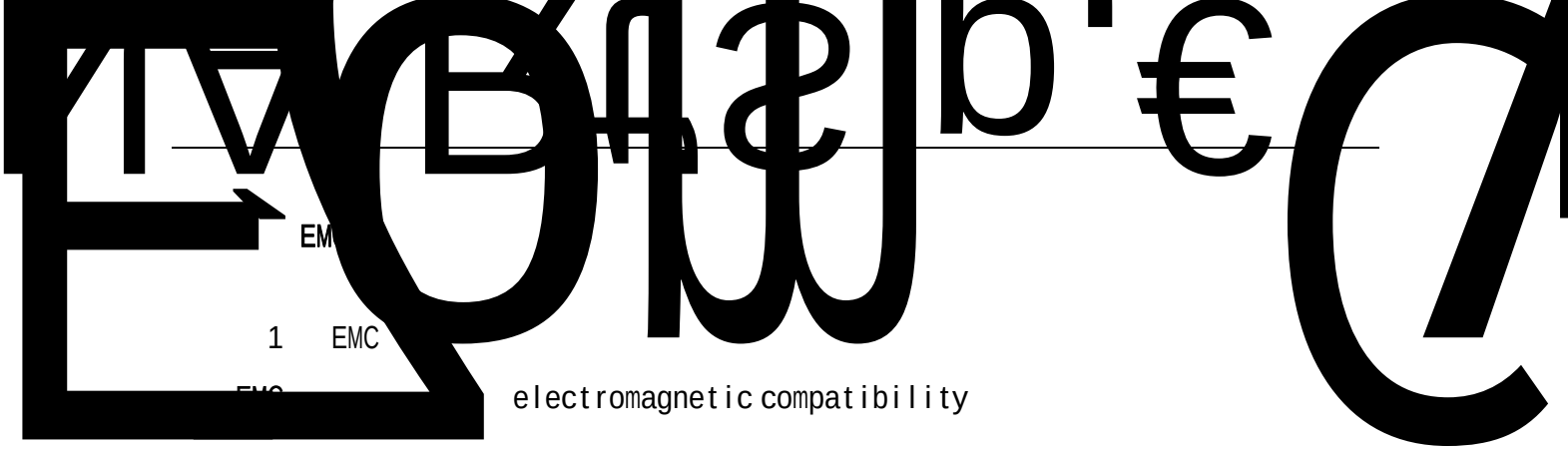
30VDC / 7

	1 2
AC	1 2 3

4.6

		A	/ mm2	/ mm2	A (AC-3)
			CEFR	40%	
HF650LC-160-4	12	200	50	95	182
HF650LC-185-4		225	50	120	198
HF650LC-220-4		275	70	2*70	241
HF650LC-250-4		300	70	2*70	267
HF650LC-280-4		340	95	2*95	300
HF650LC-160-4-S	6	400	95	95	363

HF650LC-185-4-S	12	450	120	120	396
HF650LC-220-4-S		550	2*70	2*70	482
HF650LC-250-4-S		600	2*70	2*70	534
HF650LC-280-4-S		680	2*95	2*95	600
HF650LC-315-4		387	95	2*95	341
HF650LC-355-4		417	120	2*120	368
HF650LC-400-4		475	2*50	2*150	418
HF650LC-450-4		531	2*70	2*150	468
HF650LC-315-4-S	6	775	2*95	2*95	682
HF650LC-355-4-S		835			

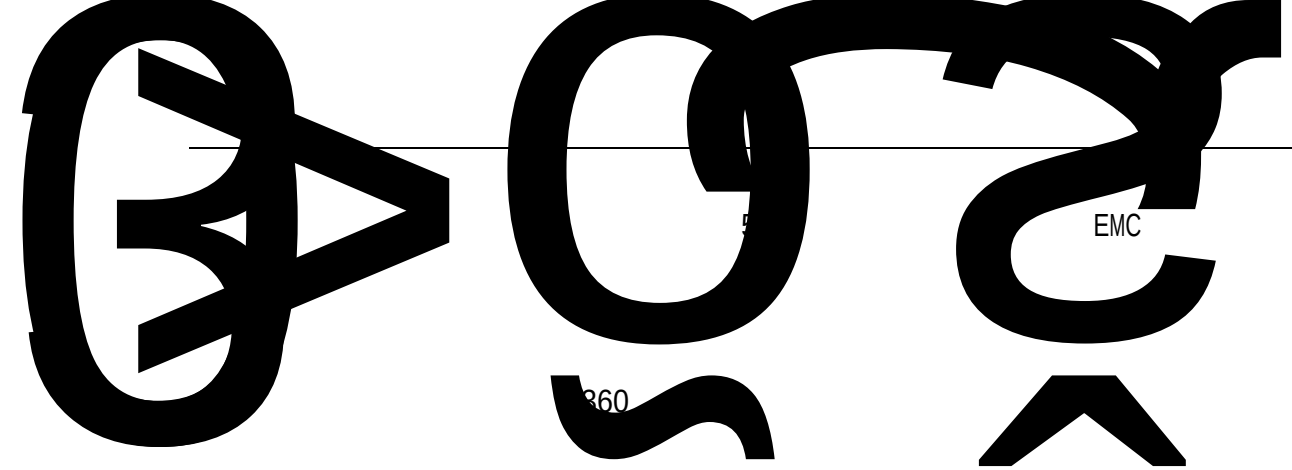


EMC

1 EMC

electromagnetic compatibility

EMC



EMC

360

>õš

b

4

3 1

PLC

20cm

50m

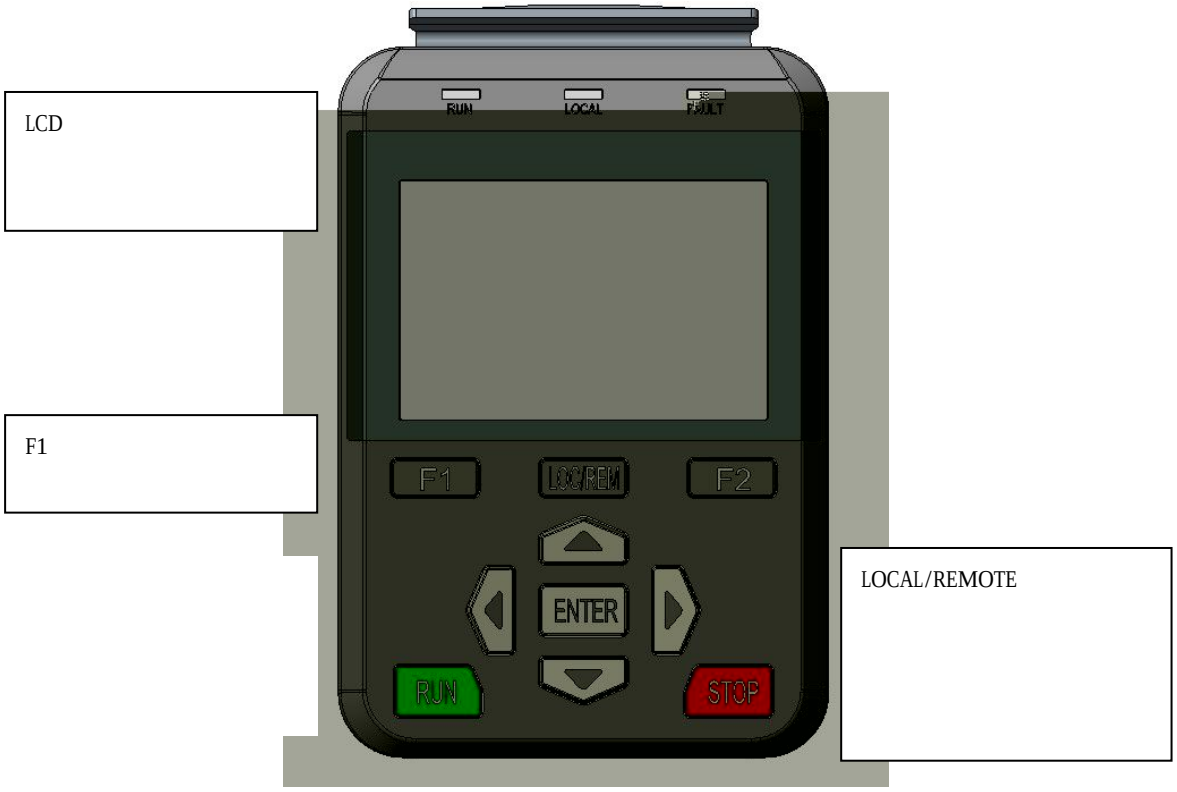
e

5.

5.1

HF650 F1 LOCAL/REMOTE

F2 RUN STOP /RESET ENTER



5.2

▼

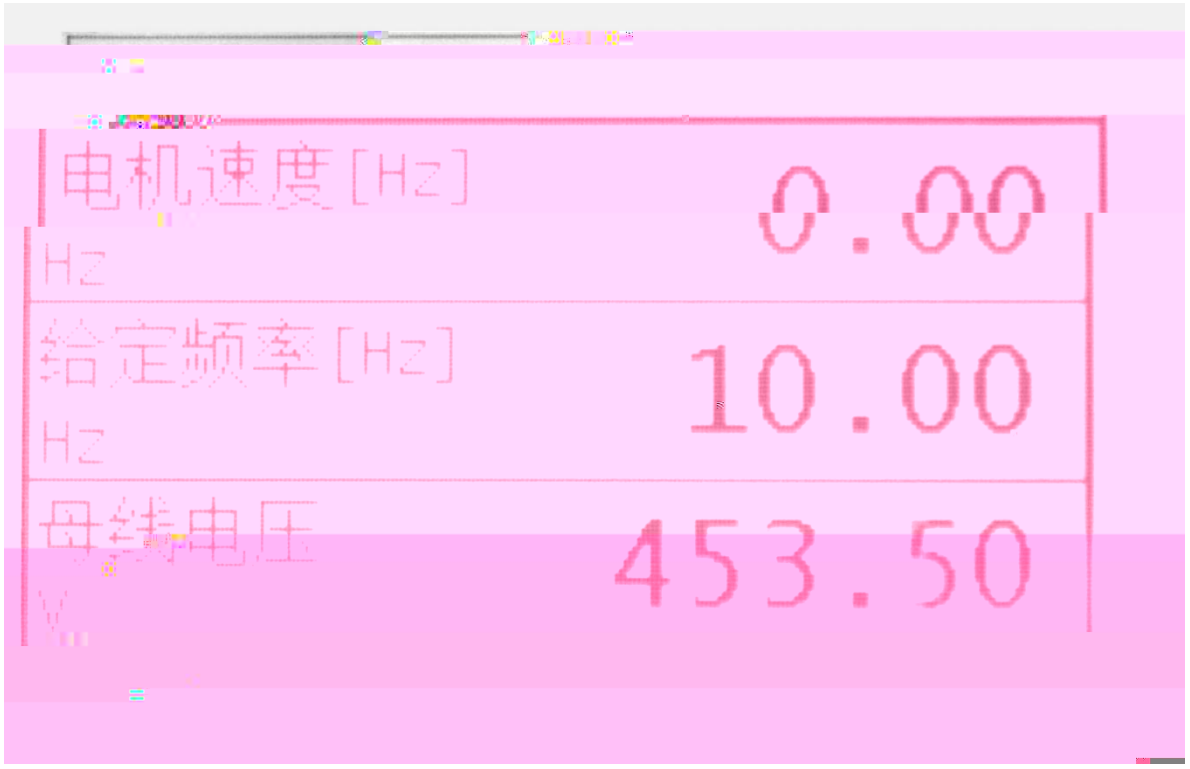
▲

ENTER

RUN STOP

LOCAL/REMOTE /

5.3



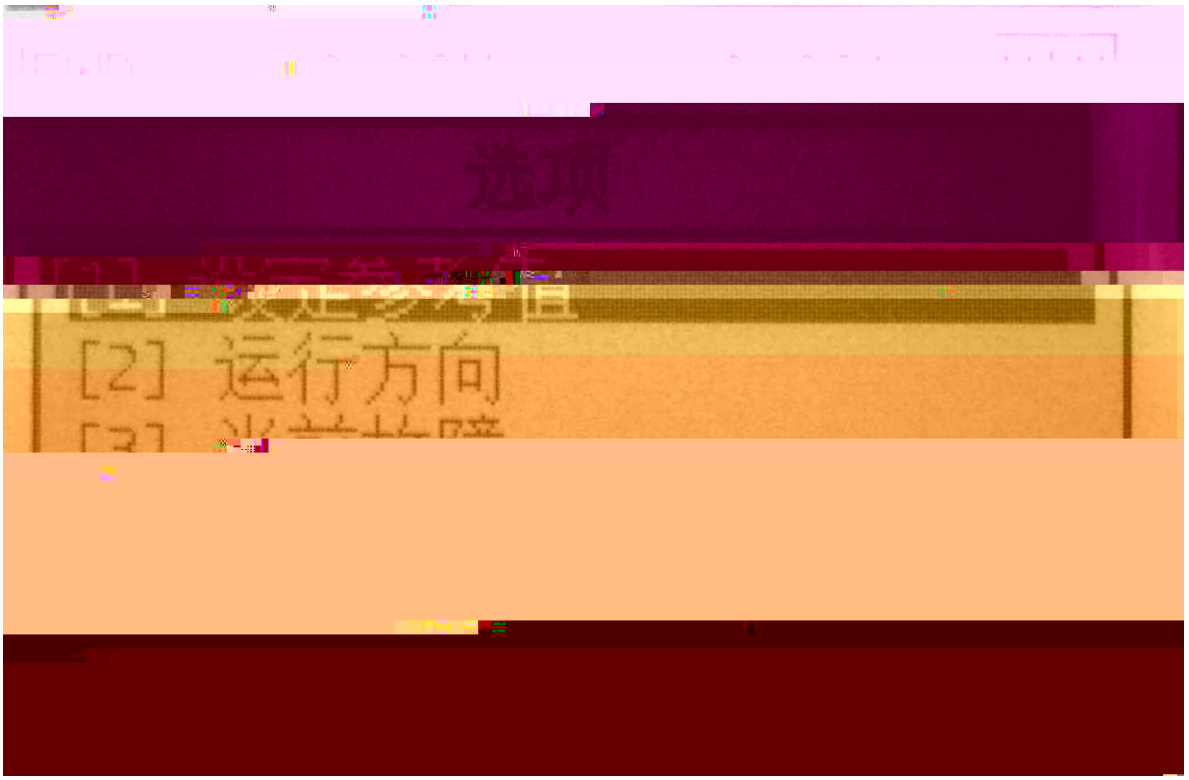
|

	FWD REV
	:HZ
	A
	N|N W E

3

F1 F2 “ ” “ ” “ ” “ ” “ ”

ENTER



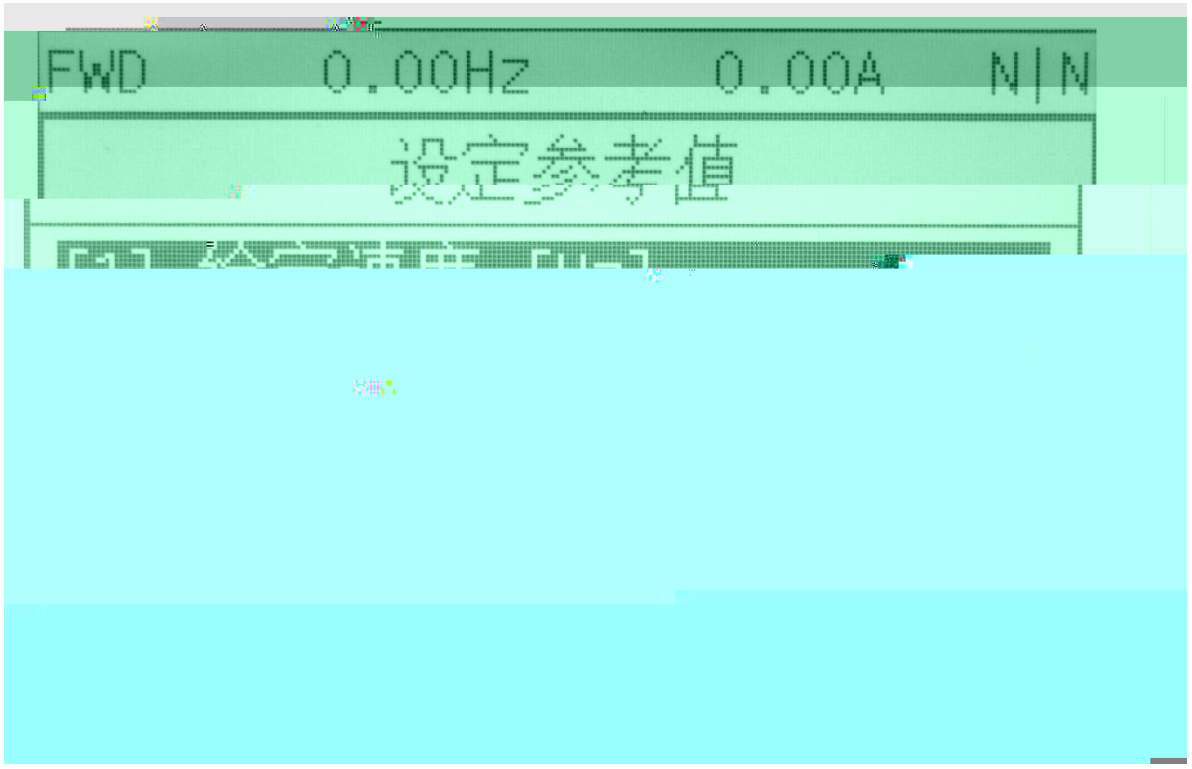
1	Reference Set	
2	Change Direction	
3	Current Error	
4	Current Warnning	

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		
		[%]	%
		[%]	%
	limiter	[%]	%
	1	[%]	1
	2	[%]	2

2 Change Direction

3 Current Error

4 Current Warnning

5 Reset Error

6 Monitor Setting

7 Firmware Version

8 Menu Language

5.5

1 Parameter Setting

2 Function Setting

1	MotoTuning I	
2	MotoTuning II	
3	MotoTuning III	
4	DC-Link Tuning (AFE)	AFE

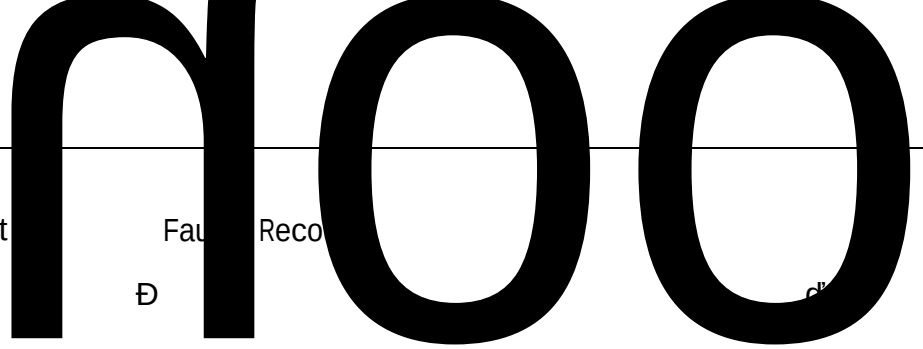
5	Shortcut Paras Setting	
6	Parameter Initialization	
7	Delete Fault Records	
8	System Restart	
9	Backup Parameter	
10	Recover Parameter	
11	Compare Parameter	

1

2

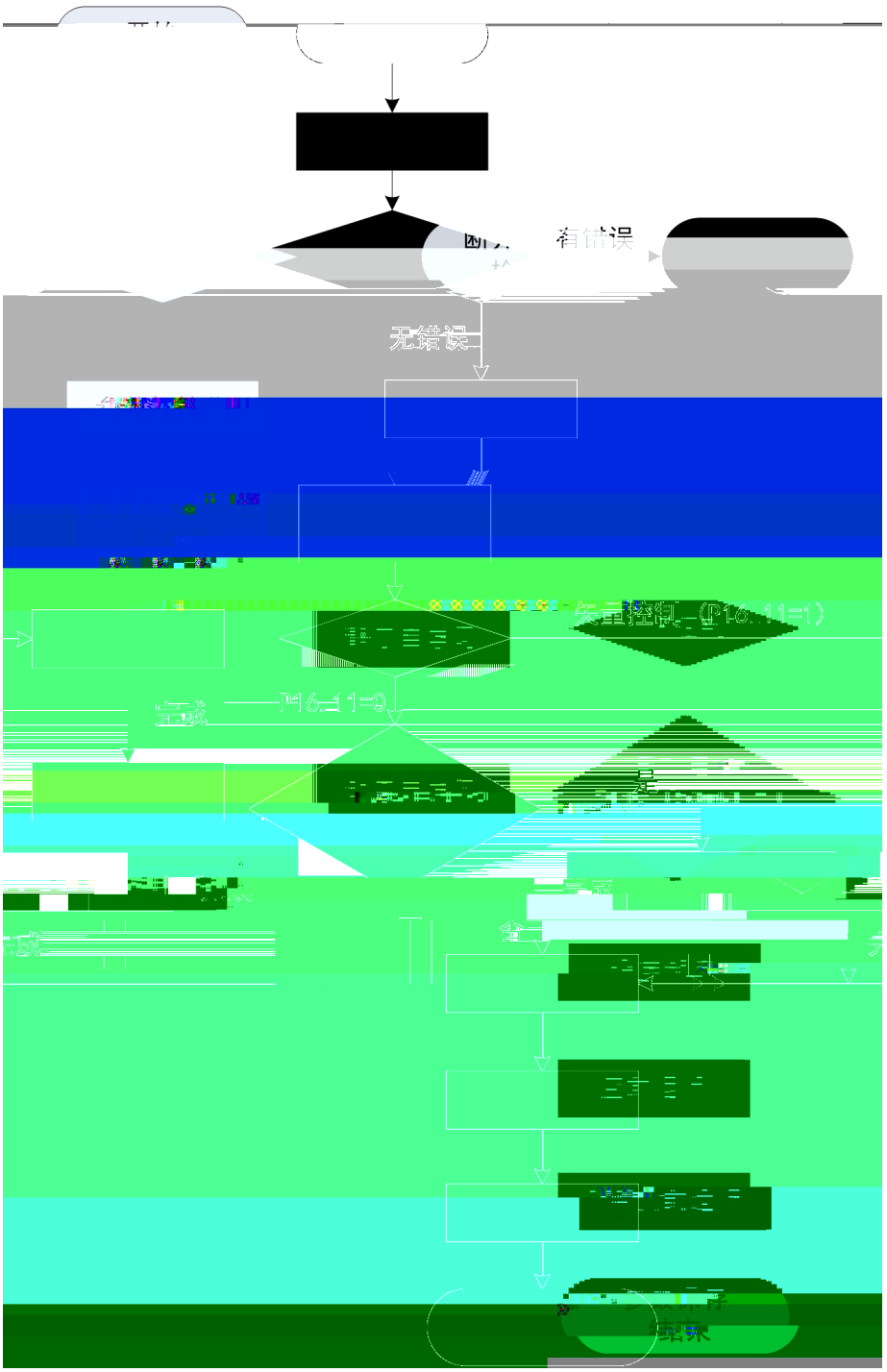
5

▼ ▲ “Enter”



6.

6.1



6.2.3

5.4 “ ”

6.2.4

7.7

P8.0		[0] [1] [2]DP [3]MODBUS [4]	1
P8.3		[0] [1]	1
P8.6		0 300s	0
P8.7			0
P8.10		[0]I/O [1] 1 [2] 2 [3] [4]DP [5]MODBUS [6]	3
P8.14		0.1 10.0	1
P8.15	1		100
P8.16	1	P8.15	3
P8.17	2		200
P8.18	2	P8.15 P8.17	4
P8.33		0.1 10.0	1
P8.34	1		100
P8.35	1	P8.34	3
P8.36	2		200
P8.37	2	P8.34 P8.36	4

Ş
Ƀ
Ƀ
شمØ سد س ℵ t m

“

” “ ”

4

50%

P20.98 P20.98

6.2.6

HF650LC

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

6.2.7

7.

7.1 P1

P1.21		[0] [1]	0 1	0	

7.2 P2

P2.0		[0] [1] [2]	0 2	0	8.1
P2.1		[0] [1]DP	0 1	0	
P2.2		[0] [1]	0 1	0	
P2.3			0 5	1	

7.3 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		
4	.NC	
5		</RST
6	1 0	8.2
7	2 1	
8	3 2	
9	4 3	
10		
11		
12		
13	.NC	
14		
15	.NC	
16		
17	0	1 0 00 1 01 2 10 3 11 4
18	1	
19		
20		AFE
21		
22	FUNC 22	
23	FUNC 23	

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	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

7.5 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]	8.4
P5.3	AI1	AI1	-20.00 20.00 [mA]	0.000 [mA]	8.4
P5.4	AI1	AI1	-10.00 10.00 [V]	0.000 [V]	8.4
P5.5	AI1	AI1	0.00 20.00 [mA]	0.000 [mA]	8.4
P5.6	AI1	AI1	-300.0 300.0 [%]	0.0 [%]	8.4
P5.7	AI1	AI1	-10.00 10.00 [V]	10.000 [V]	8.4
P5.8	AI1	AI1	0.00 20.00 [mA]	20.000 [mA]	8.4
P5.9	AI1	AI1	-300.0 300.0 [%]	100.0 [%]	8.4
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 [%]	

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		

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	0.0 300.0 [%]	235.0 [%]	8.6
P7.5	[2]	2	0.0 300.0 [%]	235.0 [%]	8.6
P7.6	[3]	3	0.0 300.0 [%]	235.0 [%]	8.6
P7.7	[4]	4	0.0 300.0 [%]	235.0 [%]	8.6
P7.8	[1]	1	0.0 100.0 [%]	20.0 [%]	8.6
P7.9	[2]	2	0.0 100.0 [%]	20.0 [%]	8.6
P7.10	[3]	3	0.0 100.0 [%]	20.0 [%]	8.6
P7.11	[4]	4	0.0 100.0 [%]	20.0 [%]	8.6
P7.12			600 820 [V]	800 [V]	8.6
P7.13			300 500 [V]	350 [V]	8.6
P7.14			60.0 100.0 [ ]	87.5 [ ]	8.6
P7.15			50.0 100.0 [ ]	80.0 [ ]	8.6
P7.19	[1]	1	100.0 720.0 [%]	120.0 [%]	8.6
P7.20	[2]	2	100.0 720.0 [%]	120.0 [%]	8.6
P7.21	[3]	3	100.0 720.0 [%]	120.0 [%]	8.6

P8.18	2	P8.15 P8.17	0.0 300.0 [s]	4.00 [s]	8.7
P8.19	3		0.0 300.0 [%]	240.0 [%]	8.7
P8.20	3	P8.17 P8.19	0.0 300.0 [s]	7.00 [s]	8.7
P8.21	4		0.0 300.0 [%]	300.0 [%]	8.7
P8.22	4	P8.19 P8.21	0.0 300.0 [s]	10.00 [s]	8.7
P8.23	5		0.0 300.0 [%]	300.0 [%]	8.7
P8.24	5	P8.21 P8.23	0.0 300.0 [s]	10.00 [s]	8.7
P8.25	6		0.0 300.0 [%]	300.0 [%]	8.7
P8.26	6	P8.23 P8.25	0.0 300.0 [s]	10.00 [s]	8.7
P8.27	7		0.0 300.0 [%]	300.0 [%]	8.7
P8.28	7	P8.25 P8.27	0.0 300.0 [s]	10.00 [s]	8.7
P8.29	8		0.0 300.0 [%]	300.0 [%]	8.7
P8.30	8	P8.27 P8.29	0.0 300.0 [s]	10.00 [s]	8.7
P8.32		[0] [1]PROFIBUS [2]MODBUS [3]	0 3	0	8.7
P8.33			0.1 10.0	1.0	8.7
P8.34	1		0.0 300.0 [%]	100.0 [%]	8.7
P8.35	1	P8.34	0.0 300.0 [s]	3.00 [s]	8.7
P8.36	2		0.0 300.0 [%]	200.0 [%]	8.7

P8.37	2	P8.34 P8.36	0.0 300.0 [s]	4.00 [s]	8.7
P8.38	3		0.0 300.0 [%]	240.0 [%]	8.7
P8.39	3	P8.36 P8.38	0.0 300.0 [s]	7.00 [s]	8.7
P8.40	4		0.0 300.0 [%]	300.0 [%]	8.7
P8.41	4	P8.38 P8.40	0.0 300.0 [s]	10.00 [s]	8.7
P8.42	5		0.0 300.0 [%]	300.0 [%]	8.7
P8.43	5	P8.40 P8.42	0.0 300.0 [s]	10.00 [s]	8.7
P8.44	6		0.0 300.0 [%]	300.0 [%]	8.7
P8.45	6	P8.42 P8.44	0.0 300.0 [s]	10.00 [s]	8.7
P8.46	7		0.0 300.0 [%]	300.0 [%]	8.7
P8.47	7	P8.44 P8.46	0.0 300.0 [s]	10.00 [s]	8.7
P8.48	8		0.0 300.0 [%]	300.0 [%]	8.7
P8.49	8	P8.46 P8.48	0.0 300.0 [s]	10.00 [s]	8.7
P8.54			0.0 300.0 [%]	0.0 [%]	
P8.55		[0] [1]	0 1	0	
P8.56			0.00 300.00 [s]	3.00 [s]	
P8.57		[0] [1]	0 1	1	
P8.58			0.00 300.00 [s]	1.50 [s]	

7.9 2 P9

P9.0	[0] [1] [2]DP [3]MODBUS [4]	0	4	0	
P9.1					
P9.2					
P9.3	[0] [1]	0	1	0	8.7
P9.6		0.00	300.00		

P9.18	2	P9.15	P9.17	0.0 [s]	300.0 [s]	4.00

P9.34 P9.36 0.0 300.0

P9.37 2

[s]

P9

[2]

P9.0 P9.0

7.10 3 P10

	[0]			
	[1]			
P10.0	[2]DP	0	4	0
	[3]MODBUS			
	[4]			
P10.1				

7.11 4 P11

P11.0		[0] [1] [2]DP [3]MODBUS [4]	0 4	0	
P11.1					
P11.2					
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	
P11.11					
P11.13		[0] [1]PROFIBUS [2]MODBUS [3]	0 3	0	8.7
P11.14			0.1 10.0	1.0	8.7
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 [s]	300.0 [s]	4.00	8.7
P11.38	3			0.0 [%]	300.0 [%]	240.0	8.7
P11.39	3	P11.36	P11.38	0.0 [s]	300.0 [s]	7.00	8.7
P11.40	4			0.0 [%]	300.0 [%]	300.0	8.7
P11.41	4	P11.38	P11.40	0.0 [s]	300.0 [s]	10.00	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	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	8.7
P11.46							

7.12 1 P12

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

7.13 2 P13

P13.0		[0] [1]	0	1	1	8.8
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		10.0			

P13.27			0.00 2.00 [s]	0.00 [s]	8.8
P13.28			0.00 2.00 [s]	0.07 [s]	8.8
P13.29			0.00 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 2.00 [s]	0.00 [s]	8.8
P13.35			0.00 2.00 [s]	0.00 [s]	8.8
P13.36			0.00 2.00 [s]	0.50 [s]	8.8
P13.37			0.00 2.00 [s]	0.50 [s]	8.8

7 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					

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

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						

P15.27	0.00 [s]	2.00	0.00 [s]	8.8
P15.28	0.00 [s]	2.00	0.07 [s]	8.8
P15.29	0.00 [s]	2.00	0.07 [s]	8.8
P15.32	0.0			

7.16 1 V/F P16

P16.0		320 460 [V]	380 [V]	
P16.2		0.0 4000.0 [kW]	[kW]	
P16.3		320 460 [V]	380 [V]	
P16.4		0.0 6500.0 [A]	[A]	
P16.5		0.0 300.0 [Hz]	50.0 [Hz]	
P16.6		0 6000 [rpm]	1465 [rpm]	
P16.7		2 12 [pole]	4 [pole]	8.9
P16.9		0 7200 [rpm]	1500 [rpm]	8.9
P16.11	[0]V/F [1] [2] [3] [4]	0 4	0	
P16.12		1.00 10.00 [kHz]	3.00 [kHz]	8.9
P16.14 V/F	[0] V/F [1] V/F [2]	0 3	0	8.9
P16.15	[0] [1]	0 1	0	8.9
P16.16		2 500 [ms]	500 [ms]	
P16.17 V/F	[0] [1]	0		

P16.22		0.00 100.00 [s]	0.00 [s]	8.9
P16.23	V/F	0.00 300.00 [Hz]		

P16.48		[0] [1]PID 1 [2]PID 2 [3]	0 3	0	
P16.49	@		0 300	0	
P16.50			0.00 300.00 [s]	0.00 [s]	8.9
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] [3] [4]	0 4	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 3	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]		

P17.48		[0] [1]PID 1 [2]PID 2 [3]	0 3	0	
P17.49	@		0 300	0	
P17.50			0.00 300.00 [s]	0.00 [s]	8.9
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 1000.0 [%]	100.0 [%]	
P17.60			0.0 1000.0 [%]	100.0 [%]	
P17.61			0.0 1000.0 [%]	100.0 [%]	
P17.62			0.0 1000.0 [%]	100.0 [%]	
P17.64	V/F	V/F	0.0 1000.0 [%]	100.0 [%]	8.9
P17.66		V/F	0.0 1000.0 [%]	100.0 [%]	
P17.67			0.0 1000.0 [%]	100.0 [%]	
P17.68			0.0 1000.0 [%]	100.0 [%]	
P17.69			0.0 1000.0 [%]	100.0 [%]	
P17.70			0.0 1000.0 [%]	100.0 [%]	

7.18 3 V/F P18

P18.0			320 460 [V]	380 [V]	
P18.2			0.0 4000.0 [kW]	 [kW]	
P18.3			320 460 [V]	380 [V]	
P18.4			0.0 6500.0 [A]	 [A]	
P18.5			0.0 300.0 [Hz]	50.0 [Hz]	
P18.6			0 6000 [rpm]	1465 [rpm]	
P18.7			2 12 [pole]	4 [pole]	8.9
P18.9			0 7200 [rpm]	1500 [rpm]	8.9
P18.11		[0]V/F [1] [2] [3] [4]	0 4	0	
P18.12			1.00 10.00 [kHz]	3.00 [kHz]	8.9
P18.14	V/F	[0] V/F [1] V/F [2]	0 3	0	8.9
P18.15		[0] [1]	0 1	0	8.9
P18.16			2 500 [ms]	500 [ms]	
P18.17	V/F	[0] [1]	0 1	0	
P18.18			10 1000 [ms]	200 [ms]	
P18.19		[0] [1]	0 1	0	

P18.22		0.00 100.00 [s]	

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]	8.9
P18.51			0.0 150.0 [%]	70.0 [%]	8.9
P18.5					

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] [3] [4]	0 4	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 3	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		[0] [1]	0 1	0	

P19.48	[0] [1] [2] [3]	[redacted]			
P19.49	@	0	300	0	
P19.50		0.00 [s]	300.00 [s]	0.00 [s]	8.9
P19.51	[redacted]				
P19.52		0.00 [Hz]	5.00 [Hz]	0.00 [Hz]	8.9
P19.54		0.00 [s]	300.00 [s]	0.00 [s]	8.9
P19.55		0.0 [%]	150.0		

[redacted]

[redacted]

7.20 1 P20

P20.31			0.0 100.0 [%]	5.0 [%]	
P20.32			0.0 100.0 [%]	5.0 [%]	
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			0.0 200.0 [%]	92.0 [%]	
P20.48			0.0 200.0 [%]	87.0 [%]	
P20.49			0.0 150.0 [%]	100.0 [%]	
P20.51			0.0 1000.0 [%]	100.0 [%]	
P20.52			0.0 1000.0 [%]	100.0 [%]	

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 [%]	8.10
P20.56						0.0 1000.0 [%]	100.0 [%]	8.10
P20.57			[0] [1]			0 1	0	8.10
P20.58						0.0 125.0 [%]	100.0 [%]	8.10
P20.59						1.0 25.0 [%]	2.5 [%]	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
P20.66		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 [%]	

7.21 2 P21

P21.0		[0] [1]		0 1	0	8.10
P21.1		[0] [1] [2] [3] [4] [5]DP [6]MODBUS [7]	1 2 P21.3	0 7	0	8.10
P21.2				0 7	0	
P21.3				-300.0 300.0 [%]	0.0 [%]	8.10
P21.4	@			0 300	0	
P21.5				0 1000 [ms]	0 [ms]	
P21.6				0.0 200.0 [%]	100.0 [%]	8.10
P21.7		[0] [1] P21.9 [2] [3] [4] [5]DP [6]MODBUS [7]	P21.8 1 2	0 7	0	8.10
P21.8		P21.7	[1]	0.0 300.0 [%]	200.0 [%]	8.10
P21.9		P21.7	[1]	0.0 300.0 [%]	200.0 [%]	8.10
P21.10				0 300	0	
P21.11				0 1000 [ms]	0 [ms]	
P21.13				20.0 500.0 [ms]	100.0 [ms]	8.10

P21.32			0.0 100.0 [%]	5.0 [%]	
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			0.0 100.0 [%]	25.0 [%]	8.10
P21.39			0.0 120.0 [%]	100.0 [%]	8.10
P21.40			0.0 150.0 [%]	100.0 [%]	8.10
P21.41			0.0 150.0 [%]	135.0 [%]	
P21.42		[0] [1]	0 1	1	
P21.43			25 1000 [ms]	75 [ms]	
P21.44			25 1000 [ms]	250 [ms]	
P21.45			0.0 100.0 [%]	22.0 [%]	
P21.46			0.0 100.0 [%]	18.0 [%]	
P21.47			0.0 200.0 [%]	92.0 [%]	
P21.48			0.0 200.0 [%]	87.0 [%]	
P21.49			0.0 150.0 [%]	100.0 [%]	
P21.51			0.0 1000.0 [%]	100.0 [%]	
P21.52			0.0 1000.0 [%]	100.0 [%]	
P21.53	Kp		0.0 1000.0 [%]	100.0 [%]	

P21.54	Ki			0.0 1000.0 [%]	100.0 [%]	
P21.55				0.0 1000.0 [%]	100.0 [%]	8.10
P21.56				0.0 1000.0 [%]	100.0 [%]	8.10
P21.57		[0] [1]		0 1	0	8.10
P21.58				0.0 125.0 [%]	100.0 [%]	8.10
P21.59				1.0 25.0 [%]	2.5 [%]	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						

P21.78				0.00	0.00 [mOhm]
P21.79				0.00 [mH]	0.000 [mH]
P21.80	1		1	0.800	1.140
P21.81	2		2	0.800	0.940
P21.82	3		3	0.800	1.080
P21.83	4		4	0.800	0.950
P21.84				0.00 [mH]	0.00 [mH]
P21.85		85%	85%	40.0 [%]	108.0 [%]
P21.86		87.5%	87.5%	40.0 [%]	106.5 [%]
P21.87		90%	90%	40.0 [%]	105.0 [%]
P21.88		92.5%	92.5%	40.0 [%]	103.5 [%]
P21.89		95%	95%	40.0 [%]	102.0 [%]
P21.90	5%	102.	102.5%	40.0 [%]	99.0 [%]
P21.91		105%	105%	40.0 [%]	96.5 [%]
P21.92		110%	110%	40.0 [%]	93.0 [%]
P21.93		115%	115%	40.0 [%]	88.5 [%]
P21.94		120%	120%	40.0 [%]	83.0 [%]
P21.95		125%	125%	40.0 [%]	77.0 [%]
P21.96		130%	130%	40.0 [%]	70.5 [%]
P21.97		135%	135%	40.0 [%]	63.5 [%]
P21.98			( )	0.01 [s]	300.00 [s] 0.75 [s]

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
P22.4	@			0 300	0	
P22.5						

P22.31			0.0 100.0 [%]	5.0 [%]	
P22.32			0.0 100.0 [%]	5.0 [%]	
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 [%]	

P22.77	2		90.0 [%]	110.0 [%]	100.0 [%]
P22.78			0.00 [mOhm]	650.00 [mOhm]	0.00 [mOhm]
P22.79			0.00 [mH]	65.50 [mH]	[illegible] [mH]
P22.80	1	1	0.800	1.350	1.140
P22.81	2	2	0.800		

7.23 4 P23

P23.0		[0] [1]		0 1	0	8.10
P23.1		[0] [1] 1 [2] 2 [3] [4] P23.3 [5]DP [6]MODBUS [7]		0 7	0	8.10
P23.2				0 7	0	
P23.3				-300.0 300.0 [%]	0.0 [%]	8.10
P23.4	@			0 300	0	
P23.5				0 1000 [ms]	0 [ms]	
P23.6				0.0 200.0 [%]	100.0 [%]	8.10
P23.7		[0] [1] P23.8 P23.9 [2]				

P23.14

P23.32			0.0 100.0 [%]	5.0 [%]	
P23.34		[0] [1]	0 1	0	8.10
P23.35			0.0 100.0 [s]	0.0 [s]	
P23.36			50.0 150.0 [%]	110.0 [%]	
P23.37			0.0 150.0 [%]	100.0 [%]	8.10
P23.38			0.0 100.0 [%]	25.0 [%]	8.10
P23.39			0.0 120.0 [%]	100.0 [%]	8.10
P23.40			0.0 150.0 [%]	100.0 [%]	8.10
P23.41			0.0 150.0 [%]	135.0 [%]	
P23.42		[0] [1]	0 1	1	
P23.43			25 1000 [ms]	75 [ms]	
P23.44			25 1000 [ms]	250 [ms]	
P23.45			0.0 100.0 [%]	22.0 [%]	
P23.46			0.0 100.0 [%]	18.0 [%]	
P23.47			0.0 200.0 [%]	92.0 [%]	
P23.48			0.0 200.0 [%]	87.0 [%]	
P23.49			0.0 150.0 [%]	100.0 [%]	
P23.51			0.0 1000.0 [%]	100.0 [%]	
P23.52			0.0 1000.0 [%]	100.0 [%]	
P23.53	= خ		0.0 1000.0 [%]	100.0 [%]	

P23.54	Ki		0.0 1000.0 [%]	100.0 [%]	
P23.55			0.0 1000.0 [%]	100.0 [%]	8.10
P23.56			0.0 1000.0 [%]	100.0 [%]	8.10
P23.57		[0] [1]	0 1	0	8.10
P23.58			0.0 125.0 [%]	100.0 [%]	8.10
P23.59			1.0 25.0 [%]	2.5 [%]	8.10
P23.60	DROOP	0 DROOP	0.0 100.0 [%]	0.0 [%]	8.10
P23.61	DROOP	DROOP	30 2000 [ms]	50 [ms]	8.10
P23.62			0.0 1000.0 [%]	100.0 [%]	8.10
P23.63			0.0 1000.0 [%]	100.0 [%]	8.10
P23.66	1	1	0.0 1000.0 [%]	100.0 [%]	
P23.67	2	2	0.0 1000.0 [%]	100.0 [%]	
P23.69			0.00 2.00 [%]	1.00 [%]	
P23.70			0.00 2.00 [%]	1.00 [%]	
P23.71		[0] [1]	0 1	0	
P23.72		[0] [1]	0 1	1	
P23.73		[0] × 1 [1] × 10	0 1	0	
P23.74			0.00 650.00 [mOhm]	0.00 [mOhm]	
P23.75			0.70 1.00	0.90	
P23.76	1	1	90.0 110.0 [%]	100.0 [%]	
P23.77	2	2	90.0 110.0 [%]	100.0 [%]	

P23.78		0.00	650.

7.24 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
P32.6	Modbus	0- 1-	0 1	0	

7.25 P33

P33.0	Profibus	[0] [1]	0 1	0
P33.1		PLC	1 255	1
P33.2		[0]PPO 1 [1]PPO 2 [2]PPO 5 [3]GUIDE	0 3	2
P33.3			0 16	14
P33.4			0 16	14
P33.5		[0] [1] [2] [3]	0 3	0
P33.6			0 1000 [ms]	50 [ms]
P33.7		[0] [1]	0 1	0
P33.8			0.0 10.0 [s]	3.0 [s]
P33.13	[W0]	7-2	0 37	0
P33.14	[W0]	[0] × 1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 4	0
P33.15	[W1]	7-2	0 37	0
P33.16	[W1]	[0] × [1] × 10 [2] ×		

P33.18
[W2ëW2ëW

P33.31	[W9]	7-2 [0]	0	37	0
P33.32	[W9]				

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

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	

7-3

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

8.

8.1

450kW 900kW 450kW

P2.0

8.2

P12.0 [0] [1]

A. [0]

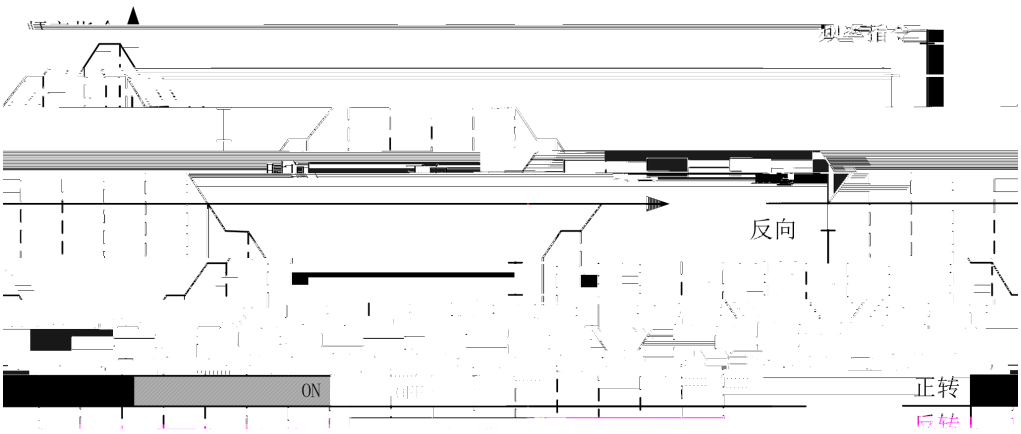
[1] [2] ---1

[6] 1 0 ---2

[7] 2 1 ---3

[8] 3 2 ---4

[9] 4 3 ---5

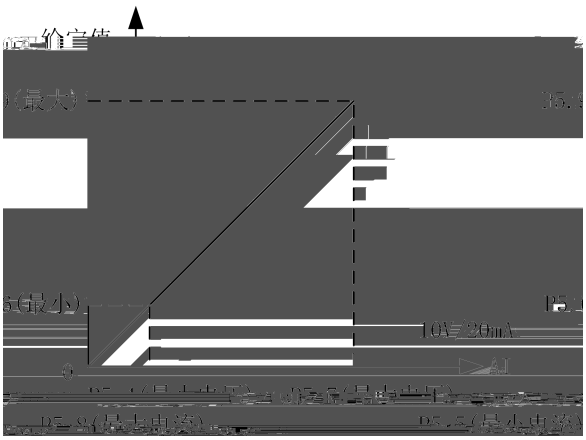


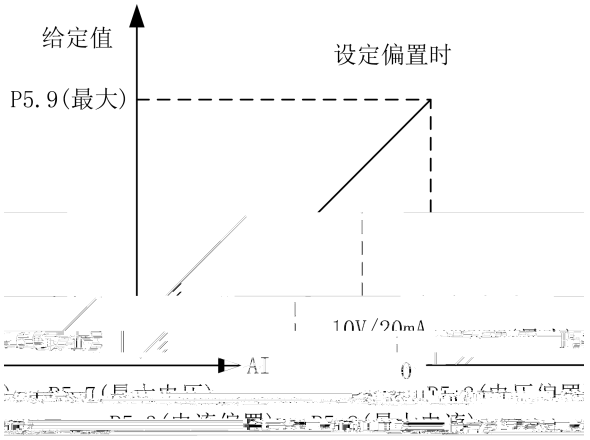
3. [1]

4 16 8421

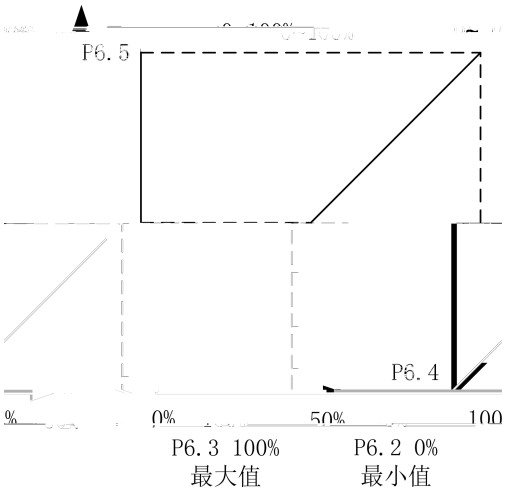
(FORWARD) REVERSE) ″

8.4

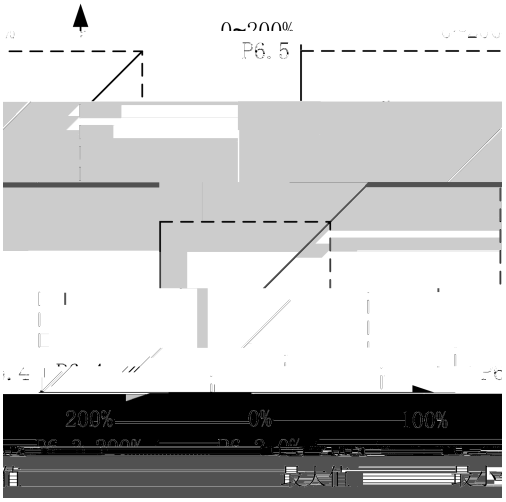




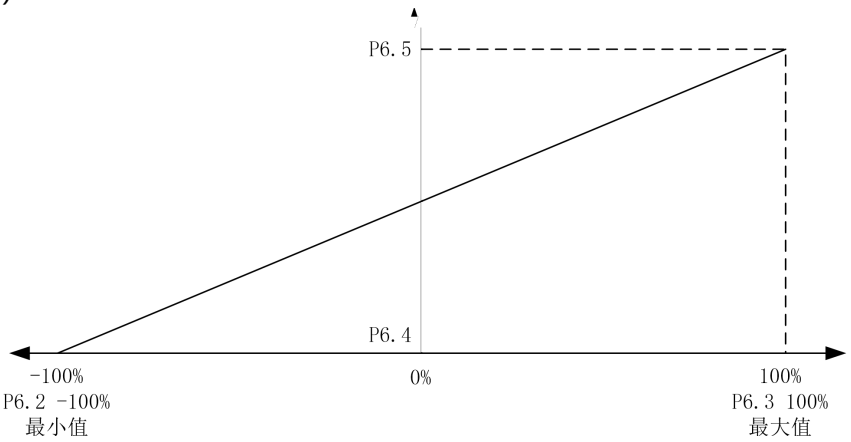
8.5



(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

6

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

P7.19 P7.22

11

P7.64 P7.65 P7.66 HF650LC

30kW

8.7

1

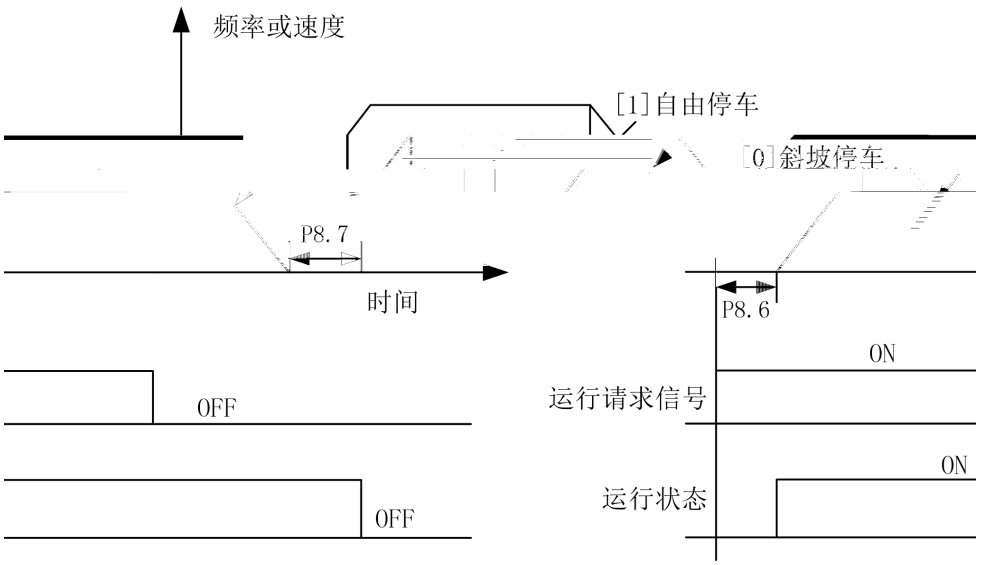
P8.3

[0]

[1]

P8.6 P8.6

P8.7

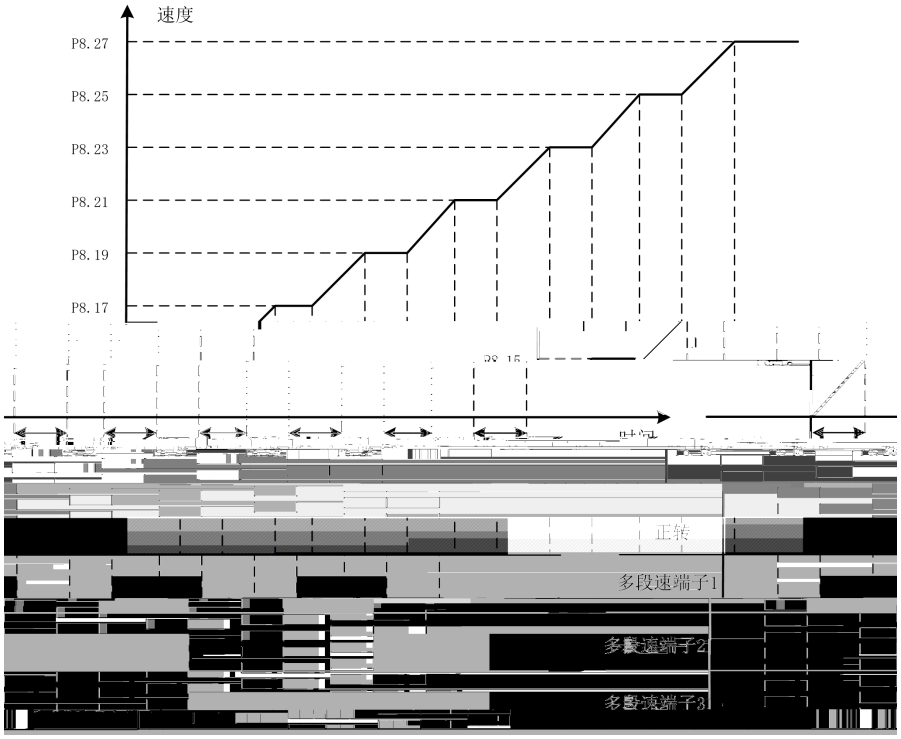


2

P8.14

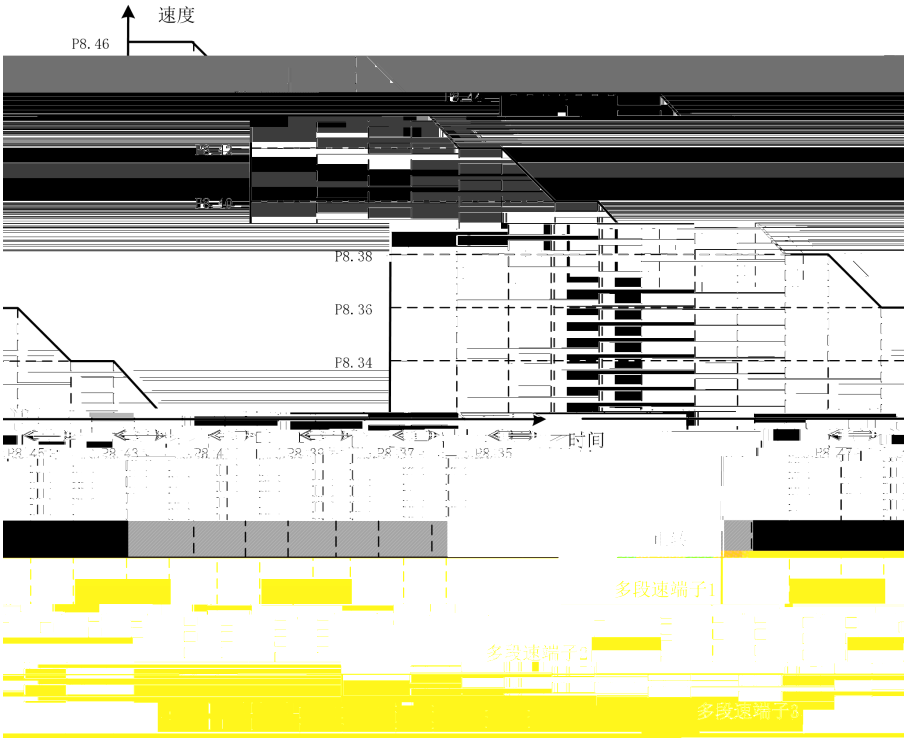
P8.14 P8.33

P8.33



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

P8.15	P8.17	P8.19	P8.21	P8.23	P8.25	P8.27
10%	20%	30%	50%	60%	80%	100%



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

P8.34	P8.36	P8.38	P8.40	P8.42	P8.44	P8.46
10%	20%	30%	50%	60%	80%	100%

3

PROFIBUS MODBUS

P8.13 P8.32

1 =P8.14 × P8.16 × (× 0.001)

1 =P8.33 × P8.35 × (× 0.001)

8.8

1

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 P12.3

8.9 V/F

1

P16.0 P16.9

P16.7 120 × P16.5/P16.6 P16.9

12

P

2

P16.12 đ Ē ő ﻙ đ ѕ ﻙ đ ﻙ ,



3 V/F

P16.14 V/F P16.11=0

[0] V/F

[1] V/F P16.33 P16.45 V/F

[2]

P16.34 P16.45 V/F V/F

V1 V2 V3 F1 F2 F3

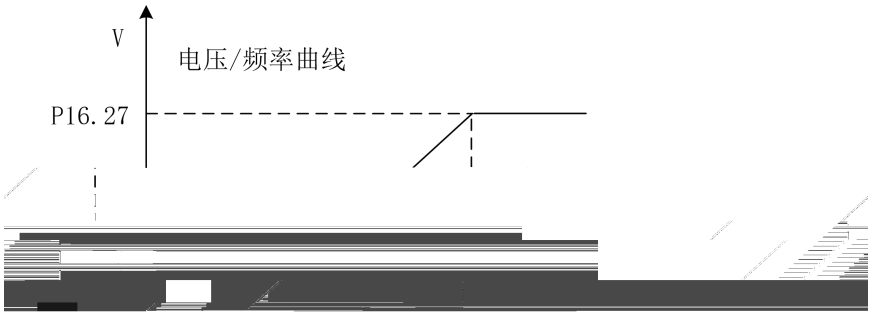
4

P16.15 V/F

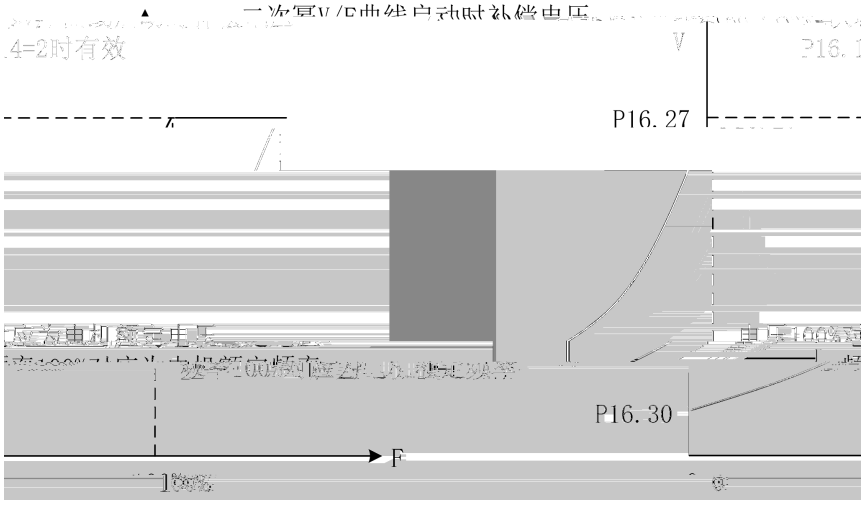
V/F

5

P16.14=[0] V/F V/F P16.26 P16.26 P16.27



P16.14=[2] V/F P16.30 P16.30 P16.27



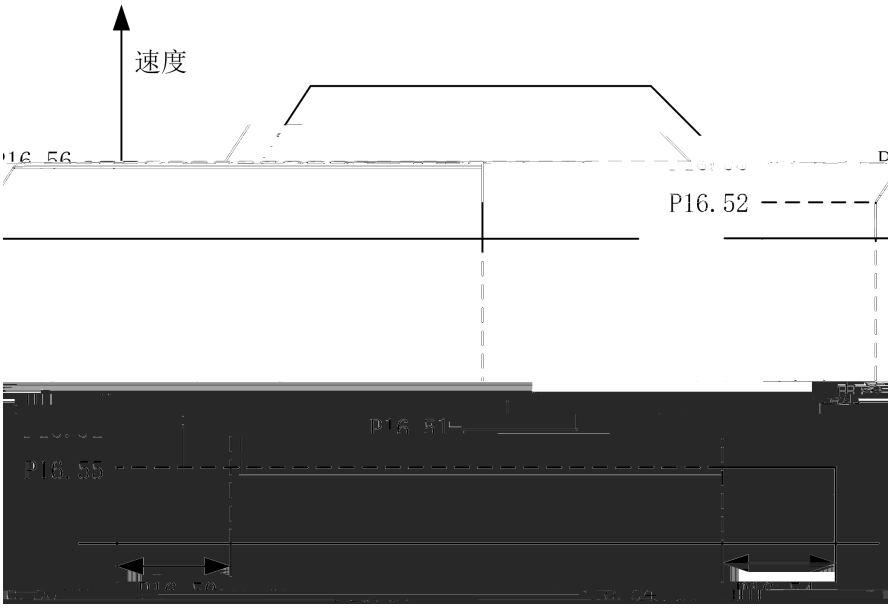
6

P16.50 P16.56

V/F

P16.50 P16.51 P16.52

P16.54 P16.55 P16.56



7

P16.64

2

P20.7

P20.8 P20.9 P20.7=1

3

P20.13

4

P20.15 A B

A B U V W

[0]

[1] A B

5

GDHF-PGD1 PG

GDHF-PGD1 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

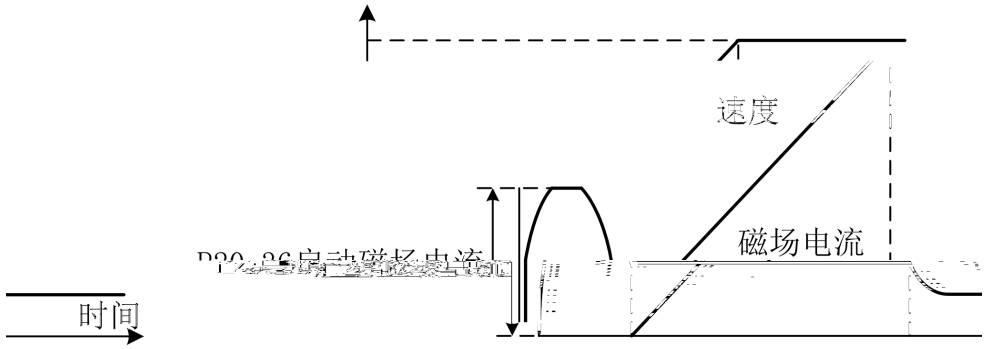
200 P20.26 P20.27 0

HF650LC P20.34 [1]

HF650LC P20.34 [0]

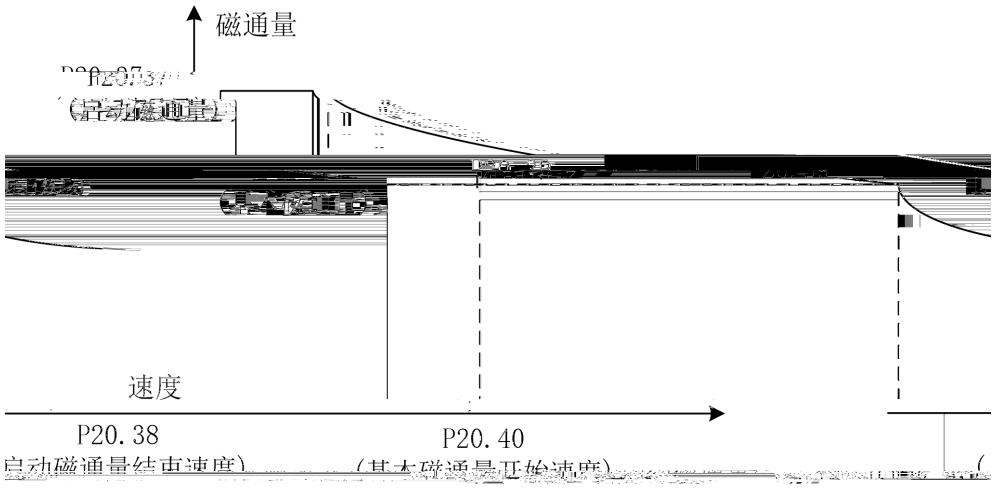
6

P20.36



7

P20.37 P20.40



8

P20.57 P20.58 P20.59 P20.57 1

P20.58

P20.59

9

P20.55 ,

P20.56 ,

9.

9.1

W01 SYS_NOT_RDY (Ready)

W02 NO_DRV_ENABLE [ÕA ¸] P3

W03 LOCAL_EM [ ] P3

W04 REMOTE_EM [ ] P3

W06 OT P7.14( )

W09 DP P/B ALARM DP DP

W1

9.2

[E111]	OL	P7.48(1) P7.49(1) P7.48 P7.49
[E112]	ZC	P7.8
[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]	$YÖG÷ Q“œ TEMP_SENSING FAIL	.ž(!#@ P €u2t• à

[E154]	V IGBT PDP[VB]	IGBT IGBT	
[E155]	W IGBT PDP [WT]	IGBT IGBT	
[E156]	W IGBT PDP [WB]	IGBT IGBT	
[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		

9.3

		• • ON • COM	• • ON • COM
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1. CMOS

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10.1

10.2

	1. 2.	1. > 40 < 95% 2.
	1. 2. 3.	1. 2. 3. 4. 5. 6.
	1. 2. 3.	1. 2. 3.
	1. 2.	1. 2.
	1. 2.	1. 2.

10.3

2

1

2

3

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6

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