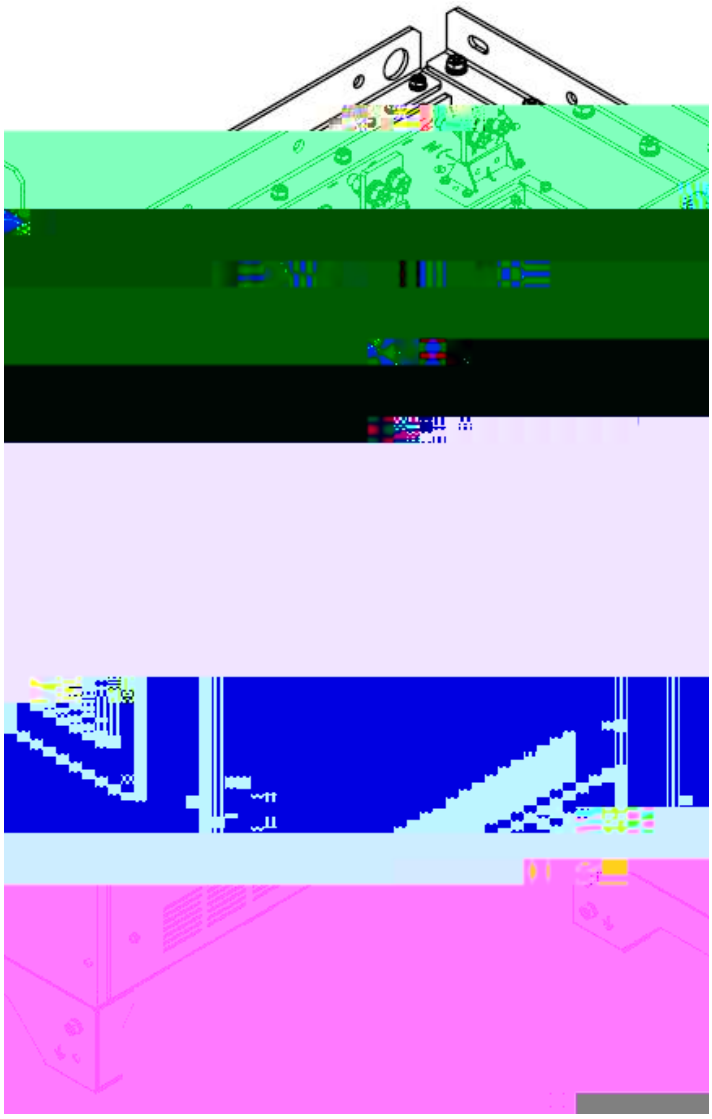
GUIDE



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 ¨ð
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

## 1.2

### 1

RCD

RCM RCD

RCM

B RCD RCD

RCD RCD

### 2

500V

5MΩ

### 3

## 1.3

(1)

(2)

(3)

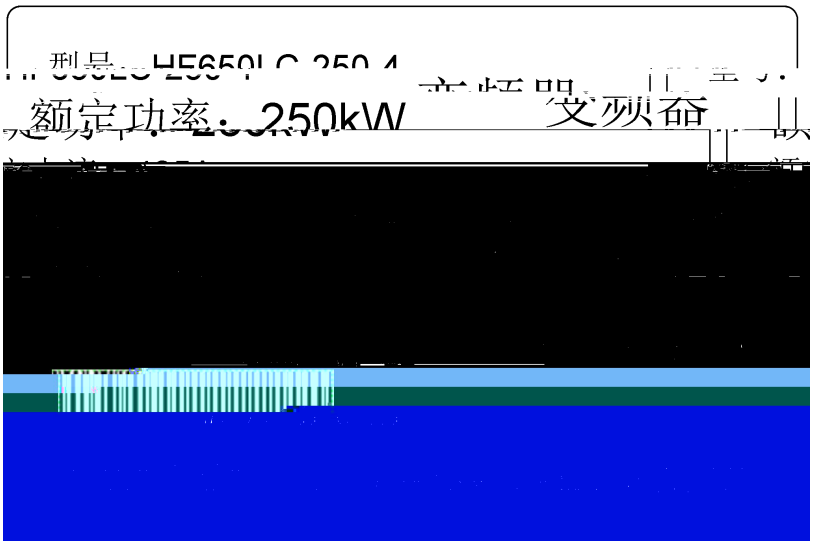
(4)

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

## 1.4

| | |
|---|---|
| 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

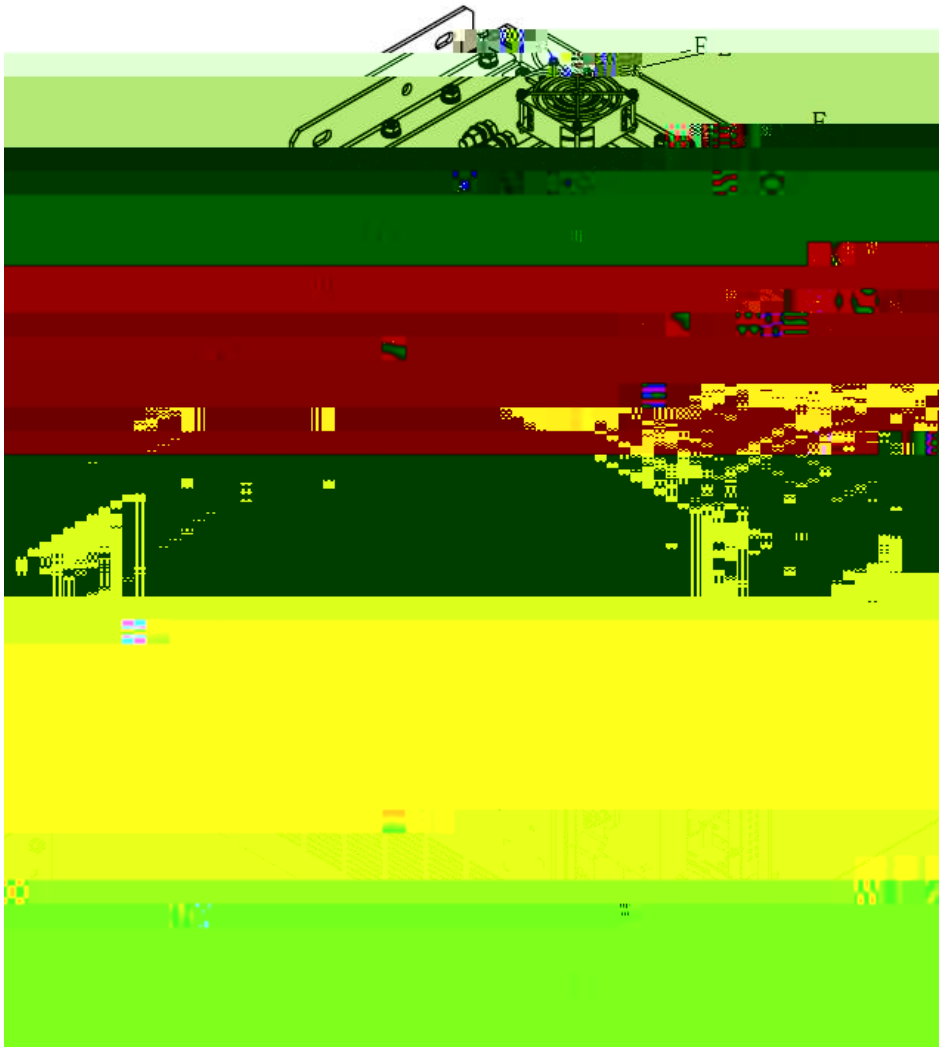
4 HF650LC-160-4-S HF650LC-450-4-S 1

6

## 2.4

HF650LC

### HF650LC-160-4 HF650LC-450-4



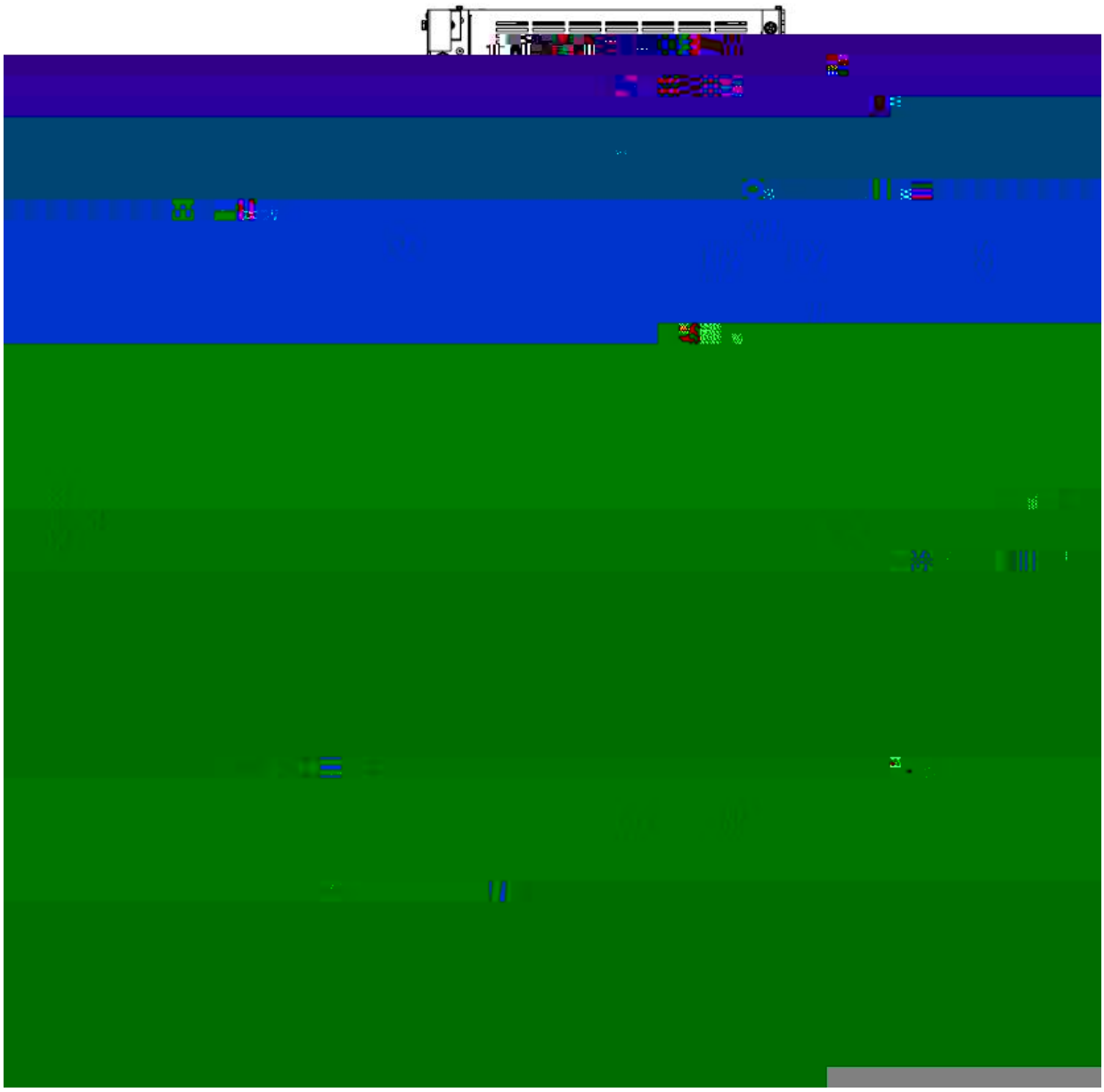
A- B- C- D-

E- 1 F- 2 G-

24° DIN2353-L

/ 18mm M26×1.5

## 2.5

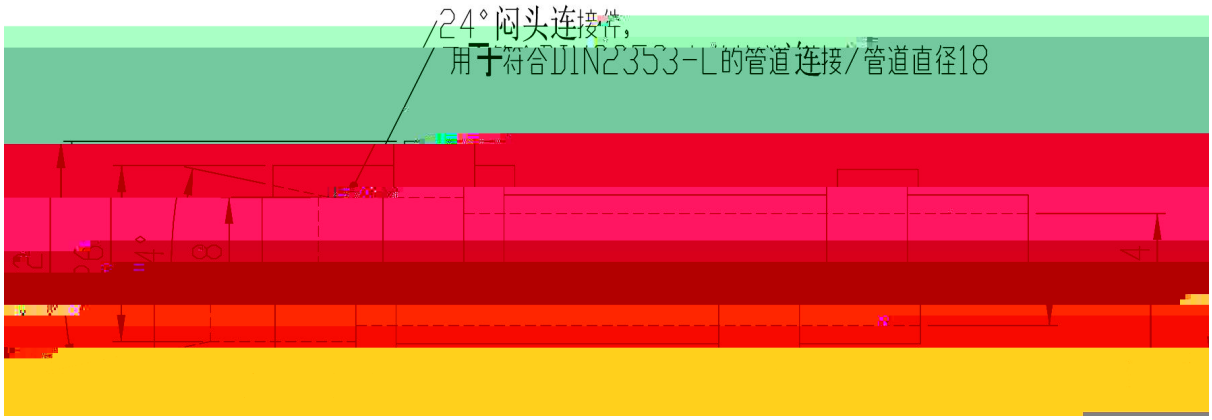


| | | ( mm) | | | ( mm) | | | D | 8.8 | kg |
|---|---|---|---|---|---|---|---|---|---|---|
| | | H1 | W1 | D1 | A | B | C | | | |
| L2 | 160 kW | 815.5 | 335 | 567.5 | 765 | 250 | 275 | Φ13 | M12 | 130 |
| | 185 kW | | | | | | | | | |
| | 220 kW | | | | | | | | | |
| | 250 kW | | | | | | | | | |
| | 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<br>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

# 3.4

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

# 3.

1. / “ ”

   /

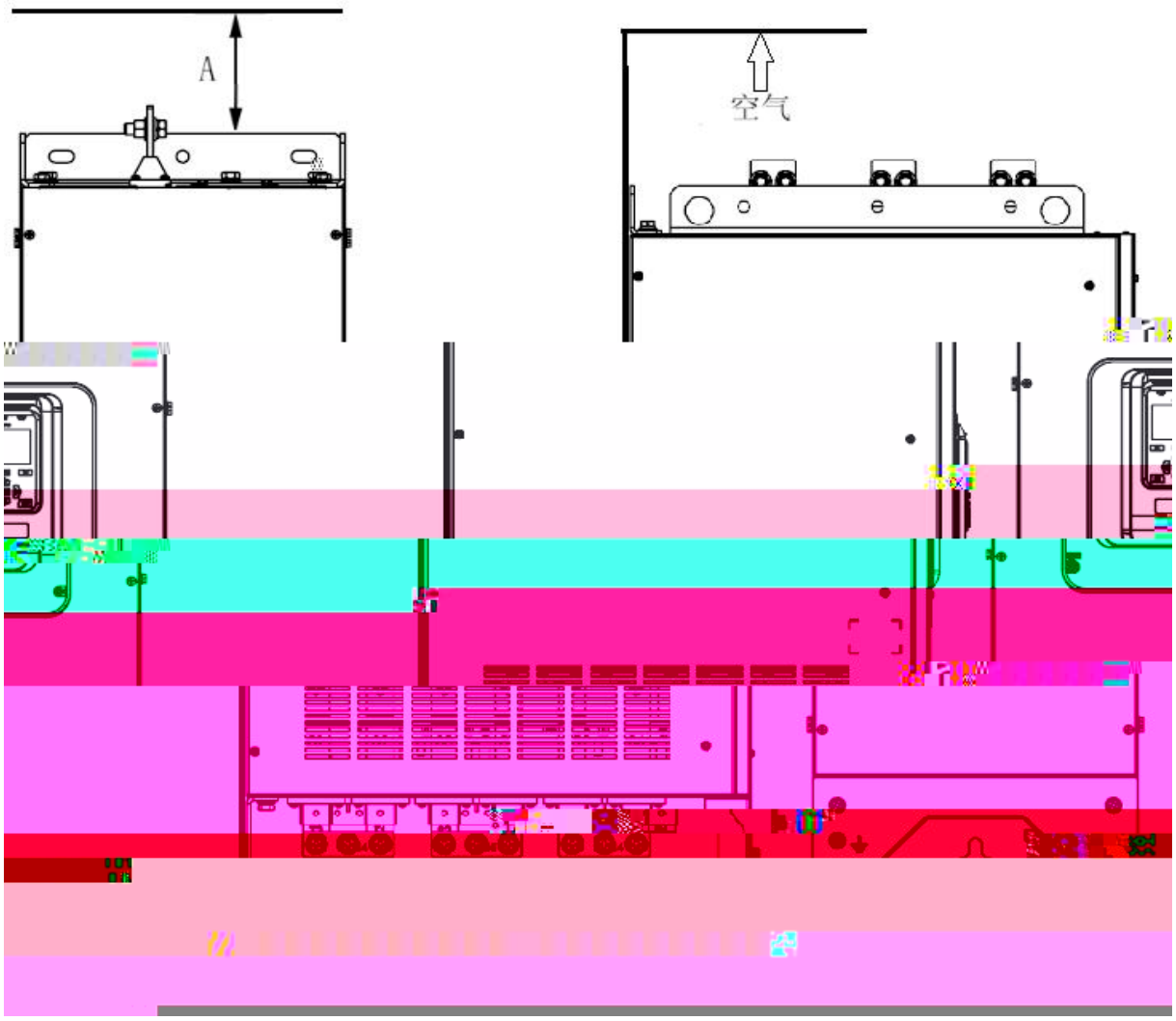
2.
3.

   - R S

## 3.2

- 
- -15 +50 +50 ! +60 1
  ض Ď ذ 1%
- 95%RH
- 
- 
- 
- 
- 
- نم Ď

## 3.3

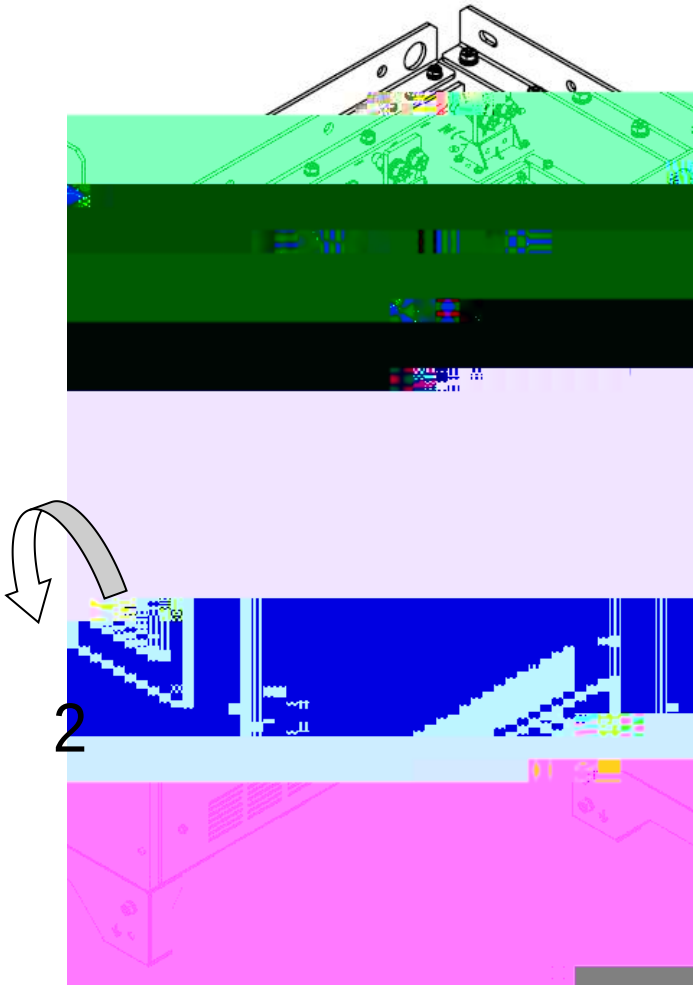



| | |
|---|---|
| | A ≥ 200mm |

## 3.4

1 1 4 5mm

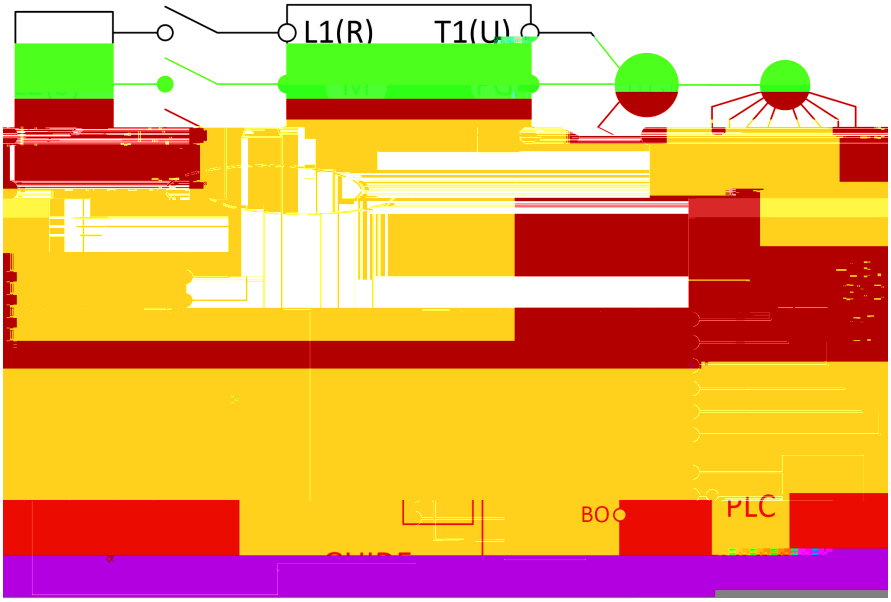
2 2




3-1

m" אל

PGC2




1 PG

2 PG

3 PE

4 PG A- B- Z- GND

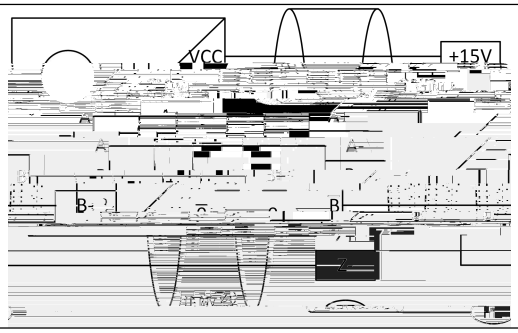
5 PGC2 15V RS-422

PGC1

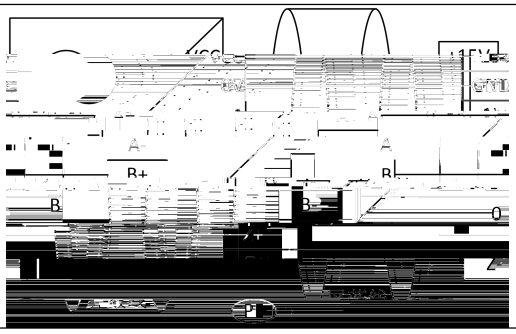
15V

1

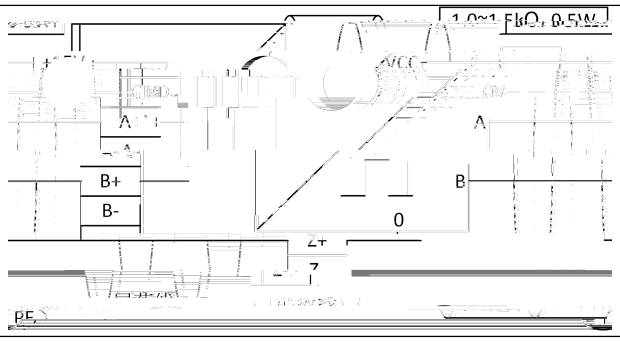
a

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

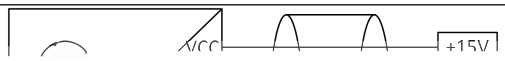
b

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

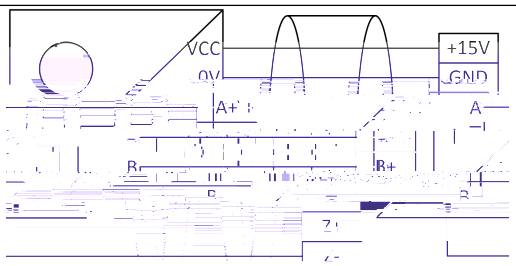
2

| | | |
|---|---|---|
|  | | |
| | | 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.

### 4.1

1

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3 U V W

4

5

6

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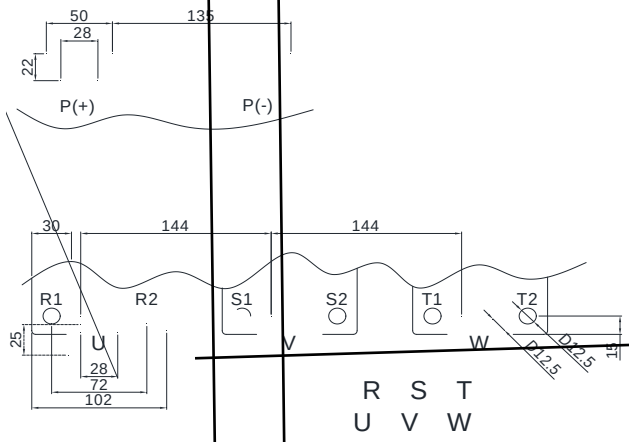
14

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

| | | |

| | | |
|---|---|---|
| 25 | +24V | 24V |
| 26 | DO3 TA | ‡ * 1 € 3 DC24V 50mA |
| 27 | DO4A A | ‡ * 1 € 4 |

250VAC 3A COSϕ=0.4

30VDC / 9

12



| | |
|---|---|
| | |
| | 1<br>2 |
| | |
| | |
| AC | 1<br>2<br>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 | | | |



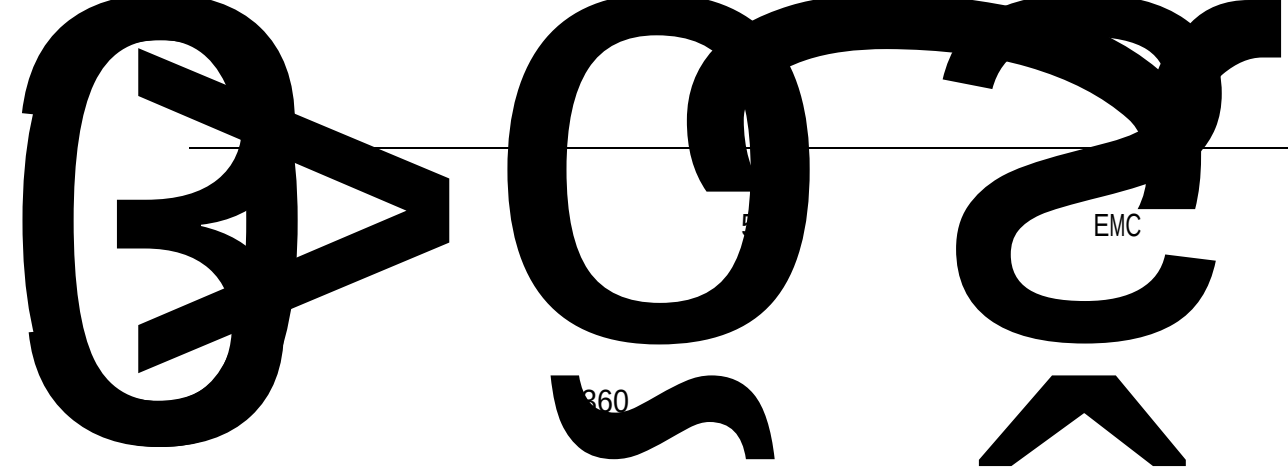
EMC

1 E

EMC ib y

EMC

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b

4

3 1

PLC

20cm

50m

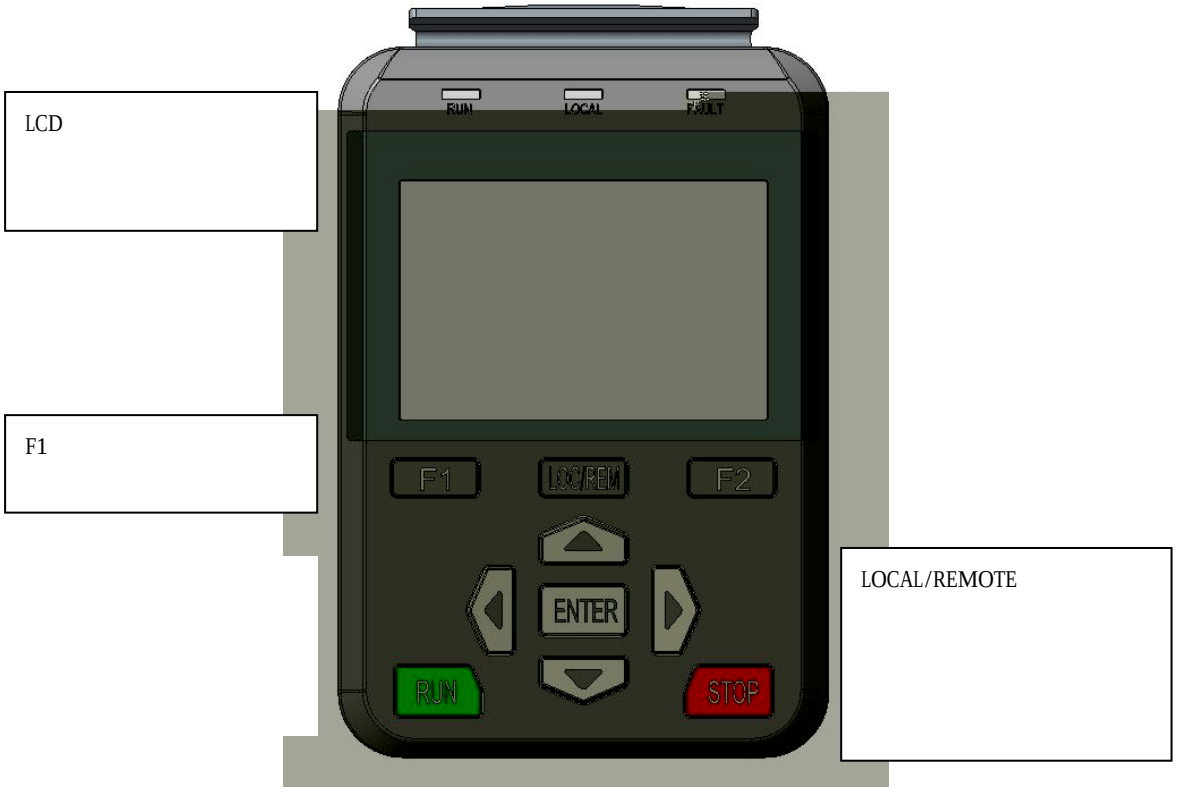
e

# 5.

## 5.1

HF650 F1 LOCAL/REMOTE

F2 RUN STOP /RESET ENTER




## 5.2

▼

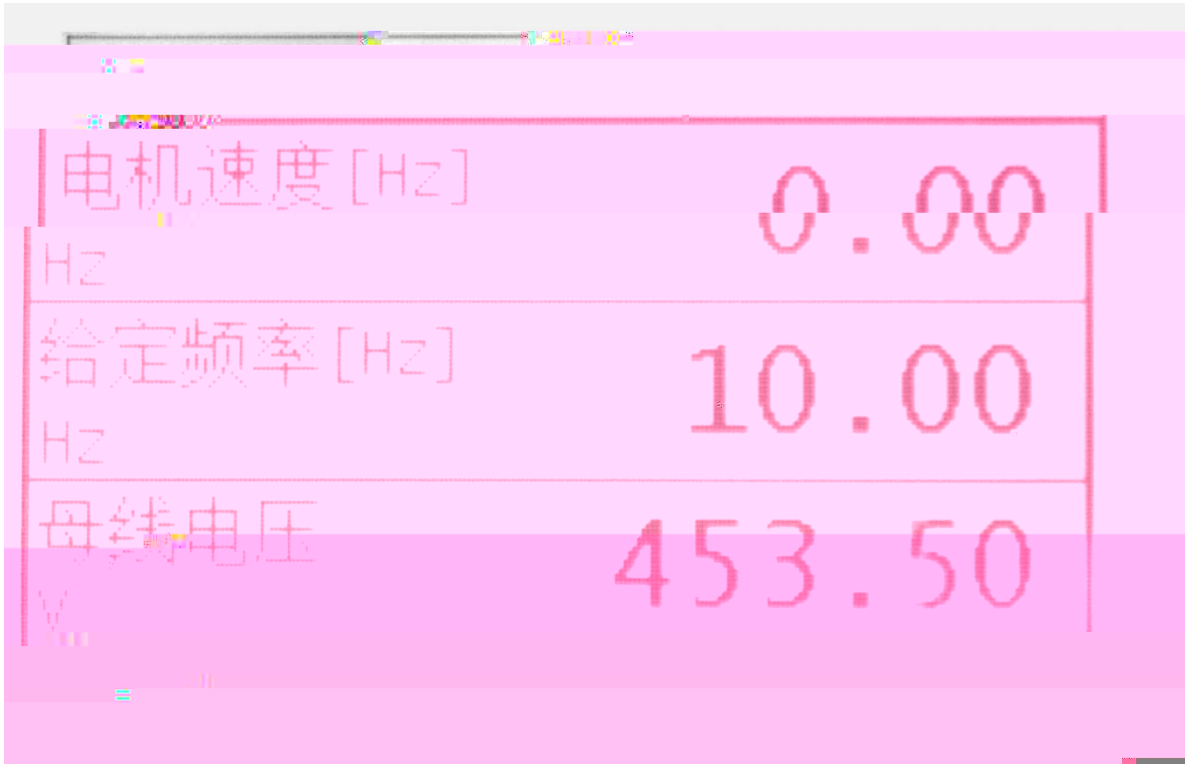
▲

ENTER

RUN STOP

LOCAL/REMOTE /

## 5.3



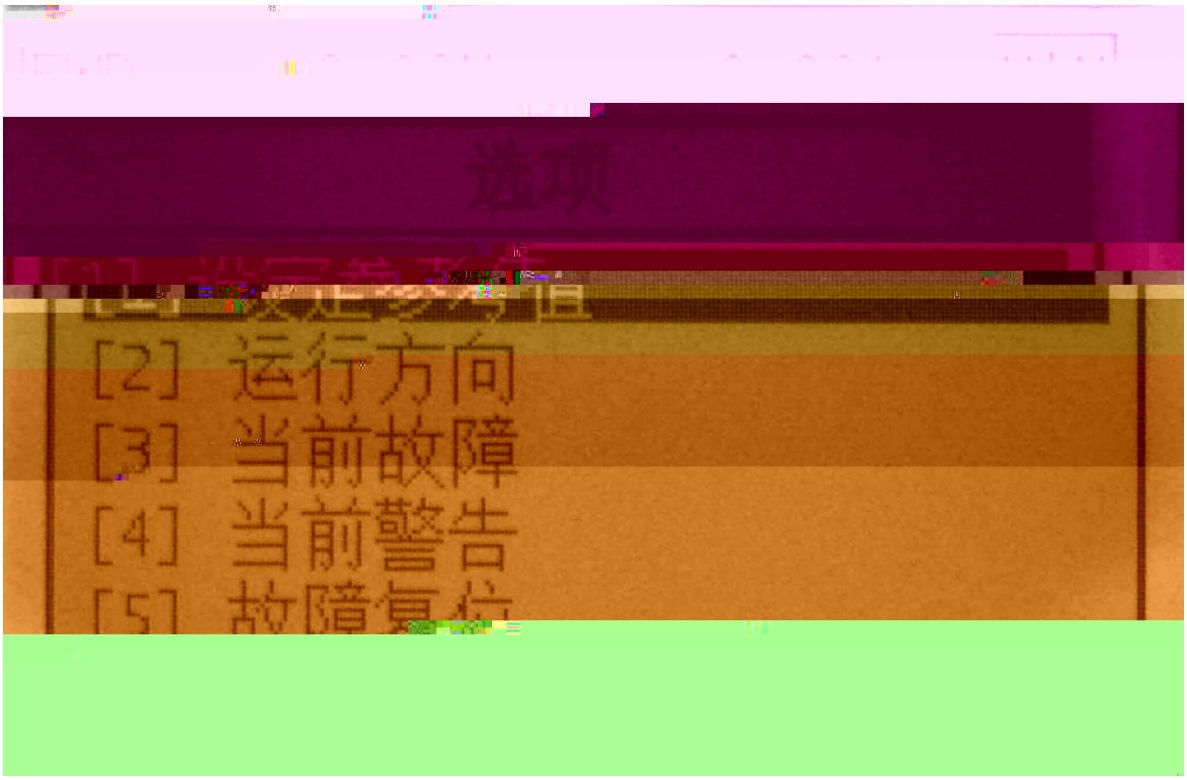

|

| | |
|---|---|
| | |
| | FWD<br>REV |
| | :HZ |
| | A |
| | N\|N<br>W<br>E |

3

F1 F2 “ ” “ ” “ ” “ ” “ ”

ENTER



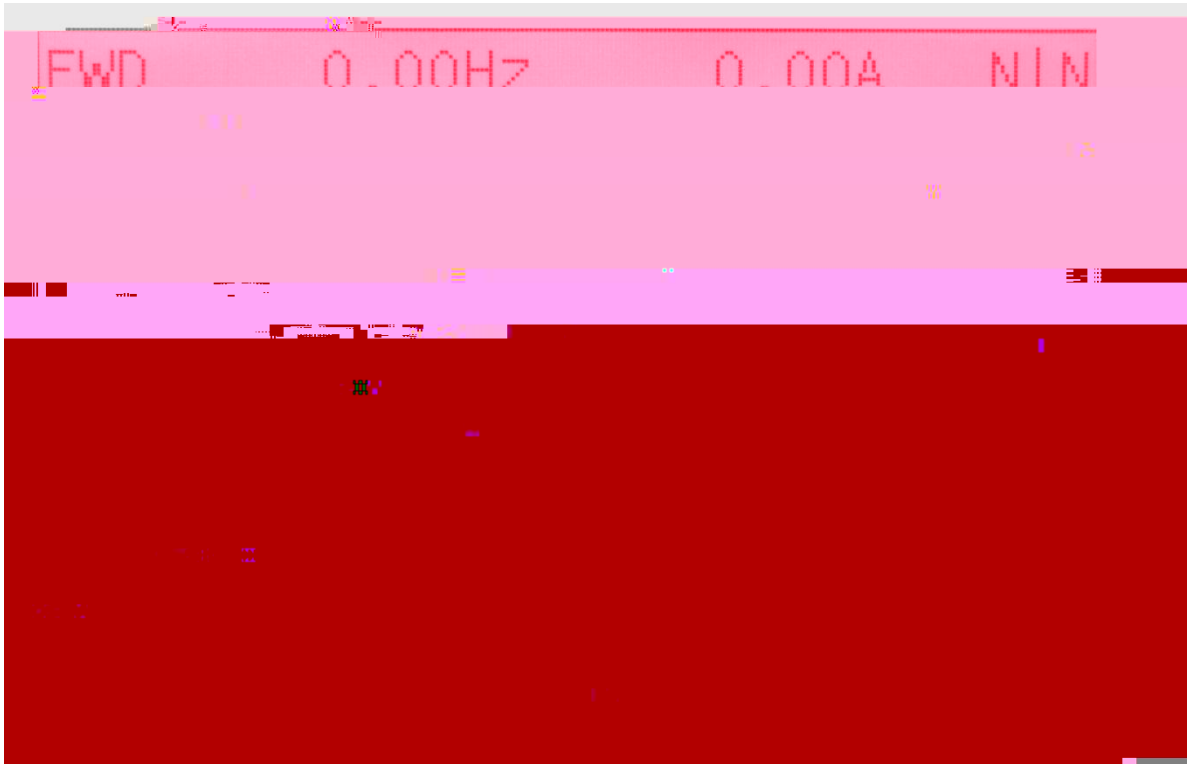

| | | |
|---|---|---|
| | | |
| 1 | Reference Set | |
| 2 | Change Direction | |
| 3 | Current Error | |
| 4 | Current Warnning | |

| | | |
|---|---|---|
| 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 |

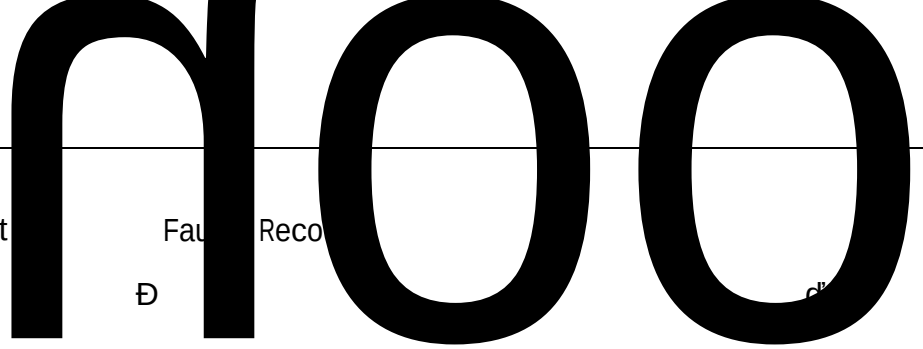
| | | |
|---|---|---|
| 5 | Shortcut Paras Setting | |
| 6 | Parameter Initialization | |
| 7 | Delete Fault Records | |
| 8 | System Restart | |
| 9 | Backup Parameter | |
| 10 | Recover Parameter | |
| 11 | Compare Parameter | |

*1*

*2*

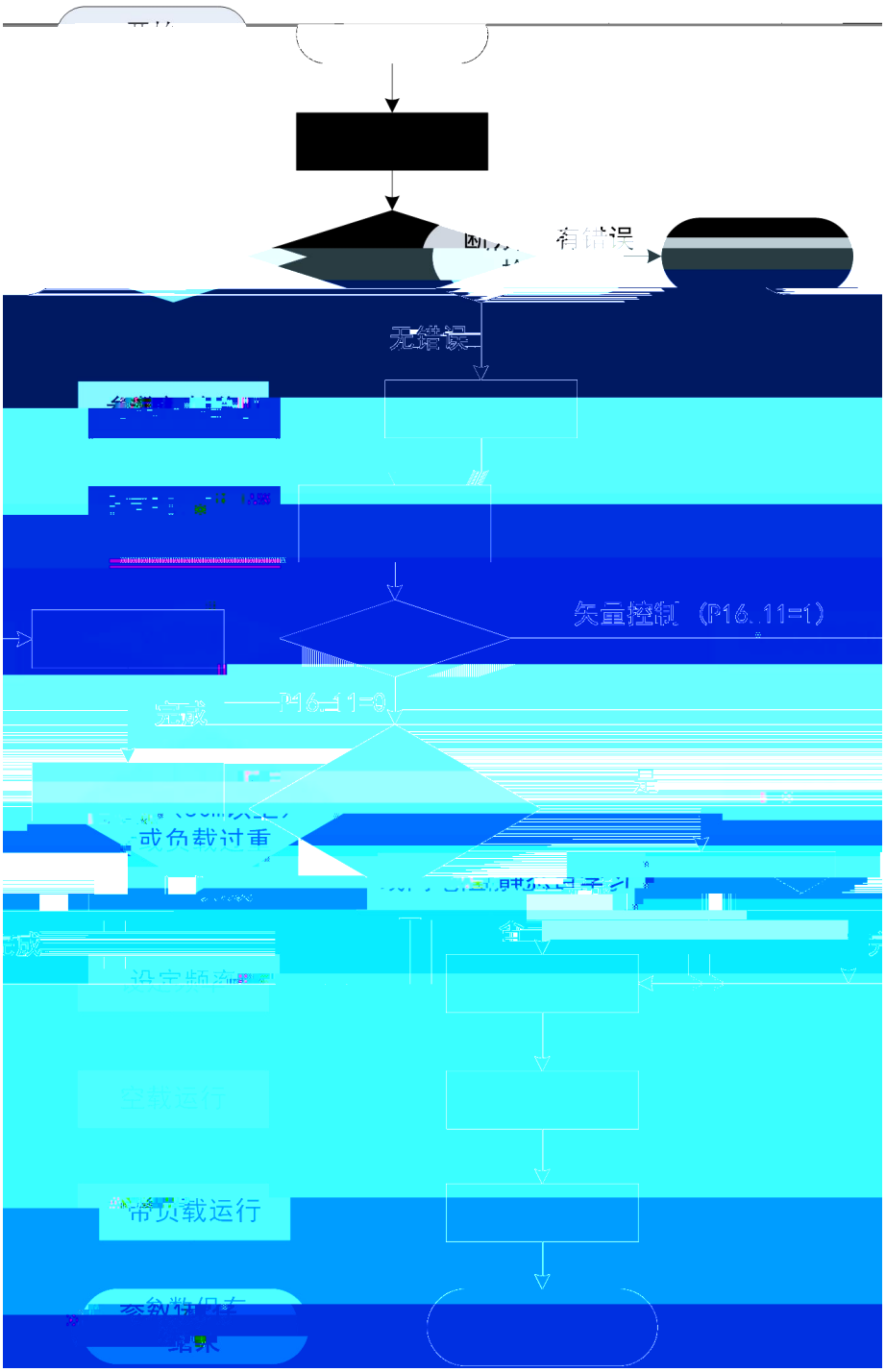
*5*

▼ ▲ “Enter”



# 6.

## 6.1



### 6.2.3

5.4 “ ”

### 6.2.4

7.7

| | | | |
|---|---|---|---|
| P8.0 | | [0]<br>[1]<br>[2]DP<br>[3]MODBUS<br>[4] | 1 |
| P8.3 | | [0]<br>[1] | 1 |
| P8.6 | | 0 300s | 0 |
| P8.7 | | | 0 |
| P8.10 | | [0]I/O<br>[1] 1<br>[2] 2<br>[3]<br>[4]DP<br>[5]MODBUS<br>[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 |

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“

” “ ”

4

50%

P20.98 P20.98

### 6.2.6

HF650LC

| | |
|---|---|
| | |
| | 7.5%<br>50% 50% |
| | 1/5 |
| | P16 |
| | V/F |

6.2.7

# 7.

## 7.1 P1

| | | | | | |
|---|---|---|---|---|---|
| P1.21 | | [0]<br>[1] | 0 1 | 0 | |

## 7.2 P2

| | | | | | |
|---|---|---|---|---|---|
| P2.0 | | [0]<br>[1]<br>[2] | 0 2 | 0 | 8.1 |
| P2.1 | | [0]<br><br>[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<br>1 01 2 10 3 11<br>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]<br>[1]0 +10V<br>[2]-10 +10V<br>[3]0 20mA | 0 3 | 1 | |
| P5.1 | AI1 | AI1 | 0.0 1000.0<br>[ms] | 25.0<br>[ms] | |
| P5.2 | AI1 | AI1 | -10.00 10.00<br>[V] | 0.000<br>[V] | 8.4 |
| P5.3 | AI1 | AI1 | -20.00 20.00<br>[mA] | 0.000<br>[mA] | 8.4 |
| P5.4 | AI1 | AI1 | -10.00 10.00<br>[V] | 0.000<br>[V] | 8.4 |
| P5.5 | AI1 | AI1 | 0.00 20.00<br>[mA] | 0.000<br>[mA] | 8.4 |
| P5.6 | AI1 | AI1 | -300.0 300.0<br>[%] | 0.0<br>[%] | 8.4 |
| P5.7 | AI1 | AI1 | -10.00 10.00<br>[V] | 10.000<br>[V] | 8.4 |
| P5.8 | AI1 | AI1 | 0.00 20.00<br>[mA] | 20.000<br>[mA] | 8.4 |
| P5.9 | AI1 | AI1 | -300.0 300.0<br>[%] | 100.0<br>[%] | 8.4 |
| P5.18 | AI2 | [0]<br>[1]0 +10V<br>[2]-10 +10V<br>[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]<br>[1]PROFIBUS<br>[2]MODBUS<br>[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]<br>[1] | 0 1 | 0 | |
| P8.56 | | | 0.00 300.00 [s] | 3.00 [s] | |
| P8.57 | | [0]<br>[1] | 0 1 | 1 | |
| P8.58 | | | 0.00 300.00 [s] | 1.50 [s] | |

## 7.9 2 P9

| | | | | | |
|---|---|---|---|---|---|
| P9.0 | [0]<br>[1]<br>[2]DP<br>[3]MODBUS<br>[4] | 0 | 4 | 0 | |
| P9.1 | | | | | |
| P9.2 | | | | | |
| P9.3 | [0]<br>[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.

[s]

P9.0 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]<br>[1]<br>[2]DP<br>[3]MODBUS<br>[4] | 0 4 | 0 | |
| P11.1 | | | | | |
| P11.2 | | | | | |
| P11.3 | | [0]<br>[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<br>[1] 1<br>[2] 2<br>[3]<br>[4]DP<br>[5]MODBUS<br>[6] | 0 6 | 0 | |
| P11.11 | | | | | |
| P11.13 | | [0]<br>[1]PROFIBUS<br>[2]MODBUS<br>[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]<br>[1]PROFIBUS<br>[2]MODBUS<br>[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 | Ó | ł | | | | | |

00 ' ш „

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]<br>[1] | 0 | 1 | 1 | 8.8 |
| P13.1 | | [0][%]<br>[1][Hz]<br>[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 | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 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]<br>[1] | 0 | 1 | 1 | 8.8 |
| P14.1 | | [0][%]<br>[1][Hz]<br>[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]<br>[1] | 0 | 1 | 1 | 8.8 |
| P15.1 | | [0][%]<br>[1][Hz]<br>[2][rpm] | 0 | 2 | 1 | |
| P15.2 | 1 | | 0.0 | 3000.0 | 10.0 | |
| P15.3 | | | | | | |

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

## 7.16 1 V/F P16

| | | | | |
|---|---|---|---|---|
| P16.0 | | 320 460<br>[V] | 380<br>[V] | |
| P16.2 | | 0.0 4000.0<br>[kW] | [kW] | |
| P16.3 | | 320 460<br>[V] | 380<br>[V] | |
| P16.4 | | 0.0 6500.0<br>[A] | [A] | |
| P16.5 | | 0.0 300.0<br>[Hz] | 50.0<br>[Hz] | |
| P16.6 | | 0 6000<br>[rpm] | 1465<br>[rpm] | |
| P16.7 | | 2 12<br>[pole] | 4<br>[pole] | 8.9 |
| P16.9 | | 0 7200<br>[rpm] | 1500<br>[rpm] | 8.9 |
| P16.11 | [0]V/F<br>[1]<br>[2]<br>[3]<br>[4] | 0 4 | 0 | |
| P16.12 | | 1.00 10.00<br>[kHz] | 3.00<br>[kHz] | 8.9 |
| P16.14 V/F | [0] V/F<br>[1] V/F<br>[2] | 0 3 | 0 | 8.9 |
| P16.15 | [0]<br>[1] | 0 1 | 0 | 8.9 |
| P16.16 | | 2 500<br>[ms] | 500<br>[ms] | |
| P16.17 V/F | [0]<br>[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]<br>[1]PID 1<br>[2]PID 2<br>[3] | 0 3 | 0 | |
| P16.49 | @ | 0 300 | 0 | |
| P16.50 | | 0.00 300.00<br>[s] | 0.00<br>[s] | 8.9 |
| P16.51 | | 0.0 150.0<br>[%] | 70.0<br>[%] | 8.9 |
| P16.52 | | 0.00 5.00<br>[Hz] | 0.00<br>[Hz] | 8.9 |
| P16.54 | | 0.00 300.00<br>[s] | 0.00<br>[s] | 8.9 |
| P16.55 | | 0.0 150.0<br>[%] | ;.5Đ | |

## 7.17 2 V/F P17

| | | | | | |
|---|---|---|---|---|---|
| P17.0 | | | 320 460<br>[V] | 380<br>[V] | |
| P17.2 | | | 0.0 4000.0<br>[kW] | <br>[kW] | |
| P17.3 | | | 320 460<br>[V] | 380<br>[V] | |
| P17.4 | | | 0.0 6500.0<br>[A] | <br>[A] | |
| P17.5 | | | 0.0 300.0<br>[Hz] | 50.0<br>[Hz] | |
| P17.6 | | | 0 6000<br>[rpm] | 1465<br>[rpm] | |
| P17.7 | | | 2 12<br>[pole] | 4<br>[pole] | 8.9 |
| P17.9 | | | 0 7200<br>[rpm] | 1500<br>[rpm] | 8.9 |
| P17.11 | | [0]V/F<br>[1]<br>[2]<br>[3]<br>[4] | 0 4 | 0 | |
| P17.12 | | | 1.00 10.00<br>[kHz] | 3.00<br>[kHz] | 8.9 |
| P17.14 | V/F | [0] V/F<br>[1] V/F<br>[2] | 0 3 | 0 | 8.9 |
| P17.15 | | [0]<br>[1] | 0 1 | 0 | 8.9 |
| P17.16 | | | 2 500<br>[ms] | 500<br>[ms] | |
| P17.17 | V/F | [0]<br>[1] | 0 1 | 0 | |
| P17.18 | | | 10 1000<br>[ms] | 200<br>[ms] | |
| P17.19 | | [0]<br>[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]<br>[1]PID 1<br>[2]PID 2<br>[3] | 0 3 | 0 | |
| P17.49 | @ | | 0 300 | 0 | |
| P17.50 | | | 0.00 300.00<br>[s] | 0.00<br>[s] | 8.9 |
| P17.51 | | | 0.0 150.0<br>[%] | 70.0<br>[%] | 8.9 |
| P17.52 | | | 0.00 5.00<br>[Hz] | 0.00<br>[Hz] | 8.9 |
| P17.54 | | | 0.00 300.00<br>[s] | 0.00<br>[s] | 8.9 |
| P17.55 | | | 0.0 150.0<br>[%] | 75.0<br>[%] | 8.9 |
| P17.56 | | | 0.00 5.00<br>[Hz] | 0.00<br>[Hz] | 8.9 |
| P17.59 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.60 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.61 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.62 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.64 | V/F | V/F | 0.0 1000.0<br>[%] | 100.0<br>[%] | 8.9 |
| P17.66 | | V/F | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.67 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.68 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.69 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |
| P17.70 | | | 0.0 1000.0<br>[%] | 100.0<br>[%] | |

## 7.18 3 V/F P18

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

| | | |
|---|---|---|
| P18.22 | 0.00 100.00 [s] | |

| | | | | | |
|---|---|---|---|---|---|
| P18.48 | | [0]<br>[1]PID 1<br>[2]PID 2<br>[3] | 0 3 | 0 | |
| P18.49 | @ | | 0 300 | 0 | |
| P18.50 | | | 0.00 300.00<br>[s] | 0.00<br>[s] | 8.9 |
| P18.51 | | | 0.0 150.0<br>[%] | 70.0<br>[%] | 8.9 |
| P18.5 | | | | | |

## 7.19 4 V/F P19

| | | | | | |
|---|---|---|---|---|---|
| P19.0 | | | 320 460<br>[V] | 380<br>[V] | |
| P19.2 | | | 0.0 4000.0<br>[kW] | <br>[kW] | |
| P19.3 | | | 320 460<br>[V] | 380<br>[V] | |
| P19.4 | | | 0.0 6500.0<br>[A] | <br>[A] | |
| P19.5 | | | 0.0 300.0<br>[Hz] | 50.0<br>[Hz] | |
| P19.6 | | | 0 6000<br>[rpm] | 1465<br>[rpm] | |
| P19.7 | | | 2 12<br>[pole] | 4<br>[pole] | 8.9 |
| P19.9 | | | 0 7200<br>[rpm] | 1500<br>[rpm] | 8.9 |
| P19.11 | | [0]V/F<br>[1]<br>[2]<br>[3]<br>[4] | 0 4 | 0 | |
| P19.12 | | | 1.00 10.00<br>[kHz] | 3.00<br>[kHz] | 8.9 |
| P19.14 | V/F | [0] V/F<br>[1] V/F<br>[2] | 0 3 | 0 | 8.9 |
| P19.15 | | [0]<br>[1] | 0 1 | 0 | 8.9 |
| P19.16 | | | 2 500<br>[ms] | 500<br>[ms] | |
| P19.17 | V/F | [0]<br>[1] | 0 1 | 0 | |
| P19.18 | | | 10 1000<br>[ms] | 200<br>[ms] | |
| P19.19 | | [0]<br>[1] | 0 1 | 0 | |

7.20 1 P20

| | | | | | |
|---|---|---|---|---|---|
| P20.31 | | | 0.0 100.0 [%] | 5.0 [%] | |
| P20.32 | | | 0.0 100.0 [%] | 5.0 [%] | |
| P20.34 | | [0]<br>[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]<br>[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]<br>[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]<br>[1] | | | | 0 1 | 0 | |
| P20.72 | | [0]<br>[1] | | | | 0 1 | 1 | |
| P20.73 | | [0] × 1<br>[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]<br>[1] | | 0 1 | 0 | 8.10 |
| P21.1 | | [0]<br>[1]<br>[2]<br>[3]<br>[4]<br>[5]DP<br>[6]MODBUS<br>[7] | 1<br>2<br>P21.3 | 0 7 | 0 | 8.10 |
| P21.2 | | | | 0 7 | 0 | |
| P21.3 | | | | -300.0 300.0<br>[%] | 0.0<br>[%] | 8.10 |
| P21.4 | @ | | | 0 300 | 0 | |
| P21.5 | | | | 0 1000<br>[ms] | 0<br>[ms] | |
| P21.6 | | | | 0.0 200.0<br>[%] | 100.0<br>[%] | 8.10 |
| P21.7 | | [0]<br>[1]<br>P21.9<br>[2]<br>[3]<br>[4]<br>[5]DP<br>[6]MODBUS<br>[7] | P21.8<br>1<br>2 | 0 7 | 0 | 8.10 |
| P21.8 | | P21.7 [1] | | 0.0 300.0<br>[%] | 200.0<br>[%] | 8.10 |
| P21.9 | | P21.7 [1] | | 0.0 300.0<br>[%] | 200.0<br>[%] | 8.10 |
| P21.10 | | | | 0 300 | 0 | |
| P21.11 | | | | 0 1000<br>[ms] | 0<br>[ms] | |
| P21.13 | | | | 20.0 500.0<br>[ms] | 100.0<br>[ms] | 8.10 |

| | | | | | |
|---|---|---|---|---|---|
| P21.32 | | | 0.0 100.0 [%] | 5.0 [%] | |
| P21.34 | | [0]<br>[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]<br>[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]<br>[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 | 655.00 [mOhm] 0.00 [mOhm] |
| P21.79 | | | | 0.00 | 65.50 [mH] 0.000 [mH] |
| P21.80 | 1 | | 1 | 0.800 | 1.350 1.140 |
| P21.81 | 2 | | 2 | 0.800 | 1.350 0.940 |
| P21.82 | 3 | | 3 | 0.800 | 1.350 1.080 |
| P21.83 | 4 | | 4 | 0.800 | 1.350 0.950 |
| P21.84 | | | | 0.00 | 655.00 [mH] 0.00 [mH] |
| P21.85 | | 85% | 85% | 40.0 | 150.0 [%] 108.0 [%] |
| P21.86 | | 87.5% | 87.5% | 40.0 | 150.0 [%] 106.5 [%] |
| P21.87 | | 90% | 90% | 40.0 | 150.0 [%] 105.0 [%] |
| P21.88 | | 92.5% | 92.5% | 40.0 | 150.0 [%] 103.5 [%] |
| P21.89 | | 95% | 95% | 40.0 | 150.0 [%] 102.0 [%] |
| P21.90 | 5% | 102. | 102.5% | 40.0 | 150.0 [%] 99.0 [%] |
| P21.91 | | 105% | 105% | 40.0 | 150.0 [%] 96.5 [%] |
| P21.92 | | 110% | 110% | 40.0 | 150.0 [%] 93.0 [%] |
| P21.93 | | 115% | 115% | 40.0 | 150.0 [%] 88.5 [%] |
| P21.94 | | 120% | 120% | 40.0 | 150.0 [%] 83.0 [%] |
| P21.95 | | 125% | 125% | 40.0 | 150.0 [%] 77.0 [%] |
| P21.96 | | 130% | 130% | 40.0 | 150.0 [%] 70.5 [%] |
| P21.97 | | 135% | 135% | 40.0 | 150.0 [%] 63.5 [%] |
| P21.98 | | | ( ) | 0.01 | 300.00 [s] 0.75 [s] |

## 7.22 3 P22

| | | | | | |
|---|---|---|---|---|---|
| P22.0 | [0]<br>[1] | | 0 1 | 0 | 8.10 |
| P22.1 | [0]<br>[1] 1<br>[2] 2<br>[3]<br>[4] P22.3<br>[5]DP<br>[6]MODBUS<br>[7] | | 0 7 | 0 | 8.10 |
| P22.2 | | | 0 7 | 0 | |
| P22.3 | | | -300.0 300.0<br>[%] | 0.0<br>[%] | 8.10 |
| P22.4 | @ | | 0 300 | 0 | |
| P22.5 | | | | | |
| | | | [ | 0 | |

| | | | | | |
|---|---|---|---|---|---|
| P22.31 | | | 0.0 100.0 [%] | 5.0 [%] | |
| P22.32 | | | 0.0 100.0 [%] | 5.0 [%] | |
| P22.34 | | [0]<br>[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]<br>[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]<br>[1] | | 0 1 | 0 | 8.10 |
| P23.1 | | [0]<br>[1] 1<br>[2] 2<br>[3]<br>[4] P23.3<br>[5]DP<br>[6]MODBUS<br>[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]<br>[1] P23.8<br>P23.9<br>[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]<br>[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]<br>[1] | 0 1 | 0 | |
| P23.72 | | [0]<br>[1] | 0 1 | 1 | |
| P23.73 | | [0] × 1<br>[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]<br>[1] | 0 1 | 0 | |
| P32.1 | MODBUS ID | | 1 255 | 1 | |
| P32.2 | | [0]RS485<br>[1]RS232 | 0 1 | 0 | |
| P32.3 | | [0] 9600 BPS<br>[1] 14400 BPS<br>[2] 19200 BPS<br>[3] 38400 BPS<br>[4] 56000 BPS<br>[5] 57600 BPS<br>[6] 115200 BPS | 0 6 | 3 | |
| P32.4 | | [0] None_8_1_CFG<br>[1] Even_8_1_CFG<br>[2] Odd_8_1_CFG<br>[3] None_8_2_CFG<br>[4] Even_8_2_CFG<br>[5] Odd_8_2_CFG | 0 5 | 0 | |
| P32.5 | Modbus | Modbus<br>0<br>Modbus | 0 100<br>[s] | 0<br>[s] | 0s |
| P32.6 | Modbus | 0- 1- | 0 1 | 0 | |

## 7.25 P33

| | | | | | |
|---|---|---|---|---|---|
| P33.0 | Profibus | | [0]<br>[1] | 0 1 | 0 |
| P33.1 | | | PLC | 1 255 | 1 |
| P33.2 | ÉÏÁÍÍÉÑÉÅÉÅÔ ÁÄ | >: ıb ∩„ | [0]PPO 1<br>[1]PPO 2<br>[2]PPO 5<br>[3]GUIDE | 0 3 | 2 |
| P33.3 | | | | 0 16 | 14 |
| P33.4 | | | | 0 16 | 14 |
| P33.5 | | | [0]<br>[1]<br>[2]<br>[3] | 0 3 | 0 |
| P33.6 | | | | 0 1000<br>[ms] | 50<br>[ms] |
| P33.7 | | | [0]<br>[1] | 0 1 | 0 |
| P33.8 | | | | 0.0 10.0<br>[s] | 3.0<br>[s] |
| P33.13 | | [W0] | 7-2 | 0 37 | 0 |
| P33.14 | [W0] | | [0] × 1<br>[1] × 10<br>[2] × 100<br>[3] × 1000<br>[4] k 10000 | 0 4 | 0 |
| P33.15 | | [W1] | 7-2 | 0 37 | 0 |
| P33.16 | [W1] | | [0] ×<br>[1] × 10<br>[2] × | | |

P33.18
[W2ëW2ëW

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

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

| | | | |
|---|---|---|---|
| P33.62 | [W8] | [0] × 1<br>[1] × 10<br>[2] × 100<br>[3] × 1000<br>[4] × 10000<br>[5] [%] × 1<br>[6] [%] × 10<br>[7] [%] × 100 | 0 |

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

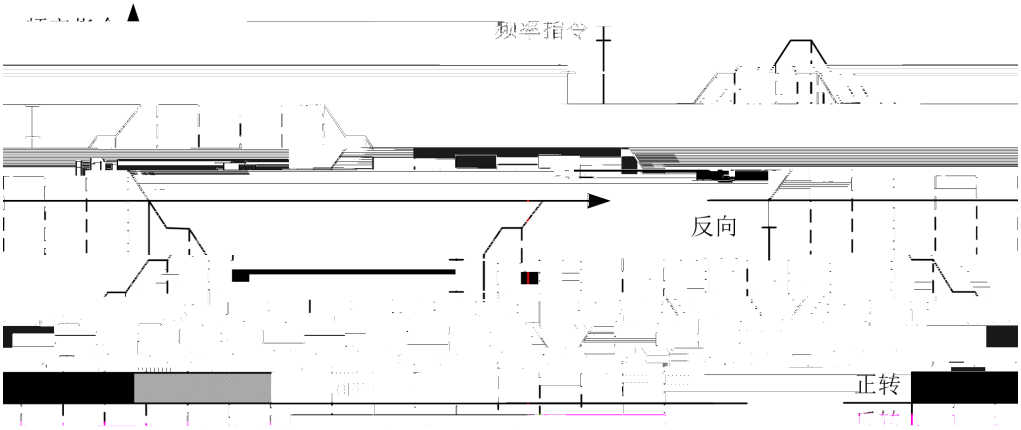
[1] [2] ---1

[6] 1 0 ---2

[7] 2 1 ---3

[8] 3 2 ---4

[9] 4 3 ---5

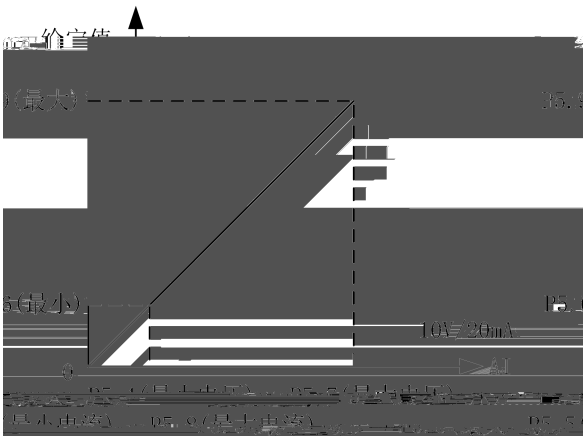


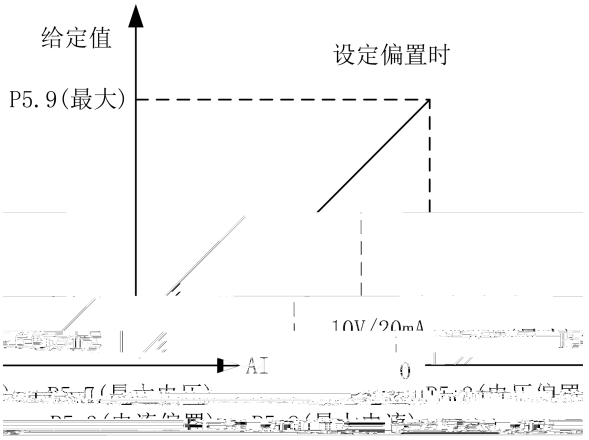
3. [1]

4 16 8421

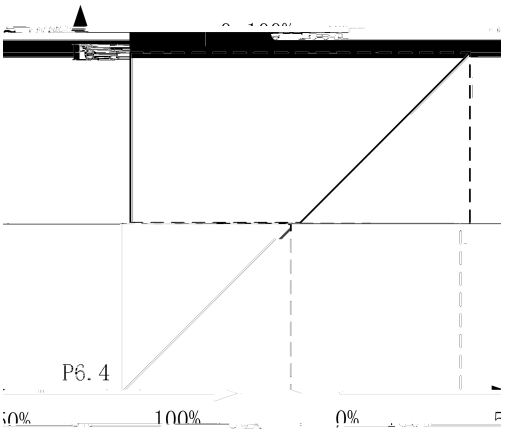
(FORWARD) REVERSE) ″

## 8.4

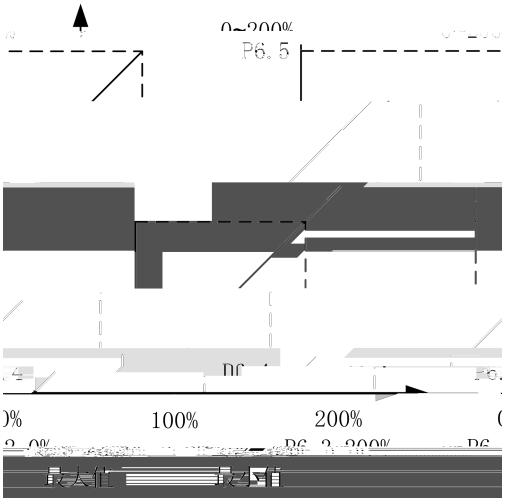




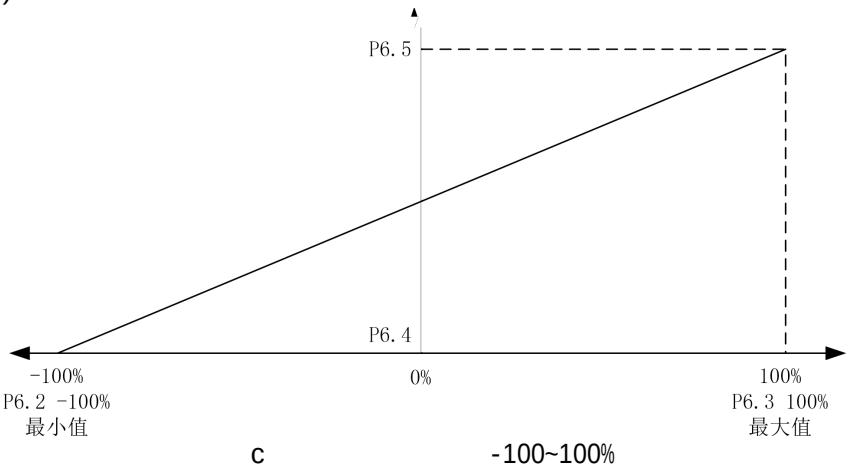

## 8.5




(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

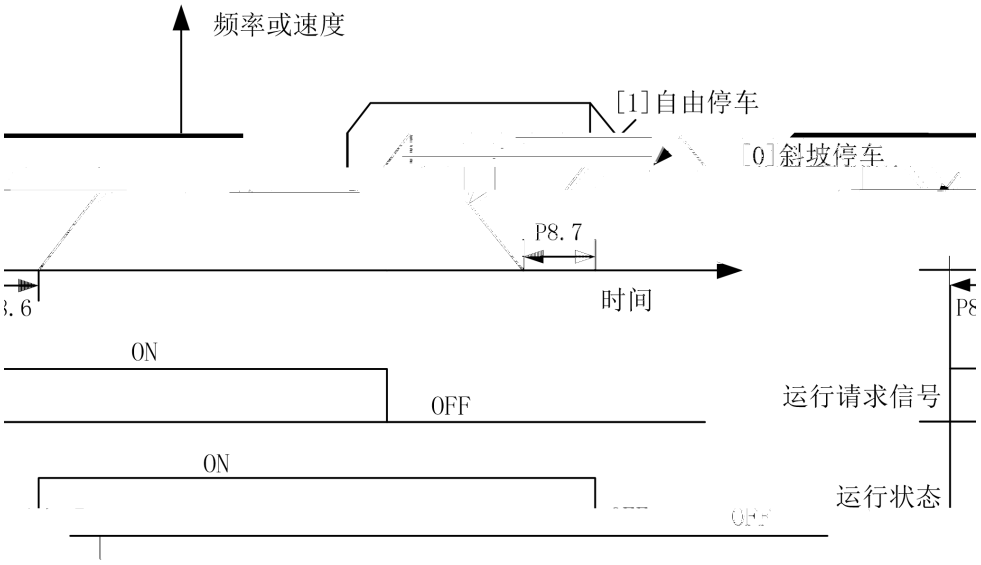
P8.3

[0]

[1]

P8.6 P8.6

P8.7

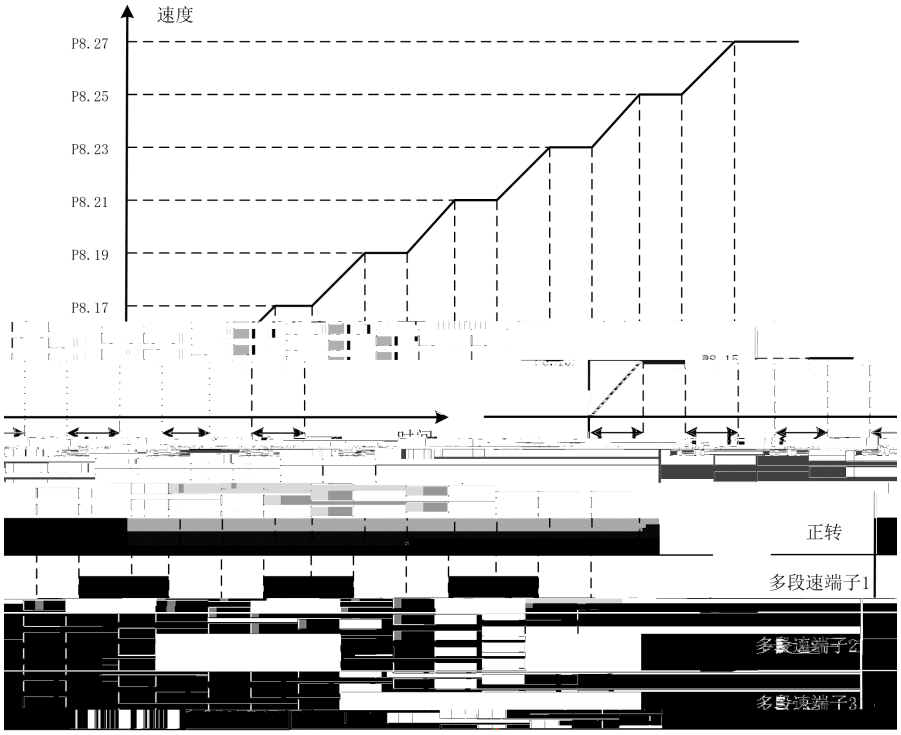



### 2

P8.14

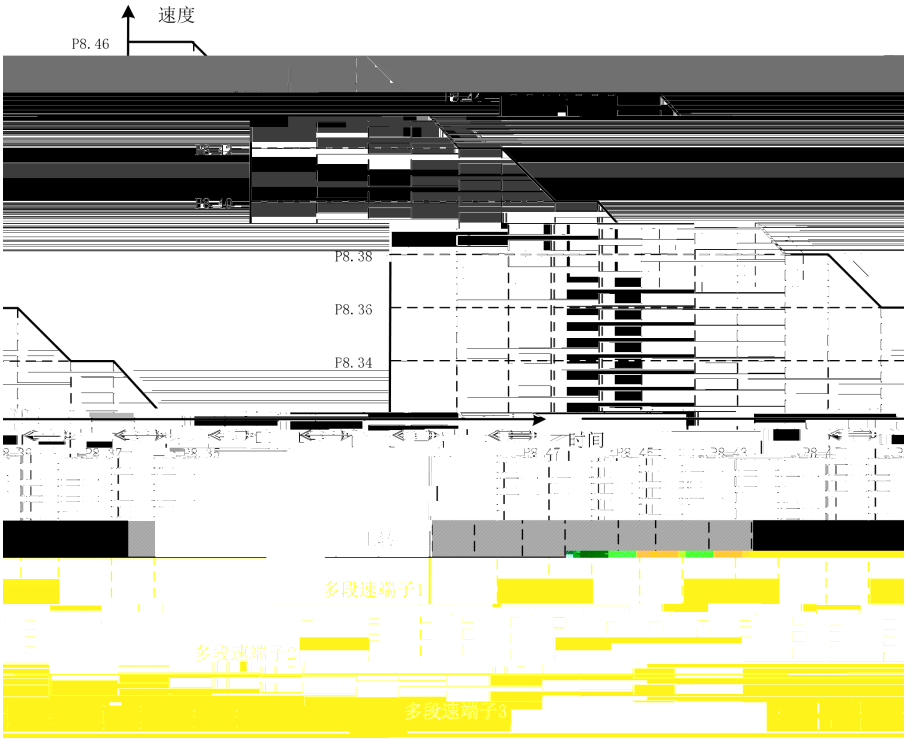
P8.14 P8.33

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

120 × P16.5/P16.7

P16.2 P16.4

### 2

P16.12 đ Ē ő ﻙ đ ѕ ő 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

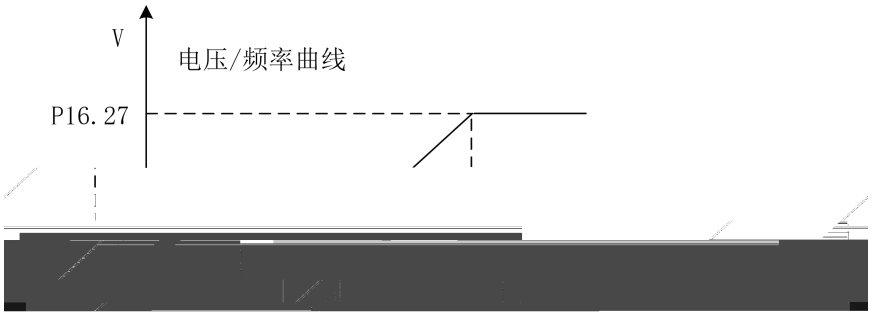
### 4

P16.15 V/F

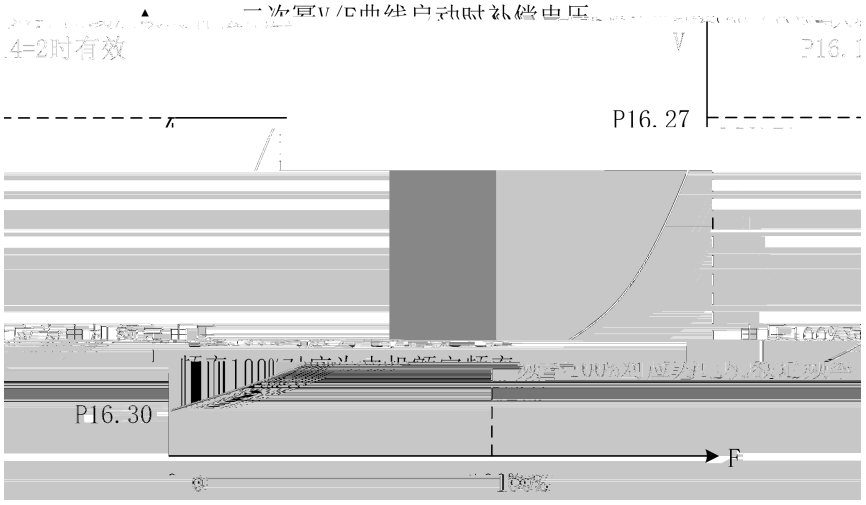
V/F

### 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



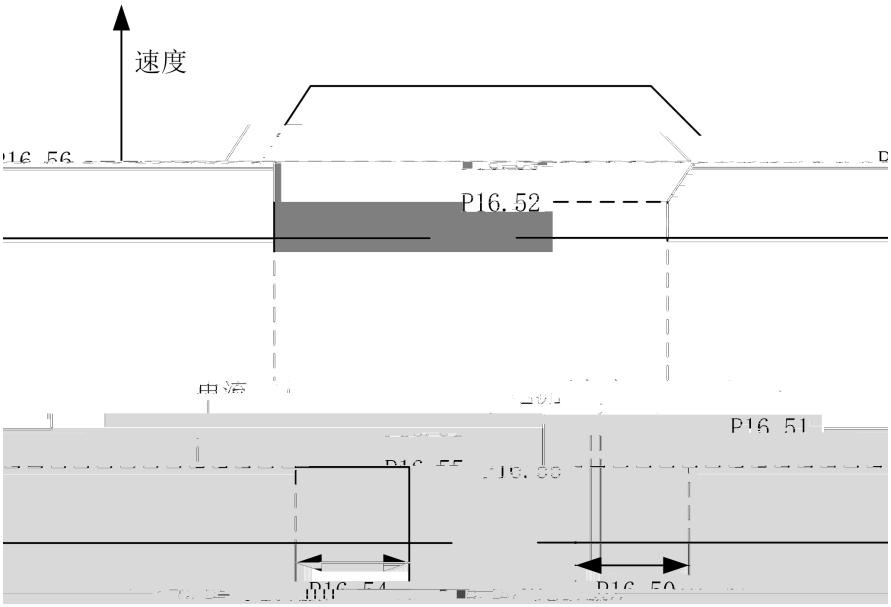

## 6

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

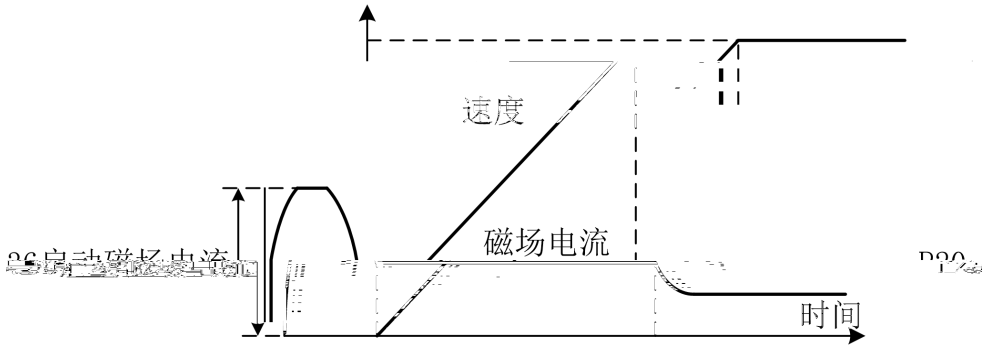
200 P20.26 P20.27 0

HF650LC P20.34 [1]

HF650LC P20.34 [0]

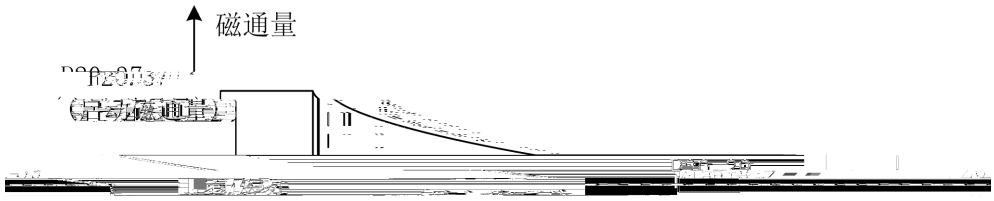
6

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 | , 3<br>NO_DRV_ENABLE | ] | [ | P3 | 0 ∀ 0 JT0<br>0ə |
| W03 | LOCAL_EM | ] | [ | P3 | |
| W04 | REMOTE_EM | ] | [ | P3 | |
| W06 | OT | P7.14( ) | | | |
| W09 | DP<br>P/B ALARM | DP | | DP | |
| W10 | | | | | |

## 9.2

| | | |
|---|---|---|
| [E111] | OL | P7.48( 1)<br>P7.49( 1)<br><br>P7.48 P7.49 |
| [E112] | ZC | P7.8 |
| [E113] | MIP | |
| [E114] | MOP | |
| [E115] | OS | P7.19<br>P7.19 |
| [E116] | SLVC Fail | P7.23 |
| [E117] | MOTOR STALL | P20.14<br>P20.15 |
| [E118] | PG ERROR | P20.14 P20.15 |
| [E119] | SPEED ABNORMAL | P20.14 P20.15<br><br>P7.31 P7.32 |
| [E121] | IGBT1<br>OT1 | |
| [E122] | IGBT2<br>OT2 | |
| [E123] | IGBT3<br>OT3 | |
| [E124] | IGBT4<br>OT4 | |
| [E125] | IGBT5<br>OT5 | |
| [E126] | IGBT6<br>OT6 | |

| | | |
|---|---|---|
| [E127] | IGBT7<br>OT7 | |
| [E128] | IGBT8<br>OT8 | |
| [E137] | FAN STALL | |
| [E138] | $YÖG÷ Q“œ<br>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

| | | | |
|---|---|---|---|
| | | • <br>• ON <br>• COM | • <br>• ON <br>• COM |
| | | • | • <br>• |
| | | • | • <br>• |
| | | • | • |
| | | • | • |
| | | • | • <br>• |
| | | • | • |
| | | • | • |
| | | • <br>ON | • ON |
| | | • | • V W |
| | | • | • / |
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| | | • | • |

# 10.



1.

2.

3.

4.



1. CMOS

2.

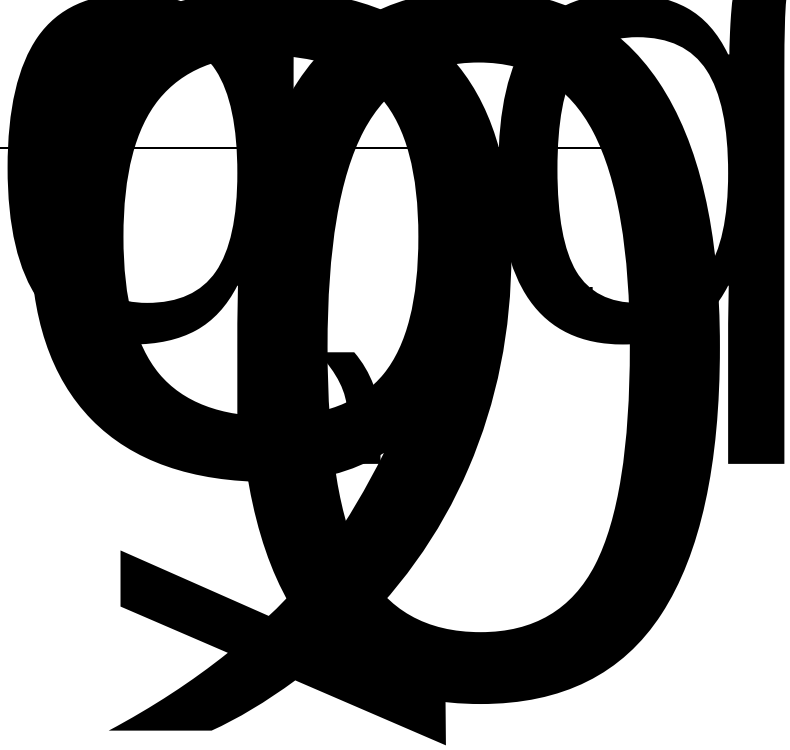
3.

## 10.1

## 10.2

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

## 10.3



1

2 đ” đ”

1

2

3

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6

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