



	
	u 0\$ = >?8@@ e, A7 BC0 7tuQg=D E&>?F GH/I J:K L@jMN20 7 ;<F tu @0gV4MN0\$ /
	u VPQk)RS u @(T:X8U/j0 V8WX.7Y 8Z/[\] j^_`/\] abc 0@ def 08 WXcghijk/(T(lm n 08opq8_r@SQV P 0u @s+ e87>? /
	u Qtu98Urv, -.GHwxU)V)W/ (2@, -.7 rUwx yz IEC8 * { } ~ 0 • @ Q rU /
	u 7 0 kF (7 k@Qg)8 F GH /
	u J8 0j MOSFET J8 \$.k@ R 1 J8 P2@ d(ef V8WXc IGBT 0j.k@s +Qg /
	
	u a 0 0 7 Q @ 2 p 7 7 0 /
	u t (} qj, -. o re7US@ t u 7 (} /

!		1
8	RS	6
1.1	RS	6
1.2	& * +	6
1.3	, -	6
	Q k	7
2.1	• F	7
2.1.1	W	7
2.1.2	Y z	7
2.1.3	P	8
2.2	S F	8
2.3	W w x 7 r	9
2.3.1	k	9
2.3.2	W w x r k / 5	10
2.3.3	W w x c Q k	12
2.3.4	W w x Q k Z	13
2.4	<= W w x 7 r	14
2.4.1	<= W w x f g	14
2.4.2	<= W w x Q k	17
2.5	0 M N Q k r	19
2.6	Q k 4 5 ; <	20
	t u M N	21
3.1	^ _ 7 f g t u	21
3.1.1	^ _ 7	21
3.1.2	^ f g	22
3.1.3	LED i c Z / [.....	22
3.1.4	^ _ 7 t u S	23
3.2	M N Z 7 '	24
3.3	M N	24
3.3.1	, - . M N S Z	24
3.3.2	. 8 t u	24

8.1.3	D 7 . k	98
8.2	a b	98
	a	99
1		101
2	> ? *	104
3	(MODBUS p q	106
4	^ _ c _	114
5	, - . a	115

1.1

j H

7 @ , - .

@ RS 0

S M G

G

7 *)

s

7 ^ J A

0 1 /

@

* /

1.2

0 & * +

ALPHA6000E - 3 R75 G B/ 3 1R5 P B

! " #	6 7 & 8	\$ % & ' ()	\$, . /	9 : ; <
ALPHA6000E	S2 * 4 5 220V	R75: 0.75KW	G * + , -	B * = > ? 4 @
ALPHA6000M	3 * 3 5 380V	7R5: 7.5KW	P * 0 1 2 3 -	
		075: 75KW		

1-1

ALPHA6000E ALPHA6000M

SVC V/F ! " # \$ % &

V/F

' ALPHA6000M-S2R4GB (ALPHA6000M-S2R75GB)

SVC % &

1.3

j , - .

7 X S 0 -

0 / , - .

c C D 7

@

R ALPHA6000E

* + 7 8

.

ALPHA6000M

* + } ~ :



Shenzhen ALPHA Inverter Co.,Ltd.

MODEL: ALPHA6000E-3R75GB/31R5PB

POWER: 0.75kW/1.5kW

INPUT: 3Φ AC 380-440V 3.7A/5.4A 50/60Hz

OUTPUT: 3Φ AC 0-440V 2.2kW 50/60Hz

SERIAL NO: 

MC:1508 018903A215378 W1.33

←

←

←

←

←

←

/ , - .

Q 8

C D G 8 @ @ 8 9 c -

C D G H 8 @ @ 8 9 c -

E @ k 0

1-2

6

Ok

2.1.3

u 2@ t, - . @ \ /] E7 ^ 9d , - . 0 j / 2 _ @ `

a @ \ / Y z I 40 (@ { | b T . 0 j z @ / 0 1 2 3 4 5 6 7 / 2 ~ 4 5

b @ 8 9 / . 0 /

~ + , 4 5 6 7 @ . ~ - C (/

2.2

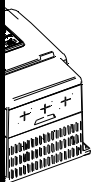
0 * + , - . Y Z & [R * & Y / Y Z c Y ' @ (T t , - . j d S @ {

. e j f 7 g X (h) (T a # 7 @ 2 - 1) 2 - 2 (2 - 1 2 3 D E 6 7

E1

2

2



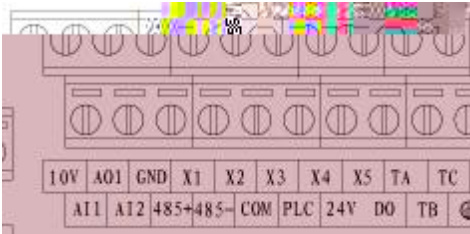
Q k

2.3.3



2.4

2.4.1



2-15 S2R4GB S2R75GB

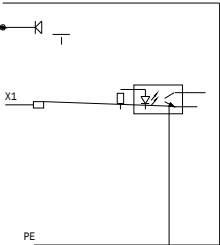
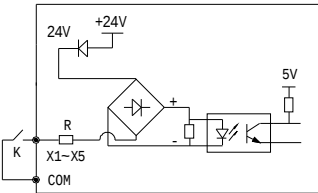
X2	X3	X4			TB
		COM		DO	TA
					TC

[f g G w x	X1	[f g G w x 1	Q 3 D 4 [^ f g 7 : ; G w x @ 1 5.4 I/O w x < = P3 G w x f g /	5 ' N G @ G R=3.9k t 5 G - 400Hz @ G 8 @ 0) 30V @ h 2 U COM
	X2	[f g G w x 2		
	X3	[f g G w x 3		
	X4	[f g G w x 4	Q 3 D 4 [^ f g 7 : ; G w x (@ Q 3 u B G w s j S2R4GB) S2R75GB I g 3 D 4 [^ f g 7 : ; G w x @ 1 5.4 I/O w x <= P3 G w x f g /	5 ' N G @ G R=3.9k t 5 G - 400Hz/50KHz(S21R5GB) S22R2GB) 3R75GB/31R5PB c R .) @ G 8 @ 0) 30V @ h 2 U COM
[f g G w x	X5	[f g G w x 5	\$ Q 3 D 4 [^ f g 7 : ; G w x (@ Q 3 D 4 B G w s 1 5.4 I/O w x <= P3 G w x f g /	5 ' N G @ G R=3.9k t 5 G - 50KHz @ G 8 @ 0) 30V @ h 2 U COM
	X6 S2R4 GB) S2R75G B a j	[f g G w x 6	\$ Q 3 D 4 [^ f g 7 : ; G w x (@ Q 3 D 4 B G w s 1 5.4 I/O w x <= P3 G w x f g	5 ' N G @ G R=3.9k t 5 G - 50KHz @ G 8 @ 0) 30V @ h 2 U COM
[f g G H	DO	W 6 8 7 G H w x	Q 3 D 4 [f g 7 G H w x @ 3 Q R u : ; G H w x / 5.4 I/O w x <= P3 G H w x f g /	5 ' N 6 8 7 W G H / 8 u 8 @ 0 V) 26V @ 5 x G H 8 9 50mA @ G H - 0) 50KHz h 2 U COM
9 8 . G H	TA	9 8 . G H	Q 3 D 4 [^ f g 7 9 8 . G H w x @ 5.4 I/O w x <= (P3) G H w x f g	TA-TB X TA-TC e x o ; @ 250VAC/2A COS : =1 @ 250VAC/1A COS : =0.4 30VDC/1A
	TB			
	TC			
	RA	9 8 . G H		RA-RC e x o ; @ 250VAC/2A COS : =1 @ 250VAC/1A COS : =0.4 30VDC/1A
	RC			% 639 & !
PLC	[f g G v w	[f g G w x v w	H 24V r @PLC 24V 0 j ' N / 4 j (PLC 2 T ; <= w x 7 SW4 " k /	X w x <# NPN F PNP r S Z % 639 & !
8 U	10V	+10V 8 U	= >10V 8 U h 2 U GND	5 x G H 8 9 20mA W 8 @ 5 x Q] 12V
	24V	+24V 8 U	= >24V 8 U h 2 U COM	5 x G H 8 9 100mA
	GND	+10V 8 U h 2 U	F >10V 8 U 7 h 2 U	0 j COM ' N +10V) A11) A12) AO1 v w
	COM	+24V 8 U v w	{ w x Q (	GND ' N
	PE	m n r U	(w x r k m n ? r U / k) 485 p q k) 8 8 1 k 7 m n ? Q r j w x	j 0 j W r k w x PE J

2-21 PLC / 1 2 3 4 5 6 " 7 8 9 : \$
Q R S T U PC@ 3 Q R PLC@ B 0 * + , - . / (PC V 2 @ j F Q k
O P 8 SRS232/RS485 E r . (PLC V 2 @ t B 7 RS485 w x F 7 RS485 w x z w J r W Q /
; 输入多功能端子配线

< = > % &

? @ A % &



& B C *

1p q r s24V t u vCOM t u o g M w x m n y z { | > } ~ • N

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

3p ` , 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 } PEN

4p 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 . 7 ^ _ r r sCN2 1 (= ^ 7RJ-45Fs / 0 n k 1 (X = X _ ` D r < = X F ^ _ X @ (} 3 Q R a L V 4 ~ D = P # 7 ^ _ k / F G H I J . K L 5 M K L 5 M N 8 0 P Q R S K L 5 M T U R V - W X Y Z 6000E LEDGH [CPU \ GH

^ _ F < = X 7 r k 1 (0 • I } F k @RJ-45r s r 1 (p k S Z @W { w ! EIA/TIA568B k b 0 • r / (} Q R a L V 4 ~ G N = u ^ _ r k /

T, GH0~50KHzFB#\$\L

2.6 B C

I 8 2@ #9 , - . 7 G 8 U /
I j , - . p G H 2 S Q 9 8 6 N 8 - 8 U 7 9 ; < /
I , - . P \$ =) 8 .) e • . 2 @ " # (1000V s f g m ; \$ = U
7 h 8 @ a { A 4 M t /
I G Z c k c - m k \$ m n @ i * k @ W) N * k @ 5 M N W
r k /
I 8 9 K L 7 ~ u @ < = W r k 1 (, 7 m n k @ r k (N / 50 j /
I 9 d t m n k 7 m n ? r e k { | k c \$ q @ Q (h = t l m 7 m n ? X n /
I r k 7 o @ (T , - . 7 8 @ s J A /
I p 5 ; 7 E @ < = r U w x p P E p W r U w x p P E p (T r U @ r U Q { | \$
7 r U k v (@ W r U k l * x W k l * 8 q / r k _ @ ' (R S r k)
) r k ` s r j j \$ 0 @ s s @ w x j b 7 l k s { | w x r /

] Q ^ _

 危險	1) n w x \ 2 @ S Q X G 8 U @ p 8 @ d t \ / e 8 7 > ? / 2) d \$ @ D 8 2 , - . u v / G 7 > ? / 1) y
--	---



3.1.2 K D

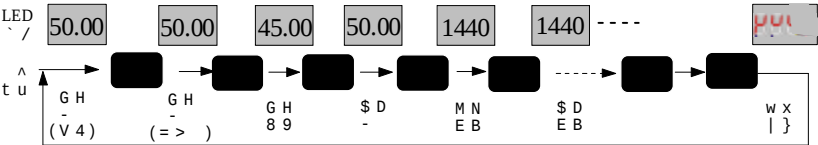
, - . ^ _ . \$ 8 S ^ @ V S ^ 7 f g D 4 m 3-1 / /
3-1 D E K D

K D	K D	K D
	3 / * H ^	6 * H 3 } / j l m } 2 @ PRG/ESC ^ 9 k 3 } @ " # 6 f g @ x ENTER ^ Q + s 6 f g @ f g h i PRG/ESC Q B f g h i k f g @ x k f g @ x k l m } @ + s * H , - . 2 @ 9 ` / f g / , e 2 @ 9 , e } F f g /
	D ^	6 s) @ h i \$ D 2 h i o o /
i { 3 . 	. W ^ (, 2 -)  - ^ (3 2 -) 	Q O P f g @ f g f g / h i \$ D } @ L E D i . / ` / E @ 0 ^ @ + O P f g \$ j ` / } @ 0 \$ D ^ _ @ Q p 1 2 O P i { - \$ D @ B z P I D D P I D i { D /

M	T O P	U V O P
	; .	@ S E
REV C E M N S Z /	]	E 8 M N
	9 #	C E L D M N
REV C E M N S Z /	: .	C E P % B
	; .	@ S C E
TRIP Z / [	]	
	. /	
REMOTE Z / [	]	^ _ < = }
	#	w x < = }
	. /	A N p q }

3.1.4 D E F G

p ^ _ Q = , - . 6 N ^ t u @ <
| } h i 7 ` / 9



a b c d e

4 5: S T p M N h i Q p U p M N h i Q /
S * p V 4 R D h i @ Q p - p V \$ D @ (} Q /

P0 0 h i

k	W L	] ^ #	+ 1] ^	m n	MODBUS o
P0.00	) ` / Z	0 0 •) 1 w x Z)	0	T	0100
P0.01	< = S Z	0 V/F < = 1 a j 2 Y : ; < = 3 V/F b N < = S2R4GB F S2R75GB : ; < = @ Q \$ 2	0	U	0101
P0.02	- i { \$ D	0.00Hz) 5 x -	0.00Hz	T	0102
P0.03	- \$ D U 1	0 NULL 1 - i { \$ D @ i { 1 2 n 2 w x A11 3 w x A12 S2R4GB F S2R75GB a j 5 G 6 p q D 8 [z B z 9 w x UP/DOWN 10 b D 2 M N (PLC) 11 PID 4) 7 a j - U 0) 7 2 [z B w x S [z B z p I	1	U	0103

k	W L	] ^ #	+ 1] ^	m n	MODBUS o
P1.19	g n = (	30.0%) 100.0% 4 @ = 0 * + , - . 3015GB c R 0 P % B G P g n =	100.0%	U	0213
P1.20	j I	0 8 0 j @ d Uu1 1 j 2 0 d , e Uu@ d Uu1 2 8 0 j @ d , e Uu	0	U	0214

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

* k	W L	] ^ #	+ 1] ^	m n	MODBUS o
P3.03	X3 w x f g D 4	0) 49 z . 50 T i . e G 51 T i . i H E 53 D 2 E ' 74 G H w x < = 77 P I D G H = P 0 78 P I D c b 2 H E 79 & c 9 v ^ _ < = 45) 46) 52) 54) 73) 75) 76 a j	37	U	0403
S21R5GB) S22R2GB) 3R75GB/31R5PB c R .					
P3.04	X4 w x f g D 4	0) 79 z . 82 + J B B J G	0	U	0404
P3.05	X5 w x f g D 4	0) 79 z . 80 PULSE G 81 J B + J B A J G	0	U	0405
P3.06	X6 w x f g D 4	0) 79 z .	0	U	0406
S2R4GB) S2R75GB c R					
P3.04	X4 w x f g D 4	0) 79 z .	0	U	0404
P3.05	X5 w x f g D 4	0) 79 z . 80 PULSE G 81 J B	0	U	0405
P3.06	a j	-	-	*	0406
P3.07	a j	-	-	*	0407
P3.08	a j	-	-	*	0408
P3.09	a j	-	-	*	0409
P3.10	a j	-	-	*	040A
P3.11	a j	-	-	*	040B
P3.12	a j	-	-	*	040C
P3.13	X w x e • 2	0.002s) 1.000s	0.010s	T	040D23

k	w L	] ^ #	+ 1] ^	m n	MODBUS o
P4.12	5 / ; G =	-100.0%) 100.0%	0.0%	T	050C
P4.13	5 x ; G	P4.11) 50.00kHz	50.00kHz	T	050D
P4.14	5 x ; G =	-100.0%) 100.0%	100.0%	T	050E
P4.15	a j	-	-	*	050F
P4.16	a j	-	-	*	0510
P4.17	a j	-	-	*	0511
P4.18	a j	-	-	*	0512
P4.19	a j	-	-	*	0513
P4.20	a j	-	-	*	0514

P5 PLC M N

k	W L	] [^] #	+ 1] [^]	m n	MODBUS o
P5.00	b M N Z	0 c Y 1 1 c Y 2 a # 5 z 2 [c Y	2	U	0600
P5.01	PLC M N x S Z '	0 B 8 z B M N 1 B 2 { 7 t z - 9 [M N 2 B 2 { 7 M N - 9 [M N	0	U	0601
P5.02	8 2 PLC } h i '	0 1 \$ 0 2 G b M N	0	U	0602
P5.03	t z 2 E '	0 1 b	0	U	0603
P5.04	b M N D 2 T1	0.1) 3600	10.0	T	0604
P5.05	b M N D 2 T2	0.0) 3600	10.0	T	0605
P5.06	b M N D 2 T3		10.0	T	0606
P5.07	b M N D 2 T4		10.0	T	0607
P5.08	b M N D 2 T5		10.0	T	0608
P5.09	b M N D 2 T6		10.0	T	0609
P5.10	b M N D 2 T7	0.0) 3600	10.0	T	060A
P5.11	b M N D 2 T8		10.0	T	060B
P5.12	b M N D 2 T9		10.0	T	060C
P5.13	b M N D 2 T10		10.0	T	060D
P5.14	b M N D 2 T11		10.0	T	060E
P5.15	b M N D 2 T12		10.0	T	060F
P5.16	b M N D 2 T13		10.0	T	0610
P5.17	b M N D 2 T14		10.0	T	0611

P7 PID < =

k	w L	] ^ #	+ 1] ^	m n	MODBUS o
P7.00					

P9 V/F <= h i

k	W L	] ^ #	+ 1] ^	m n	MODBUS o
P9.00	V/F 1 k \$ D	0 9 E F } 1 k 0 1 - E F } 1 k 1 2.0 2 - E F } 1 k 2 1.5 3 - E F } 1 k 3 1.2 4 (} \$ D V/F 1 k Q P9.01) P9.06 f g D	0	U	0A00
P9.01	V/F - F1	0.0) P9.03	10.00Hz	U	0A01
P9.02	V/F 8 @ 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 8 @ 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 8 @ V3	0) 100.0%	80.0%	U	0A06
P9.07	E F W	0.0 G E F W 0.1) 30.0% E F W	75kw c R 0.0% 93kw c R . 0.1%	T	0A07
P9.08	E F W p x	0.00) 50.00Hz	16.67Hz	T	0A08
P9.09	E U - =>	0.0) 250.0% R C D E F 100%	75kw c R 80.0% 93kw c R . 0.0%	T	0A09
P9.10	E U => 2 i	0.10) 25.00s	2.00s	T	0A0A
P9.11	g <= '	0 g <= 1 g <=			

PA: 8 h i

k

PC ` / < =



k	W L	3 G 4 p q \$ D	+ 1] ^	m n	MODBUS o
Pd.05	8 x , 9 8 . a b	20) 110%	100%	T	0E05
Pd.06	i d e R H)	20.0) 200.0%	160.0%	U	0E06
0007					

PF h i a b c 7

k	W L	] ^ #	+ 1] ^	m n	MODBUS o
PF.00	(}	0 { a b	0	T	1000
PF.01	h i a b	0 j h i ! " E 1 \$ \$ D - P0.02 F f g @ { f g h i p 2 \$ 0 f g @ j p	0	T	1001
PF.02	h i B L	0 t u 1 \$ 2 R H H \$ D (\ \ 8 h i \$) 3 R H H \$ D (\ \$)	0	U	1002
PF.03	h i	0 u 1 h i 2 h i . 3 8 h i 4 @ = ^ _	0	U	1003
PF.04	G/P '	0 G (9 E F) 1 P (&) })	0	U	1004
PF.05	a j	a j	-	*	1005
PF.06	a j	-	-	*	1006
PF.07	a j	-	-	*	1007
PF.08	a j	-	-	*	1008
PF.09	* +	0) 9999		*	1009
PF.10	k 0	0.00) 99.99		*	100A
PF.11	0 0 F b	0.000) 9.999		*	100B

h i j a k l

5.1 > ? " P0 \$

P0.00) ` / Z	\$ D 0) 1 0
0 0 •)	1 W X Z)
P0.00 \$ D 1 2 @ 6) W X Z / j Z @ Q p 1 2 n S F V E 7 f	
g @ { E 7 f g t ` / M 0 @ j ` / /	

P0.01 <= S Z	\$ D 0) 3 0
0 V/F <=	1 a j
2 Y : ; <=	3 V/F b N <=
: V/F <= j ~ (, - . 8 R . 8 j 6 N 8 h i g o D p {	
H w R 8 h i 7 6 7 @ ' <= S Z /	
Y : ; <= W B z \$. : ; <= S Z @ Q (g ? p , B / S2R4GB F S2R75GB	
: ; <=	
V/F b N <= j ~ = - F 8 @ i <= 7 @ Q ' <= S Z /	

& 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 P 8 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 - i { \$ D	\$ D 0.00Hz) 5 x - 0.00Hz
: f g j f g P0.03 P0.04=1 2 @ W (^ _ 6 N - i { \$ D 2 @ D 4 2 , - . 7 - \$	
D /	

& 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 - \$ D U 1	\$ D 0) 11 1 1
------------------	-----------------

S D w x D 7 S Y # s 5 @ p q D 7 @ ^ _ D 7 S 5 A / Y # s 7 2 @
+ Q A Y # s 7 D /

P0.09 0 -	\$ D A - Z 0.10) 650.0Hz - Z a j 0.1) 1000Hz
P0.10 5 x G H -	\$ D A - Z MAX[50.00Hz @ . y - @ \$ D - @ [z - @ " \ -]) 650.0Hz 50.00Hz - Z a j MAX[50.0Hz @ . y - @ \$ D - @ [z - @ " \ -]) 1000Hz 50.0Hz

: 0 - F_{BASE} \$, - . 7 G H 8 @ C D 8 @ U_N 2 7 5 / G H - @ (D u n - 7 • /
p R 8 C D - u 0 - 7 \$ D / j p M (7 6 7 @ 8 7 C D - ' F_{BASE} / j }
M (7 @ Q (• \$ D @ y 2 (T } 7 4 5 8 7 V / F } 7 Q c 8 7 H • @
5-0-1 G H - G H 8 @ : * / /
5 x - F_{MAX} 0 * + , - . ! " G H 7 5 - / \$ D x P C D @ + Q g 8

\$ 0
= \$ D -
\$ n o =
8 s i))rp
X ? p M
/ 30.00Hz @
P0.17=10 2 @

P0.18 P B 2

P0.19 % B 2

: P B 2
0 * + , - .
P % B 2 @
P % B 2

5.2 p v

P1.00 S

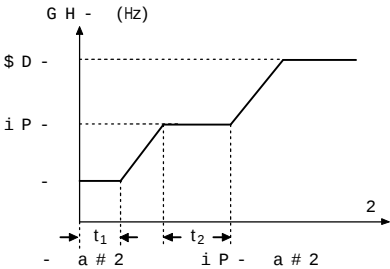
0 B -
2 E B g h
:
B -
D P B 2
= (
8
x @
} E C
9 = h i



f g

P1.01	-	\$ D	0.10) 60.00Hz	0.50Hz
P1.02	- a # 2	\$ D	0.0) 10.0s	0.0s

1 -



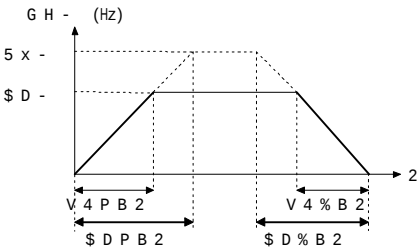
5-1-4 p q / p q w x

& B C *
? I /) R ? /) A R g 7 /) \$? I /)] r 0] M ? I /) N

P1.07 P % B Z	\$ D 0) 3 0
---------------	--------------

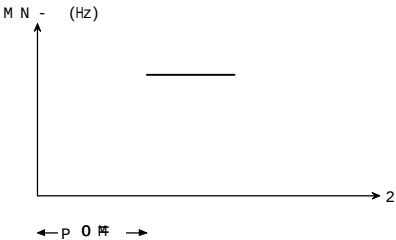
0 k 1 S l k
2 a j 3 a j

说明 k P % B 8 p ((@ G H - z 9 D 0 % @ 5-1-5 / /



5-1-5 v y z s

S l k j P B B F 2 _ 2 ; , G H - @ 7 % 4 * C 7 P) % / @
(A - 2 ~ % E F) - 2 ~ 2 P B 7 @ K = /



S 1 k 2 _ z 2 5-1-6 / @ F G H - , L 7 + A % k 0 /

& B C:

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

P1.16	a # -	\$ D	0.00Hz) 5 x - 0.00Hz
P1.17	a # 2	\$ D	0) 3600.0s 0.0s

a # - W j STOP ^ { k @ M N - # - k a # - @
x - 0 /
\$ a # 2 0 2 @ a # - \$ \$ D 7 a # - x M N - 2 @ a #
- /

P1.18	= '	\$ D	0) 3 3
-------	-----	------	---------

0 (= 1 (g n =
2 (J p = 3 (g n F J p =

& 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	g n = (	\$ D	30.0) 100.0% 100.0%
-------	---------	------	----------------------

\$ P 7 i x = @ y = 8 . 7 w t x / R h i 7 \$ P 2 = 8 7
F f @ ' 7 (R j : B = F 8 9 = 8 , v W) /
g n = u 8 @ x F B @ x Pd.11 : @ 380V G 7 @ g n = u 8 @ ! @ B
x A 52V (W 0 n u x 700V) @ 220V G 7 A 23V (W 0 n u x 350V) / [0 o h 1 Pd.11
7 /

P1.20	j I	\$ D	0) 2 0
-------	-----	------	---------

0 j @ d Uu1 1 j 2 0 d , e Uu @ d Uu1
2 j @ d , e Uu /

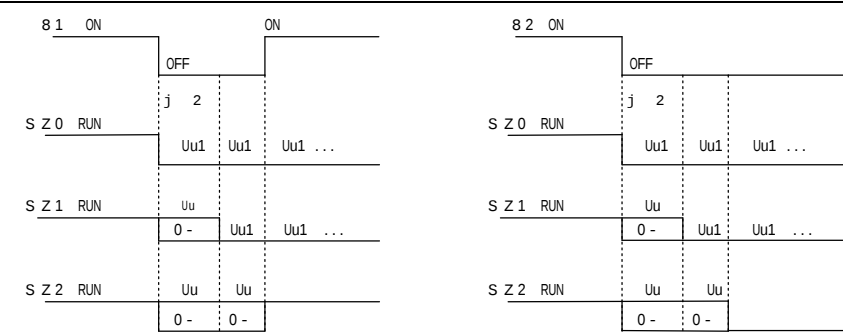
P1.21	j 2	\$ D	0.5) 10.0s y D
-------	-----	------	-----------------

P1.22	j , e u '	\$ D	0) 1 0
-------	-----------	------	---------

0 u 1 % B M N

P1.23	j % B M N 2 % B	\$ D	0.10Hz/s) 5 x - /s 10.00Hz/s
-------	-----------------	------	-------------------------------

: 2 H W u @ @ + I , e Uu @ 2 8 D / 5-1-8 /
M N 2 H W u @ @ d Uu Uu1 @ 5-1-8 / E Uu 2 @ X @ 6 0 - M N / R H @
+ Uu E Uu1 2 @ + @ 9 [- 8 @ v 300V R @ + u @ 3 u G H
R H @ Uu1 /
j , e u ' 1 2 @ j , e z P1.23 j % B B % B M N @ j % B 2 8 R H @
+ \$ D B 2 R \$ /



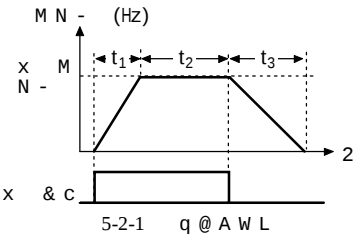
5-1-8 | Y }

5.3 ~ • @ A " P2 \$

P2.00 x MN -	\$ D 0.10Hz) . y - 5.00Hz
P2.01 x PB 2	\$ D 0.1) 3600s 6.0/20.0s
P2.02 x % B 2	\$ D 0.0) 3600s 6.0/20.0s

P2.00) P2.02 D 4 x MN 2 7 J : h i /
5-2-1 / @ t₁) t₃ V 4 M N 7 x P B F % B 2 @ t₂ x 2 @ P2.00 x MN - @
Q P2.01 F P2.02 \$ D 7 x P % B 2 0 k 5 x - ~ 7 2 /
V 4 M N 7 x P B 2 t₁ z Z D / z @ V 4 M N 7 x % B 2 t₃ 3 Q D /
S Z Q P2.02 \$ D D \$ P2.02 \$ D 0 2 @ S Z 0 % B P2.02 \$ D 0 2 @
+ G Q S Z

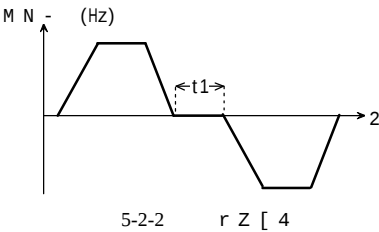
t₁= $\frac{x - Ux}{PB2}$



& B C *

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

P2.03 CE 9 2	\$ D 0.0) 3600s 0.0s
: , - . Q ME k C ME @ Q C ME k ME 7 @ j G H i - I m 7 2 @ 5-2-2 / 7 t ₁ /	



P2.04	y -	I	Z	\$ D	0) 3 0
-------	-----	---	---	------	---------

0 M N j y -

1 0 - M N

2 3 a j

: ' 0 M N j y - 2 @ \$ D - / y - @ + V 4 M N - y - \$ @

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

b 7 = P % B 2 2) 3) 4 6 N D 4 P % B 2 1 Q P 0.18) P 0.19 D 4 / , - . M N 7 P) % B 2
Q j w x p h i P 3.01) P 3.05 ' D 0 @ + P % B 2 1 / \$ w x ' * {
6 7 2 @ % B 2 k N / = b D 2 M N F x M N 7 P % B 2 @ j w x < = @
Q G \$ D 7 h i ' /
\$, - . w x * 2 @ + P 2.34 % B 2 @ S Z P 1.10 7 y
= / P % B 2 7 0 n E | @ Q R p P 2.35 P % B 2 q t \$ D 2 / q x 10 q /

P2.35 P % B 2 q	\$ D 0) 2 0
-----------------	--------------

0 1 q 1 10 q
2 0.1 q
V 4 P % B 2 = P % B 2 " P % B 2 q

P2.36 Y Z & [< =	\$ D 0) 1 0
-------------------	--------------

0 G p S Z 1 p 8 & [8 M E
G p S Z , - . M N & [8 M E 3 b c @ 0 z \$ 50 (@ & [E 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 % B r i 1	\$ D 1) 1000 1
P2.50 PG % B r i 2	\$ D 1) 1000 1

\$ 3 . (PG) r j 8 . 2 @ ~ \$ P h i @PG % B r i 1 = 8 . 7
r i w @PG % B r i 2 . 2

P3.03 X3w x f g	\$ D 0) 79 37
P3.04 X4w x f g	\$ D 0) 79,82 0
P3.05 X5w x f g	\$ D 0) 81 0
P3.06 X6w x f g	\$ D 0) 79 0

< = w x X1) X6 [f g w x @ p \$ D P3.01) P3.06 7 D 4 { & f g / ! " H D 4 @ H D
4 7 w x @ { 8 S 2 @ f g / \$ D f g 1 m5-3-1 /

5-3-1

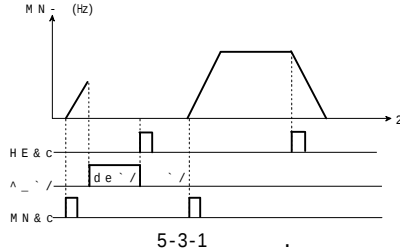
= m5-3-1 + < 7 f g

0- D 4 D 4 w x w x @ , - . R w x 7 | } @ 3 6 N g h @ W w x I m n |
 } / = (7 w x D 4 @ Q p K L ~ u /

1) 5 M E Z @ 1 P 3.15 M E Z \$ D /

6-RST H E j | } @ Q (^ _ STOP/RESET ^ * H | } @ 3 Q (D 4 RST 7 w x * H |
 } @ j M N | } (w x Q , - . S Z / RST Z c j { . W k N H E u / R (

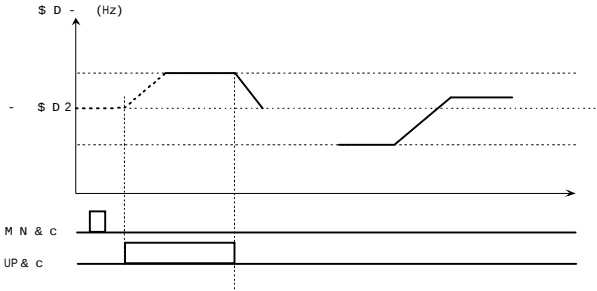
T - - S Z t u @ 5-3-1 / /



7-FC - \$ D ' 0 SFC - \$ D ' f g w x @ + - \$ D Q P 0.06 M N - \$ D 2 D 0
 f g w x @ + - \$ D Q P 0.05 M N - \$ D 1 D / , - . M N @ Q R p F C w x 9
 - \$ D S Z @ B v w 7 < = , - . 7 G H - /

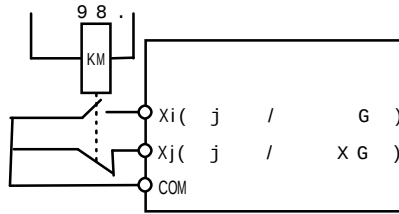
8) 9 C E x Z c FJOG/RJOG

, - . 8 p M N Z c M N - G H 2 @ D 4 FJOG f g w x @ k N



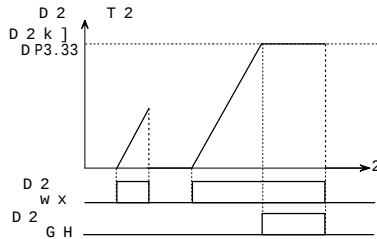
16-P % B p Z c a # 8 g h D 7 & c \$ @ # \$ E B M E /
17-, - . M N p w x 2 @ M N 7 , - . + G Q ~ @ m | } + p / (~
7 /
18) 24 @ 26) 29 [z B
[z B z M N 2 7 / p < = Q ' ^ _) w x Z c A N p f 7 . 4 4 0 T D 9

EIO j @EI1 j X , - . j MN @rk j @W0 - MN / 8 o
 j \$ @ , - . R H M N @ Q h 2 E H 0 j) E H 1 j X J : @ 5-3-6
 / /



5-3-6 /

41- | } P 9 = (w x = | } 7 * C V P 9 = /
 42) 44 w x P L C < =
 P L C s b D 2 M N / t - \$ D 1 P L C P I D s } z / (- \$ D U 2 2 @ P L C s /
 P L C K b D 2 M N K / w x 2 K b D 2 M N @ 6 0 - M N K Z c ` B x 9
 [M N / w x 0 S T O P ^ @ b M N T i . i @ 2 @ S Z / 0 , - . j
 b M N S Z 8 u + f g 5 4 /
 P L C | } H E j P L C M N Z 7 | } @ f g w x 2 t \$ P L C 2 7 M N t
 z) M N 2 /
 47- P I D s P I D M N @ t - \$ D 1 P I D X Y / (- \$ D U 2 2 @ P I D s /
 48- B z / F Z 9
 j : ; < = Z @ Q P 8.10 E F < = Z \$ D F w x | } D M N j B z E F Z @ \$ P 8.10
 \$ 0 B z Z M N 2 @ \$ w x \$ 48 2 @ + M N Z G 9 E F Z /
 49) 53 D 2
 49 w x 2 D 2 2 B T 2 @ 2 0 /
 \$ D 2 k] D P 3.33 2 p T 2 / 5-3-7 / /
 53 f g w x 2 @ P 3.33 D 2 k] D E 9 b c @ + | /



5-3-7 ^ 4 q * -

50- T i . e G O P T i . 7 T i G s @ 5 - 200Hz @ 8 2 Q R \$
 T i /
 51- T i . i H E = , - . O P 7 T i . 6 N i t u @ T i . e G Q (/
 74- G H w x < = f g w x G 2 @ 36 G H f g w x G H
 77- P I D G H = P 0 B z P I D M N 2 @ \$ w x \$ P C 2 @ G H = P \$ D B z P I D M N 2 @ \$
 w x \$ P C 2 @ G H = P i - /
 78- P I D c b 2 H E P I D M N Z @ 8 P I < = @ \$ w x \$ D C @ 2 2 t I ! n @ c b
 n 0 /
 80- P U L S E G f g w x r . u - D @ G 7 - \$ D - 7 : * @ h
 1 P 4 - D } l k 7 /

81 J B G O PPG J B G w x f g f g Z D 7 w x r E . 3 .
 PG 7 A J @ V W J B z C J /
 82 + J B B J G O PPG + J B B J G f g @ f g Z D 7 w x r 3 . PG B
 J @ F 8 1 f g w x Q V W + J B z C J /

& B C *

I P G 5 L - & ` Q S - ~ & 0 M & 8 1 2) 3 0 V D C @ ~ g \ 1 Z m j 2.4.2
 | > = t u ~ * g G N

e • 2 i = G 6 N i { e • I @ R p K L = * C L D 7 /
 e • 2 i x @ < = L D @ y < = , U / 2 @ : @ y Q g < = L D / 5 \$
 D @ Q a L < = L D " x 6 7 \$ n o \$ D /

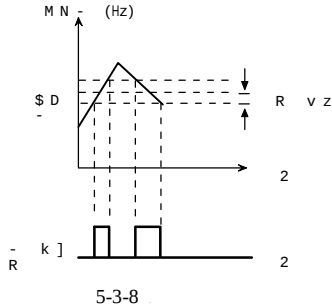
0 { k Z M E Z 1 1 { k Z M E Z 2
 2 k Z M E Z 1 - G a # f g P X 1) X 6 g 5 8 w x
 3 k Z M E Z 2 - G a # f g P X 1) X 6 g 5 8 w x
 @ \$, - . M N & c < = S Z P 0.07 w x < = 2 @ { k Z 1) 2 @ k Z 1) 2 0 5 4 /
 { k Z M E Z 1 @ F W D @ R E V Z / S M N @ F W D E @ R E V C E / (} Q p 9 w x
 F W D) R E V @ < = 8 C E / \$ F W D 2 E M N \$ R E V 2 @ 0 C E ' P 2.38 1 p C E @
 + p 0 ! " C E @ + C E M N / z 2 2 @ p / w x r k S Z 1 / /
 { k Z M E Z 2 @ R U N M N & c @ F / R : M N S @ { 2 (/ \$ R U N 2 @ , - . @
 F / R \$ D 2 @ F / R = 2 E @ F / R 2 C E @ F / R \$ D 2 @ S Q f g D / \$ R U N 2 @ p ,
 - . M N / w x r k S Z 2 /
 k Z M E Z 1 @ F W D @ R E V Z / S M N @ F W D E @ R E V C E / H L D 2 @ (} Q p
 9 w x F W D) R E V @ < = 8 C E / \$ F W D 2 E \$ R E V 2 C E z 2 2 @
 / H L D O N H L 4 4 2 T D (#) T j / F 1 3 T f 1 5.12 0 T D 0.24 T 4 4 0 T D (z) T j / F 1 + 3 7.44 T f 7.(rk) T j 0.24 T c (S Z) V c (

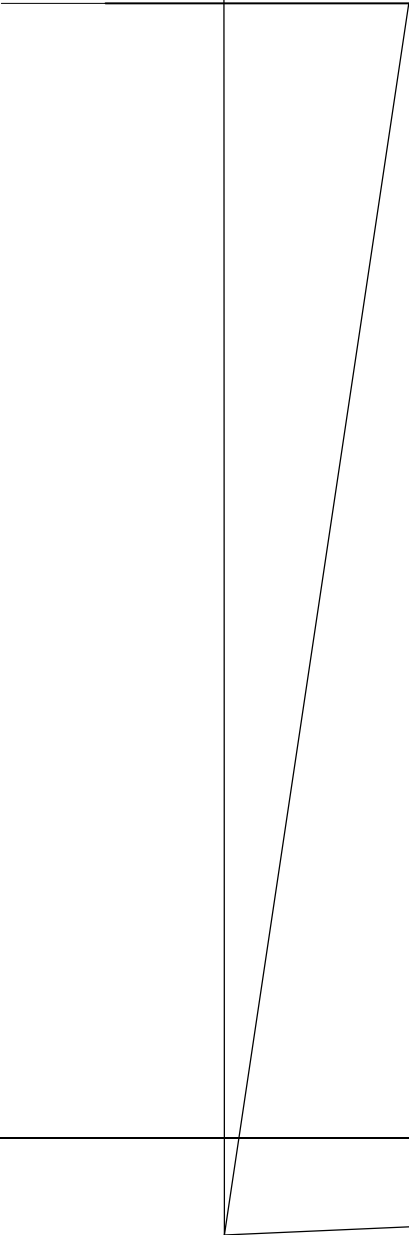
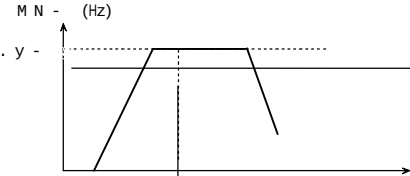
4 0 T D (=) T j / F 1 + 6 7.44 T f 1 6.8 0 T D (@ T f 1 5.12 0 T D 0 T c (

	Q R	
29	_ `	* C I _ ` 2 w x G H
30	i B	G H - 0 2 w x G H
31	a j	a j
32	a j	a j
33	V 4 1 E S	\$, - . 6 N S 9 2 @ G H 7 8) 3 E ,
34	a j	a j
35	u R H ULP	\$, - . u 2 @ u R H
36	[z B	g 5 8 S [z B G w x 18) 24) 26) 29 @ w x G H
37	< =	74 G f g w x G 2 @ w x G H

P3.26 - k] R H v z	\$ D 0.00) 10.00Hz 2.50Hz
---------------------	----------------------------

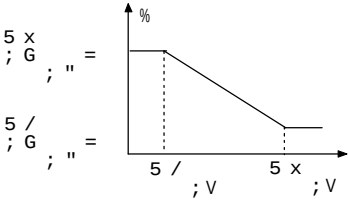
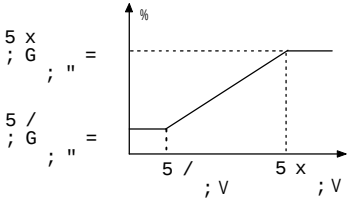
G H - k] \$ D - 2 @ f g n o { R v z @ n o \$ D - 7 0) & 10.00Hz / \$,
- . 7 G H - j \$ D - 7 R H v z 0 2 @ J G H f g w x G H @ 5-3-8 / /





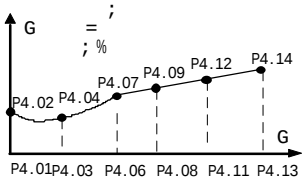
5.5 ' (" P4 \$

P4.00	; k '	\$ D	0) 3 0
0		1	AI1
2	AI2 S2R4GB) S2R75GB a j	3	
	\$ P4.00 \$ D 0 2 @P4.01) P4.05 \$ D D 4 AI1 G }	P4.11) P4.15 \$ D	G \$ D
2 W \$ D i @ C	K L		
P4.00 \$ D	0 @ W k ' 2 @ P4.01) P4.15	\$ D	P4.00 ' p G 7 ' (x / e • 2
R p G • @	1 W p G ;	0	
\$ P4.00 \$ D	1 2(S2R4GB) S2R75GB a j) 2 @	G SS	



5-4-1 ' (* - {

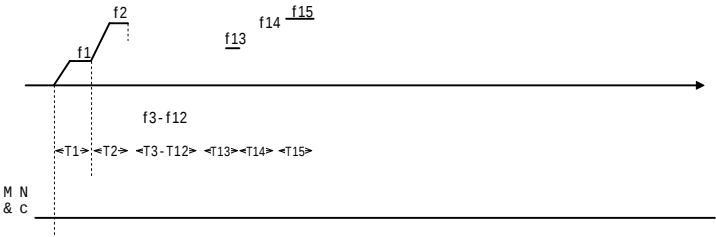
2 \$ P4.00 \$ P 1)2(S2R4GB)S2R75GB a j) 3 2 @P4.01) P4.04@P4.06) P4.09@ P4.11) P4.14
(. (1 z / (} Q R p \$ D F @ G D 4 k 1 k / Q \$ D M N 1 k 7 S x /
5-4-2 / @P4.01) P4.03) P4.06) P4.08) P4.11) P4.13 7 , b o P /



5-4-2 ' (* - {

3 e • 2 i = G 6 N i { e • I @ R p K L = * C L D 7 /
e • 2 i x @ < = L D @ y < = , U / 2 @ : @ y Q g < = L D / 5 \$ D @
Q 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 1

P4.31	AO1 b P	\$ D	-100%) 100% 0.0%
P4.32	AO2 b P	\$ D	-100%) 100% 0.0%
$\begin{aligned} & \theta \text{ b P } (\text{ S b p m } / @ \text{ O y } (\text{ S k p m } / @ \text{ V 4 G H } (\text{ S y p m } / @ \theta \cdot \text{ G H } (\text{ S x p m } / @ + \text{ V 4 G H } \\ & \text{ y=kx>10b } \text{ AO1 b P } 100\% = 10\text{V} / \theta \cdot \text{ G H Z G H 0 }) 10\text{V} = \text{ G H } ; 70) 5 \text{ x } / 8 (\\ & \text{ G H 7 i } \text{ F G H } ^ { 7 } \text{ b U } / 3 \text{ Q R G D 4 } \text{ g h } \sim 7 \text{ G H 1 k } / \quad \theta \quad \text{ G H 0 o M N } - \\ & @ \quad \text{ j } - \quad 0 2 \text{ G H 8 V } @ - \quad 5 \text{ x } 2 \text{ G H 3 V } @ + \text{ O y } \quad \$ \quad \text{ S -0.50 p } @ \text{ b P } \quad \$ \quad \text{ S 80\% p } / \end{aligned}$			
P4.34	D0 5 x G H	-	\$ D ((-) Tj /F6.1648 Tf TD (b) Tj 0 T 14.88 0 T





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

* D t z , - . P % B 2 F M N S / v 8 ^ @ { 4 1 m5-5-1/

5-5-1 PLC i @ A] ^

0 o	P % B 2		M N S
1F	P % B 2 1	P0.18) P0.19	F
1r			r C
2F	P % B 2 2	P2.28) P2.29	F
2r			r C
3F	P % B 2 3	P2.30) P2.31	F
3r			r C
4F	P % B 2 4	P2.32) P2.33	F
4r			r C

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

b M N z i P5.35 \$ PLC M N z i /

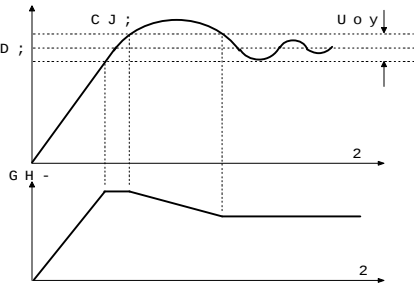
b M N 0 z 2 P5.36 \$ PLC 0 z M N 2 /

P5.34 12 b M N z i P5.35) b M N 0 z 2 P5.36@ 0 0 f g R H 0 /

& . . 0

P7.03 PIDC J U 1	\$ D 0) 5 0
P7.04 PIDC J U 2	\$ D 0) 5 0
0 0 PPG J B G P7.03 / a j P7.04	
1 AI1w x	2 AI2w x (S2R4GB) S2R75GB a j)
3 a j	4 G
5 A N p q	
P7.05 C J ;	\$ D 0) 5 0
0 PIDC J U 1	1 PIDC J U 2
2 MIN PIDC J U 1@PIDC J U 2	3 MAX PIDC J U 1@PIDC J U 2
4 PIDC J U 1>PIDC J U 2	5 PIDC J U 1-PIDC J U 2
(DPIDC J ; G S Z F p G / C J p G 02 @ M N j B z PID Z @ G B z ; 2 @	
{ ; = 5 x E B (5 x - = 7 E B) U E B D / { C J p G 2 0 1 1 7 1 4 4 . 0 4 T j f s . 7 0	

P7.22 ~ U o y	\$ D 0.0) 999.9 0.0
: \$ C J F \$ D 7 U A PID ~ U o y \$ D 2 @PID <= . K n o @ , - . # \$ 7 G H / 5-7-1 / / f g 7 \$ \$ P ! * C G H 7 z F L D z / ~ U o y - A 2 * C 7 n z @ y 2 * C L D z @ 8 9 (7 G H • / PID 2 @ ~ U o y \$ D P 7.22 ; 7 = @ ; d Q @ E B P I D 2 ~ U o y \$ D P 7.22 E B / 5-7-1 /	



5-7-1

P7.23 P I D n }	\$ D 0) 1 0
0 u (1 C u (u (\$ P I D G H O P @ W - O P @ <= 7 ; O P 2 ' (@ * C / C u (\$ P I D G H O P @ W - O P @ <= 7 ; % / 2 ' (@ = Y * C /	

P7.24 c b n ' }	\$ D 0) 1 0
0 - k . y 2 @ p c b n 1 - k . y 2 @ 9 [c b n	

& B C *

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

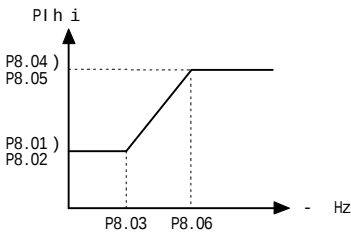
P7.25 (_ `	\$ D 0) 1 0
0 (1 (	

& B C *

2 P I D] (n N

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

f g (j 9 ; i 2 p , ; ! / j F ^ 6 7 @ , ; 7 - A S _ ` a p @ " 2 E / j " 2 @ - A a @ + , ; / o \$ I S \_ ` p | } / 9 v ~ • | } @ @ C J (T - v S ~ • p a / 2 , ; E / 5-7-2 / ~ • a \$ D = 7 P I D C J 7 b ! / ~ (^ _ . 1 2 n @ \$ D @ Q t P C P C . 0 1 - P C . 2 0 @ P C . 1 6 , P C . 1 7 \$ 1 @ { \$ 0 @ j l < ` / | | n 1 2 @ @ \$ D H @ i 1 2 , L / n @ Q S E N T E R p n / W 8 M M N @ n 7 @ v /



5-8-1 P I W L

p \$ D B z n . 7 ! * i F c b 2 @ Q R n : ; < = 7 B z } } / O P ! 0 y @
% / c b 2 @ Q P : B z Y 7 } / ! 0 y x c b 2 / Q g * C E /
n S H h i g { | • @ + j H h i G . 6 N E n # 0 x ! 0 y @ a
* C v

P8.14 \$ D => * i	\$ D 0.0%) 200.0% 102.4%
: ; <= S Z @ h i = E F Z c 6 N => @ , h i Q R , G H 8 9 @ p /	

P8.15 E F P B 2	\$ D 0.00) 120.0s 0.50s
P8.16 E F % B 2	\$ D 0.00) 120.0s 0.50s
\$ P E F Z 2 7 E F P % B 2 @ B z Z f g E F B 0 k] C D E F 7 2 E F P B 2 @ B C D E F k] 0 7 2 E F % B 2 /	

P8.17 A B T E U =>	\$ D 50.0%) 200.0% 117.0%
= B z \$. : ; <= @ 0 A B 2 = M N L D @ Q \$ 0 x h i /	

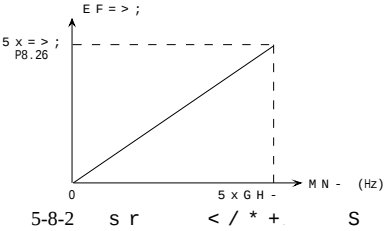
P8.18 B T E U =>	\$ D 50.0%) 200.0% 117.0%
= B z \$. : ; <= @ h i (D n o 8 7 L B z \$ 8 = 2 B z b A + P x h i @ C + % / h i /	

P8.23 i B E F W	\$ D 0.0) 50.0% 0.0%
P8.24 i B a	\$ D 0) 20% 5%
P8.23 i B E F W 2 => i B 2 7 G H E F @ 8 j i B 2 a # 8 D 7 F / i B a \$ D = 7 0) 20% 7 5 x G H -	

P8.25 = E F \$ D U	\$ D 0) 5 0
0 P8.11 T U R k 7 5 z E F \$ D 8 T	1 A I 1
2 A I 2 (S 2 R 4 G B) S 2 R 7 5 G B a j)	3 a j
4 G	5 A N p q

P8.26 B F => 0 y	\$ D 40.0%) 160.0% 100.0%
P8.27 B F => y L	\$ D 0) 1) 2 0

0 M N - => 1 k B z => a j
2 a j
M N B z 7 @ * C n D [7 E F @ B E F => 2 => j b E * C
n 7 F a # R k 7 E F 0 , /
P8.26 \$ D 7 5 x => ; @ 100.0% = 8 C D G H E F @ \$ => y L S M N - => p 2 @ F =
> ; \$ M N - 7 : * 5-8-2



P8.28 i f J 2	\$ D 0.05) 10.00s y D
i f J f g (D @ 8 J @ 0 h i \$ P # [7 2 /	

5.10 V/F " P9 \$

P9.00 V/F 1 k \$ D	\$ D 0) 4 0
--------------------	--------------

0

& B C *

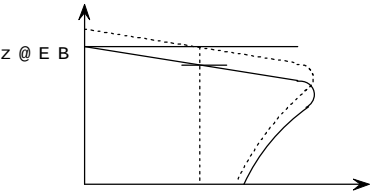
1p j k g I q m & ' \$ 3 K
2p ? c & '] M I J , ` , ? 2 3 B M d & ' j k v ` , & n V / F \ N

P9.08	E F W p x	\$ D	0.00) 50.00Hz	16.67 Hz
-------	-----------	------	----------------	----------

f g D 4 E F W 7 p - @ 1 5-9-3 / p - (P9.00 D 7 g h V / F l k /

P9.09	E U - = >	\$ D	0.0) 250.0%	75kw c R	80.0%	93kw c R .	0.0%
P9.10	E U = > 2 i	\$ D	0.10) 25.00s	2.00s			

8 E F 7 , L t 8 M N E U @ T 8 B z , L / p E U = > @ a L 8 E F G
n o , - . G H - @ R 8 } 7 z @ 5-9-4 / /



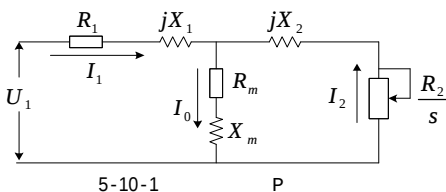
PA.01 8 17 i	\$ D 2) 56 4
PA.02 8 1 C D f	\$ D 0.4) 999.9kW y D
PA.03 8 1 C D E B	\$ D 0) 24000r/m-280.855 0.851 0.86H
PA.04 8 1 C D 8 9	\$ D 0.1) 999.9A y D

PA.01) PA.04 (\$ P E < 8 17 i @ < = g @ z 8 7 h i \$ P
J : /
8 , - s d Q Q P @ 8 I ! " ! - . / x 8 s @ g a 7 4 4 . f

4 p j k n 7 3 ' b D PA.29 m ? I r 0 N
 5 p j k n 7 3 M T } C - A t - M j k n 7 q { (M T } s C A t E N
 4 J p o D 2 @ 8 8 9 T U S F 8 \$ T U S Z (@ { L 8 \$ @ I_0 8
 9 @ L_m \$ @ h 8 @ I 8 C D 8 9 @ U 8 C D 8 @ @ f 8 - /

$$89 \quad I_0 = I \bullet \sqrt{1-h^2} \quad \$ T U \quad L_m = \frac{U}{2\sqrt{3}pf \bullet I_0} - L$$

R . 8 h i 7 & 4 5-10-1 //



5-10-1 7 R1) X1) R2) X2) X_m) I_0 b 7 \$ m D x 8) D x \$) E x 8) E x \$)
 \$) 8 9 /

5.12 MODBUS 2 3 " Pb \$

* , - . Q R 1 (MODBUS p q F Q 3 b < = . PLC 6 N A N p q / MODBUS Q
 8 S < PLC F 1-31 | 0 * + , - . / < F E < 7 K B Z < K @ E < =
 u H /
 < 8 F 8 | E < , - . 6 N K / E < , - . r . k < D 7 Z c k N { f g @ 6
 < /
 p q * r s RS-485 z @ S Z q + 8 @
 G h i • } Q B 1200) 2400) 4800)

Pb.03 p q I 2 R 2	\$ D 0) 100.0s 0.0s
-------------------	----------------------

0 8 I 2 R /
0 I 2 R / V ' Pb.03 \$ D @ * C W R p q | } @ 0 i L . W d j p q
EF0 ~ \$

& B C *

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

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

f g D 4 , - . r . i L @ m \$ D 7 " x 2 0 /

Pb.06 p q i L Eeprom '	\$ D 0) 1 0
------------------------	--------------

0 r Eeprom 1 r Eeprom

f g (\$ D p q f g h i 2 @ s r Eeprom \$ D 12 @ V f g h
i ! t Eeprom \$ D 02 @ + @ @ = ~ Eeprom 7 i L Q p f g h i = 7
MODBUS . U k a K (U 0x00FF @ t h i o o a k EEPROM @ J \$ ^ _ 7 ENTER /

 r s Eeprom t u v w x y z Eeprom T U { | } a ~ • & ! R v w " R #
\$ % RAM & ' (/) * + T U S , - " R Pb.06 ' Y 0 . /

Pb.07 CCF6 I	\$ D 0) 1 0
--------------	--------------

0 d 9 [k N 1 d G Q
f g (\$ D p q 2 s ` / p q \$ D 12 @ p q 0 E W ` / z 2 7
S Z . \$ D 02 @ ` / p q @ 9 [M N /

Pb.08 < =	\$ D 0) 1 0
-----------	--------------

0 1 Z c
f g \$ D 12 @ , - . . k Z c 0x06) 0x10 @ Z c) I _ @

[1 E @ n B Q B 0.01Hz@ n k 0.1Hz@ 5 Q n k 1Hz@ V W - : B 0 % @ 6 h 1 P0.17 /

PC.05 M N E B r/min	\$ D 0) 1 1
PC.06 \$ D E B r/min . /	\$ D 0) 1 0

0 ` / 1 ` /
PC.05 \$ D 1 @ j 1 m | } ` / M N E B @ E r/min / 0 \$ D 0 @ +

PC.19w x | }E

\$ D0) 1 0

0 \ /1 \ /

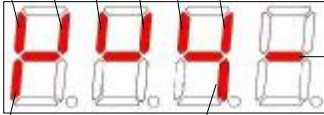
PC.19\$ D1 @ + \ / w x | } @ 0 \$ D0 @ + \ / = % /

w x | }[f g w x X1) X6) +W 6 8 7 G H w x D0 @ R c G H 9 8 . 1 7 | } @ 1 (LED

i Z D z 7 #] D m f g w 7 | } @ i z # m / J w x | } | } @] + m / J w x

| } @ iS # 7 z @ S T / 5-12-1 /

X1X2X3X4X5X6



D09 8 . TA/TB/TC

5-12-10 P

PC.21\ / '

\$ D1) 20 1

PC.21\ / ' @ 0 f g (\$ D Y # \ / h i / \$ D1) 20 b 7 = PC.01) PC.20 /

\$ D \ / h i 7 \ / < = 0 \ / 2 @ B \$ \$ D B b i B / k x @] 20 2 6 1

S @ v H W \ / < = 0 7 h i @ \ / /

Y # \ / h i @ y PC.01) PC.20 h i Y # @ @ 2 / \$ j) , e p q CALL \ /

2 b Y # s \ / @ 2 Y # \ / u (/

PC.22E B \ / * i

\$ D0.1) 999.9% 100.0%

PC.22E B \ / * i 0 f g (W E B { z \ / ~ U @ = V 4 E B 8 /

E B = V E B "PC.22 PG

E B = 120 "MN - # 8 7 i "PC.22 PG

\$ D E B = PID \$ D E B "PC.22 PG

\$ D E B = 120 " \$ D - # 8 7 i "PC.22 PG

PC.23k B z * i

\$ D0.1) 999.9% 100.0%

PC.23k B z * i (W k B z { z \ / ~ U @ = V 4 E B 8 /

k B z = MN - "PC.23 PGk B z = E B "PC.23 PG

\$ D k B z = \$ D - "PC.23 PG\$ D k B z = \$ D E B "PC.23 PG

& B C *

C ~ 07 @ 9 DT D D DT C 67 31 () T.0.25.43.07.08.09.12.16.41.49.14. T.r) T.44 Tf7. Tf7k (P)f14./F2+1 7.

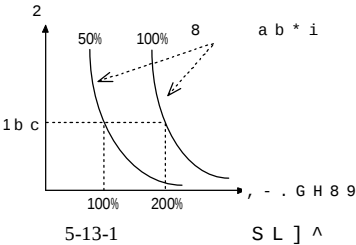
\$. a b a W a b @ V W 2 8 r , 9 8 . 7 a b f g @ p Pd.01 Pd.03 \$ P 8 1 F
8 2 7 a b a p Pd.02 Pd.04 \$ P \$. p G /

Pd.01 8 1 a b a	\$ D 0.0) 10.0V 10.0V
Pd.02 8 1 a b \$. G p G	\$ D 0) 4 0
Pd.03 8 2 a b a	\$ D 0.0) 10.0V 10.0V
Pd.04 8 2 a b \$. G p G	\$ D 0) 4 0

0 w x AI1 1 AI2(S2R4GB) S2R75GB a j)
2 a j 3 G
4 p q \$ D

Pd.05 8 x , 9 8 . a b	\$ D 20) 110% 100%
-----------------------	---------------------

/ 0 ' 2 = 8 V P 7 a b @ - = z 8 f = , - . ! " G H 8 9 7 5 x 6 N n o /
5-13-1 / /



8 a b * i = $\frac{! " 5 x 8 9}{, - . C D G H 8 9}$ U 100%
n o Q Q 7 Z D
{ p ! " 5 x 8 9 p 8 8 7 C D 8 9 /
8 o , ! 2 Q j 7 G . 0 x 8 (10 %) @ o , U 2 @ % / 8 /

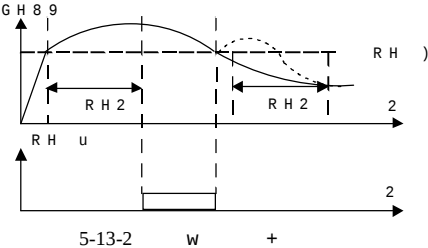
& B C *

& ' ~ 6 7 & K . / 0 ~ 6 7 & K q %] M 2 3 g 7 Pd.05 ~ m (& ' ~ N
? T] P W M M d O L 1 N

Pd.06 , - . i d e R H)	\$ D 20.0) 200.0% 160.0%
Pd.07 , - . i d e R H 2	\$ D 0.0) 60.0s 60.0s

/ 0 ' i d e R H) Pd.06 D 4 2 i d e u 7 8 9 @ { \$ D J = , - . C D 8
9 7 b ! /

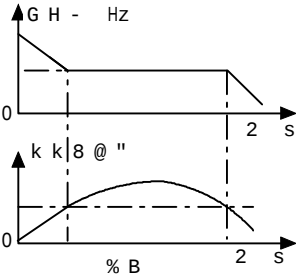
i d e R H 2 Pd.07 D 4 2 , - . G H 8 9 # [x R H) Pd.06 # [I H 8 D 2
@ G H i d e O L P 2 /
i d e | } W , - . 8 u 8 9 I R H) C a # 7 2 I R H 2 /



& B C *

1p3 / S!0A] ~gI1" k # dR./03/ ?TN
2pv3 / S] M[\$T&K R3/ S!0Mx' ~3/ S]
0N

Pd.08 89y ^	\$D 0)3 1
0	1 P%B @9B
2 !	3 92 - AMNBz
Pd.09 89y ^)	\$D G 30)180% 160% P 60)140% 120%
/0 , - . j P% B L } MN2@Q PB2 8 ; dQ EFu , @ HW . W7 89 / <= GH89@Pd.08' 1)2 32@ , - . GH - QgG no/ \$D 1 2@P%B2@\$GH89]0oGD (d) Tj / F1+3 7.44 Tf7.44 [6 [4	



5-13-5 z s i

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

f g Q R G J G J) @ R a b , - . . G J a b \$ @ Q \$ 0 . 9 6 T

f g

Pd.33	k y 9 x	S2R4GB F S2R75GB a j	\$ D	100.0%) 300.0% y	D
Pd.34	k y 9	g S2R4GB F S2R75GB a j	\$ D	0) 1 1	

0 p 1 ! "

k y 9 x 100.0% = , - . C D 8 9 / Pd.33 \$ D 300.0% 2 @ Pd.33
k y 9 x D , - . C D 8 9 7 230.0% e @ & i . : /
k y 9 ! k y 9 f g C : @ R p k y 9 f g /

y \$ 5 4 3 0 \$ 1 6 4 8 0 TD . 4 7 7 . 1 2 TD 1 5 T f e 60 0 TD bc

PE.11	T 2 h	\$ D 0) 65530h 0
PE.12	T (8 ; (MWh)	\$ D 0) 9999MWh 0
PE.13	T (8 ; (KWh)	\$ D 0) 999KWh 0

T M N 2 (h) , - . I M N | } 7 2 Q T /
T 2 (h) , - . | } 2 T /
T (8 ; (MWh) , - . T (8 ; 7 E /
T (8 ; (KWh) , - . T (8 ; 7 A E /

PE.14	IGBT z	\$ D 0.0) 200.0 (0.0 (
-------	--------	--------------------------

(` / , - . IGBT 7 \$ z /

PE.15	o 9 z	\$ D 0.0) 200.0 (0.0 (
-------	-------	--------------------------

(` / , - . o 9 7 \$ z /

5.16 W L " PF \$

PF.00 (}	\$ D 0) 9999 0
-----------	-----------------

(} \$ D (} B \$ D 0@m / a b \$ D @ 2 (+ 3 7 . 4 4



PF.01 \$D 0@ jhi!"E /yI him 0(7hi@QjMNF p2 @0"7h
i@Igj p2Q @{|hi+ g /: MNF p2 sQR @1 4 / S ^
_ .7hi`/@0hi i{. /`/@+m/ hi!" 0 i{. /`/@+ !" /
PF.01 \$D 1 \$\$\$D- P0.02 F fg @{|fg hi p /
PF.01 \$D 2 \$0fg @ j p /

& BC *

vW'jk;< MPF.01 g7r0=Yjk>? @Mxmv\ nd g7/)A j PID
A7vOPP IDk A7N PF.01 g7r1]M nv\ nd g7/)N PF.01 g7r2]M4
v\ n{ N

PF.02 hi BL	\$D 0)3 0
0 tu	1 \$
2 RHH \$D (\ \8 hi\$)	3 RHH \$D (\ \$)

PF.02 \$D 0@ tu /
PF.02 \$D 1@t \$PE B PE.00 k PE.08 hi 07 @T (}n b /
PF.02 \$D 2@tRHH \$D (MN) (} \$DF8 hi\$)/
PF.02 \$D 3@tRHH \$D (MN F (} \$D\$)/

& BC *

[, 4 . /0jkg7 BqC1 1 D Mxm`, PF.02 g7r2~(nM E S6 M
FRGHg7jkn
IJK L\$E S6g7 MPF.02 m?E r0MJC k~ TMNO{N

PF.03 hi	\$D 0)3 0
0 tu	1 jhi
2 hi .	3 8 hi

1- jhi ^_. 7(}\$Dhit k, - .
2-hi. (}\$D7 hitB, - . k^_.
3- 8 hi t^_. 7\$8 hi 7(}\$Dhi@ k, - . /
pq\$D PF.03 @@"^_\$D PF.03 hi @ pq)
^_\$D PF.03 @^_ / @ _ PF.03 G RH 0@^_ / 2 @ STOP
^@RH^_1m| } ` / / 0 <=X Eeprom + rd CCF3/
/ 3 4

3	4	3	4	3	4
dn0	jhi	dn1	8 hi	uP	hi .
SUCC	f	StP	^_ Stop ^	rEt	
EFLF	) * + 8 T	bdAF	^_. i L	rEF	i L
UrtO	<=Xr . I 2	brtO	^_ r . I 2	LdtO	I 2

& BC *

./0v P\$ M[`, (nMm QR, g7f~jkM S TU ~] N
jkQR(n QR V'U%WD M >? !A '-~-./0 lGQR}
6000M-S2R4GBA S2R75GB XWY3 V110 \$ () M6000M)S21R5GBA S22R2GBA 6000E !XWY
3 V140 \$ () Y3 j k QR N

PF.04 G/P '	\$D 0)1 0
0 G 9EF	1 P &) }

f g h i \$ P @ = G/P 8 * + , - . s + h i B z 0 PF.02 B L H h i 2
h i
, - . H h i \$ P G @ ' P t f g \$ P 1
0 H 2 5.5kW G @ 7.5kW P @ ~ \$ P PF.04=1

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

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

1 2 0 3 4

6.1

0 * + , - . R H 8 S 2 @ j ^ _ . ` / @ z 2 X PWM GH @ 6 a b | } @
Z / [STRIP p . / @ r x GH @ 8 G Q ~ / 2 TRS b F 1 P / (7
R S P g @ r F * / \$ @ 2 M @ Q S p / H E ^ p
p j w x H E / 4 5 \$ w x M N ` \$ 6 7 @ W \$ @ , - . 3 g @ (T #
M N x X O g M N / 3 Q R W 8 U 8 @ H E / 0 H W 7 S S C p @ +
10 s 0 ! " H E / j ` / 0 S E 2 7 8 7 G H -) \$ D -) G H 8 9) 9
k k 8 @ @ R c 5 E 7 0 o @ " # S 3 / * H ^ p 6 f g 3 5 | } @ x p 1
2 = f g \$ P E . 0 0) P E . 0 8 6 N S /

6-1

T			Q
Uu1	k k u @	I G 8 @	I R S 8 U 8 @ I R S R 8) \$ P @ U 5.52\$331-1-6.78) Tf(6348))



T			Q
OL2	, - .	, - . G H I , - .	% / @ " # P B 2
		9 = ; x	% / 9 = 8 9 @ " # = 2
		V/F 1 k	n o V/F 1 k F E F W
		8 F 8 @ A	R S 8 F 8 @
		x	' W 2e
		P B 2	
		8 9 y ^) A	

6.3

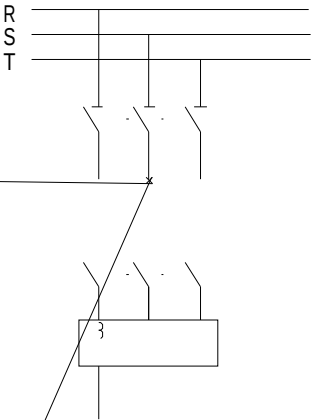
j 8E + g 8 @ RS { b 1 J P / F R S F P g
@ • > ? < /

6-3

8 E	8 U 8 @ s P j 8 U w x R) S) T . @ C H A R G E L E D Z / [# s	I r p 8 U I 8 U x p 8 I R S 8 U 8 @ I n w x p
8 E	(o 9 8 @ m G H w x U) V) W 7 8 @ s	I 8 U x r p
	Q @ 8 s E X	I % 4 F a \$ X
	^ _ . ` / @ R S T R I P [s . /	I a L \$ S m 6-1
	s M N Z c	I R S M N w x r k s Q
	C E ' \$ P s S Z c	I \$ P ! " C E , S Z c
	w x M N s # x .	I w x M N # x .
	- D 8 @ s G	I R S - D 8 @
8 E J C	M E S Z 7 \$ D s	I G \$ D
8 1 E y g , B	w x U) V) W 7 r k s	I n o 8 U) V) W 7 = r k I n o f g P 2.45
8 E B A	- D 8 W 7 r k s	I r k
	s x	I % 4 " # P % B 2
M E 8 E B L	5 x G H - \$ D s	I R S 5 x G H - \$ D
	(o 9 8 @ m R S 8 w x 8 @ - 7 s [	I R S V / F }
	s x	I % 4
	, s x	I % 4 7 ,
8 P x	J 8 U J	I R S J 8 U 7 r k J I = J 8 U @ r A C 8 . v 8 U
	- D U L	I R S - D U
8 x	) ') E x b	I H 8
	• - A	I • -
	v	I n o " \ -
8 x	M)	I n o M
	J G H)	I R S , - . G H

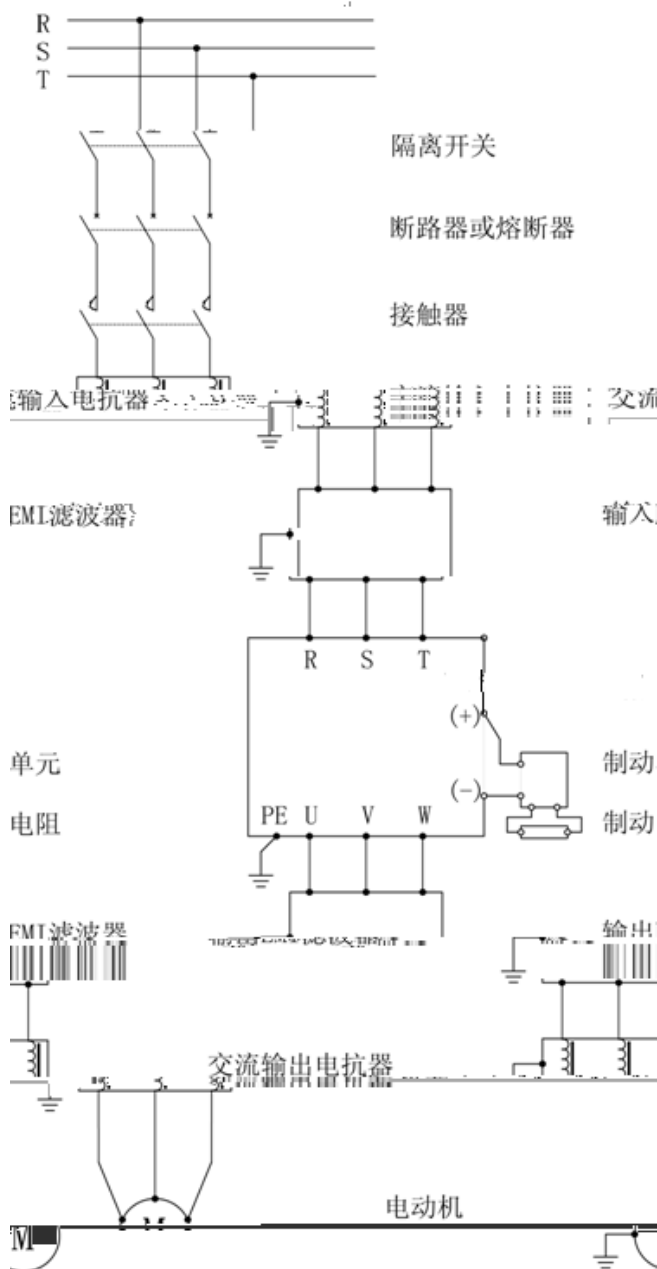
5 6 7 8 9

7.1 #] C



97N :

W . .



7-2 3018G/3022P

]

7.2 #]

7-1 I #] G					
] / c			* h	*EMI	* q N q
	(: B 9 , - . 7 8 9 p , - . c { k W T 8 U	j , - . 2 9 8 U p 8 c 7 x	(` G f i @ - A • c = 8 U 7 X Y	(% / , - . E 7 k 8 K L / 8 , - . Q k (N / 20 j 2 @ r j 8 U @ Q k (N x 20 j 2 @ r j G H	j = F g { • 2 ' (@ (x ; c - = : B ~ 7
4 =* g ' k /					

7.2.1 h * -

u 9 G 8 . Q = , - . G 8 9 7 • @ ` ` , - . 7 f i @ j + 6 7
(u 9 8 .
I , - . (I 7 8 U o ; , - . 7 o ; ! 10 1 R . /
I z 8 8 U . r Q < = : < = 7 f i = > P /
I J 8 U 7 8 @) z x e 3 %

7.2.2 q N q

0 * + 15 k w c R , - . 0 P = @ ~ g n = 2 (} @ ~ r = 8 / 18.5 k w v 9 3 k w @
Q ' Q = / 110 k w c R . 0 P = @ ~ g n = @ + ~ r = / 0 P =
< = j b) j b c q 8 8 / < = j b h z 0 * + , - . 8 @ a b u 6 N n o @ q 8 8
j b , a b @ { < = r x r v < = w 0 /
8 = 10 % @ = 8 c f h z m
7-2 q c d Q R

= 2 8 7 x E g ; j n j = 8 . , Q a L Z T U = f
U m U : R = P b
Z R 8 a L 2 2 2

\$ \$

8.1.2 ^

, - . D a R S 2 @ 8 D 9 8 U @ m l m . ` / c 8 W 8 U Z / [\] 5) 10 b c R @
 O g 6 N R S @ R 9 , - . 7 8 o . r j 7 8 @ G c a L /
 D b R S O o m 8-2 //

8-2 ^

RS <	RS O o	=
W w x) <= W w	s s	(
x	s ? @	(4) 6 kg/cm ² @ 7 K @
+,	s ? @	(4) 6 kg/cm ² @ 7 K @
PCB V 8 W X	s ? @	(4) 6 kg/cm ² @ 7 K @
Y Z & [	E s v w @ s P K) @ s c @)	Y Z & [@ \$ c @ F
f k	s ? @	(4) 6 kg/cm ² @ 7 K @
8 8 o	s ,)) >	8 8 o
= 8	x U h s '	t = 8 q j K) h 7 U S

j R S @ Q 5 t . k . k @ Q 5 P r k @ s + Q g T , - . g M
 N 6 ` / | } @ v T . k : . k I G B T { | . k 7 /
 j ~ ; 2 @ 4 5 ^ z l m Q g R H U 7 x 7 ; 2 / (] Z 8 @ m ; G 8
 @ @ (Z 8 @ m ; G H 8 @ @ (Z 8 9 m ; G) G H 8 9 @ (8 } m ; f / j k &
 2 @ Q 1 (Z 8 ^ m 6 N ; V R T ! /
 ~ 6 N * } @ (' - x 40MHz 7 / . . @ j j , . * 2 + (100MHz R
 . 7 / . . / / . . (T V 8 ' N /
 j 8 U = J J 8 9) 2 @ 1 (} T ; f /
 Q 0 H p V 8 h X c 8 z X @ () ~ a v } X C F } X V V
 8 - A 7 h o @) @ \$ 7 } X v Q g . k / ~ V } X @
 Q M 7 > ? L 6 N t u /
 0 V w o @ X @ (T (2) 8 9 Q \$ D 7 o ; J \$ 7 o @ l @ 0 x t - A % & /
 V W h X @ (T t W w x R) S) T) U) V) W) P B (P 1)) + - j Q W @ v (8 @
 s J 7 f g m 220V s (250V @ 380V s (500V @ 660V s (1000V 6 N ; / <= W Q (f g m ; @ Q ((m 8 ; /
 = 380V s 7 W = U h 8 / 5 M ' @ <= W = U h 8 / 3 M ' /

8.1.3 ^ m [

2 , - . # Q M N @ (T = , - . 0 j 8 x . k 7 (% & @ D 6 N a F b / ,
 - . 8 x . k 7 (% & { (Y F (k 7 z z / 8 [(2 @ Q m 7 * D
 @ m (Y @ 6 7 c , - . W | & 6 7 D /
 m 8-3 / , - . 7 a y @ (} (2 h 2 /

8-3

8 m [4

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

8.2 ! " /

, - . W (@ ~ K 2 # 2 @ V k
 I q j * D 7) . z O C .) ? @) @) p & ' 7 /
 I I 8 (@ + 6 N Y 8 X / R 0 W 8 8 o . 7 } R R R H / Y 8 2
 (n @ . ; ; W , - . 7 G 8 @ v C D 8 @ @ p 8 2 j 1) 2 / 2 R . /
 I . (X v 4 V 8 /
 Q 5 V P o @ V X @ | t T , - . % & - A @ v . k /= h X @ Q R 1 (500V
 f g m 6 N ; X @ { h 8 R / 4 M ' /

E C C D N F ! G H I '

S @ y I 7 = 7 24 S 0 /

Q (b 7 @ W j a 0 @ 3 >

I 7 t u ! " G N c 7

1 I H O • * • (, - . 7

I M 7

1 j A 0 (} • 7 Y (7 . k L

1 j 6 7 7 , - .

l r k o ~ 7 , - .

I Q U I)) & H)) 8 @ { | G v H F H J 7 2 : } f 8 .

1 :)

1 : :) : f } :))*))

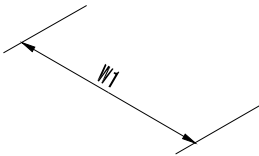
1 } 8

$$)f_{\infty} \mathbf{8} \}$$

> c { E & 7 + (H @ ' (; # 0 /
I (u p M G \$
I ' (P
I) g) 8 \$
I *) * + P
I ^ P
I { | } (H /
L s O U M P Q '
, - x (} = 0 7 \$ T) g) c ' H 7 @ 0 t . \$
% /

#	1	\$ % /	\$ %
---	---	--------	------





2 & '

W R S

	W X	C T	T U kVA	C V A	C V A	W - kW
ALPHA6000M	S2R4GB	1PH 220V 50/60Hz 8 @ 176)	1.0	5.1	2.4	0.4
	S2R75GB	264V	1.7	9.2	4.5	0.75
	S21R5GB	- /	2.8	13.1	7.0	1.5
	S22R2GB	&5%	4.0	23	10.0	2.2
	3R75GB		1.6	3.7	2.5	0.75

31R

ALPHA6000E

3PH 380V
50/60Hz
8 @ 304)
456V
8 @ /
3%
- /
&5%

X Y Z c [

C D G H 8 @	0) C D G 8 @
5 x 8 9	G 150% 1 b c @180% 20 P : 120% 1 b c @150% 1
< = S Z	J p : ; < = / 8 9 : ; < =
- < =	A - Z 0.00) 650.0Hz - Z 0.0) 1000Hz a j
- z	i { Z c / 0.01 " -10 () +40 (Z c / 0.01 " 25 (/ 10 (
\$ D - b	i { Z c 0.01Hz Z c 1/1000 5 x -
G H - b	0.01Hz
- \$ D	0) 10V @ 0) 20mA
P % B 2	0.1) 3600 P) % B 2 i \$ D
= E F	P = 8 Q] 125%
8 @ / - }	4 ^ D V/F } Q ' c g 5 V/F } 7 \$ D @ = P G V/F < =
a b f g	@) u @) 8 9 y ^) 9)) 8 x , 9 8 .) ,) @ B) W) r U @ u @ a b @ G J @ G H J @ = U c J W @ 8 a b
(Y z	-10 () +40 (@z -1a+4040B

3 (MODBUS 2 3

```

0 * + , - . Q ( Q 3 <= . PLC . E $ p MODBUS p q 6 N i L u /
I MODBUS p q 7 "
p q i L Q k 1 | <= . (PLC) F 1 ) 3 1 | 7 , - . " / B <= . B K @ , - . V
H /
<= . @ z 2 1 | 7 , - . 6 N K @ , - . $ D G 7 U 3 @ <= . Z D 3
6 N K / , - . r k <= 7 Z c @ V P u @ ; C J <= . /
I p q 0 •

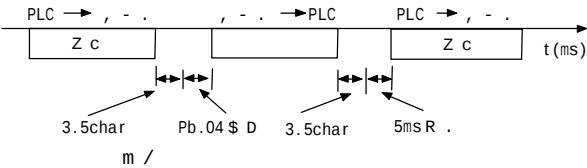
```

r s	RS-485
p q S Z	@ q + 8
p q h i	B 1200/2400/4800/9600/19200/38400bps ' R X ' i / i / w X i L # z RTU Z D 8 E @ A S C I I Z 7) 8 E Q ' p E RTU Z D 1 E @ A S C I I Z w X 2 1 E) w X 2 2 E
p q	MODBUS RTU Z) A S C I I Z a j
Q r , - . i	3 1

```

I p q r w x 7
MODBUS p q ( w x 485 + @ 485 - w x /
I r k 2 7 4 5 ; <
(1) p q r k W r k c { | 7 k @ 8 k b N /
(2) p q ( Q k ( m n k @ m n ? r j , - . r U w x . @ 8 w u r I / ( p k L ~
u )
PLC 6 N p q 7 , b
1. j 8 U 9 7 | } @ r PLC F , - . 7 p q 8 1 /
2. r 8 U /
3. j ^ _ . $ D p q ~ 7 h i ( P b . 00 ) P b . 08 ) /
4. 9 8 U @ ^ _ ` / _ /
5. x 8 U /
6. 6 N PLC 7 p q /
I p q h i $ D
PLC p q 2 @ ~ $ D p q : 7 h i / h i @ & S 4 ) 5
P 0 . 03 @ P 0 . 04 @ P 0 . 07 @ P 0 . 11 @ P 7 . 00 @ P 7 . 01 @ P 7 . 03 @ P 7 . 04 @ P 8 . 11 @ P 9 . 19 @ P d . 02 @ P d . 04 @
P b . 00 ) P b . 08 @ P d . 16
* 4 1 : I ' 2 S p q $ D p p G @ O g t Z c i L J . @ s + d 02 H /
* 4 2 : 0 • ' F w X ' E @ + ( T x @ M 7 $ D O E / . E F E
{ < $ P ( T 8 T / s + p q p q H o /
* 4 3 : $ , - . U $ P 0 2 @ , - . r . p q Z c @ - 0 Z c / $ , - . U > 0 2 @ U
E Q W E /
I K y D
- A p q K L 7 @ R 5 7 p q @ j 1 b @ a L ~ y D i L K /
B a K F r . i L ! / j ' w X 7 S Z @ ( } Q R 5 : 7 p q /
I Z
p q 2 <= . (PLC ) = , - . H Z c @ , - . 6 N / Z c f g ) 0 o z @ i L X . Z B

```



B	, - . U	Z c 3	i L O o	CRC W X	2 _
' 3.5char R .	1 char	1 char	n char	2 char	' 3.5char R .

i L W X 1 (CRC-16 @ o S h W X @ CRC W X 7 T U S :
1 8 CRC-16 T U 2 B 0 @ p q z w * + 7 B \$ D 1 / (16 E ! 1)
2 , - . U 7 LSB MSB @ 5 7 i L MSB (LSB T U CRC-16 /
3 , - . 7 Z c 3 T U CRC-16 @ Z c 7 CRC-16 6 N = ! /
2) MODBUS-ASCII Z
(ASCII Z @ ` 2 : { A ASCII 3AH @ 3 ~ N A ASCII 0DH,0AH /
\$ 2 ` F 3 @ Q R (7 G { A 6 = 7 0) 9 @ A) F @ x @ j R ASCII S Z
K @ # K 4 E @ K A 4 E / i L 1 (LRC W X @ , - . U) Z c) i L O o h W X @ W X
h W X i L 7 { A F 4 5 6 E E 7 = / 8 K _ 2 5 # g I 1 | @ s + t
n G o ~ / V 4 " 2 / 1 ms / 8 S /

B E	, - . U	Z c 3	i L O o	LRC W X	2 _ A
1 char 3AH	2 char	2 char	n char	2 char	2 char 0DH@0AH

\] '
, - . U (0) 3 1) @ \$ D 0 2 @ . k g h Z c @ ! I /

I Z c 3
0 * + , - . < # 7 MODBUS Z c 3 R 4 ^

Z c 3 (16 E)	f g	Z c # z		# z		# z	
		5 / { i	5 x { i	5 / { i	5 x { i	5 / { i	5 x { i
03H	H	8	8	7	7	5	5
06H	S {	8	8	8	8	5	5
08H	Y	8	8	8	8	5	5
10H		11	11	8	8	5	5

I ^ _ ` U a H
16

[03H]
S { Z c B Z D 7 3 @ 1 S { 7 0 o / 0 o b 8 E F A 8 E @ , b
0 o 7 8 j b /
1 , - . 7 | } /

3 (MODBUS p q

RTU Z

Z c 0 o		0 o		0 o	
	01		01		01
	03		03		83
	00		02		03
	20		00		01
	00		C1	CRC	31
	01		79		
	85	CRC	D4		
CRC	C0				

4 5 i L S i U S i 7 2 q

ASCII Z

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 D . @ j Z D 7 . . Z D 7 i L @ i L (T j 3 , b
 @ 8 E @ A 8 E 7 , b + Z c 0 o /
 1 , - . M N /

RTU Z

Z c 0 o		0 o		0 o	
	01		01		01
	06		06		86
	00		00		02
	01		01		C3
	00		00	CRC	A1
	01		01		
	19		19		
CRC	CA	CRC	CA		

ASCII Z

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 0 o t b \ R } Z C J @ (< = . , - . 7 6 K / 3 @ i L Q
 (g 5 /
 W C J

RTU Z

Z c 0 o		0 o		0 o	
	01		01		01
	08		08		88
	00		00		03
	00		00		06
	12		12	CRC	01
	34		34		
	ED		ED		
CRC	7C	CRC	7C		

ASCII Z

Z c 3A 3031 3038 3030 3030 3132 3334 4231 0D0AA030

[10H]

S { Z c 0 o k
8 E @ A 8 E 7 , b
\$ D - 50.00Hz /

RTU Z

Z c 0 0		01
Z c 3		10
		00
		02
		00
		01
		02
		13
		88
CRC		AA
		E4

ASCII Z

Z	c	3A 3031 3130
		3A 3031 3130
		3A 3031 3930

[10H]

```
i L a   Z c       f g h :
J $   ^ _ 7 ENTER @ t :
K ( @ Pb.06=0 2    /
      $ DP0.02 30.0Hz @
```

RTU Z

Z c o o		-
		01
		10
		01
		02
		00
		01
		02
		0B
		B8
CRC		B0
		30

! D 7 i L @ i L (T j 3 , b @

The first part of the paper discusses the importance of the
 Journal of Management Education in the field of management
 education. It highlights the journal's commitment to
 publishing high-quality research and its role in advancing
 the understanding of management education. The second
 part of the paper presents a review of the journal's content,
 focusing on the various articles and their contributions to the
 field. The review is organized into three main sections:
 research, theory, and practice. Each section discusses the
 key findings and insights from the articles, as well as the
 journal's efforts to promote the dissemination of knowledge
 and the advancement of the field.

```

6 0D0A      LRC W X   4F
              LRC W X   EC
              LRC W X   6C

```

```
U 0x00FF @t h i 0 o a kEEPROM@
} E 7 , b + Z c 0 o /00FFH i L a
```

Diagram illustrating a CRC-32 checksum calculation. The data is divided into four 8-bit segments. The first segment is labeled 'CRC' and contains the value '00000000'. The second segment contains '00000000'. The third segment contains '00000000'. The fourth segment contains '00000000'. The final result is '00000000'.

RTU Z

Z c 0 o	0 o	0 o
Z c 3	01	

h i a [G Z c] Q				
3	J	O o	\$ D	
00FFH	G Z c	f g m MODBUS U	0100H) 0FFFH	7

06 F10 i L Z c @ I t i L RAM M N @ = 0 M N / 8 x @ + .
7 i L / 0 ~ 8gL

MODBUS U	J	bit	O o			
0026H	A12	; G	(V) @ 0~10.00V = 0~1000			
0027H	G H 8 9 (A)					
0028H	G H 8 @ (V)					
0029H	\$ D - Hz					
002AH	a j					
002BH	[f g G w x }	0	w x X1	1 X	0	
		1	w x X2	1 X	0	
		2	w x X3	1 X	0	
		3	w x X4	1 X	0	
		4	w x X5	1 X	0	
		5	w x X6	1 X	0	
		6-F	a j			
002CH	(a j)					
	[f g G a j	0	DO	1 p ON p	0 p OFF p	
		1	a j			
		2	TA-TB-TC 9 8 .	1 p ON p	0 p OFF p	
		3-F	a j			
		; G H V 0~10.00V = 0~1000				
		k k 8 @				
		E F				
		E B				
		E B				
		k B z				
		k B z				
		f				
		C J ; (%)				
		G ; (%)				
T i						
j)						
} @ 0040H Z 004AH y = 002BH 7 BIT0-BITA E						
j)						
J m :						
(6 = DEC)		Modbus . U (6 = 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						

f g m h i 3 (6 = DEC)	Modbus . U (6 = HEX)
PF.00) PF.12	1000H) 100CH
(h i 8 9 ()	(1100H) FFFFH)

I Modbus U 3 S :
h f g m f g @ 8 E HI=f g >1 A 8 E L0=f g . { | + . U a j /

I 3 8 6 m

3	0 o
01H	Z c 3 o ~ Z c 3 j 03H@08H@10H R /
02H	. U o ~ . U @1 S ! : / ENTER n K (. [0x00FFH] j f g \$ D @ p U 7 p q f g / 41 S i o ~
03H	7 i L S i j 1 R . 16 R V03

5 + N

+ N

(}	
(} U	
*	8 =
> 3	?
	3

| 7

8 KW 7	8 (H
E 2 s 8 U	" {
W %	
` / OC OL OU OH LU	{
(< = w x	
H E M N Q Q	G H 8 @
Q 8 u 2 :	/ 2 -

6 7

8 U 8 @ U-V V@ V-W V@W-U V	
, @ . o ; KVA	, - . r U
v 8 U (N m	v 8 (N m
8	@ @ 8 [
{ 6 7	

