	**" # $**
	u $ = >? @ , A BC =D E&>?F GH I J:K L MN ;<F O $
	u PQ RS (T: U V WX. Y Z/[\] ^_`/\] abc def WX ghijk (T lm n opq r P s+ e >?
	u tu U v wxUVW 2 wx yz IEC * {|}~0•
	**%&$**
	u F k F GH
	u j MOSFET k P2 d ef V WX IGBT j k s +
	**'($**
	u 0 0 2 p 0
	u t q o e t| u

)*+,-./012345)6789:;<=>?@ABCDCEFG HIJKLDMNO,PQRFSTUV5W8XYZ

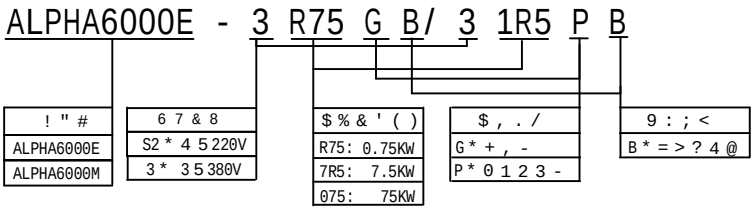
[\ ] ^ _ ` a

1.1

R S s G
* s J A 0 1

1.2

& * +



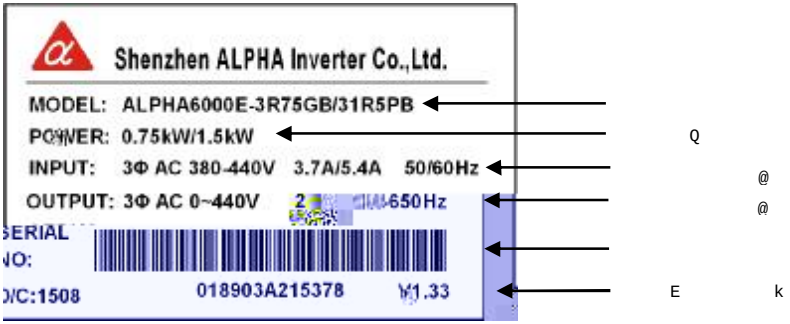
1-1

ALPHA6000E bALPHA6000M R c d e f 8 g h i j k l m n 8 o p q r i j F s t u V/F b v w x y z f { | } ~ q r • SVC F V/F q r Z

' ALPHA6000M-S2R4GB ALPHA6000M-S2R75GB ? v w x y z f { | } ~ q r • SVC Z

1.3

X - 0 / ALPHA6000E 8
ALPHA6000M } ~ :



1-2

2.1

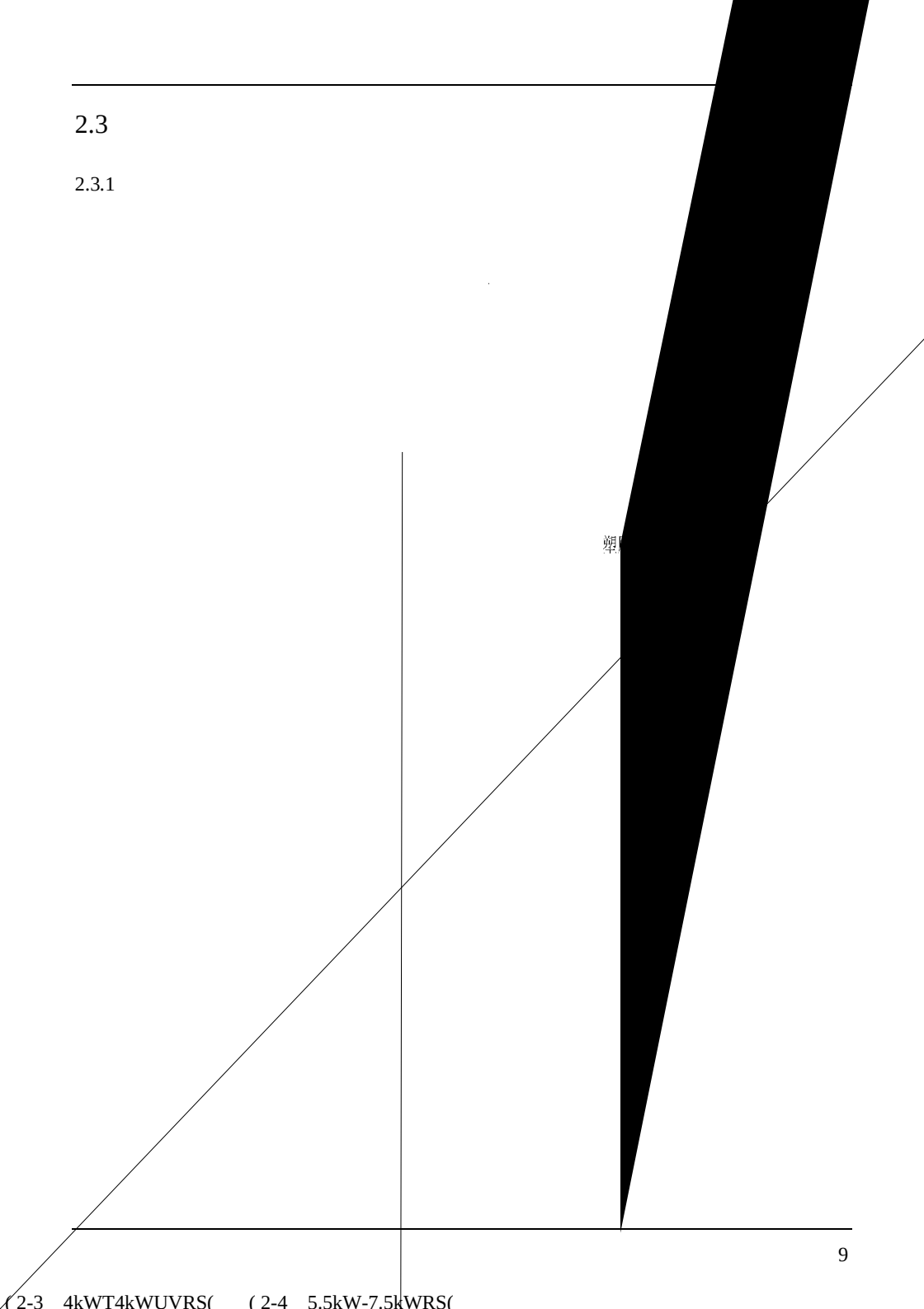
a

2.2

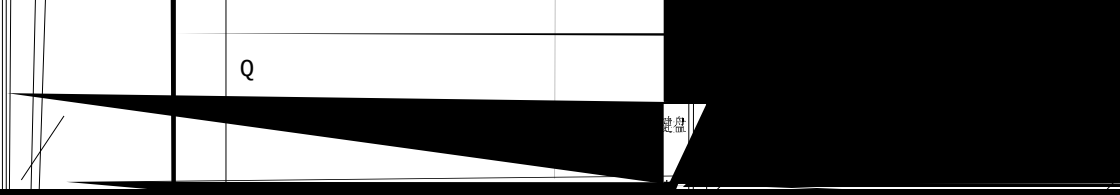
.

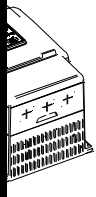
2.3

2.3.1

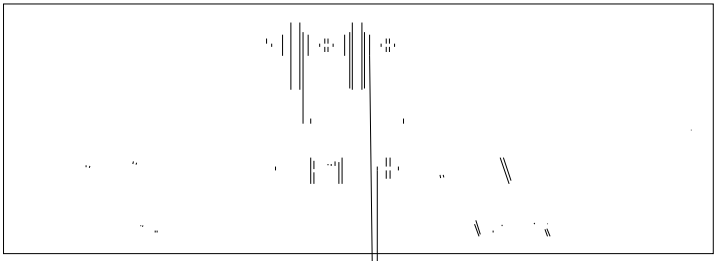


(2-3 4kWT4kWUVRS((2-4 5.5kW-7.5kWRS(


Q
键盘

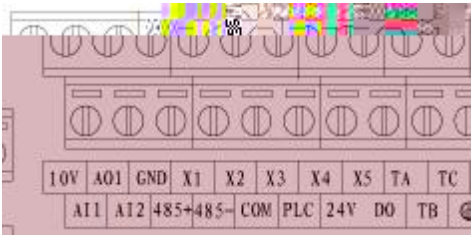


2.3.3

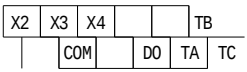


2.4

2.4.1



2-15 S2R4GB S2R75GB

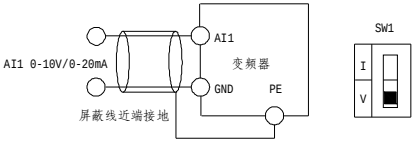


w x	X1	w x 1	3 4 : w x 1 5.4 I/O w x P3 w x	5 ' N R=3.9k t 400Hz @ 0) 30V 2 COM
	X2	w x 2		
	X3	w x 3		
	X4	w x 4	3 4 : w x 3 w S2R4GB S2R75GB I 3 4 : w x 1 5.4 I/O w x P3 w x	5 ' N R=3.9k t 400Hz/50KHz(S21R5GB S22R2GB 3R75GB/31R5PB .) @ 0) 30V 2 COM
w x	X5	w x 5	$ 3 4 : w x 3 4 w 1 5.4 I/O w x P3 w x	5 ' N R=3.9k t 50KHz @ 0) 30V 2 COM
	X6 S2R4GB S2R75GB j	w x 6	$ 3 4 : w x 3 4 w 1 5.4 I/O w x P3 w x	5 ' N R=3.9k t 50KHz @ 0) 30V 2 COM
	DO	W 6 7 w x	3 4 w x 3 : w x 5.4 I/O w x P3 w x	5 ' N 6 7 W 8 @ 0V) 26V 50mA 0) 50KHz 2 COM
9	TA	9	3 4 9 w x 5.4 I/O w x (P3) w x	TA-TB TA-TC e x o 250VAC/2A COS : =1 250VAC/1A COS : =0.4 30VDC/1A
	TB			
	TC			
	RA	9		RA-RC e x o 250VAC/2A COS : =1 250VAC/1A COS : =0.4 30VDC/1A % 639 & !
	RC			
PLC	v w	w x v w	24V PLC 24V j ' N 4 PLC 2 T ; w x SW4 "	X w x < # NPN F PNP % 639 & !
U	10V	+10V U	= > 10V U 2 GND	20 mA W @ 12V
	24V	+24V U	= > 24V U 2 COM	100mA
	GND	+10V U 2	F > 10V U 2	j COM ' N +10V AI1 AI2 AO1 v w
	COM	+24V U v w	{ | w x Q	GND ' N
	PE	m n	w x m n ? 485 l m n ? w x	j W w x PE J

2.4.2

- w x Q

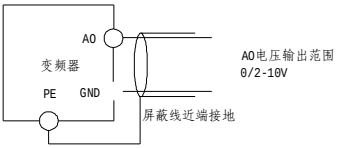
AI1 AI2 w x (S2R4GB S2R75GB @ AI1) AI1 Q / : SW3 @ 0) 10V 0) 20mA w x Q



2-18 ' (* -

- w x Q

w x AO S2R4GB S2R75GB @ < # @ { / : SW2 @ / m Z / w x Q

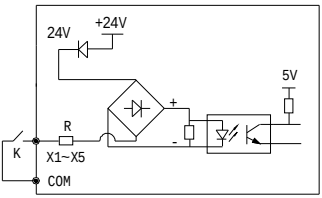


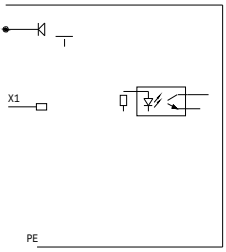
2-21 PLC/ 1 2 3 4 5 6 " 7 8 9 : $

S T U PC 3 PLC B PC V 2 F Q

O P 8 S RS232/RS485 PLC V 2 t B RS485 w x F RS485 w x z w J W

；输入多功能端子配线





& B C *

1 p q r s 24V t u v COM t u o g M w x m n y z { | > } ~ • N

2 p ! ` , " # a b & c $ % & \ ' 1mm ( ) D * g | > t u N

3 p ` , a b & c] M & c a b + ~ , t ' - . / 0 ~ 1 t D k 2 3 . / 0 4 % ~ g h 5 6 * g F . / 0 ~ g h } PE N

4 p 7 \ ] | > & c k 8 9 : ; < & = v > & \ = ' ? @ & A \ A & ' \ A B & 0 \ A g C 0 * g \ D D 30cm ( ) M E F d G H I M I J | > & c v > & & c K L M N M (O P Q R Z [z { . / 0 S ? T N

X . ^ _ CN2 = ^ RJ-45 F 0 n k X = X _ ` D X F ^ _ X 3 a L P # ^ _ **k** **.** 5 **F** 5 **I . n ,** **Z < =** 5 **I** **6000E R c LED** • **CPU** **8** **Z**

^ _ F X 0 • } F RJ-45 W { w ! EIA/TIA568B b 0 • a L G ^ _

2.6 B C

l 2 9 U
l p 2 9 8 U 9 ; <
l P $ e • 2 1000V s f g m $ =
h { 4M t
l Z c m $ m n i * W) * M N W

l 8 9 K L ~ W , m n (N / 50 j
l 9 d t m n m n ? e k { | $ q h = t l m m n ? X n
l o @ (T @ s J A
l p 5 ; E w x pPEp W w x pPEp (T { | $
v W l * W l * 8 q ' (R S
` s r j $ s s w x j b l s { | w x

[ ]


危险

1 n w x \ U
d t \ e > ?
2 d $ D 2 u v正 G >
?
1


注意

3.1.2 K D

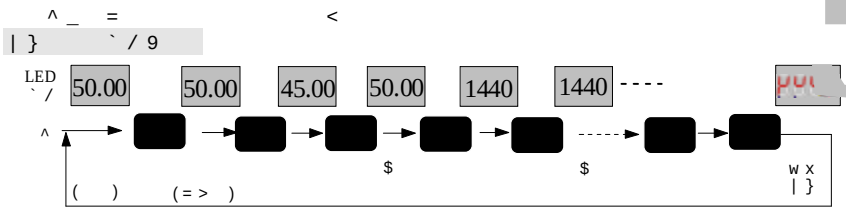
^ _ . $ 8 S ^ V S ^ 4 m 3-1 /

3-1 D E K D

K D	K D	K D
PRG ESC	3 /* ^	* 3 | } | } 2 PRG/ESC ^ 9 k 3 | } x ENTER ^ + s PRG/ESC B k x k x k | } + s * 2 9 ` / , 2 9 , | } F
ENTER	^	s) $ 2 o
{ 3	. W ^ (, 2 -)	O P $ | } LED . / ` / E 0 ^ + O P $ ` / | } 0 $ ^ _ 1 2 O P { $ PID PID {
	- ^ (3 2 -)	

M	T O P	U V O P
	; .	
REV C Z /	]	8
	9 #	C
REV C Z /	: .	C P %
	; .	C
TRIP Z / [	]	
	. /	
REMOTE Z / [	]	^ _ | }
	#	w x | }
	. /	A | }

3.1.4 D E F G



[ ] n

4 5 : S T p p U p
S*p R p-p V $

P0

k	W L	] ^ #	+ l] ^	m n	MODBUS o
P0.00	) ` /	0 0 •) 1 W X)	0	T	0100
P0.01		0 V/F 1 j 2 3 V/F b N S2R4GB F S2R75GB $ 2	0	U	0101
P0.02	{ $	0.00Hz)	0.00Hz	T	0102
P0.03	$ U 1	0 NULL 1 { $ { 1 2 2 w x AI1 3 w x AI2 S2R4GB F S2R75GB j 5 6 8 z 9 w x UP/DOWN 10 b 2 (PLC) 11 PID 4 7 j U 0)7 2 z w x S z p I	1	U	0103

k	W L	] ^ #	+ l] ^	m n	MODBUS o
P1.19	n	30.0%) 100.0% 4 @ = 3015GB % G P n	100.0%	U	0213
P1.20	j I	0 8 o j Uu1 1 j 2 , Uu Uu1 2 8 o j , Uu	0	U	0214
	j 2	0.5) 10.0s	y	U	

k	W L	] ^ #	+ l] ^	m n	MODBUS o
P2.34	% 2	d 132kW 0.1) 3600s e 160kW 1.0) 3600s	22kW 3.0s { | 10.0s	T	0322
P2.35	P % 2 q	0 1 q 1 10 q 2 0.1 q	0	U	0323
P2.36	Y Z & [	0 G p 1 & [8	0	U	0324

k	w L	] ^ #	+ l] ^	m n	MODBUS o
P3.03	X3 w x 4	0) 49 z . 50 T e 51 T i H E 53 2 E 74 w x 77 PID 0 78 PID c b 2 H E 79 & c 9 v ^ _ 45 46 52 54) 73 75 76 j	37	U	0403
S21R5GB S22R2GB 3R75GB/31R5PB .					
P3.04	X4 w x 4	0) 79 z . 82 + J B J	0	U	0404
P3.05	X5 w x 4	0) 79 z . 80 PULSE 81 J + J A J	0	U	0405
P3.06	X6 w x 4	0) 79 z .	0	U	0406
S2R4GB S2R75GB					
P3.04	X4 w x 4	0) 79 z .	0	U	0404
P3.05	X5 w x 4	0) 79 z . 80 PULSE 81 J	0	U	0405
P3.06	j	-	-	*	0406
P3.07	j	-	-	*	0407
P3.08	j	-	-	*	0408
P3.09	j	-	-	*	0409
P3.10	j	-	-	*	040A
P3.11	j	-	-	*	040B
P3.12	j	-	-	*	040C
P3.13	X w x e • 2	0.002s) 1.000s	0.010s	T	040D

k	W L	] ^ #	+ l] ^	m n	MODBUS o
P4.12	/ =	-100.0%) 100.0%	0.0%	T	050C
P4.13		P4.11) 50.00kHz	50.00kHz	T	050D
P4.14	=	-100.0%) 100.0%	100.0%	T	050E
P4.15	j	-	-	*	050F
P4.16	j	-	-	*	0510
P4.17	j	-	-	*	0511
P4.18	j	-	-	*	0512
P4.19	j	-	-	*	0513
P4.20	j	-	-	*	0514

P5 PLC

k	W L	] ^ #	+ l] ^	m n	MODBUS o
P5.00	b	0 c 1 1 c 2 # z 2 [c	2	U	0600
P5.01	PLC x	0 B 8 z B 1 B 2 { t z 9 [2 B 2 { 9 [	0	U	0601
P5.02	2 PLC | }	0 1 $ 0 2 G b	0	U	0602
P5.03	t z 2 E	0 | 1 b	0	U	0603
P5.04	b 2 T1	0.1) 3600	10.0	T	0604
P5.05	b 2 T2		10.0	T	0605
P5.06	b 2 T3		10.0	T	0606
P5.07	b 2 T4	0.0) 3600	10.0	T	0607
P5.08	b 2 T5		10.0	T	0608
P5.09	b 2 T6		10.0	T	0609
P5.10	b 2 T7		10.0	T	060A
P5.11	b 2 T8		10.0	T	060B
P5.12	b 2 T9		10.0	T	060C
P5.13	b 2 T10		10.0	T	060D
P5.14	b 2 T11	0.0) 3600	10.0	T	060E
P5.15	b 2 T12		10.0	T	060F
P5.16	b 2 T13		10.0	T	0610
P5.17	**b 2 T14**		**10.0**	**T**	0611

P7 PID

k	W L	] ^ #	+ l] ^	m n	MODBUS o

P7.00 h8h8

P9 V/F

k	W L	] ^ #	+ l] ^	m n	MODBUS o
P9.00	V/F l $	0 9 } l 0 1 - } l 1 2.0 2 - } l 2 1.5 3 - } l 3 1.2 4 $ V/F l Q P9.01) P9.06	0	U	0A00
P9.01	V/F F1	0.0) P9.03	10.00Hz	U	0A01
P9.02	V/F @ V1	0.0) 100.0%	20.0%	U	0A02
P9.03	V/F F2	P9.01) P9.05	25.00Hz	U	0A03
P9.04	V/F @ V2	0.0) 100.0%	50.0%	U	0A04
P9.05	V/F F3	P9.03) P0.09	40.00Hz	U	0A05
P9.06	V/F @ V3	0) 100.0%	80.0%	U	0A06
P9.07	W	0.0 G W 0.1) 30.0% W	75kw 0.0% 93kw . 0.1%	T	0A07
P9.08	W p x	0.00) 50.00Hz	16.67Hz	T	0A08
P9.09	U = >	0.0) 250.0% 100%	75kw 80.0% 93kw . 0.0%	T	0A09
P9.10	U = > 2	0.10) 25.00s	2.00s	T	0A0A
P9.11		0 1			

PA:

k

PC ` /

k	W L	] ^ #	+ l] ^	m n	MODBUS o
		3 4 $			
Pd.05	x , 9	20) 110%	100%	T	0E05
Pd.06	i R)	20.0) 200.0%	160.0%	U	0E06
0E07					

i R) .0

PE

k	W L	] ^ #	+ l] ^	m n	MODBUS o
PE:00	` /	0) 30	1	T	0F00
PE.01	}	0 NULL 1 Uu1 k u @ 2 Uu2 W u @ 3 Uu3 Y W ' 4 OC1 P 5 OC2 % 6 OC3 9 7 Ou1 P @ 8 Ou2 % @ 9 Ou3 9 @ 10 GF 11 OH1 + , , 12 OL1 13 OL2 14 SC W 15 EF0 D G A j 16 EF1 w x . j 17 SP1 J) 18 SPO J) 19 CCF1 W 1 5 | ^ _ 20 CCF2 W 2 ^ _ [2 | . 21 CCF3 EEPROM 22 CCF4 AD 23 CCF5 RAM 24 CCF6 CPU K L 25 PCE H o ~ 26 j 27 HE R 28 DE R 29 CUE	NULL	*	0F01
PE.02	2	0.00Hz) .	0.00Hz	*	0F02
PE.03	2 $	0.00Hz) .	0.00Hz	*	0F03
PE.04	2	0) 2 q	0.0A	*	0F04
PE.05	2 k @	0) 1000V	0V	*	0F05
PE.06	2 8 7	0:StP 1:Acc P 2:dEc % 3:con	S		

PF 7

k	W L	] ^ #	+ l] ^	m n	MODBUS o
PF.00		0 { |	0	T	1000
PF.01		0 j ! " E 1 $ $ P0.02 F { | p 2 $ j p	0	T	1001
PF.02	B L	0 1 $ 2 R H $ (\ \ $) 3 R H $ (\ $)	0	U	1002
PF.03		0 1 2 . 3 4 @ = ^ _	0	U	1003
PF.04	G/P	0 G (9) 1 P (& })	0	U	1004
PF.05	j	j	-	*	1005
PF.06	j	-	-	*	1006
PF.07	j	-	-	*	1007
PF.08	j	-	-	*	1008
PF.09		0) 9999		*	1009
PF.10	k	0.00) 99.99		*	100A
PF.11	0 F b	0.000) 9.999		*	100B

[ ] n

5.1 > ? " P0 $

P0.00) ` /	$ 0 1 0

0 0 •) 1 W X)

P0.00 $ 1 2) W X 1 2 S F V E

{ E t ` / M 0 j ` /

P0.01	$ 0) 3 0

0 V/F 1 j

2 3 V/F b N

: V/F | 8 | . G {

H w R 6 7

W ? S2R4GB F S2R75GB

V/F b N = F @ i

& B C *

U V W X Y L | > 1 Z] M [` , ~ q \ ] ^ ~ _ ` a 2 b c & ' M x ^ _ d e f g I & ' h i j k M d l G & ' j k m n 7 (o p q f ~ & ' j k M r s o p t f ~ | > u n M I J v w 1 x y G z { | G h i j k g I v & ' j k m n 7 } ~ x r e f g I Y L | > 5 • j k M P8 Y L | > j k ; < N

v | > 1 Z M 2 1 . / 0 & ' n | > 1 & ' M . / 0 ( ) D & ' ( ) D q 5 3 M & ' ~ ( ) D m (. / 0 ( ) D 1 $ 1 M w x s | > u n . $ e y G N

P0.02 { $	$ 0.00Hz) 0.00Hz

: P0.03 P0.04=1 2 W ^ _ { $ 2 | 4 $

& B C *

P0.02 ~ , k ? M 1 ENTER G f ^ M v . / 0 Y M ` & q y N

[P0.03 g 7 r 1 M , (n j k P3.18 M P3.18 g 7 r 2] M k g 7 /) ' P0.02 D v \ n ~ & } q \ 2] M & q N

D 1

P0.03 $ U 1	$ 0) 11 1 1

6 A 7 j 8 z
9 U = >
: P0.03 $ 1 ^ _ { $ 2 | } ^ _ . { 1 2 $ $ $
P0.02 J : 2 | } ^ _ 1 2 P0.02
w x AI1 AI2 w x AI1 AI2 2 0) 10V @ 0) 20mA
/

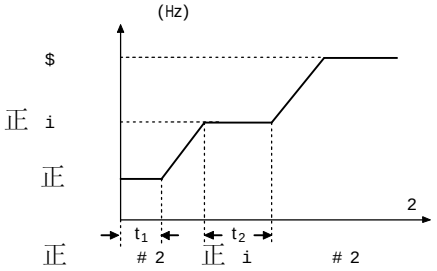
w x Y s ^ _ Y s 2
+ Q Y s

P0.09	$ 0.10) 650.0Hz j 0.1) 1000Hz
P0.10	$ MAX[50.00Hz . $ z " \ ]) 650.0Hz 50.00Hz j MAX[50.0Hz . $ z " \ ]) 1000Hz 50.0Hz

: F_{BASE} $ @ @ U_N 2 / D •
$ 6 7 F_{BASE} }
$ y 2 (T } 7 4 5 V/F } Q
5-0-1 @ : /
F_{MAX} ! " $ +

P1.01 止		$ 0.10) 60.00Hz 0.50Hz
P1.02 止	# 2	$ 0.0) 10.0s 0.0s

止



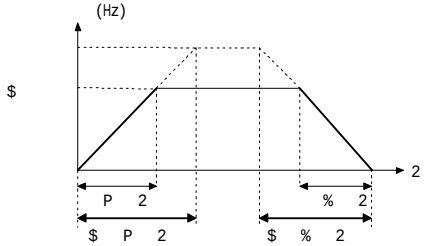
5-1-4 p q / p q w x

& B C *

? I /) R ? /) A R g 7 /) $? I /)] r 0] M ? I /) N

P1.07 P %	$ 0) 3 0
0	1 S l
2 j	3 j

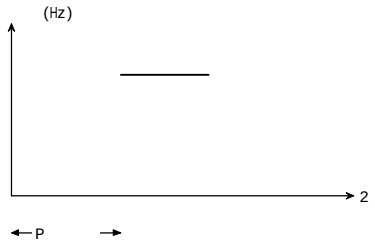
说明 P % 8 z 9 O % 5-1-5 /



5-1-5 v y z s

S l P B F 2 _ 2 ; % 4 C P % /

2 % 2 2 P K =



S l 2 _ z 2 5-1-6 / F L + A % k 0

& B C:

(n \ v . / 0 g W ' , M 2 , R B ' j D Mq n , R e y G] ~ > ? N
v ' r ~ & M k : > ? 4 @ $ U , > ? (n ~ ' - N

P1.16 #	$ 0.00Hz) 0.00Hz
P1.17 # 2	$ 0) 3600.0s 0.0s

W STOP ^ { k - k
x - 0
$ # 2 0 2 # $ $ # 2 #

P1.18	$ 0) 3 3
0	1 n
2 J	3 n F J

& B C *

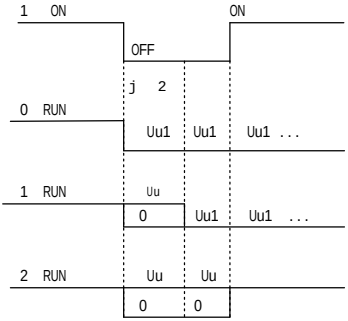
R . / u q \ ] r ~ & M m (q g > ? & `, 2 > ? }
R 2 ? L M d r ' ~ & M \ I J s j k g I { 1 $ 3 d U V % ~ n > ?
4 @ > ? & N
15kW (' - I n > ? 4 @ N

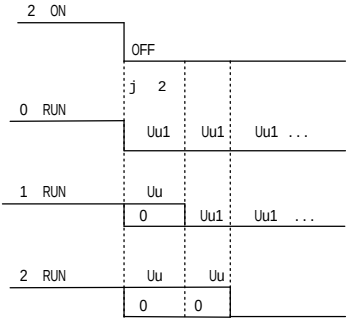
P1.19 n	$ 30.0) 100.0% 100.0%

$ y . W t $ 2
F : F 8 9 ,)
n @ x F @ x Pd.11 : 380V n @ ! @
x 52V(W 0 n x 700V) 220V 23V(W 0 n x 350V) o 1 Pd.11

P1.20 j I	$ 0) 2 0
0 j Uu1	1 j 2 , Uu Uu1
2 j , Uu	
P1.21 j 2	$ 0.5) 10.0s y
P1.22 j ,	$ 0) 1 0
0	1 %
P1.23 j % 2 %	$ 0.10Hz/s) /s 10.00Hz/s

: 2 u @ + I , Uu 2 D 5-1-8 /
2 u @ Uu Uu1 5-1-8 / E Uu 2 X 0 R H
+ Uu E Uu1 2 + 9 [- @ v 300V + 3
R H Uu1
j , 1 2 j , z P1.23 j % % % 2 R H
+ $ 2 R $





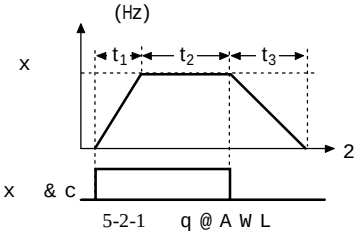
5-1-8 | Y }

5.3 ~ • @ A " P2 $

P2.00 x	$ 0.10Hz) . 5.00Hz
P2.01 x P 2	$ 0.1) 3600s 6.0/20.0s
P2.02 x % 2	$ 0.0) 3600s 6.0/20.0s

P2.00) P2.02 4 x 2 J :
5-2-1 / t_1 t_3 x P F % 2 t_2 x 2 P2.00 x
Q P2.01 F P2.02 $ x P % 2 0 k 2
x P 2 t_1 z z x % 2 t_3 3
Q P2.02 $ $ P2.02 $ 0 2 0 % P2.02 $ 0 2
+ G Q

$$t_1 = \frac{x \quad U x \quad P \quad 2}{}$$



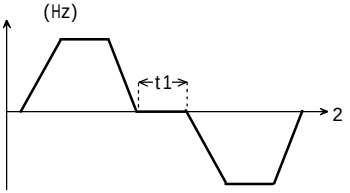
5-2-1 q @ A W L

& B C *

1 p ? y G ? 1 Z 0 l G ? M ? :] 4 H 7 r N
2 p [?] r 0 m Q M ? y G 3 M ' L K > ? t u '] M] 4
}
3 p T } A | > t u m l G ? | > N

P2.03 C 9 2	$ 0.0) 3600s 0.0s

: Q k C Q C k i I m
2 5-2-2 / t_1



5-2-2 r Z [4

P2.04 I	$ 0) 3 0
0	1 0
2	3 j

: 0 2 $ / + $ @

P2.28 P 2 2	$ 0.1) 3600s 6.0/20.0s
P2.29 % 2 2	$ 0.1) 3600s 6.0/20.0s
P2.30 P 2 3	$ 0.1) 3600s 6.0/20.0s
P2.31 % 2 3	$ 0.1) 3600s 6.0/20.0s
P2.32 P 2 4	$ 0.1) 3600s 6.0/20.0s
P2.33 % 2 4	$ 0.1) 3600s 6.0/20.0s
P2.34 % 2	$ 0.1) 3600s 3.0/10.0s

b 7 = P % 2 2 3 4 4 P % 2 1 Q P0.18 P0.19 4 P % 2
Q j w x P3.01) P3.05 0 + P % 2 1 $ w x * {
6 7 2 % 2 k = b 2 F x P % 2 j w x
Q G $
$ w x * 2 + P2.34 % 2 P1.10
P % 2 0 n E | P2.35 P % 2 q t $ 2 / q 10 q

P2.35 P % 2 q	$ 0) 2 0

0 1 q 1 10 q
2 0.1 q
P % 2 = P % 2 " P % 2 q

P2.36 Y Z & [	$ 0 1 0

0 G p 1 & [8
G p & [8 3 b c 0 $50 (& [s +
30 j / F 1 + 3 7 . 4 4 T f 1 5 . 1 2 0 T D (8) T j / F 1 + 2 7 . 4 0 T D j / F

P2.49 PG% r 1	$ 1) 1000 1
P2.50 PG% r 2	$ 1) 1000 1

$ 3 (PG) . 2 $ PG % r 1 = .
r w PG % r 2 . .
t r tØ U

P3.03 X3 w x	$ 0) 79 37
P3.04 X4 w x	$ 0) 79,82 0
P3.05 X5 w x	$ 0) 81 0
P3.06 X6 w x	$ 0) 79 0

w x X1) X6 w x $ P3.01) P3.06 4 { & ! " H 4 H
4 w x { 8 S 2 $ 1 m 5-3-1

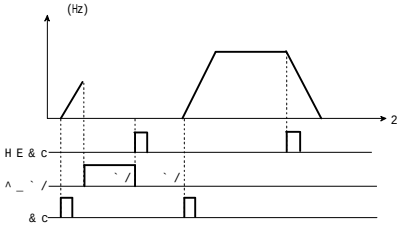
5-3-1

= m 5-3-1 <

0- 4 4 w x w x R w x | } 3 g h W w x I m n |
} = w x 4 p K L ~

1) 5 1 P3.15 $

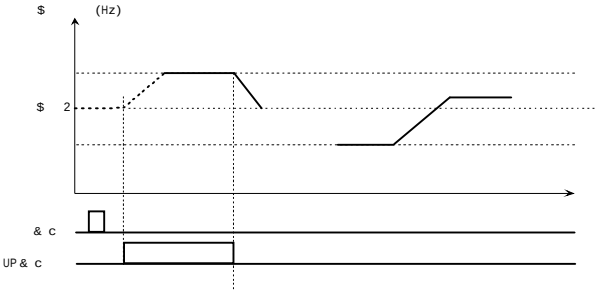
6-RST H E | } ^ _ STOP/RESET ^ * | } 3 4 RST w x * |
} | } 正 w x RST Z c { . W k H E (
T - - 5-3-1 /



5-3-1 .

7-FC $ 0 S FC $ w x + $ Q P0.06 $ 2 0
w x + $ Q P0.05 $ 1 FC w x 9
$ B

8) 9 C x Z c FJOG/RJOG
8 Z c 正 2 4 FJOG w x k


$
(Hz)
$
2
& c
UP & c

16- P % p Z c # g h D & c $ # $

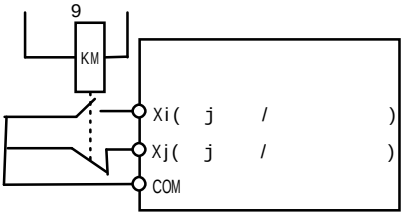
17- p w x 2 + G Q ~ m | } + p

18) 24 26) 29 z

z 2 正 / p ^ _ w x Z c A m z

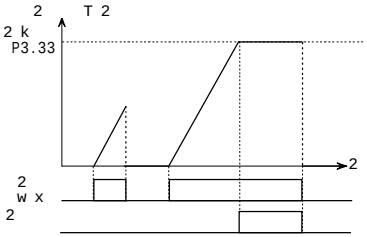
zp Tf 7.44 0 TD 0

EI0 j EI1 j k j W0 8 o
j $ R H 2 EH0 j EH1 j J : 5-3-6
/



5-3-6 /

41- | } P w x = | } C P
42) 44 w x PLC
PLC s b 2 t $ 1 PLC PID s } z $ U22 PLC s
PLC K b 2 K w x 2 K b 2 0 K Z c ` B x 9
[w x 0 STOP ^ b T i 正 2 0
b 8 + 5 4
PLC | } H E PLC | } w x 2 t $ PLC 2 t
z 2
47-PID s PID t $ 1 PID $ U22 PID s
48- / 9
Q P8.10 $ F w x | } $ P8.10
$ 0 2 $ w x $ 48 2 + G 9
49 53 2
49 w x 2 2 2 B T 2 2 0
$ 2 k P3.33 2 p T 2 5-3-7 /
53 w x 2 P3.33 2 k E 9 b c + |



5-3-7 ^ 4 q * -

50-T e T T 200Hz 2 $
T
51-T i H E = T i T e Q
74- w x w x 2 36 w x
77-PID 0 PID 2 $ w x $ C 2 $ PID 2 $
w x $ C 2 i
78-PID c b 2 H E PID 8 PI $ w x $ C 2 2 t I ! c b
0
80-PULSE w x . $:
1 P4 } l

81 J PG J w x Z w x E 3
PG A J J C J
82 + J B J PG + J B J Z w x 3 PG B
J F 81 w x Q + J C J

& B C *

I PG 5 L - & ` Q S - ~ & 0 M & 8 12) 30VDC ~ g \ 1 Z m j 2.4.2
| > = t u ~ * g GN

e • 2 = { e • I p K L = C
e • 2 y U / 2 : y $
a L " x 6 7 $ $

0 { 1 1 { 2
2 1- G # P X1) X6 g 5 8 w x
3 2- G # P X1) X6 g 5 8 w x
@ $ & c P0.07 w x 2 { 1 2 1 2 O 5 4

{ 1 FWD REV Z / FWD REV C 9 w x
FWD REV C $ FWD 2 $ REV 2 0 C P2.38 1 p C
+ p 0 ! " C + C z 2 2 p w x 1 /

{ 2 RUN & c F/R: { 2 $ RUN 2 正
F/R $ 2 F/R= 2 F/R 2 C F/R $ 2 Q $ RUN 2 p
w x 2

1 FWD REV Z / FWD REV C HLD 2
9 w x FWD REV C $ FWD 2 $ REV 2 C z 2 2
HLD ON H L y L 4 0 TD (#) Tj /F13Tf 15.12 0 TD 0.24 T44 0 TD (z) Tj /F1+3 7.44 Tf 7.(rk) Tj 0.24 Tc (SZ) Vc (

4 0 T D (=) T j / F 1 + 6 7 . 4 4 T f 1 6 . 8 0 T D (@ T f 1 5 . 1 2 0 T D 0 T c (

w x UP/DOWN 4 UP/DOWN w x $ L UP/DOWN ^ 4 UP/DOWN w x $ L

P3.18 { UP/DOWN	$ 0) 2 2
0 k STOP UP/DOWN H E 0	
1 k STOP UP/DOWN H E 0	
2 k STOP UP/DOWN H E 0 k P0.03 $ 1 2 P0.02	

UP/DOWN 1 5-3-3 5-3-4 /
P0.03 $ 1 ^ _ $ 2 P3.18 $ 2 2 { $ P0.02 2 2
& 1 P0.02 ' (

P3.19 D0 w x 4	$ 0) 37 0
P3.24 9 1(TA/TB/TC)	$ 0) 37 19
P3.25 9 2(RA/RC	$ 0) 37 0

9 2(RA/RC @639 X
v 2 W : { w x D0 9 1 3 w x a L
8 j b F 1 m 5-3-4
5-3-4 1 * +

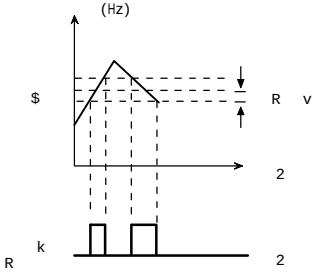
	Q R	
0	NULL	
1	RUN	I | } w x
2	FAR k	z P3.26 k R v
3	FDT R	1 P3.27 P3.28 R R w J :
4	FDTH . k	$ % . C k . C " x k 2 w x
5	FDTL k	$ $ C k k < 0 J / F 1 + 8 6 . 4 8 T f 6 . 4 8

	Q R	
29	_ `	C I _ ` 2 w x
30	i	0 2 w x
31	j	j
32	j	j
33	1	$ 9 2) 3 E
34	j	j
35	u R ULP	$ u 2 u R
36	z	g 5 8 S z w x 18) 24 26) 29 w x
37		74 w x 2 w x

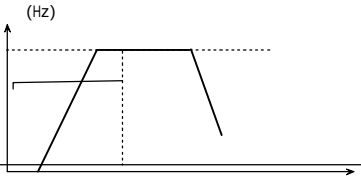
P3.26 k R v	$ 0.00) 10.00Hz 2.50Hz

k $ 2 { R v $ 0) &10.00Hz $

$ R v 2 J w x 5-3-8 /



5-3-8


(Hz)

5.5 ' (" P4 $

P4.00	$ 0) 3 0
0	1 AI1
2 AI2 S2R4GB S2R75GB j	3

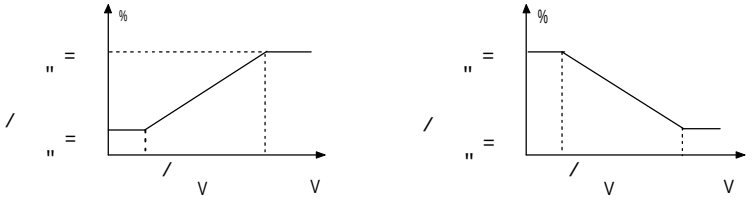
$ P4.00 $ 0 2 P4.01) P4.05 $ 4 AI1 } P4.11) P4.15 $ $

2 W $ i C K L

P4.00 $ 0 W 2 P4.01) P4.15 $ P4.00 G ' (x e • 2

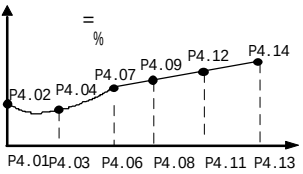
G • 1 W G 0

$ P4.00 $ 1 2(S2R4GB S2R75GB j) 2 D D:D> D8 D D21+5 7.44



5-4-1 ' (* - {

2 $ P4.00 $ 1 2(S2R4GB S2R75GB j) 3 2 P4.01) P4.04 P4.06) P4.09 P4.11) P4.14
. (1 z $ F G 4 l $ l S x
5-4-2 / P4.01 P4.03 P4.06 P4.08 P4.11 P4.13 , b O P



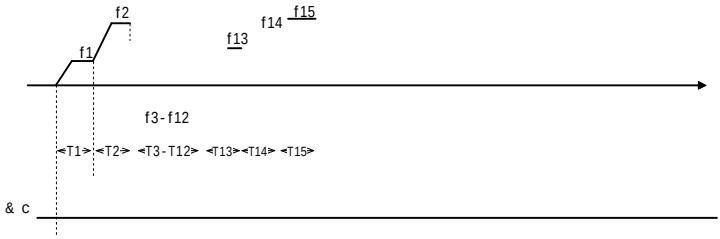
5-4-2 ' (* - {

3 e • 2 = { e • I p K L = C
e • 2 y U / 2 : y $
a (2) T j / F 1 + 4 7 . 4 4 T f 7 . 4 4 0 T D (D) 9 . 8 4 1 + 9 7 E 0 4 l

P4.31 AO1 b	$ -100%) 100% 0.0%
P4.32 AO2 b	$ -100%) 100% 0.0%

0 b Sbpm/ Oy Skpm/ Sypm/ 0• Sxpm/ +
y=kx > 10b AO1 b 100% = 10V 0• Z 0) 10V = 0) 8
i F ^ b U 3 G 4 g h l 0 o
0 2 8V 2 3V + O y $ S -0.50 p b $ S 80% p

P4.34 DO	$


f2
f15
f14
f13
f1
f3-f12
<T1> <T2> <T3-T12> <T13> <T14> <T15>
& c


T1
T2
T4

P5.28 T10 z b $	$ 1 F) 4 r 1F
P5.29 T11 z b $	$ 1 F) 4 r 1F
P5.30 T12 z b $	$ 1 F) 4 r 1F
P5.31 T13 z b $	$ 1 F) 4 r 1F
P5.32 T14 z b $	$ 1 F) 4 r 1F
P5.33 T15 z b $	$ 1 F) 4 r 1F

* t z P % 2 F v 8 { 4 1 m5-5-1

5-5-1 PLC i @ A] ^

o	P % 2		
1F	P % 2 1	P0.18 P0.19	F
1r			r C
2F	P % 2 2	P2.28 P2.29	F
2r			r C
3F	P % 2 3	P2.30 P2.31	F
3r			r C
4F	P % 2 4	P2.32 P2.33	F
4r			r C

P5.34 b i	$ 0 1 0
P5.35 b z	$ 0) 15 0
P5.36 b z 2	$ 0.0) 3600 0.0

b z P5.35 $ PLC z

b z 2 P5.36 $ PLC z 2

P5.34 1 2 b z P5.35 b z 2 P5.36 0 R H 0

& . .

P7.03 PIDC J U1	$ 0)5 0
P7.04 PIDC J U2	$ 0)5 0

0 PG J P7.03 / j P7.04

1 AI1w x 2 AI2w x(S2R4GB S2R75GB j)

3 j 4

5 A

P7.05 C J	$ 0)5 0

0 PIDC J U1 1 PIDC J U2

2 MIN PIDC J U1 PIDC J U2 3 MAX PIDC J U1 PIDC J U2

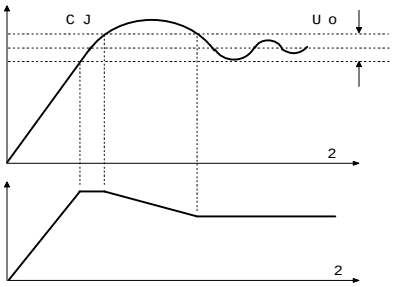
4 PIDC J U1>PIDC J U2 5 PIDC J U1-PIDC J U2

PIDC J F G C J G 02 PID { 2

= (=) U { C J G 2

P7.22 ~ U o	$ 0.0) 999.9 0.0

: $ C J F $ U PID ~ U o $ 2 PID K # $
5-7-1 /
$ $! C F ~ U o - C y
C 8 9 (•
PID 2 ~ U o $ P7.22 = d Q PID 2 ~ U o $ P7.22
5-7-1 /



5-7-1

P7.23 PID }	$ 0 1 0

0 1 C
$ PID O P W O P O P 2 C
C $ PID O P W O P % / 2 Y C

P7.24 c b	$ 0 1 0

0 k . 2 p c b 1 k . 2 9 [c b

& B C *

R r k ~ M I J U 0M /) F)] M P 9 N

P7.25 正 _ `	$ 0 1 0

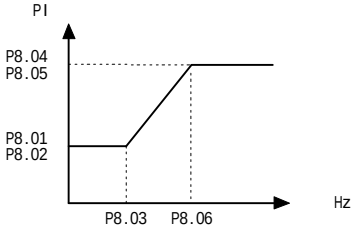
0 正 1 正

& B C *

2 PID] (n N

P7.26 _ ` " 2	$ 0) 999s 120s
P7.27 _ ` a	$ 0.00Hz) . 20.00Hz
P7.28 ~ • a	$ 0.0) 100% 80%

i 2 p ! F 6 7 S _
` a p " 2 E 正
" 2 a + $ I S _ ` p | }
9 v ~ • | } @ C J (T - v S ~ • p a 2 E / 5-7-2 ~ • a $
= PID C J b !
^ _ . 1 2 @ $ t PC PC.01-PC.20 @ PC.16,PC.17 $ 1 { $ 0
` / | } 1 2 @ $ i 1 2 L S ENTER p n W
M n @ v



5-8-1 PIWL

P8.14 $ = >	$ 0.0%) 200.0% 102.4%

= Z c = >

P8.15 P 2	$ 0.00) 120.0s 0.50s
P8.16 % 2	$ 0.00) 120.0s 0.50s

$ 2 P % 2
B 0 k 2 P 2 B k 0 2 % 2

P8.17 T U = >	$ 50.0%) 200.0% 117.0%

= 0 2 = $ O

P8.18 T U = >	$ 50.0%) 200.0% 117.0%

= D $ = 2 b + P
C + % /

P8.23 i W	$ 0.0) 50.0% 0.0%
P8.24 i a	$ 0) 20% 5%

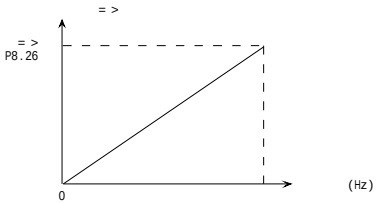
P8.23 i W = > i 2 i 2 # 8
i a $ = 0) 20%

P8.25 $ U	$ 0) 5 0

0 P8.11 T U R k z $ 8 T 1 AI1
2 AI2 (S2R4GB S2R75GB j) 3 j
4 5 A

P8.26 = > O y	$ 40.0%) 160.0% 100.0%
P8.27 = > y L	$ 0 1 2 0

0 = > 1 = > j
2 j
C n D = > = > j b E C
n # R k
P8.26 $ = > 100.0% = $ = > y L S = > p 2 =
> $: 5-8-2



5-8-2 s r < / * + S

P8.28 i f J 2	$ 0.05) 10.00s y

i f J D @ 止 J $ # [2

5.10 V/F " P9 $

P9.00 V/F l $	$ 0) 4 0

0

& B C *

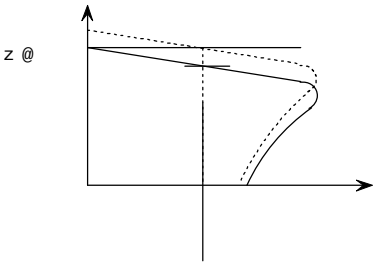
1 p j k g I q m & ' $ 3 K
2 p ? c & '] M I J , ` , ? 2 3 B M d & ' j k v ` , & n V/F \ N

P9.08 W p x	$ 0.00) 50.00Hz 16.67 Hz

4 W p 1 5-9-3 p P9.00 g h V/F l

P9.09 U = >	$ 0.0) 250.0% 75kw 80.0% 93kw . 0.0%
P9.10 U = > 2	$ 0.10) 25.00s 2.00s

L t U T L U = > a L G
} 5-9-4 /



PA.01	1 7	$	2) 56 4
PA.02	1	$	0.4) 999.9kW y
PA.03	1	$	0) 24000r/m-280.855 0.851 0.86H
PA.04	1	$	0.1) 999.9A y

PA.01) PA.04 $ E 1 z $

J :

s d Q Q 8 I ! " ! / 8 s

4p j k n 7 3 ' b D PA.29 m ? I r 0 N

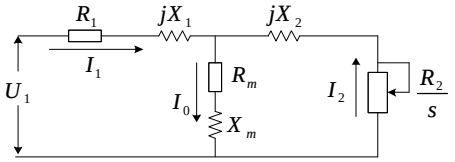
5p j k n 7 3 M T } C - At- M j k n 7 q { (M T } s C AtE N

4 p 2 T U F T U ({ L I_0

L_m h I U @ f

$$I_0 = I \bullet \sqrt{1-h^2}$$ T U $$L_m = \frac{U}{2\sqrt{3}pf \bullet I_0} - L$$

. & 4 5-10-1 /



5-10-1 P

5-10-1 R_1 X_1 R_2 X_2 X_m I_0 b 7 $ m x x x x

5.12 MODBUS 2 3 " Pb $

MODBUS F 3 b PLC A MODBUS Q

8 S PLC F 1-31 | F E K B z 正 K E =

8 F 8 | E K E . k D Z c k { 6

* RS-485 z @ q + 8 @

• } B 1200 2400 4800

Pb.03	2 R 2	$	0) 100.0s 0.0s

0 8 2 R
0 2 R V ' Pb.03 $ C W R | } 0 L . W j
EF0 $

& B C *

[ ] F b k M q T r 2 M }

Pb.04	" x 2	$	0) 500ms 5ms

4 . L m $ " x 2 O

Pb.06	L Eeprom	$	0 1 0

0 Eeprom 1 Eeprom

$ 2 s Eeprom $ 1 2 V
! t Eeprom $ 0 2 + @ = Eeprom L =
MODBUS k K 0x00FF t o k EEPROM J $ ^ _ ENTER

Eeprom **e F** Eeprom **8 F ? n 1 i ! F v F " # 5**
$ % RAM **& 8 ' ( ) * + , F - I " 4 5** Pb.06 **'** 0 **. Z**

Pb.07 CCF6	I	$	0 1 0

0 9 [k 1 G Q
$ 2 s ` / $ 1 2 0 E W ` / z 2
.$ 0 2 ` / 9 [

Pb.08		$	0 1 0

0 1 Z c
$ 1 2 . k Z c 0x06 0x10 Z c I

[1 B 0.01Hz k 0.1Hz k 1Hz : O % 6 1 P0.17

PC.05	r/min	$ 0 1 1
PC.06 $	r/min . /	$ 0 1 0

0 ` / 1 ` /

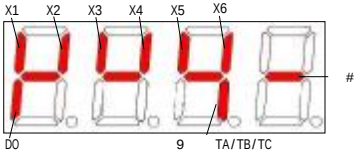
PC.05 $ 1 | } ` / E r/min 0 $ 0 + D 0 T c (@ j l f 1 7 6

/ D

PC.19 w x | } E	$ 0 1 0

0 ` / 1 ` /

PC.19 $ 1 + ` / w x | } 0 $ 0 + ` / = %
w x | } w x X1) X6 + W 6 7 w x D0 9 1 | } LED
Z z #] D m w | } z # m / J w x | } | }] + m / J w x
| } S # z 5-12-1 /



5-12-1 O P

PC.21 ` /	$ 1) 20 1

PC.21 ` / $ Y ` / $ 1) 20 b 7 = PC.01) PC.20
$ $ ` / ` / 0 ` / 2 B $ $ B b B / k 20 2 6 1
S v ` / 0 ` /
Y ` / @ PC.01 ) PC.20 Y @ 2 $ , CALL ` /
2 b Y s ` / 2 Y ` /

PC.22 ` /	$ 0.1) 999.9% 100.0%

PC.22 ` / W { ` / ~ U = 8
= "PC.22 PG
=120" # 7 "PC.22 PG
$ =PID $ "PC.22 PG
$ =120" $ # 7 "PC.22 PG

PC.23	$ 0.1) 999.9% 100.0%

PC.23 W { ` / ~ U = 8
= "PC.23 PG = "PC.23 PG
$ = $ "PC.23 PG $ = $ "PC.23 PG

& B C *

C ~

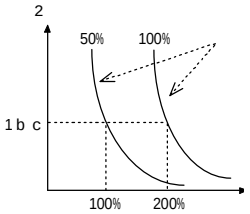
a W , 9 Pd.01 Pd.03 $ 1 F
2 a Pd.02 Pd.04 $ G

Pd.01	1 a	$	0.0) 10.0V 10.0V
Pd.02	1 G	$	0) 4 0
Pd.03	2 a	$	0.0) 10.0V 10.0V
Pd.04	2 G	$	0) 4 0

0 w x AI1 1 AI2(S2R4GB S2R75GB j)
2 j 3
4 $

Pd.05	x , 9	$ 20) 110% 100%

/ 0 = P - = z = ! "
5-13-1 /



5-13-1 S L] ^

! "
= U 100%

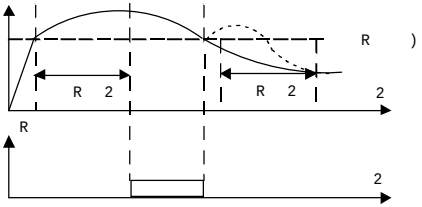
Q
{ p ! " p 8
o , ! 2 G . O 8 (10%) o , U 2 % / 8

& B C *

& ' ~ 6 7 & K . / 0 ~ 6 7 & K q %] M 2 3 g 7 Pd.05 ~ m (& ' ~ N
? T] PWM M d OL1 N

Pd.06	i R)	$	20.0) 200.0% 160.0%
Pd.07	i R 2	$	0.0) 60.0s 60.0s

/ 0 i R) Pd.06 4 i { $ J =
b !
i R 2 Pd.07 4 # [R) Pd.06 # [8 2
i OLP2
i | } W 8 R) C # 2 R 2



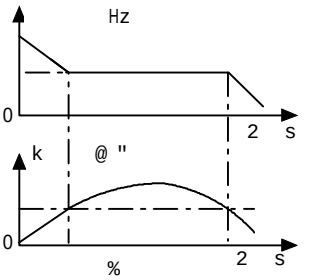
5-13-2 w +

& B C *

1 p 3 / S ! 0 A] ~ g I 1 " k # d R . / 0 3 / ? T N
2 p v 3 / S] M [$ T & K R 3 / S ! 0 M x ' ~ 3 / S]
0 N

Pd.08 ^	$ 0) 3 1
0	1 P % 9
2 !	3 2 -
Pd.09 ^)	$ G 30) 180% 160% P 60) 140% 120%

/ 0 P % } 2 Q P 2 d Q u . W
Pd.08 1 2 3 2 G
$ 1 2 P % 2 $ G



5-13-5 z s i

Pd.12	J R •	$	1) 100% 100%
Pd.13	J R 2	$	2) 255s 10s

R J J) . J $ O

Pd.33	k x S2R4GB F S2R75GB j	$ 100.0%) 300.0% y
Pd.34	k S2R4GB F S2R75GB j	$ 0 1 1

0 p 1 ! "

k x 100.0% = Pd.33 $ 300.0% 2 Pd.33

k x 230.0% e & :

k ! k C : k

Pd.35 k J R 3030G/3037P

k 30.5 Tf 6.48 0 TD . 477.12 TD 15 Tf 6 60 0 TD bc

PE.11 T 2 h	$ 0) 65530h 0
PE.12 T (MWh)	$ 0) 9999MWh 0
PE.13 T (KWh)	$ 0) 999KWh 0

T 2 (h) I | } 2 Q T
T 2 (h) | } 2 T
T (MWh) T E
T (KWh) T E

PE.14 IGBT	$ 0.0) 200.0 (0.0 (

` / IGBT $

PE.15	$ 0.0) 200.0 (0.0 (

` / $

5.16 W L " PF $

PF.00	$ 0) 9999 0

$ B $ 0 m / $ 2

PF.01 $ 0 j ! " E y I m 0 (F p 2 0 "
I p 2 { | + : F p 2 s 1 4 S ^
_ . ` / 0 { . / ` / + m / ! " 0 { . / ` / + ! "
PF.01 $ 1 $ $ P0.02 F { | p
PF.01 $ 2 $ j p

& B C *

v W ' j k ; < M PF.01 g 7 r 0 = Y j k > ? @ M x m v \ n d g 7 /) A j PID A 7 v O P PID k A 7 N PF.01 g 7 r 1] M n v \ n d g 7 /) N PF.01 g 7 r 2] M 4 v \ n { N

PF.02 B L	$ 0) 3 0
0	1 $
2 R H $ (\ \ $)	3 R H $ (\ $)

PF.02 $ 0
PF.02 $ 1 t $ PE B PE.00 k PE.08 b
PF.02 $ 2 t R H $ ($ F $)
PF.02 $ 3 t R H $ (F $ $)

& B C *
[, 4 . / 0 j k g 7 B q C 1 1 D M x m ` , PF.02 g 7 r 2 ~ (n M E S 6 M F R G H g 7 j k N
I J K L $ E S 6 g 7 M PF.02 m ? E r 0 M J C k ~ T M N O { N

PF.03	$ 0) 3 0
0	1 j
2 .	3

1- j ^ _ . $ t k
2- . $ t B k ^ _ .
3- t ^ _ . $ $ k
$ PF.03 _ @ ! " ^ _ $ PF.03 正
^ _ $ PF.03 正 ^ _ / PF.03 G R H 0 ^ _ / 2 STOP ^ R H ^ _ | } ` / 0 X Eeprom + CCF3
/ 3 4

3	4	3	4	3	4
dn0	j	dn1		uP	.
SUCC		StP	^ _ Stop ^	rEt	
EFLF	8 T	bdAF	^ _ . L	rEF	L
UrtO	X . 2	brtO	^ _ . 2	LdtO	2

& B C *
. / 0 v P $ M [` , (n M m Q R , g 7 f ~ j k M S T U ~] N
j k Q R (n Q R V ' U % W D M > ? ! A ' - ~ . / 0 l G Q R }
6000M-S2R4GB A S2R75GB X W Y 3 V110 $ ( ) M 6000M) S21R5GB A S22R2GB A 6000E ! X W Y 3 V140 $ ( ) Y 3 j k Q R N

PF.04 G/P	$ 0 1 0
0 G 9	1 P & }

$ @ = G/P 8 s + B z 0 PF.02 B L 2

$ G P t $ 1
0 2 5.5kW G 7.5kW P $ PF.04=1

& B C *
Z M (n Q P - r G -] M T 1 [N

PF.09	$ 0) 9999 y
PF.10 k	$ 0.00) 99.99 y
PF.11 0 F b	$ 0.000) 9.999 y
PF.12 k 7	$ 0) 9999 y

[1] 2 3 4

6.1

R 8 S 2 ^ _ . ` / z 2 X PWM | }
Z / [STRIP p . / x G Q ~ 2 T R S b F P (
R S P F $ M正 S p / H E ^ p
j w x H E 4 5 $ w x ` $ 6 7 W $ 3 正 (T
x O 3 W U 8 H E 0 SSC p +
10s O ! " H E ` / 0 S E 2 8 7 $
k @ E o S 3 / * ^ p 3 5 | } x
2 = $ PE.00) PE.08 S

6-1

Uu1 k u @ I @ I R S U @
I R S R) $ u

T			Q
			% / " # P 2
			% / " # 2
		V/F l	V/F l F W
OL2		F @	R S F @
			W 2e
		P 2	
		^)	

6.3

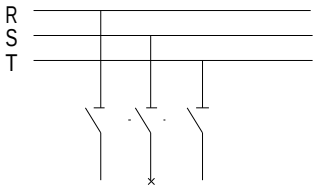
E g 8 R S { b J P F R S F P
<

6-3

	U @ sP Uwx R S T. CHARGE LEDZ / [# s	U U x RS U @ nwx p
	@m wx U V W @ s	U x
	Q sE	% 4 Fa$
	^ _ . `/ RSTRIP[s./	aL $ S m 6-1
	s Zc	RS wx s
	C $ s Zc	$!"C Zc
	wx s x .	wx x .
	@ s	RS @
	$ s	$
J C	wxU V W s	U V W = P2.45
1 y	W s	
	s	% 4 "#P% 2
	$ s	RS $
	@mRS wx @- s	RS V/F }
	s	% 4
	s	% 4
	J U J	RS J U J = J U AC v U
	U	RS U
P	' xb	H
	•	•
	v	"\
	M)	M
	J)	RS

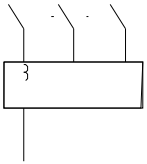
[5] 6 7 8 9

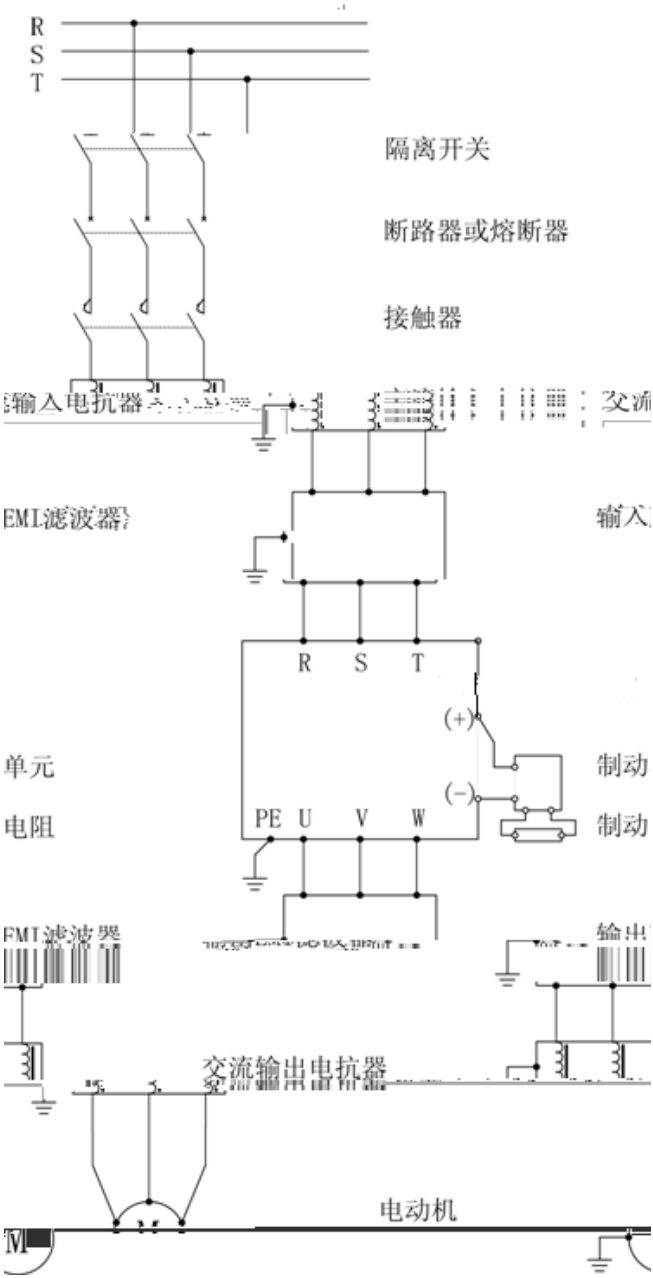
7.1 #] c



' N :

W





7-2 3018G/3022P #

7.2 #]

7-1 I #] G

] / c			* h	*EMI	* q N q
	: 9 p { W T U	2 9 U p x	- • U X Y	% / E K L Q (N / 20 j 2 U Q (N 20 j 2	2 : ~

4 =* g k

7.2.1 h * -

u • ` 6 7
u
I I U o o ! 10 1 .

I z 8 U . = : = >
I J U @) e 3%

7.2.2 q N q

15kw n 2 @ 18.5kw v 93kw
Q 110kw . n +
j b j b q j b z @ q
j b , { x v W
8 10% z m
7-2 q c d Q R

2 x E j n ., a L T U
U U : R = Pb
R a L

$ $

8.1.2 ^

R S 2 8 9 U m ` / W U Z / [\ ] 5) 10 b c
O R S 9 o r j @ G L
R S o m 8-2 /

8-2 ^

R S <	R S o	=
W w x W w x	s s	
+ ,	s ? @	4) 6kg/cm² @ K @
PCB V W X	s ? @	4) 6kg/cm² @ K @
Y Z & [	s s P s c @	Y Z & [$ c @ F
k	s ? @	4) 6kg/cm² @ K @
o	s >	o
	h s '	t q K h

R S 5 t k k 5 P k s + T
` / | } v T k : k IGBT { | k
2 4 5 z l m R U 7 2] @ m
@ @ m @ m } m k &
2 z 8 m V !
• } ' 40MHz / • j • } 2 + 100MHz
. / • / • (T V ' N
U = J J) 2 } T
Q p V h X X a V } X C F } X V V
8 - h o @) $ } X v k V } X
Q M L
0 V W o @ X (T 2 $ o J $ o @ l X t - % &
V W h X (T t W w x R S T U V W PB(P1) + - j W v @
s J f g m 220V s 250V 380V s 500V 660V s 1000V W
f g m m
= 380V s W = h / 5M ' W = h / 3M '

8.1.3 ^ m [

(T - = j x k % & F
x k % & { F k z z 8 [2 m *
6 7 | & 6 7
m 8-3 / @ 2 2
8-3 8 m [4

k J	0 •
Y Z & [	2) 3
o	4) 5
V W X	5) 8

8.2 /

W K 2 # 2 V k
I q * . C . ? @ @ & '
I 8 + Y X W o } R R H Y 2
@ ; ; W @ v @ 2 1) 2 / 2 .
I . (X v 4 V 8
5 P o @ X | t T % & - v k = h X 500V
f g m X { h R / 4M '

[B] C D ,

) E C 8 C D , F < ! G H I N

@ Z G B

S y 24 S

Q (b W 3 >

I ! " G

I 0 • *

I

I A k L

I j

I o ~

I Q I & H @ { | G v H F H J 2 T f **8** .

I

I :): **f** } :)*) **)**

I **8**

)f **8**

> { E & H ' (;

I u $

I ' (

I) $

I * * +

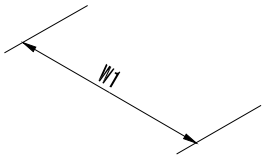
I

I { | } H

L O M 8 P Q

, - = $ T ' t .

1 /


W1

2

p R S

R c		_ o T	o T U ~ • kVA	_ o V• A	V o V • A	W o p • kW
ALPHA6000M	S2R4GB	1PH 220V 50/60Hz @ 176) 264V / &5%	1.0	5.1	2.4	0.4
	S2R75GB		1.7	9.2	4.5	0.75
	S21R5GB		2.8	13.1	7.0	1.5
	S22R2GB		4.0	23	10.0	2.2
	3R75GB		1.6	3.7	2.5	0.75
	31R					
ALPHA6000E		3PH 380V 50/60Hz @ 304) 456V @ / 3% / &5%				

X s Y Z [

@	0) @
	G 150% 1 b c 180% 20 | P : 120% 1 b c 150% 1 |
	J /
	0.00) 650.0Hz 0.0) 1000Hz j
	{ Z c / 0.01 " -10 ( ) +40 (Z c / 0.01 " 25 (/ 10 (
$ b	{ Z c 0.01Hz Z c 1/1000
b	0.01Hz
$	0) 10V 0) 20mA
P % 2	0.1) 3600 | P % 2 i $
	P 125%
@ / }	4 V/F } g 5 V/F } $ = PG V/F
	@ u @ ^ x , 9 , @ W u @ J J = J W
	-10 ( ) +40 (@55.84 Tf 12.96 0 TD (`a) Tj 6F1+1 6.48 Tf 12.96 0 TD (67f 357.36.6.48 Tf 6.48 0 TD ( ) Tj 46

3 MODBUS 2 3

3 PLC . E $ MODBUS L u

I MODBUS "
L Q 1 | (PLC) F 1) 31 | " B B K V

z 2 1 | K $ G 3 Z 3
K k Z c P ; C J

I 0 •

	RS-485
	@ q + 8
	1200/2400/4800/9600/19200/38400bps R X / / W X L # RTU 8E ASCII 7 8E p E RTU 1E ASCII W X 21E W X 22E
	MODBUS RTU ASCII j
|	31 |

I w x

MODBUS w x 485+ 485- w x

I 2 4 5 ; <

(1) W { | b N

(2) Q m n m n ? w x . 8 w I (p K L ~)

PLC , b

1. U 9 | } PLC F l
2. U
3. ^ _ . $ (Pb.00) Pb.08)
4. 9 U ^ _ ` /
5. x 正 U
6. PLC

I $

PLC 2 $: & S 4 5

P0.03 P0.04 P0.07 P0.11 P7.00 P7.01 P7.03 P7.04 P8.11 P9.19 Pd.02 Pd.04 Pb.00) Pb.08 Pd.16

*4 1: I S $ p G O t Z c L J s + 02H

*4 2: 0 • } F W X E + (T x正 M $ O E . E F E { < $ (T 8 T s + o

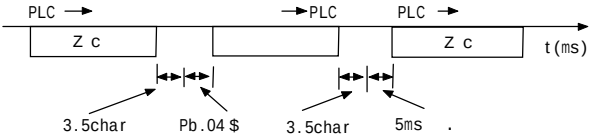
*4 3: $ $ 0 2 . Z c - 0 Z c $ >0 2 E W E

I K

- K L R 1 b a L L K B K F . L ! W X R :

I

2 (PLC) = Z c Z c o z L X



m /

B		Z c 3	L o	CRC W X	2 _
' 3.5char .	1 char	1 char	n char	2 char	' 3.5char .

L W X CRC-16 S W X CRC W X T U :
1 8 CRC-16 T U 2 B 0 z w B $ 1 (16 E ! 1)
2 LSB MSB L MSB LSB T U CRC-16
3 Z c 3 T U CRC-16 Z c CRC-16 = !

2 MODBUS-ASCII

ASCII ` 2 : { A ASCII 3AH 3 ~ A ASCII 0DH,0AH
$ ` F 3 { A 0)9 A)F @ j ASCII
K K 4E K 4E L LRC W X Z c L o W X W X
W X L { A F 4 5 E E = 8 K 2 # 1| s + t
n o ~ " 2 / 1ms 8 S /

B E		Z c 3	L o	LRC W X	2 _ A
1 char 3AH	2 char	2 char	n char	2 char	2 char 0DH 0AH

d e f \ ]

(0)31) $ 02 . k g h Z c ! I

I Z c 3

< # MODBUS Z c 3 4

Z c 3 (16 E)		Z c #		#		#	
		/ {	{	/ {	{	/ {	{
03H		8	8	7	7	5	5
06H	S {	8	8	8	8	5	5
08H		8	8	8	8	5	5
10H		11	11	8	8	5	5

I ^ _ ` a H

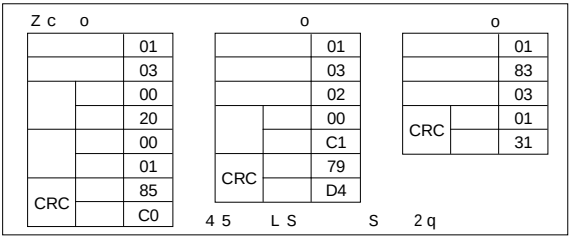
16

[03H]

S { Z c B Z 3 1S { o o b 8 E F 8 E , b
o 8 j b

1 | }

RTU



ASCII

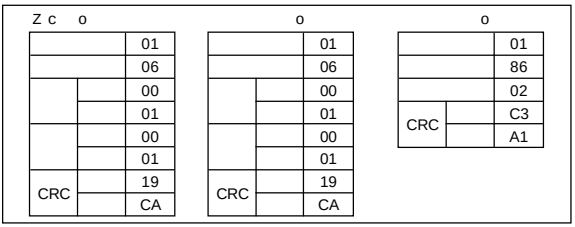
Z c 3A 3031 3033 3030 3230 3030 3031 4442 0D0A LRC W X DB
3A 3031 3033 3032 3030 4331 3339 0D0A LRC W X 39
3A 3031 3833 3033 3739 0D0A LRC W X 79

[06H]

S { Z c S { k Z Z . Z L L (T 3 , b
8 E 8 E , b Z c o

正 1

RTU



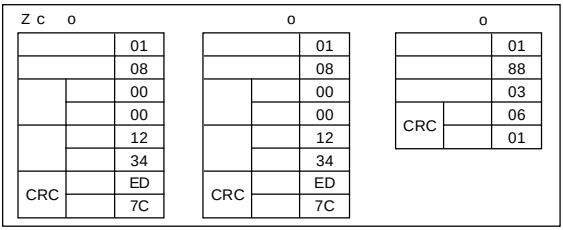
ASCII

Z c 3A 3031 3036 3030 3031 3030 3031 4637 0D0A LRC W X F7
3A 3031 3036 3030 3031 3030 3031 4637 0D0A LRC W X F7
3A 3031 3836 3032 3737 0D0A LRC W X 77

[08H]

W Z c Z c o t b } C J 6 K 3 L
g 5
W C J

RTU



ASCII

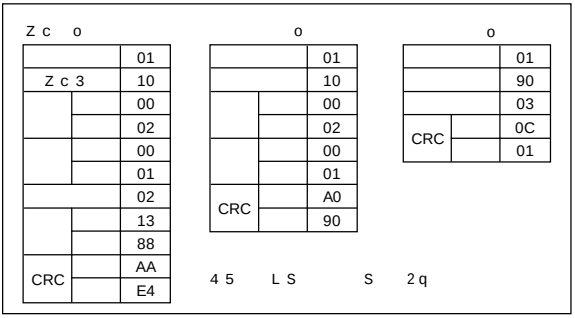
Z c 3A 3031 3038 3030 3030 3132 3334 4231 0D0AA03 3D0

[10H]

S { Z c o k Z Z . Z L L (T 3 , b 8 E 8 E , b Z c o

$ 50.00Hz

RTU



ASCII

Z c 3A 3031 3130 3030 3032 3030 3031 3032 3133 3838 3446 0D0A LRC W X 4F

3A 3031 3130 3030 3032 3030 3031 4543 0D0A LRC W X EC

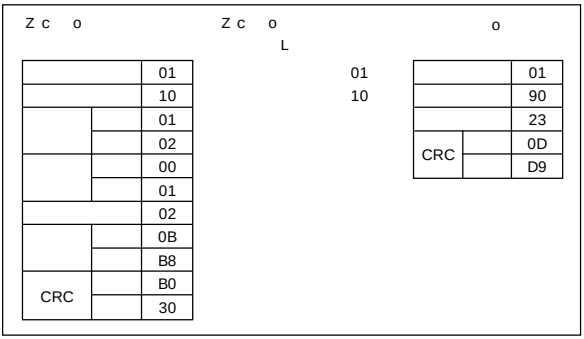
3A 3031 3930 3033 3643 0D0A LRC W X 6C

[10H]

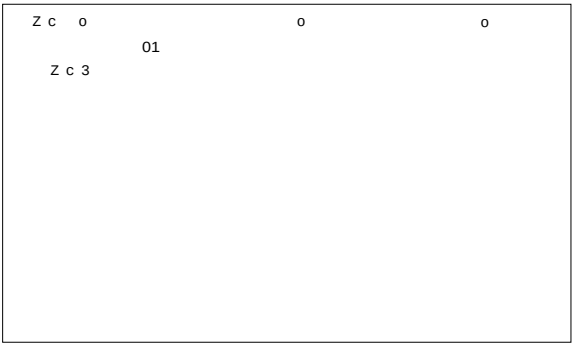
L Z c = MODBUS k K 0x00FF t o k EEPROM J $ ^ _ ENTER t L 3 8 E 8 E , b Z c o 00FFH L K Pb.06=0 2

$ P0.02 30.0Hz k EEPROM

RTU



RTU



[Z c]

3	J	o	$	
00FFH	Z c	m MODBUS	0100H) 0FFFH	7

'

06 F10 L Z c I t L RAM = x正 + .

L 0 I t w @@cL0 @L

MODBUS	J	bit	o		
0026H	AI2		(V) 0~10.00V = 0~1000		
0027H			(A)		
0028H			@ (V)		
0029H	$		Hz		
002AH	j				
002BH	w x | }	0	w x X1	1	0
		1	w x X2	1	0
		2	w x X3	1	0
		3	w x X4	1	0
		4	w x X5	1	0
		5	w x X6	1	0
		6-F	j		
002CH	(j)				
		0	DO	1 p ON p	0 p OFF p
		1	j		
		2	TA-TB-TC 9	1 p ON p	0 p OFF p
		3-F	j		
			V 0~10.00V = 0~1000		
	k @				
	C J (%)				
			(%)		
	T				
	j)				
	| } 0040H Z 004AH y = 002BH BIT0-BITA E				
	j)				

m:

(DEC)	Modbus (HEX)
)	(00FFH)
L)	(0001H) 001FH)
o)	(0020H) 004FH)
0.19	0100H) 0113H
1.24	0200H) 0218H
2.55	0300H) 0337H
3.36	0400H) 0424H
4.35	0500H) 0523H
5.36	0600H) 0624H
7.33	0800H) 0821H
8.28	0900H) 091CH
9.25	0A00H) 0A19H

A.31 Tf6.242B76 0 TD 0.12 Tc (0A) Tj-0.12 Tc (0) Tj0.12 Tc (0H) Tj/F1+6 6.48 Tf16.56 0 TD ()) Tj/F1 6

m 3 (DEC)	Modbus (HEX)
PF.00) PF.12	1000H) 100CH
(8 9)	(1100H) FFFFH)

l Modbus 3 :
m 8 E HI= >1 8 E LO= . { | j

l 3 8 6 m

3	o
01H	Z c 3 o ~ Z c 3 03H 08H 10H
02H	o ~ 1 S ! : ENTER n K [0x00FFH] $ 4 1
03H	S o ~ L S 1 . 16 V03

.12 Tc 281.6 FZ 22148 56 V 6 B T/F 9 3 1 7 6 / i F 1 F 8 5 1 6 2 1 T i 6 ! 0 T T / D A 1 H + . 4 1 3 6 . 3 4 8 0 3 H f 6) . 4 T 8 i / 0 F 1 T D 7 ; 2 (T) i 8 T T /

5 N

N

	=
> 3	?
	3

| 7

KW 7	H
E 2 s U	" { |
%	
` / OC OL OU OH LU	{ |
w x	
H E	@
Q 8 2 : / 2	

6 7

U @ U-V V V-W V W-U V	
@ o KVA	
v U (N m	v (N m
8	@ @ 8
{ | 6 7	