

风机、水泵专用型 高性能变频器



SB12

PID

GB/T 12668.2 2002

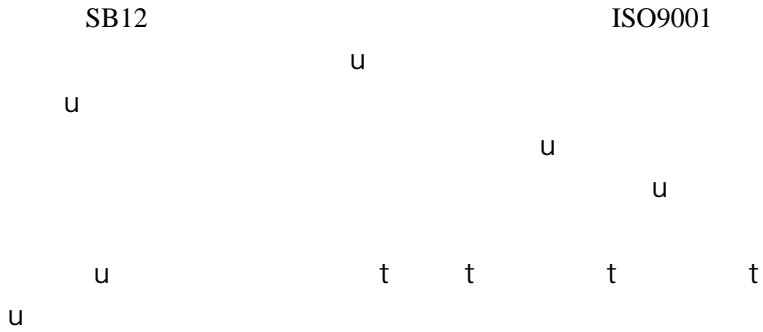
SB12

SB40

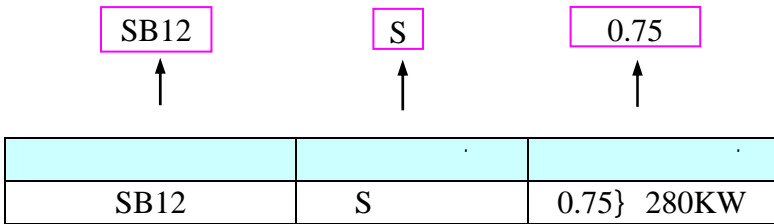
380V

0.75 280KW

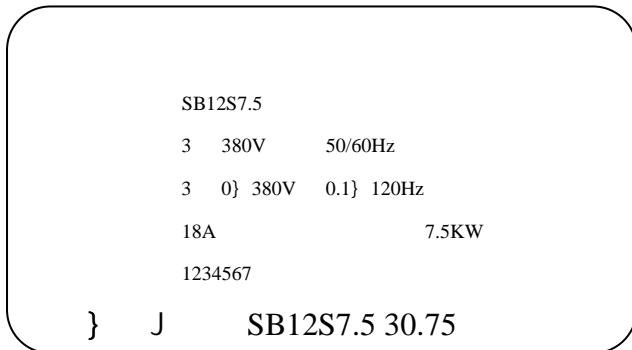
1.1



1.2



1.3



1.4

Ñ u t u
Ñ u
Ñ u

1.5

t t t
u



:


u




:


1

<ul style="list-style-type: none">••••	u u u
u	


	
<ul style="list-style-type: none"> • • 	<p>u</p> <p style="text-align: right;">u</p>


2

	
<ul style="list-style-type: none"> • • • • 	<p>PE</p> <p>U.V.W</p> <p style="text-align: right;">u</p> <p style="text-align: right;">u</p> <p style="text-align: right;">u</p>


	
<ul style="list-style-type: none"> • 	<p style="text-align: right;">u</p>


3

	
<ul style="list-style-type: none"> • • • 	<p>u</p> <p style="text-align: right;">u</p>


	
•	STOP
•	u
•	u

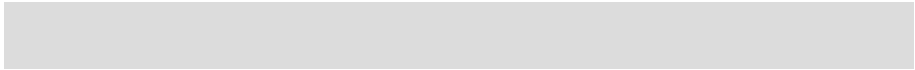
4

	
•	10
•	Pt N
•	t
•	u
•	u
•	u

	
•	u

5

	
•	u



2.1

1

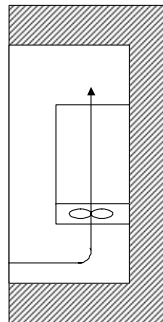
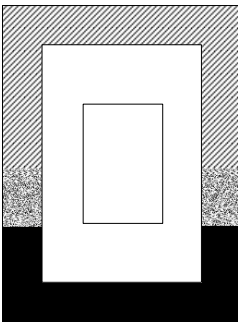
40 10 40 90
500m % 3% u 5% >1000m

2.

t t u
t u
u
u

3.

u



u

u

u

t

	m^3/min	m^2
0.75-3.7KW	1.5	0.023
5.5-7.5KW	3	0.033
11-15KW	4	0.051
18.5-22KW	7	0.065
30-55KW	10	0.092
75KW	14	0.13
90KW	14	0.15
110-132KW	28	0.17
160-220KW	28	0.22
220-280KW	42	0.24

2.2

1.

PE R S T P DB U V W

PE R S T P1 P+ DB U V W

--

PE R S T P1 P+ N

U V W

2

Rt St T	380V
Ut Vt W	
P1t P+	
Pt DB	
P+t DB	
P+t N	
PE	

1 [Rt St T]

Rt St T MCCB 1.5 2
u

u

2 [Ut Vt W]
Ut Vt W

u

Ut Vt W

u

u

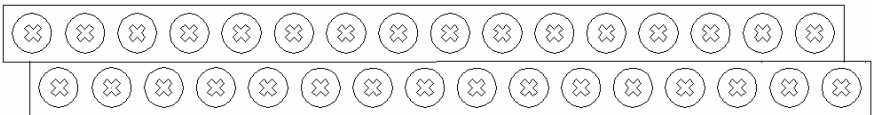
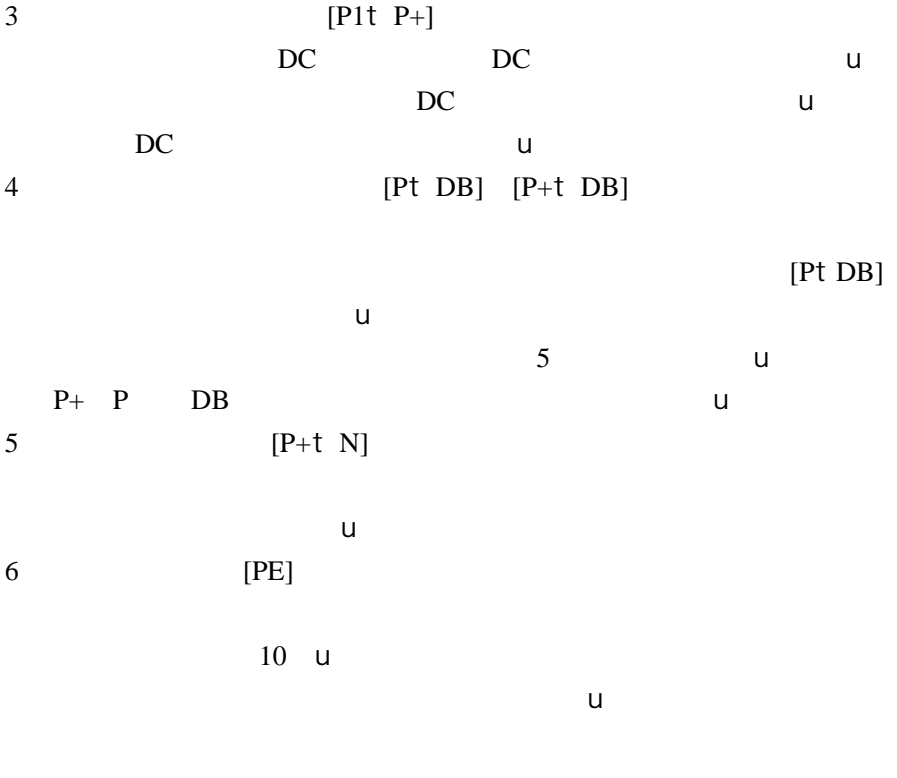
u

u

	<50m	<100m	≥ 100m
	· 9KHz	· 7KHz	· 3KHz
F24	· 7	· 5	· &



Ut Vt W
u



A2 B2 C2 24V GND FMA 5V Y1 FWD CM THR LA1 1K1 2K1 3K1 4K1
A1 B1 C1 VRF IRF VPF IPF Y2 REV FA RESETLA2 1K2 2K2 3K2 CM

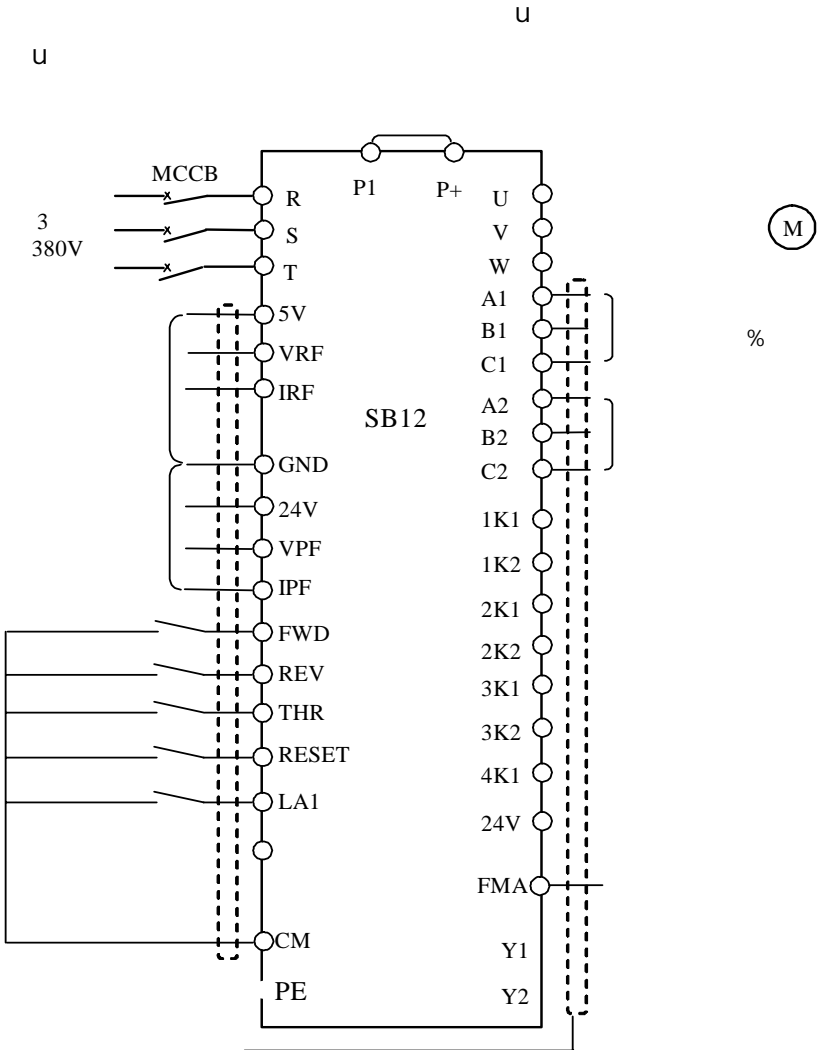
GND 24V 5V u
 CM 12V u
 9 1K1t 2K1t 3K1t 4K1t 1K2t 2K2t 3K2
 u
 NK1 24V N N=1 4
 NK2 24V N N=1 3
 CM GND u
 24V 24V
 NK1t NK2
 SK01 GND CM u
 10
 u
 t
 u

6

	mm ²	mm ²
SB12S0.75-1.5	2.5	0.5
SB12S2.2-3.7	4	0.5
SB12S5.5-7.5	6	0.5
SB12S11-15	8	0.5
SB12S18.5-22	10	0.5
SB12S30	16	0.5
SB12S37	25	0.5
SB12S45-55	35	0.5
SB12S75-90	60	0.5
SB12S110-132	90	0.5
SB12S160	120	0.5
SB12S200	180	0.5
SB12S220	210	0.5
SB12S280	240	0.5

2.3

1t SB12S



2t SB12S

3t SB12S

4t SB12S

			2-2	3		1K1
	K11	1				
						K11
K12				0		
K21						2
		3				
	3					
			K12			

2-3 3

K41t K11

0

K12

K41t K11

3

3

K12

F76=1

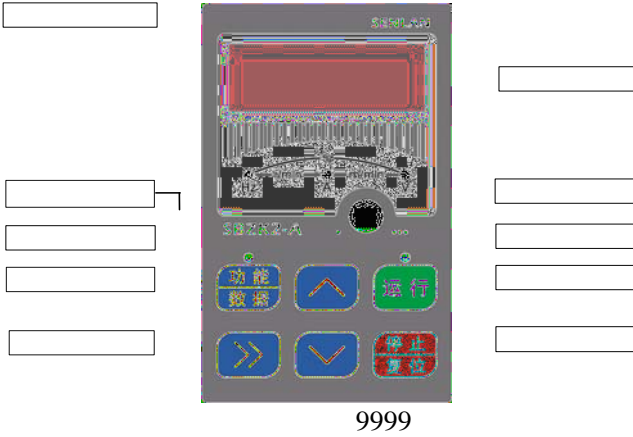
F76=0

u

“ ”

u

3.1



3.2

/	
>>	
/	Err5

3.3

corr		Err1	
FL		Err4	
Lou		Err5	
ouu		oH	
oLE		oL	
		oLP	

3.4

SB12S 4
 F01=0 / F00
 F01=1
 F01=2 3 0 5V 0 10V 4 20mA

3.5

1

LED

2

LED

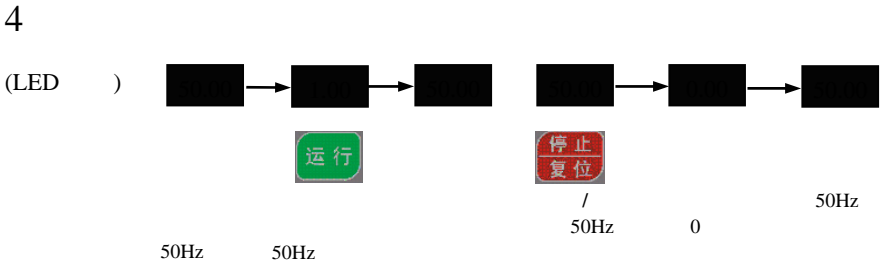
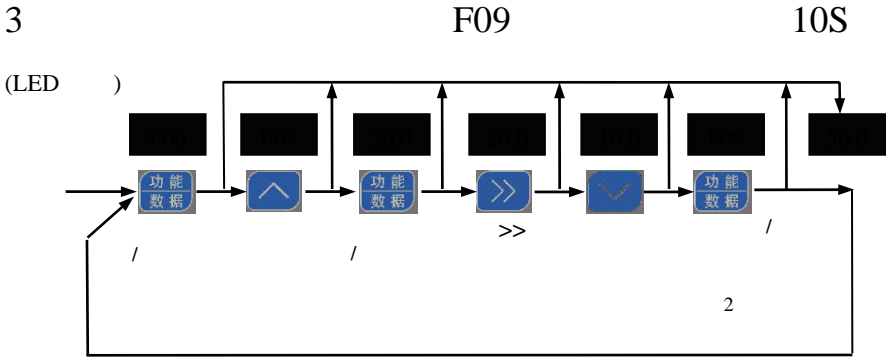
3

LED

3.3

/

LED



4.1

400V

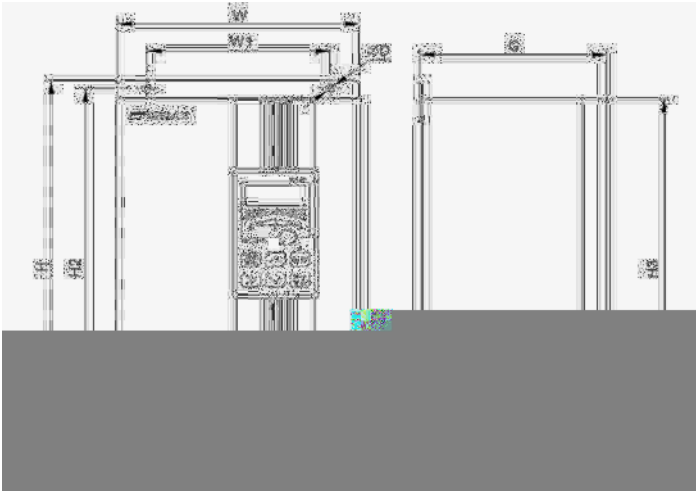
	0.75	1.5	2.2	3.7	5.5	7.5	11	15
	18.5	22	30	37	45	55	75	90
	110	132	160	200	220	280		
(KW)	0.75	1.5	2.2	3.7	5.5	7.5	11	15
	18.5	22	30	37	45	55	75	90
	110	132	160	200	220	280		
(KVA)	1.6	2.4	3.6	5.9	8.5	12	16	20
	25	30	40	49	60	74	99	116
	138	167	200	248	273	342		
(A)	2.5	3.7	5.5	9.0	13	18	24	30
	38	45	60	75	91	112	150	176
	210	253	304	377	415	520		
	120%1							
(V)	3	0	380V					

4.2

		V/F
	0	I 50
	0.1	3600S
		AVR
PID	PI	P 1 8000 I 1.0 500.0S
	4	3
		0 1000
	>	
	<	
		FA CM
		0 24.0h
	50	120Hz
	X4 X5	VRF VPF IRF IPF
		/
	FWD REV	
		A1 B1 C1 A2 B2 C2
		Y1 Y2
		FMA
		1000m
	-10 40	/20 90% RH
	5.9m/S ²	0.6G
	-20	65
		IP10

4.3

1. SB12



2. SB12

	D	G	H	H1	H2	H3	W	W1
0.75-3.7KW	6	140	260	5	249	236	160	120
5.5-7.5KW	7	153	330	6	317	300	200	150
11-15KW	7	196	400	6	387	370	260	200
18.5-22KW	7	255	465	6	452	435	300	230
30 KW	7	255	516	6	501	482	310	246
37-45KW	9	260	590	8	574	550	380	300
55KW	9	280	590	8	574	550	410	300
75KW	10	320	690	8	672	650	440	300
90-110KW	10	340	755	8	735	705	460	350
132KW	10	350	850	10	828	805	520	370
160-220KW	14	350	1000	14	972	940	600	400
280KW	14	365	1100	12	1075	1030	720	550

NO			
F00		0.10 120.0Hz	50.00
F01		0 F00 œÿ 1 2 VRF 3 IRF	0
F02		0 1 FWDt REV / 2 FWDt REV /	0
F03		0 1	0
F04		50.00 120.0Hz	50.00
F05		10.00 120.0Hz	50.00
F06		220 380V	380
F07		0 50 0	10
F08		0.1 3600S	20.0
F09		0.1 3600S	20.0
F10		0 1 2	0
F11		25 105	100
F12		0.50 120.0Hz	60.00
F13		0.10 120.0Hz	0.50
F14	1	0.00 120.0Hz	0.00
F15	2	0.00 120.0Hz	0.00
F16	3	0.00 120.0Hz	0.00
F17		0.00 10.00Hz	0.50
F18		50 200	100

NO				
F19		0.00	120.0Hz	0.00
F20		0	1	0
F21		0.10	50.00Hz	1.00
F22		0.0	20.0S	0.5
F23		0	100	0
F24		0	5.253 014450 10.5 34.6.0057 0 H610.0022 T.2534M6012	

NO				
F38	0	1		

NO				
F56		0.1	50.0S	0.5
F57		0.50	120.0Hz	50.00
F58		0.10	120.0Hz	10.00
F59		0 1		0
F60		1	8000	1000
F61		1.0	500.0S	5.0
F62		0.1	100.0S	5.0
F63		0.1	100.0	0.2
F64		100	150	120
F65		10	150	40
F66		20	150	110
F67		10	120	50
F68		0	1000h	0
F69		0.0	24.0h	0.0
F70		0.0	24.0h	0.0
F71	1	corr		corr
F72	2	oL		corr
F73	3	oH ouu FL		corr
F74		0 1		0
F75		0 1		0
F76		0 1		0
F77	FMA	0	100	0

NO					
F78 F79	1 2	0	1		0
		1			
		2			
		3			
		4			
		5			
		6			
		7			
		8			
		9			
		10			
		11			
F80	2	0.00	120.0Hz		40.00
F81	2	0.00	10.00Hz		1.00

u



F00		50.00
	0.10 120.0Hz	0.01Hz

F01		0
	0 3	

F01=0	F00 /
F01=1	
F01=2	VRF
F01=3	IRF

0 F00 /
 F00

1 / F00

2 VRF
 VRF
 VRF VRF

3 SW2 0 5V 0 10V
 IRF
 IRF
 IRF

F02

0

0 2

F02=0	/
F02=1	FWD REV /
F02=2	FWD REV /

0 RUN STOP

1 / 0
 FWD REV /
 FWD CM REV CM
 FWD REV CM
 /
 2 FWD REV /
 1 /

F03

4~~5~~

F08 F09		20.0
		20.0
	0.1 3600S	0.1S
	50Hz	50Hz

F10		0
	0 2	

F11		100
	25 105	1

F10

F11

F11

100

120 Ie

120 Ie

F10=0	
F10=1	
F10=2	

F11=

×100 /

Ie

F10=0

Ie×F11

F10=1

Ie×F11

F10=2

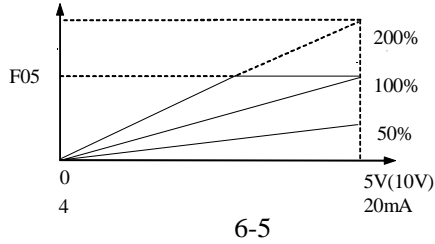
Ie×F11

6-3

F12		60.00
	0.50 120.0Hz	0.01Hz
F13		0.50

F18		100
	50 200	1

0 5V 0 10V 4 20mA



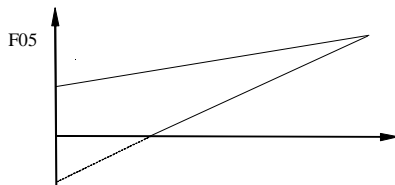
F19		0.00
	0.00 120.0Hz	0.01Hz

F20		0
	0 1	

VRF IRF 0
F19 F20

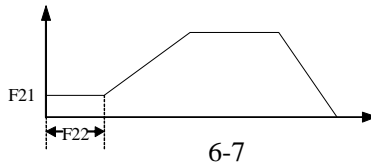
F20=0	
F20=1	

F20=0 >0 VRF IRF F19
 F05
 F20=1 <0 VRF IRF -F19
 F05



6-6

F21		1.00
	0.10 50.00Hz	0.01Hz
F22		0.5
	0.0 20.0S	0.1S



F23		0
	0 100	1

F23

F24		2
	0 7	1

IGBT

F24 5
2 9KHz

F24 1

5%

F25		30.0
	0.1 520.0A	0.1A

LED

F38=1

15KW

30A

30.0A

F26**LED**

0

0 5

7 LED

	F44>0	F44=0	F44>0	F44=0
0				
1				
2				
3				
4				
5				

“SET/>>”

F27

0

0 2

F27=0	
F27=1	
F27=2	

F28**FMA**

0

0 2

F29**FMA**

100

50 200

1

F28

FMA

F29

FMA

F28=0	FMA
F28=1	FMA
F28=2	FMA

F30

1.00

0.00 10.00Hz

0.01Hz

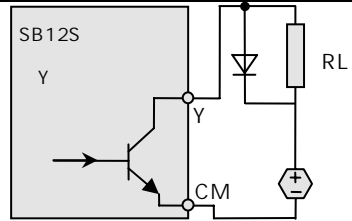
6-8

1

40. W00pW00pW

0		6	
1		7	
2		8	
3	1	9	
4		10	2
5			

0
1
2
3
4
5
6
7
8
9
10



1

F31

F10

1 2

THR—CM

F59=1

2

2

F80

F35		0
	0 7	1
F36		5.0
	1.0 20.0S	0.1S

F02 2 3 F44>0

F37	AVR	0
	0 1	

F37=0	
F37=1	

PWM

F38		0
	0 1	

F38=1

F38

F39

F38=0	
F38=1	

F39		0
	0 1	

F39=0	
F39=1	

F39=1

/

F26

F40		4
	2 4 6 8 10 12	2

F41		1.00
	0.01 10.00	0.01
	7 LED	
	=	×

F42		0.0
F43		0.0
	0.0 60.0 S	0.1 S
	F53>0	F42
	F43	

F44		0
	0 2	

F44=0	
F44=1	
F44=2	

0

VPF IPF FA LA1 LA2 +24V

F46-F70

1

VRF IRF VPF IPF FA +24V F46-52 F54-55

F59 -67 F69-F70

2

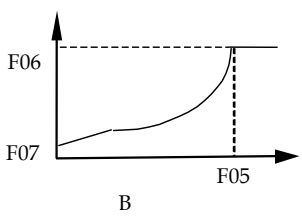
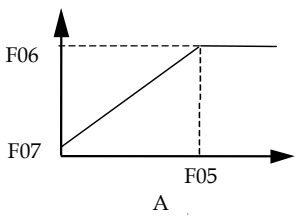
F44=2 , LA1 LA2 F46

F44=2

F45

	0
0 1	

F45=0	6-10A
F45=1	6-10B



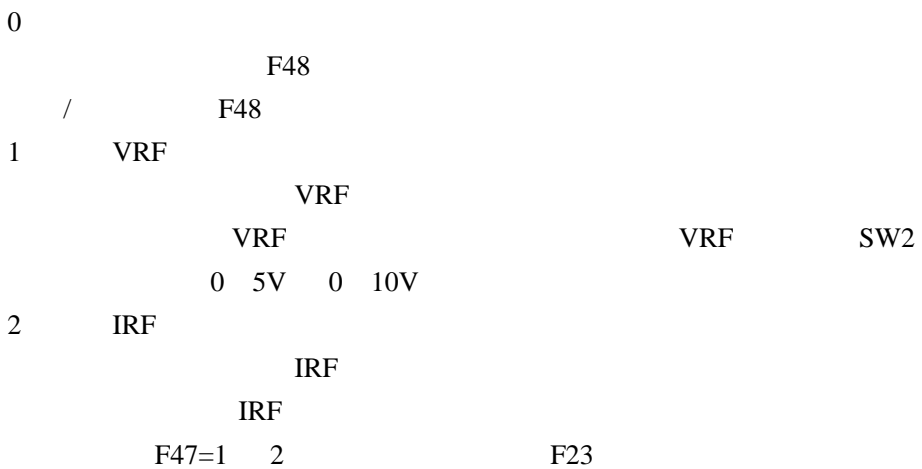
6-10

F47

	0
0 2	

F44>0

F47=0	
F47=1	VRF
F47=2	IRF



F48		50.0
	0.1 100.0	0.1

F44=1 2

/ F48

=F48× /100

0 10MPa 5MPa F48=50

F49		100.0
	0.1 100.0	0.1

FA CM

=F49× /100

F50		3
	0 3	

F50=0	0 5V 0 10V
F50=1	0 20mA
F50=2	1 5V 2 10V
F50=3	4 20mA

VPF	SW3	0 5V 0 10V	
0	0 5V 0 10V	0 5V 0 10V	VPF
1	0 20mA	0 20mA	IPF
2	1 5V 2 10V	1 5V 2 10V	VPF
3	4 20mA	4 20mA	IPF

F51

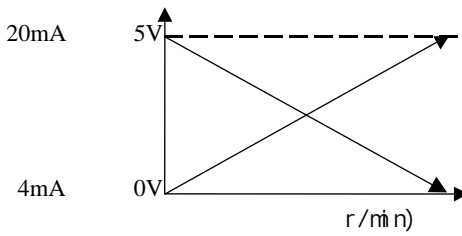
0

0 1

F50=0	
F50=1	

0

1



6-11

F52

100

25 200

1

F53

0

0 5

F53=0	
F53=1	
F53=2	
F53=3	
F53=4	
F53=5	

F54		40.00
	10.00 100.00 Hz	0.01Hz
F55		30.0
	3.0 180.0 S	0.1S

F55

6-12

F56		0.5
	0.1 5.0S	0.1S

F57		50.00
	0.50 120.0Hz	0.01Hz
F58		10.00
	0.10 120.0Hz	0.01Hz

F53=1 2

F53=3 5

F59		0
	0 1	

4K1

F59=0	
F59=1	

0

1

1

1

F60		1000
	1	8000

F61		5.0
	1.0	500.0S

PID

F62		5.0
	0.1	100.0S

F63		0.2
	0.1	100

=| - |

PID

PID

F64		120
	100 150	1
F65		40
	10 150	1
A2 B2 C2		

$$= F64 \quad F65 \times \quad /100$$

F66		110
	20 150	1
F67		50
	10 120	1
F53 0 2		

F55

0		6	
1		7	
2		8	
3	1	9	
4		10	
5		11	2

0

1

2

3 1

4 1 F31

5

6 THR—CM

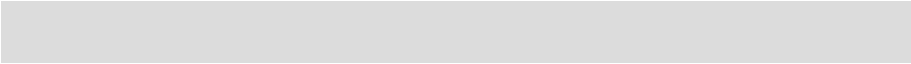
7


8 F55 0


9


10

F10 1 2




<ul style="list-style-type: none">••


<ul style="list-style-type: none">••• <p style="text-align: right;">DC36V</p>


<ul style="list-style-type: none">•

7.1

7.2

3 6

U V W

R S T U V W
R S T U V W

2

DC500V

R S T P1 P+ DB N U V W
PE 5M

7.3

7-1

	3
	5
	7

7.4

1

R S T U V W

PE

2

R S T U V W

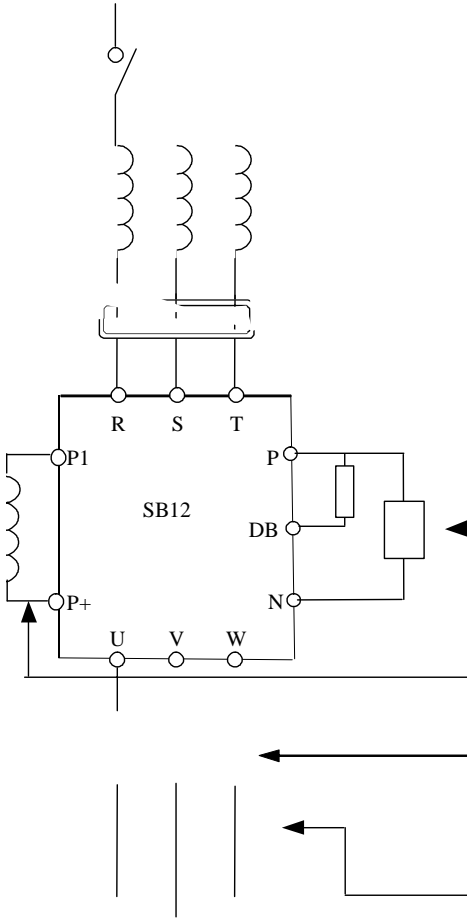
3-4

7.5

7-1

ouu		1 2 3	1 2 3
Lou		1 2	1 2
oL		1 2	1 2
oLE			
FL		1 2 3 4	1 2 3 4
oH		1 2 3	1 2 3
Err1			
Err5			
		1 2 3	1 2 3
		1 2 V/F 3 4	1 2 V/F 3 4

8.1



8.2

1

- ①
- ②
- ③
- ④

10:1

3%

0.75 0.85

8-1

(V)	(kW)	(A)	(mH)
380	30	60	0.32
	37	75	0.26
	45	90	0.21
	55	110	0.18
	75	150	0.13
	90	170	0.11
	110	210	0.09
	132	250	0.08
	160	300	0.06
	200	380	0.05
	220	415	0.05
	280	520	0.04

2

CE UL CSA

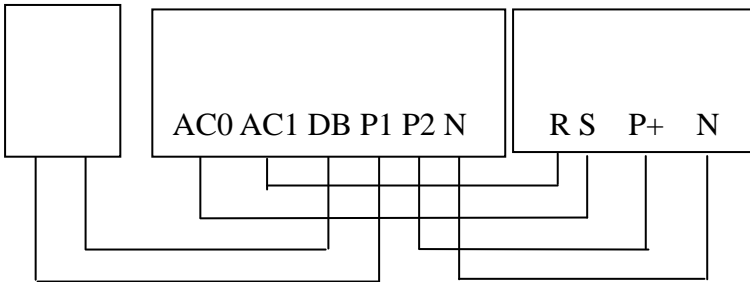
3

8-2

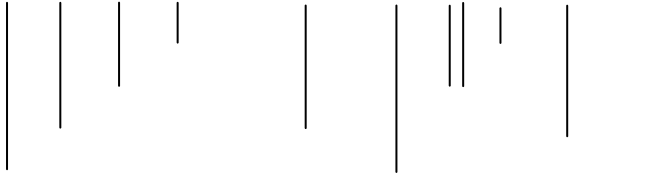
(kW)	(Ω)	(kW)	(Ω)
11	60Ω/2.5 kW	75	2 20Ω/20 kW
15	50Ω/4 kW	90	2 20Ω/20 kW
18.5	40Ω/4 kW	110	2 13.6Ω/27 kW
22	30Ω/5 kW	132	2 13.6Ω/27 kW
30	24Ω/8 kW	160	2 20Ω/33 kW
37	20Ω/8 kW	200	5 20Ω/40 kW
45	16Ω/12 kW	220	4 13.6Ω/45 kW
55	13.6Ω/12 kW	280	5 13.6Ω/64 kW

8-3

	(Ω)	(kW)
SZ10G11/22	20	1
SZ10G30/45	10	3
SZ10G55/90	.1	7
SZ10G110/132	3.3	10
SZ10G110/200	2.2	2.5
SZ10G220/375	1.2	



SZ10G11/22



4

1000KVA

>0.9

P+ P1 P+ P1

P+ P1 P+ P1

30KW

8-3

(V)	(kW)	(A)	(uH)
380	30	75	600
	37 55	150	300
	75 90	220	200
	110 132	280	140
	160 200	370	110
	220	560	70
	280	740	55

5

6

7

10

20mS