

	<p>u O\$V=y>?8@@f e, XA7dBCOqr 7t uQg=D E&>?F~•GH/I yJ: K<~L@j MN2Oqr 7j k ; <Fj ?tul s@OgV4MNO\$V/</p>
	<p>u VPQk) RS; u<@(T: X8U/j O#2V8WX. 7Y 8Z/[\] dj ^_` /\] sabcl O@[def #O8 WXcghi j k/(T(l mhn#O8opq8_r @SQV P#Ou<@s +ye87>?/</p>
	<p>u " XQt u98Ur v, - . GHwx U) V) W/P(2@, - . 7 r Uwx [yz IEC 8Mj k * Rd{ | } ~O• @ hQGr U/</p>
	<p>u ! a" #7\$%#O&kFP(' () cb*d+, 7- k@Qg . /O1) 82F~•GH/</p>
	<p>u K~3J 845678Oj MOSFET; J 89\$. k@. R! 1; < J 8=P2@[d(qef 2V8WXc IGBT >?; Oj . k@s +Qg. /@A/</p>
	<p>u [ha: yOBdOC7DEQp@ F 2GHpI J 7dK77 OC/</p>
	<p>u [tL(} qr qj , - . - MoNr e7US@ t | OuP: y7(} op/</p>



 Q R

!	1
S8T U VRS	6
1.1 WXRS	6
1.2 &Y* +	6
1.3 , - . Z[	6
S\T j ?Qk	7
2.1 j ?]: ^•Fu_	7
2.1.1 j ?W]	7
2.1.2 Y` az	7
2.1.3 <b=P	8
2.2 j ?ScFde	8
2.3 fgWwx 7&r	9
2.3.1 g/f ^hki	9
2.3.2 fgWwxr kj ?/ 5i	10
2.3.3 fgWwxkl cQk	12
2.3.4 fgWwxQkZm	13
2.4 <=gWwx 7&r	14
2.4.1 <=gWwxfg	14
2.4.2 <=gWwxQk	17
2.5 nOMNQk &r	19
2.6 Qk 45; <	20
SoT tuMN	21
3.1 ^_7fgftu	21
3.1.1 ^_7l p	21
3.1.2 q^fg r s	22
3.1.3 LEDi tucZ/[r s	22
3.1.4 ^_7tuS(	23
3.2 MN>Z 7' u	24
3.3 } MN	24
3.3.1 , - . MNSZ	24
3.3.2 vw. 8tu	24

QR

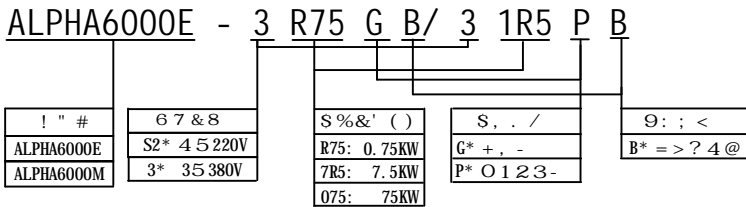
8.1.3 D \$H7. k	98
8.2 Ufab	98
S T / a	99
- R1 fj ?	101
- R2 >? * b	104
- R3 P(MODBUS pq	106
- R4 ^_c _j ?} W ~	114
- R5 , - . a	115

1.1

, - . j H) aQ5 7 } @, - . UVs@WX[RSog/ sKMGX * 7G=g /7*) sf Ug/7#^JA=y O1; /Oy @[f c*/

1.2

O/&Y* +O



1-1

ALPHA6000E ALPHA6000M

V/F

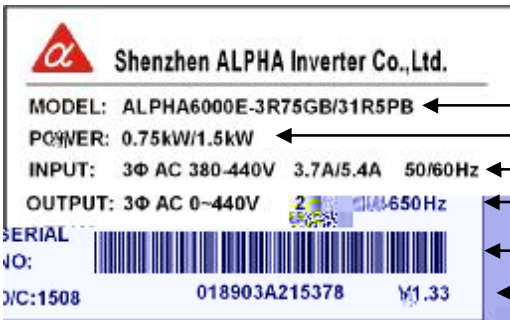
SVC V/F ! " # \$ % &

* ALPHA6000M-S2R4GB (ALPHA6000M-S2R75GB)

SVC % &

1.3

j , - . X37 X S@- yO/, - . cCD 7Z[@O R ALPHA6000E * + 78 # . > } ALPHA6000M * + } ~-:



Q8#
 CDGV8@@89c-J
 CDGH8@@89c-J
 t
 Eg @ k O

1-2

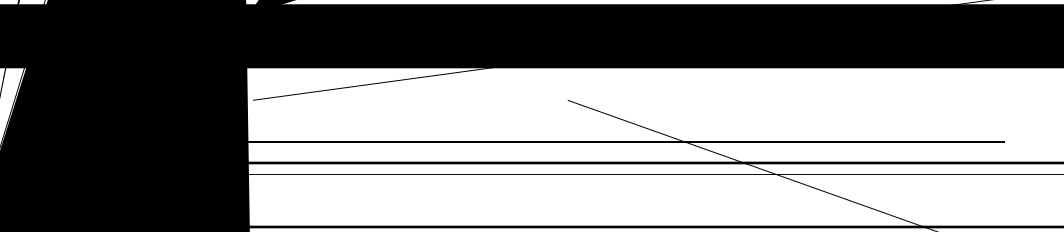
S\T j ?Qk

2.1.3

j ?u<2@[, - . . . <@\ /] ; gE78 ^ 9d V, - . Oj /j ?2_s@[` a<@\ /
O Y` azI Q40(@d{ | bKmT#. Oj azQF@/O1 23 4567/L2~45
<b@89n/ 3 V#. O/
O ~^+, -567@#. -^- CP(/

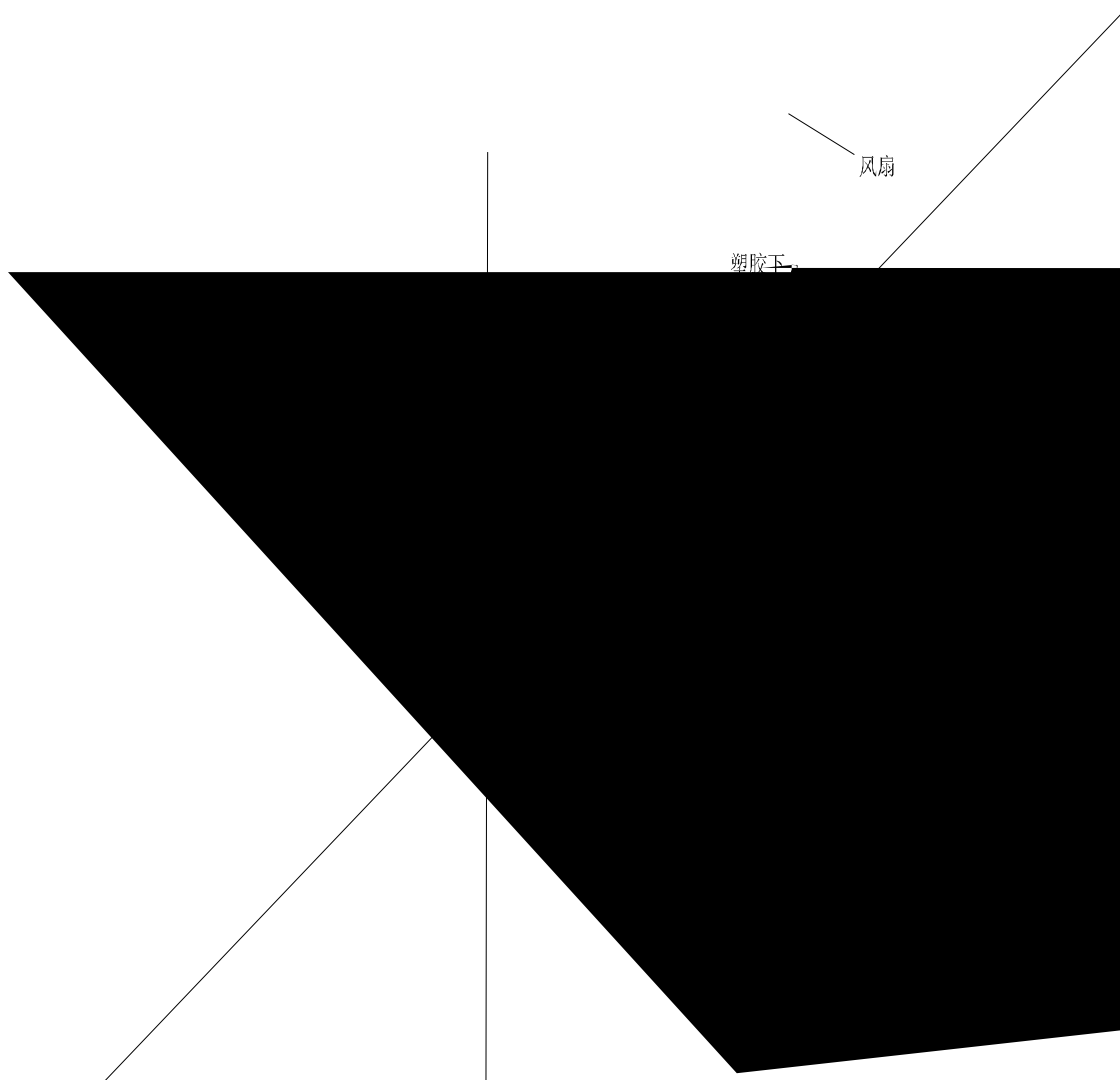
2.2

O* +, - ?yYZ&[RD* &Y/>PYZcYL ' H@(Tt, - . j ?j deSc@{
. e fJf7 /dgX(h)(Ta#| 7de@Oi 2-1) 2-2 (2-1 23DE67



2.3

2.3.1



S\T j ?Qk

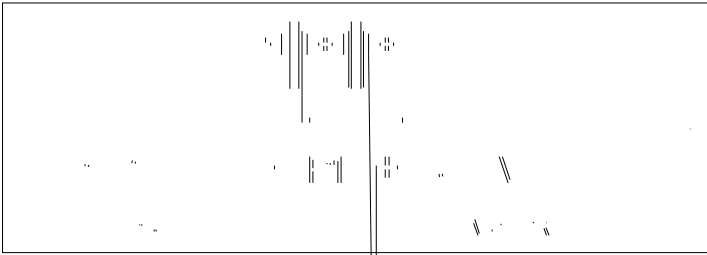
键盘

进出口

S \ T j ? Qk

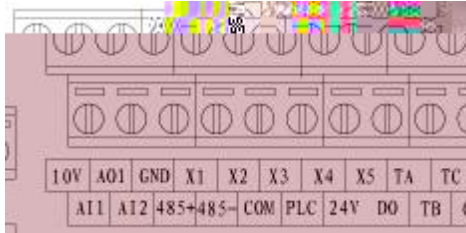
2.3.3





2.4

2.4.1



2-15 S2R4GB S2R75GB

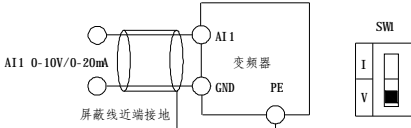
X2	X3	X4			TB	
		COM		DO	TA	TC

[f g G Vwx	X1	[f g G Vwx 1	Q3RD4>[^ f g 7W: ; G	5' NGV@GV R=3.9kt
	X2	[f g G Vwx 2	Vwx@m1SzT5.4NI/Owx < =) P3h-GVwxfg{| /	5FGV-J 400Hz@GV8@b 0) 30V@h2U COM
	X3	[f g G Vwx 3		
	X4	[f g G Vwx 4	Q3RD4>[^ f g 7W: ; G VwxP(@TQ3Ru>FB GVws=j S2R4GB) S2R75GB l g3RD4>[^ f g 7W: ; GVwx@m1SzT5.4NI/Owx < =) P3h-GVwxfg{| /	5' NGV@GV R=3.9kt 5FGV-J 400Hz/50KHz(S21R5GB) S22R2GB) 3R75GB/31R5PB c R.)@GV8@b 0) 30V@h2U COM
[f g G Vwx	X5	[f g G Vwx 5	\$Q3RD4>[^ f g 7W: ; GVwxP(@TQ3RD4>FB GVws=m1SzT 5.4 N I/Owx < =) P3h-GVwxfg{| /	5' NGV@GV R=3.9kt 5FGV-J 50KHz@GV8@b 0) 30V@h2U COM
	X6 } S2R4 GB) S2R75G Baj ~	[f g G Vwx 6	\$Q3RD4>[^ f g 7W: ; GVwxP(@TQ3RD4>FB GVws=m1SzT 5.4 N I/Owx < =) P3h-GVwxfg{| /	5' NGV@GV R=3.9kt 5FGV-J 50KHz@GV8@b 0) 30V@h2U COM
[f g G H	DO	WW687GHwx	Q3RD4>[f g 7 G Hwx@3QRu>W: ; GHwx /SzT5.4NI/Owx < =) P3h-GHwxfg{| /	5' N687WWGH/8u8@b 0V) 26V@5xGH89 50mA@GH-J b 0) 50KHz h2U COM
98 . G H	TA	98. GH	Q3RD4>[^ f g 798. G Hwx@SzT5.4NI/Owx < =(P3 h) GHwxfg{| /	TA-TB X=TA-TC W/ ex o; @250VAC/2A } COS: =1-@250VAC/1A } COS: =0.4-30VDC/1A
	TB			
	TC			
	RA	98. GH		RA-RC W/ ex o; @250VAC/2A } COS: =1-@250VAC/1A } COS: =0.4-30VDC/1A % 639 &!
	RC			
PLC	[f g G Vwx ^ v w	[f g G Vwx ^ v w	H) f 24V r @PLCf 24VOj ' N/ 4 j P(PLC 2T; < =wx 7 S#4 " k W/ = l >10V 8U } h2U GND~	Xwx < # NPN F PNP &r SZ % 639 &!
8U	10V	+10V 8U	= l >10V 8U } h2U GND~	5xGH89 20mA WW8@5xQ] 12V
	24V	+24V 8U	= l >24V 8U } h2U COM~	5xGH89 100mA
	GND	+10V 8Uh2U	> F >10V 8U7h2U	Oj f COM' N +10V) A11) A12) AO1 ^ v w
	COM	+24V 8U ^ v w	f { | wx Q P(	f GND' N
	PE	mnr U	(! wx r k mn? r U/ > k) 485 p q k) 8# 8l k 7mn ? Qr j L wx	j Oj f f g Wr k wx PE J &

2.4.2

- > GVwx Qk

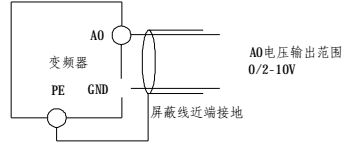
AI1) AI2wx r > GV(S2R4GB)
 S2R75GB@AI1)@AI1Q/ t W: SW3' uGV
 8@} 0) 10V-dGV89} 0) 20mA~/wx
 Qk SZO i



2-18 ' (* -

- > GHwx Qk

> GHwx A0 S2R4GB) S2R75GB@
 < # 8@ GH@{ # QpQ/ t W: SW2
 ' u8@/89GH@ r > mQZ/[^ _
 ; @wx Qk SZO i



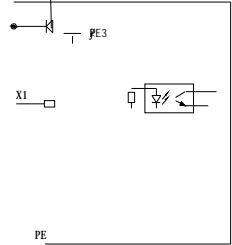
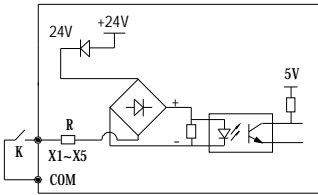
S \ T j ? Qk

2-21 PLC/ 1 23456 " 789: \$
f # QR S ~ T U # PC @ 3QR PLC @ B # > O * + , - . / (PC # V f # 2 @ B j f # F Q k I
e O P 8 S R S 232 / R S 485 E r . = (PLC V f # 2 @ t B # 7 R S 485 w x F f # 7 R S 485 w x z Y w J r W Q /

； 输入多功能端子配线

< = > % &

? @ A % &



& BC*

1pqr s 24Vt uv COMt u o g Mwxmnyz { | > } ~ • N

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

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

4p 7 \] | > & c k 8 9 : ; < & = v > & \ = ' ? @ & A \ A & ' \ AB & O \ Ag CO * g \ DD 30cm () ME F d GHI MI J | > & c v > & & c KLMNM (OPQRZ [z { . / OS ? TN


< = X . 7 ^ _ & r r s CN 2 1 (= < ^ 7 RJ-45 Fs / On k 1 (X = X O _ ` D & r < = X F ^ _ X @ (} 3 QR a LV 4 ~ ^ D = P # 7 ^ _ k / F GHI J . KL5M KL5M N8O PQ RSKL5M TURV- WXYZ 6000E LEDGH [CPU \ GH

^ _ F < = X 7 & r k 1 (O • l z } F k @ RJ-45 r s & r 1 (ep k SZ @ W { w ! q EIA/TIA568B k b O • & r / (} QR a LV 4 ~ ^ GN = u ^ _ & r k /

2.6 BC

```
I j H8#2@B#9 , -. 7GV8U/  
I j , -. pGH2SQ9H8#d6N8- 8U79H; ; </  
I , -. P? $v}=% )8 .)e•. -2@B" #( 1000V sf gm ; $v=U  
7" h8 @a { XA! 4Mt/  
I GVZc kc-Jm; &k$mn @TB i *k@X^ffgW) N*k@5HMNfgW  
rk/  
I >89KL. /7~%u@<=gW&rkB1(, 7mnk@rk(NB/! 50j /  
I 9dtmnk7mn?rek{| kc$v q@Q(" h5=tl m7mn?Xn/  
I :y&rk7o@(Tf, -. 78@; sJA /  
I ><p5 ; @7 E@<=r UwxpPEpffgWr UwxpPEp(Tr U@r UXQf{| $  
v7rUkv(@fgWr UKl * Bx! fgWkl * 8q/rk_ s@[ '(RSrk)  
)rk`; srjj $vO@ sys%@wxj b7l mk sf{|wx r/
```






] Q^_

 危險	1) hnwx \j ?H2l s@SQX GV8U@p8S@ [dj t \ /ye87>?/ 2) [dGM# 6\$v@KD82, - . 4uv• %/y G7> ?/ 1) y
--	---



3.1.2 KD

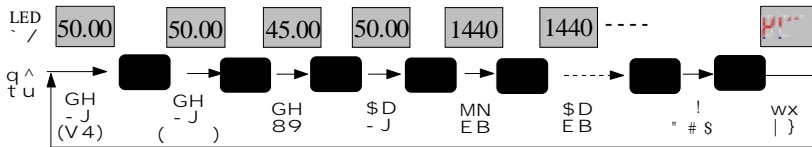
, - . ^ _ . \$ y 8 Sq ^ @ V Sq ^ 7 f g D 4 O m 3 - I : / /
3-1 DEKD

KD	KD	KD
	3R/ H^	6Vd H3R| } /j l m| } 2@q PRG/ESC ^ 9Hk 3R| } @' # 6Vfgh@ xq ENTER ^ Q s 6Vfg @fghi =q PRG/ESC QBfghi kfg @xk fgh@xkl m| } @ s H=, - . @A2@9H@A` /ffgh/, e2@ 9H, e| } Ffgh/
	hD^	6V s @dhi \$D2U hi Oo /
i { 3t 	. W^(2)  - ^ (2) 	QOPfgh @fgt dfgt /hi \$D| } @LEditu ` / %E@ qL^@+OPfg t =j` /| } @ \$D>^_yL@QpQ OPI { -J \$D@Bz PID PDd> PIDi { PD/

M	T OP	UVOP
		#@Sc> E
REVCeMNScZ/	]	Ed yMN
		CELDMN
REVCeMNScZ/		CEP%BS
		#@Sc>CE
TRIP@AZ/[]	
		@A
REMOTE Z/[	]	^_<=| }
		wx<=| }
		ANpq| }

3.1.4 DE FG

pQ^_Q=, -. 6N^ ^tu@ O
 |}hi 7`/9H



SoT

a bcde

45: pMNShi Q\$%#p pMNShi XQ\$%/
 *pV4R d Dhi @XQ\$%#p-p) \$D@({ XQ\$%/

P0 nOhi

k	WL	] ^ #	+l] ^	m n	MODBUS o
P0.00	` / > Z	0 O• 1 > Z	0		0100
P0.01	< = SZ	0 V/F < = 1 aj 2 WY: ; < = 3 V/F bN < = } S2R4GB F S2R75GB ; ; < = @XQ\$ > 2-	0		0101
P0.02	- Ji { \$D	0.00Hz) 5x - J	0.00Hz		0102
P0.03	- J \$DU 1	0 NULL 1 - Ji { \$D@i { nN 2 wx AI1 3 wx AI2} S2R4GB F S2R75GB aj ~ 5 GV 6 pqPD 8 [z Bz 9 wx UP/DOWN 10 RbD2MN(PLC) 11 PID 4) 7 aj - J U > 0) 7 2 [z BwxyLq [z Bz p _	1		0103

SxT fghi ym

k	WL	] ^ #	+l] ^	m n	MODBUS o
P1.19	g = %P(J	30.0%) 100.0% 4 @=O* +, - . 3015GB cR OPyL=% BSG%PVg =%	100.0%		0213
P1.20	-	0 8 @d@A Uu1 1 2eOd, e Uu@Qsd@A Uu1 2 8 @d, e Uu	0		0214

k	WL	] ^ #	+l] ^	m n	MODBUS o
P2.34	#%B2e	f J 132kW 0.1) 3600s f J 160kW 1.0) 3600s	22kW c R 3.0s { | 10.0s		0322
P2.35	P%B2e J	0 1 1 10 2 0.1	0		0323
P2.36	YZ&[<=	0 G% pSZ 1 p8S&[8eME	0		0324

SxT fghi ym

k	WL	] ^ #	+l] ^	m n	MODBUS o
P3.03	X3 wx f gD4	0) 49 z . 50 Ti . e GV 51 Ti . Di HE 53 D2 E' u 74 GHwx <= 77 PID GHD=P 0 78 PID b2eHE 79 &c 9Hv ^ _<= 45) 46) 52) 54) 73) 75) 76 aj	37		0403
S21R5GB) S22R2GB) 3R75GB/31R5PB c R . #					
P3.04	X4 wx f gD4	0) 79 z . 82 +J BBJ GV	0		0404
P3.05	X5 wx f gD4	0) 79 z . 80 PULSE GV 81 J B d+J BAJ GV	0		0405
P3.06	X6 wx f gD4	0) 79 z .	0		0406
S2R4GB) S2R75GB c R #					
P3.04	X4 wx f gD4	0) 79 z .	0		0404
P3.05	X5 wx f gD4	0) 79 z . 80 PULSE GV 81 J B	0		0405
P3.06	aj	-	-	*	0406
P3.07	aj	-	-	*	0407
P3.08	aj	-	-	*	0408
P3.09	aj	-	-	*	0409
P3.10	aj	-	-	*	040A
P3.11	aj	-	-	*	040B
P3.12	aj	-	-	*	040C
P3.13	X wx e • 2e	0.002s) 1.000s	0.010s		040D

SxT fghi ym

k	WL	] ^ #	+ | ] ^	m n	MODBUS o
P4.12	5/ ; GV = B _;	-100.0%) 100.0%	0.0%		050C
P4.13	5x ; GV	P4.11) 50.00kHz	50.00kHz		050D
P4.14	5x ; GV = B _;	-100.0%) 100.0%	100.0%		050E
P4.15	aj	-	-	*	050F
P4.16	aj	-	-	*	0510
P4.17	aj	-	-	*	0511
P4.18	aj	-	-	*	0512
P4.19	aj	-	-	*	0513
P4.20	aj	-	-	*	0514

P5 PLC MN

k	WL	] ^ #	+l] ^	m n	MODBUS o
P5.00	RbMN>Z	0 cY1 1 cY2} a#5 ~ 2 &[cY	2		0600
P5.01	PLC S MNx / % SZ' u	0 BS8zW MN 1 BS 2 7 z - J 9[MN 2 BS 2 7MN- J 9[MN	0		0601
P5.02	82 PLC | } hi U ' u	0 XU 1 U \$ > 0 2G%DRbMN R	0		0602
P5.03	z 2e E' u	0 1 b	0		0603
P5.04	RbMND2 T1	0.1) 3600	10.0		0604
P5.05	RbMND2 T2	0.0) 3600	10.0		0605
P5.06	RbMND2 T3		10.0		0606
P5.07	RbMND2 T4		10.0		0607
P5.08	RbMND2 T5		10.0		0608
P5.09	RbMND2 T6		10.0		0609
P5.10	RbMND2 T7		10.0		060A
P5.11	RbMND2 T8		10.0		060B
P5.12	RbMND2 T9	0.0) 3600	10.0		060C
P5.13	RbMND2 T10		10.0		060D
P5.14	RbMND2 T11		10.0		060E
P5.15	RbMND2 T12		10.0		060F
P5.16	RbMND2 T13		10.0		0610
P5.17	RbMND2 T14		10.0		0611

SxT fghi ym

P7 PID < =

m7 P Tj 0

k	WL	n	] ^ #	+	] ^	MODBUS	o
P7.00							

P9 V/F <= hi

k	WL	] ^ #	+l] ^	m n	MODBUS o
P9.00	V/F k \$D	0 EF C k 0 1 - EF C k 1) 2.0~ 2 - EF C k 2) 1.5~ 3 - EF C k 3) 1.2~ 4 () \$D V/F k } QP9.01) P9.06 f g t h D~	0		0A00
P9.01	V/F - J F1	0.0) P9.03	10.00Hz		0A01
P9.02	V/F 8@ V1	0.0) 100.0%	20.0%		0A02
P9.03	V/F - J F2	P9.01) P9.05	25.00Hz		0A03
P9.04	V/F 8@ V2	0.0) 100.0%	50.0%		0A04
P9.05	V/F - J F3	P9.03) P0.09	40.00Hz		0A05
P9.06	V/F 8@ V3	0) 100.0%	80.0%		0A06
P9.07	E F I W	0.0 G%EF I W 0.1) 30.0% q%EF I W	75kw c R 0.0%= 93kw c R . 0.1%		0A07
P9.08	q%EF I W p x	0.00) 50.00Hz	16.67Hz		0A08
P9.09	E U - J	0.0) 250.0%) RCDEF > 100%~	75kw c R 80.0%= 93kw c R . 0.0%		0A09
P9.10	E U 2e i	0.10) 25.00s	2.00s		0A0A
P9.11	Ng <= ' u	0 Ng <= L 1 Ng <=			

PA: 8#hi

k

SxT fghi ym

PC ` / < =



k	WL	]	^	#	+]	]	^	m	n	MODBUS	o
		3	GV	4	p	q	\$	D			
Pd.05	8x, 98. ab	20)	110%						100%		OE05
Pd.06	QAI deRHO)	20.0)	200.0%						160.0%		OE06
0007											

PE MN R

° k	WL	J ^ #	+l] ^	m n	MODBUS o
PE.00	` /@A' u	0) 30	1		0F00
PE.01	@A}	0 NULL 1 Uu1 kk @ 2 Uu2 <=8W 8@ 3 Uu3 Y8gWX' 4 0C1 PBQ9 5 0C2 %BQ9 6 0C3 BQ9 7 0u1 PBQ@ 8 0u2 %BQ@ 9 0u3 BQ@ 10 GF r U 11 0H1 +, . Q, 12 0L1 8#QA 13 0L2, -. QA 14 SC @A W 15 EF0 DGANp 7 j @A 16 EF1wx. 7 j @A 17 SP1GV JdX) 18 SP0GH JdX) 19 CCF1 <=gW@A 1@p85 , -. f ^_l e G Xg 20 CCF2 <=gW@A 2@, -. f ^_l e&ps@ G@A&[2 R. 21 CCF3 EEPROM @A 22 CCF4 AD E H@A 23 CCF5 RAM @A 24 CCF6 CPU KL 25 PCE hi H=o- 26 aj 27 HE 89R @A 28 DER @A 29 CUE x@A	NULL	*	0F01
PE.02	@A2GH- J	0.00Hz) . y- J	0.00Hz	*	0F02
PE.03	@A2\$D- J	0.00Hz) . y- J	0.00Hz	*	0F03
PE.04	@A2GH89	0) 2 CD89	0.0A	*	0F04
PE.05	@A2kk 8@	0) 1000V	0V	*	0F05
PE.06	@A2MN87	0: StP # 1: Acc PB 2: dEc %B 3: con LB			S -0.12 Tc () re fl34.64 254.64 7/350 T

PF hi abcg/B

k	WL	] ^ #	+l] ^	m n	MODBUS o
PF.00	{ } t	0 t { | tab	0		1000
PF.01	hi Vab	0 kj hi ! " % 1 \$\$D- J} P0.02-F fgt @{| fgth i p% 2 \$Ofgt @kj p%	0		1001
PF.02	hi v	0 tu 1 D\$@A R 2 HH) \$D (R\ t\8#hi \$) 3 HH) \$D (R\ t\$)	0		1002
PF.03	hi	0 %u 1 hi A 2 hi . A 3 X 8#hi A 4 @= ^ _yL	0		1003
PF.04	G/P' u	0 G (EF@A#) 1 P (&#) O }@A#)	0		1004
PF.05	aj	aj	-	*	1005
PF.06	aj	-	-	*	1006
PF.07	aj	-	-	*	1007
PF.08	aj	-	-	*	1008
PF.09	g/ * +	0) 9999		*	1009
PF.10	k O	0.00) 99.99		*	100A
PF.11	' O OF b	0.000) 9.999		*	100B

h i j a k l

5.1 >? " P0 \$

P0.00 ` />Z	\$Db 0) 1 0
-------------	-------------

```

0 O•                                1 >Z
    P0.00 $D> i2@6V                >Z/j >Z @QpQ nNS F %Vh %Q7f
gt@{ ! %7fgttX` /=6 %>0s@kj ` //
    
```

P0.01 <=SZ	\$Db 0) 3 0
------------	-------------

```

0 V/F <=                            1 aj
2 WY: ; <=                          3 V/FbN<=
: V/F <= j ~^( | , - . $%8|R. 8#dj ( h6N8#hi GoDd (pQ{
w h R8#hi 767 @[' uL<=SZ/
WY: ; <= W Bz $.: ; <=SZ@Q(! FCg p, B$%]: / S2R4GB F S2R75GB
: ; <=~
V/FbN<= j ~^=- JF8@ i <=7] @Q' uL<=SZ/
    
```

& BC*

```

UVWXYL |>1Z] M[ ` , ~q\ ] ^~_` a2bc&' Mx^_ defgI &' hij kM
dl G&' j kmn7( opqf ~&' j kMrsoptf ~|>unMI Jvw1xyGz{ | Ghi
j kgI v&' j kmn7} ~xrefgI YL|>5•j kM P8 YL|>j k; <N
v |>1Z M2 1 . /O&' n|>1 &' M . /O() D &' () D q
5 3 M&' ~() D m( . /O() D 1 $ 1 Mwxs |>un. $ e y
GN
    
```

P0.02 - Ji { \$D	\$Db 0.00Hz) 5x - J 0.00Hz
------------------	----------------------------

```

: fgj fgt P0.03 d P0.04=i 2@W( ^_6N- Ji { $D2yL@| D42, - . 7 - J $
D /
    
```

& BC*

```

P0.02~ , k ? M1 ENTERGf ^ M v. /O YM ` &
qy N
[ P0.03g 7r 1M , (nj k P3.18M P3.18g 7r 2] Mk g 7/) ' P0.02Dv \ n ~
& } q \ 2] M &q N
                                d1
    
```

P0.03 - J \$DU 1	\$Db 0) 11 1 1
------------------	----------------

SzT mnfg{ |

SchD wxhD7Sc #s5F@pqhD7wl @^_hD7Sc5A/ #sF7 L2@
 +QA #s7hD/

P0.09 nO- J	\$Db A- >Z 0.10) 650.0Hz=F- >Z} aj ~ 0.1) 1000Hz
P0.10 5xGH- J	\$Db A- >Z MAX[50.00Hz@. y- J@\$D- J@[z- J@ " - J]) 650.0Hz 50.00Hz F- >Z} aj ~ MAX[50.0Hz@. y- J@\$D- J@[z- J@ " - J]) 1000Hz 50.0Hz

: nO- J F_{BASE} \$, - . 7GH8@; ! CD8@U_N275/GH- J@(Du>nN- J 7n• /
 p R8#CD- Ju>nO- J 7\$D /j p M(767 @Bq8#7CD- J' uF_{BASE}/j
 M(7] @QqP(^• \$D@yL2(T 45f@A8#7V/F C7Q c8#7H ^• @O
 i 5-0-1GH- J fGH8@: *i : //

5x- J F_{MAX} O* +, - . ! " GH75F- J/O\$D x! \$%?PCD @+yQg* 8%f 5BØT

\$ > ' 0;
= B\$D- J
\$no=
8#si))rp
X pM
/ 30.00Hz@
P0.17=10 2@

P0.18 PB2

P0.19 %B2

: PB2

O* +, - .
P%B2e@
P%B2

5.2 pY

P1.00 • %S

0 B • %-

2 EB

:

B • %-

PDPB2e

= % (

P@A8:

s x • % @)

} y E' C

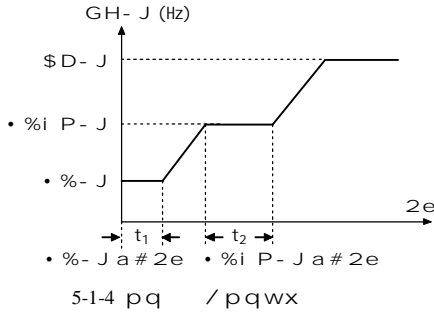
e 9 = % t i



SzT mnfg{|

P1.01 • %- J	\$ Db 0.10) 60.00Hz 0.50Hz
P1.02 • %- J a # 2e	\$ Db 0.0) 10.0s 0.0s

' • %- J



& BC*

? I /) R ? /) A Rg7 /) \$? I /)] r 0] M ? I /) N

Pl.07 P%B>Z	\$Db 0) 3 0
-------------	-------------

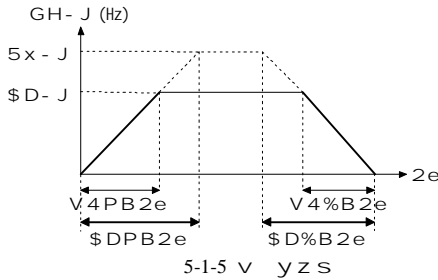
0 kC

1 S k

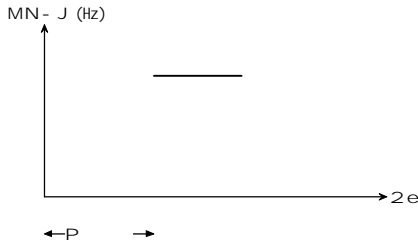
2 aj

3 aj

说明 kCP%B >8 p(@A: (@GH- J qz D J Od %@Oi 5-1-5: //



S k j PBW F2_2 %, GH- J@Q7 % #6* C7 f %) %// 2@
 (! A- 2~^ %EF) F- 2~^ 2PB7@A@O K=; /



SzT mnfg{ |

s k2_z 2eOi 5-1-6S : /@ GH- J, 7 J %k 0/

& BC:

(n\v. /OgW ' , M2 , RB ' j DMq n, Re yG] ~ >?N
v ' r ~ &Mk: >?4@SU, >?(n~' - N

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

#a#-J Wj q STOP ^d{ # k @MN-J 4# -k #a#-J@| s
x->0/
\$ #a#2e>02@ #a#-J L=\$ \$D7a#-Jx! d; ! MN-J 2@ #a#
-J L/

P1.18 =% ' u	\$Db b 0) 3 3
--------------	---------------

0 XP(=% 1 P(g =%
2 P(Jp=% 3 P(g FJp=%

& BC*

R. / uq\] r ~ &Mm(qg>?& ` , 2>?}
R 2? LMd r ' ~ &M \IJs j kgI{ 1\$3dUV %~n >?
4@ >?& N
15kW (' - I n >?4@N

P1.19 g =%P(J	\$Db 30.0) 100.0% 100.0%
---------------	--------------------------

\$P7i x=%L H@y=%8 . 7aWt x/: R hi 7\$PB2 =%8 7
FfJ@' u 7P(JRj B=%F89=%8 Q, eVW) /
g =%%u8@x FJ BQ@x} Pd.11~: \ @380VGV7# @g =%%u8@ Q@J B
xA 52V(WOn%u x >700V)@220VGV7# A 23V(WOn%u x >350V)/ \$[Oo[h1 Pd.11
7rs/

P1.20 _	\$Db 0) 2 0
---------	-------------

0 s@d@AUuI=
1 2eOd, eUu@Qsd@AUuI=
2 s@d, eUu/

P1.21 2e	\$Db 0.5) 10.0s y# hD
----------	-----------------------

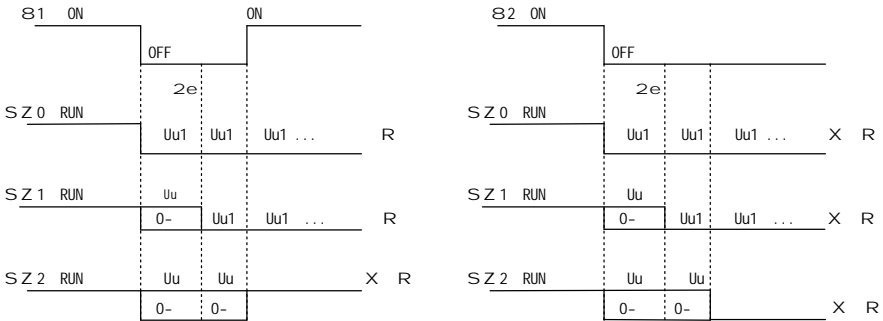
P1.22 , es%u' u	\$Db 0) 1 0
-----------------	-------------

0 X%u 1 %BMN

P1.23 %BMN2%BJ	\$Db 0.10Hz/s) 5x - J/s 10.00Hz/s
----------------	-----------------------------------

: O #2HW @@+I , eUu@L28#/%X/D/Oi 5-1-8: /
OMN2HW @d Uu d UuI@Oi 5-1-8: /= E Uu 2@X @6V0 - MN/ H@
+ Uu J= E UuI 2@+ #@O9[- 8@v 300V R @+ Xu >@A R@3Xu >@AGH=
O H@ R UuI @A/
, es%u' u >12@ , esqz P1.23 %BBJ%BMN@Oj %B2 8 H@
+q\$DB2 \$ /

SzT mnfg{ |

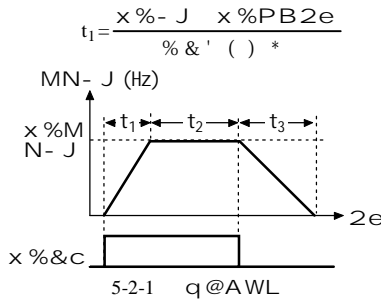


5-1-8 | Y}

5.3 ~ • @A" P2 \$

P2.00 x %MN- J	\$Db 0.10Hz) . y- J 5.00Hz
P2.01 x %PB2e	\$Db 0.1) 3600s 6.0/20.0s
P2.02 x %%B2e	\$Db 0.0) 3600s 6.0/20.0s

P2.00) P2.02D4x %MN27J : hi /
 Oi 5-2-1: / @t1) t3 > V4MN7x %PBF %B2e @t2 > x %2e @P2.00 > x %MN- J @
 Q P2.01 F P2.02 \$D7x %P%B2e > 0k5x - J : ~ 72e /
 V4MN7x %PB2e t1qz ZhD/ z_@V4MN7x %%B2e t33QOLhD/
 #SZQP2.02\$D hD \$P2.02\$D>' 0 2@q #SZ0 %B # =P2.02\$D> 02@
 +qGQ #SZ # =



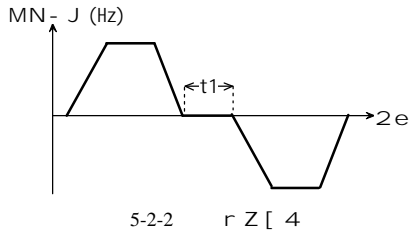
5-2-1 q@AWL

& BC*

1p ?yG ? 1Z 0l G ?M ? :] 4H 7r N
 2p[?] r 0mQ M ?yG3 M ' LK>?tu '] M] 4
 }
 3p T } A | >tu ml G ? | >N

P2.03 CE9H2e	\$Db 0.0) 3600s 0.0s
--------------	----------------------

, , - . Q cMEQ kCcME@di QCcMEQ k cME7QRS@j GHi - ; 7
 Q 2e@Oi 5-2-2S: / 7t1/



P2.04 y - J _>Z	\$Db 0) 3 0
-----------------	-------------

0 MNj y - J

1 0- MN

2 #

3 aj

: ' u0 MNj y - J 2@O \$D- J /! y - J @+V4MN- J > y - J X \$ @Ou



P2.28 PB2e2	\$Db 0.1) 3600s 6.0/20.0s
P2.29 %B2e2	\$Db 0.1) 3600s 6.0/20.0s
P2.30 PB2e3	\$Db 0.1) 3600s 6.0/20.0s
P2.31 %B2e3	\$Db 0.1) 3600s 6.0/20.0s
P2.32 PB2e4	\$Db 0.1) 3600s 6.0/20.0s
P2.33 %B2e4	\$Db 0.1) 3600s 6.0/20.0s
P2.34 # %B2e	\$Db 0.1) 3600s 3.0/10.0s

b = P%B2e2) 3) 46ND4} P%B2e1QP0.18) P0.19D4-/ , - . MN7P) %B2e
Q j wxpQhi P3.01) P3.05' uhd= L@+>P%B2e1/\$wx' u>D* #d{
#672@q # %B2e N/=RbD2MNF x %MN7P%B2e@X j wx <=@
Q` G\$D7hi ' u/
\$, - . #dwx D* #2@+qP2.34 %B #2e #@ #SZ} P1.10~7y
=/P%B2e7On E> @QRpQ %P2.35 P%B2e J t \$D2e /dqx10 /

P2.35 P%B2e J	\$Db 0) 2 0
---------------	-------------

0 1 1 10
2 0.1
V4P%B2e = P%B2e P%B2e J

P2.36 YZ&[<=	\$Db 0) 1 0
---------------	-------------

0 G% pSZ 1 p8S&[8eME
G% pSZ , - . MNS&[8eME = # 3 bcs@ >?az 50(@&[E=s+
30j /F1+3 7. 44 Tf15. 12 O TD (8) Tj /F1+2 7. 4 O TD j /F1

SzT mnfg{ |

P2.49 PG%B i 1	\$Db 1) 1000 1
P2.50 PG%B i 2	\$Db 1) 1000 1

\$3t.(PG)X erj ?j 8# . 2@~^\$P hhi @PG%B i 1 =B>8# . 7
% idew@PG%B i 2 . d w@ BD% %

P3.03 X3wx f g	\$Db 0) 79 37
P3.04 X4wx f g	\$Db 0) 79,82 0
P3.05 X5wx f g	\$Db 0) 81 0
P3.06 X6wx f g	\$Db 0) 79 0

<=wx X1) X6 [f gwx@pQ\$DP3.01) P3.067 D4{ 3fg/! " 6HD4@6HD
47wx@{ S8SyL2@ fg>yL/\$D ffg1m5-3-1/

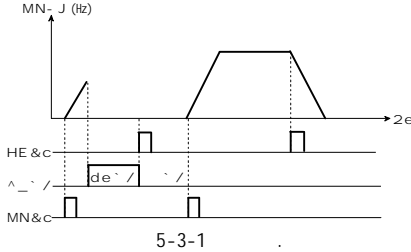
5-3-1

=m5-3-1S: + 7fg{ | O

0- D4 : D4wx > Lwx@, -. XR wx7|}@3X6Ngh B@W wx !mn| } / = ! XP(7wxOLD4@QyL < pKLd ~ %u /

1) 5 ME > Z @ 1 P3.15ME > Z \$ D /

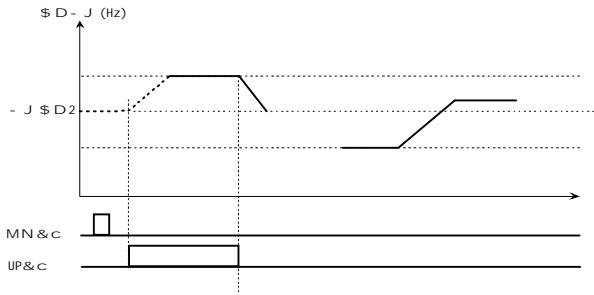
6-RST HE j @A| } @Q(^ _STOP/RESET^ H@A| } @3Q(D4 > RST7wx H@A| } @j MN| } • (wxQ , -. q #SZ # / RSTZcj { . W NHE%u / : R(Tq L-yL- L SZtu@Oi 5-3-1: //



7-FC- J \$ D' u FC- J \$ D' u fgwx yL @+- J \$ DQP0.06MN- J \$ Dh 2hD= Lfgwx L@+- J \$ DQP0.05MN- J \$ Dh 1hD/, -. MNQRS@QRpQFCwx 9 H- J \$ DSZ@B \$vw7 < =, -. 7GH- J /

8) 9 CEx %Zc FJOG/RJOG

, -. ypQMNZc • %MN} - J GH- 2@D4 > FJOGfgwx yL@ N



SzT mnfg{|

16-P%B pZc a#8#X gh D 7 } #&c\$ -@ # \$ EBME/

17-, -. MN p wxyL2@MNS7, -. +GQ -@ #|}+ p/%/f^(! - A|k
\\%7] /

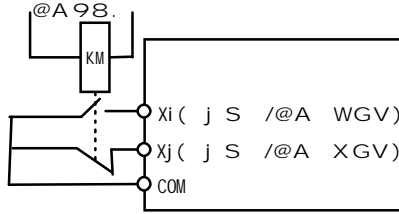
18) 24@26) 29 [z B

[z Bz MN27 • %/ p<=Q' u^_) wxZcdANpf 4 6 σ . 4D9T 7 68 O. 7
[p7.S7. Ze (Q3) Tj/F174 (4-4 Tjv67.44.T4.08 0DD

pf 7.S1.

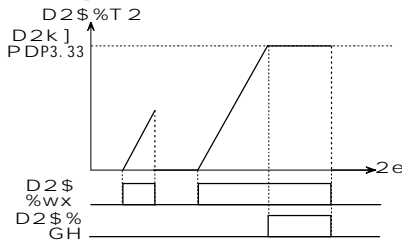


EIO j S W@EII j S X , - . j MNQRS@r k j S s@W0- MN/8
 j S V\$@, - . HMN@Qh2EH0 j @A W) EHI j @A X; J: r s@Oi 5-3-6
 : //



5-3-6 /

41- #|} Pe9=% (wx = #|} S7* CVPe9=%/
 42) 44 wx PLC<=
 PLC V RbD2MN/t- J \$D1GH>PLC=PID V} z /P(- J \$DU22@PLC V L/
 PLC RbD2MN /wxyL2 RbD2MN@6V0- MN= Zc`bsB x9
 [MN/wxyL e q STOP ^@RbMNTi . Di @ w.%2@q/%SZ/%/ , - .! j
 RbMNSZ 8u+ fg 54/
 PLC #|} HE j PLCMN>Z7 #|} @ fgwxyL2tD\$PLC #2 7MN
 z) MN2e; /
 47-PID V PIDMN@t- J \$DIGH>PIDXY /P(- J \$DU22@PID V L/
 48-Bz/ F>Z9H
 j : ; <=>Z @QP8.10EF<=>Z\$DF wx|} WDMNj Bz dEF>Z@ O \$P8.10
 \$>0} qBz>ZMN~2@\$wx\$>48 yL2@+MN>ZG%9H>EF>Z/
 49) 53 D2\$%
 49 wxyL2D22eW T2@ L2D0/
 \$D2k] PD} P3.33~2 pT2/Oi 5-3-7: //
 53 fgwxyL2@P3.33D2k] PD E9H>bc@ L+> /



5-3-7 ^4 q*-

50-Ti . e GV OPTi . 7Ti GVs@ 5F- J 200Hz@ 82QRU \$
 Ti /
 51-Ti . Di HE =, - . OP7Ti . 6NDi tu@Ti . e - GVQ P(/
 74-GHwx <= fgwxGVyL2@36 GHf gw xGHyL=
 77-PIDGHD=P0 Bz PIDMN2@\$wx\$P yL2@GHD=P>\$DBz=> PIDMN2@\$
 wx\$P yL2@GHD=P>i - /
 78-PID b2eHE PIDMN>Z @8 >PI<=@\$wx\$D yL@L22tIy nN@ b
 nN>0/
 80-PULSE GV fgwxr . u>- JPD@GV7 - Jf \$D- J7: *@h
 1P4h- JPD C k7rs/

SzT mnfg{ |

81 J B GV OPPG J B GVwxfg= fgZD7wxr E. d3t. }
PG~7AJ @VW J BzC /
82 +J BBJ GVOPPG +J BBJ GVfg@ fgZD7wxr 3t. }PG~B
J @F8I fgwxQ VW+J BzC /

& BC*

I PG5 L- &`QS - ~ & OM&8 12) 30VDC@g\ 1Zmj 2.4.2
|> =tu~*gGN

e• 2e i =GV 6Ni { e• _@R<pKL =*CLD7 /
e• 2e i Qx@<=LD@y<= B, U=Q/2@ B @yQg<=XLD/OX| 5 \$
D @QaL<=XLDd B" 67 \$no\$D /

0 { kZME>Z 1 1 { kZME>Z 2
2 okZME>Z 1-Ga#fg} - P Xl) X6Sg58wx ~
3 okZME>Z 2-Ga#fg} - P Xl) X6Sg58wx ~
@\$, - . MN&c<=SZ} P0.07~>wx<=2@{ kZ 1) 2@okZ 1) 2Oy54/
{ kZME>Z1@FWD@REV qZ/ScMN@FWD> E@REV>CE/({ QpQ9Hwx
FWD) REV@<=8# CE/\$FWDyL2 EMN=\$REvyL2@ <CE' uP2.38>1 pCE@
+ p=>0 ! " CE@+CEMN/z2yLd L2@ p/wxrK SZO i 1: //
{ kZME>Z2@RUN MN&c@FR:MNSc@{ i 2 P(/\$RUNyL2@•%, - . @y
FR\$D2@FR= L2 E@FRyL2CE@ FR\$D2@ScQf gthD/\$RUN L2@ p,
- . MN/wxrK SZO i 2/
okZME>Z1@FWD@REV qZ/ScMN@FWD> E@REV>CE/HLDyL2@({ Qp
Q9Hwx FWD) REV@<=8# CE/\$FWDyL2 E=\$REvyL2CE=z2yLd L2@
#/HLD>ONH L7L44 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 O TD (=) Tj /F1+6 7. 44 Tf 16. 8 O TD (@ Tf15. 12 OTD O Tc (

R

wx UP/DOWNBJ D4(UP/DOWNwx %\$D- J 7, J / UP/DOWNPD D4(UP/DOWNwx %\$D- J 7, b /

P3.18i { - J UP/DOWNU ' u	\$Db 0) 2 2
---------------------------	-------------

0 r k STOP@UP/DOWN PD HE > 0/
 1 r k STOP@UP/DOWN PD XHE > 0@ 8XaU/
 2 r k STOP@UP/DOWN PD XHE > 0@ 8aUkfgtS=P0.03 \$D> 12@P0.02j kno 8aU/
 UP/DOWNMN1 i 5-3-3@5-3-4: //
 P0.03\$D>1^_ \$D- J 2 P3.18\$D>22@i { \$D- J } P0.02~j kno 8aU=X 22@ 8XaU@ 3h1P0.02 /

P3.19 D0wx f g D4	\$Db 0) 37 0
-------------------	--------------

P3.24 98. 1(TA/TB/TC)GHf g' u	\$Db 0) 37 19
-------------------------------	---------------

P3.25 98. 2(RA/RC~GHf g' u	\$Db 0) 37 0
----------------------------	--------------

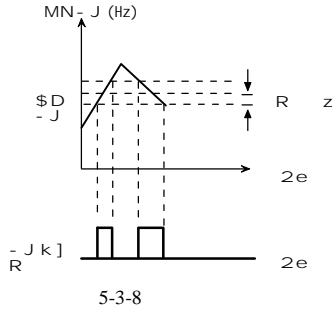
98. 2(RA/RC~@639<=Xy/
 O* +, -. v2WW: ; GH@{ GHwx D0) 98. 1 >Q3R[f gwx / () QaL ~ ^@ uGH8j b<=F l m @1m5-3-4/
 5-3-4 1 * +

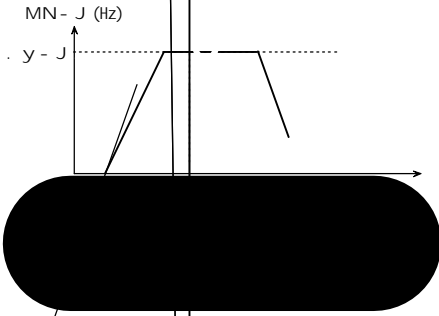
QR	
0	NULL
1	RUN MN , -. ! MN| } @wxGHyL
2	FAR - J k] hzrs P3.26 - J k] RH z
3	FDT - J R h1 P3.27) P3.28 - J R f - J R sJ: rs
4	FDTH . y - J k] \$D- J . y - J MN- J k] . y - J " k] 2@wxGHyL/
5	FDTL y - J k] \$D- J y - J MN- J k] J k<00/F1+8 6. 48 Tf 6. 48

QR		
29	S	* C ! S2wxGHyL
30	i BS	GH- J > 0 2wxGHyL
31	aj	aj
32	aj	aj
33	V4 ESc	\$, - . 6NSc9H2@GH78) 34 E%,
34	aj	aj
35	ARH } ULP~	\$, - . A2@ ARH yL
36	[z B	g58S[z BGVwx} 18) 24) 26) 29~yL@wxGHyL
37	< =	74 GVf gwxGVyL 2@wxGHyL

P3.26 - J k] RH z	\$Db 0.00) 10.00Hz 2.50Hz
-------------------	---------------------------

GH- J k] \$D- J 2@Lfgno{ R z@nob >\$D- J 70) 10.00Hz/ \$, - . 7GH- J j \$D- J 7 @RH z O2@J BGHf gwxGHyL@Oi 5-3-8: //





5.5 ' (" P4 \$

P4.00 > ; ' kC' u	\$Db 0) 3 0
-------------------	-------------

0 1 All

2 AI2} S2R4GB) S2R75GB aj ~ 3

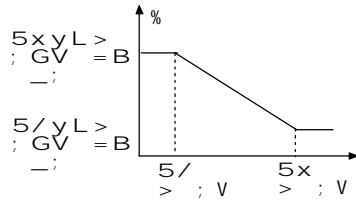
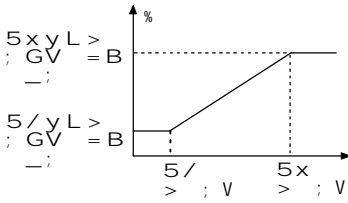
\$ P4.00 \$D> 0 2@P4.01) P4.05 \$DD4 All GV C= P4.11) P4.15 \$D> GV\$D=

2W\$Di @ XKL =

P4.00 \$DX> 0@W>' kC' u2@ P4.01) P4.15: y\$D > P4.00: ' p 7 x/e • 2

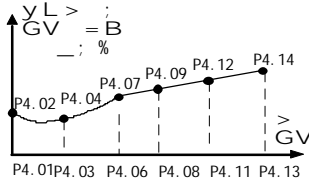
eR p > • @ { 1Wp _; > 0=

\$ P4.00 \$D> 1 d 2(S2R4GB) S2R75GB aj)2@>GV4 O TD (p) Tj /F1+8 7657



5-4-1' (* - {

2 \$ P4.00 \$P > 1) 2(S2R4GB) S2R75GB aj)d 3 2@P4.01) P4.04@P4.06) P4.09@ P4.11) P4.14
 ((f. rs 1Xz/() QRpQ\$D @G D4' kC k/Q\$DMN k7 Sx/Oi
 5-4-2: /@P4.01) P4.03) P4.06) P4.08) P4.11) P4.13 7 B bOP/

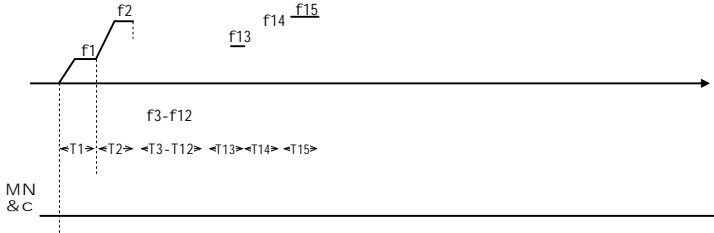


5-4-2' (* - {

3 e• 2e i =GV 6Ni { e• _@R<pKL =* CLD7 /
 e• 2e i Qx@<=LD@y<= B, U=Q/2@ B @yQg<=XLD/OX| 5 \$D @
 Qa (2) Tj /F1+4 7. 44 Tf7. 44 O TD (D) 9. 841+9 7EO4 I

P4.31	A01	P	\$Db	-1	100%	0.0%
P4.32	A02	P	\$Db	-1	100%	0.0%

P(bpm/@O (kpm/@V4GH ypm/@O• GH xpm/@+V4GH
 >y=kx>10b=A01 P100%=B10V/O• GHZGH0 / = B> GH; 5x /8 (!
 > GH7i ! FGH 7 U/3QRGD4>gh GH k/ > GHOo>MN-
 J@" #j - J >02GH8V@- J >5x2GH3V@+ 0.5 PB\$ > 80%P'
 42 xOr O r (J) Tj /F1 6. 4.88 0.04 TB (4 or 4) Tj Or 6.48 P(+1 6.48 Tj 30.5 F 0.7 TD (B) T2.4
 \$ \$ 14 Tf 14.88 0 0 TD (#\$) Tj /F1+1 6.48 Tf 12.96 0 TD (-) Tj /F1+2 6.48





P5.28 T10z RbMN\$D	\$Db 1F) 4r 1F
P5.29 T11z RbMN\$D	\$Db 1F) 4r 1F
P5.30 T12z RbMN\$D	\$Db 1F) 4r 1F
P5.31 T13z RbMN\$D	\$Db 1F) 4r 1F
P5.32 T14z RbMN\$D	\$Db 1F) 4r 1F
P5.33 T15z RbMN\$D	\$Db 1F) 4r 1F

* D` z, -. P%B2eFMNSc/vy8^h @{ 41m5-5-1/

5-5-1 PLCi @A] ^

h Oo	P%B2e		MN Sc
1F	P%B2e1	P0.18) P0.19	F c
1r			r Cc
2F	P%B2e2	P2.28) P2.29	F c
2r			r Cc
3F	P%B2e3	P2.30) P2.31	F c
3r			r Cc
4F	P%B2e4	P2.32) P2.33	F c
4r			r Cc

P5.34 RbMN RDi	\$Db 0) 1 0
P5.35 RbMNzi R	\$Db 0) 15 0
P5.36 RbMNOz 2e	\$Db 0.0) 3600 0.0

RbMNzi RP5.35 R\$ PLCMNzi /
 RbMNOz 2eP5.36 R\$ PLCOz MN2e /
 P5.34>12DRbMNzi RP5.35) RbMNOz 2eP5.36@D0s Of gt H>0/

& . . O

SzT mnfg{ |

P7.03 PIDC U1	\$Db 0) 5 0
P7.04 PIDC U2	\$Db 0) 5 0

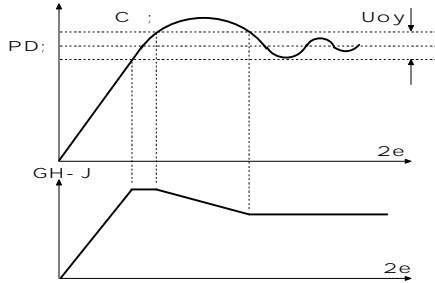
0 OPPGd J BGV} P7.03~/ aj } P7.04~
 1 AIIwx 2 AI2wx (S2R4GB) S2R75GBaj)
 3 aj 4 GV
 5 ANpq

P7.05 C ; h	\$Db 0) 5 0
-------------	-------------

0 PIDC U1 1 PIDC U2
 2 MIN} PIDC U1@PIDC U2~ 3 MAX} PIDC U1@PIDC U2~
 4 PIDC U1>PIDC U2 5 PIDC U1-PIDC U2
 (! hDPIDC ; GVSZFp /C p >02@MNj Bz PID>Z@{ PD>> ; 2@q
 { ; R=B5xEB(5x - J =B7EB)%U EBPd/{ C p 2MNj n DP GD/) Tj /!F71 + 3

P7.22 ~Uoy	\$Db 0.0) 999.9 0.0
------------	---------------------

: \$C F\$D7U A! PID~Uoy\$D 2@PID<=. no@, -. # \$ 7GH/O
i 5-7-1: //
Lfg7 \$ \$Py!! () * CGH7Ez FL Dz / ~Uoy - A2 * C7nNEz @y I F2
* CLDRz @89X(^ 7GH • %/
> PID2@~Uoy \$DP7.22> _; 7" = @^f; RdQ@EBPID2~Uoy \$DP7.22>E
B/Oi 5-7-1: /



5-7-1

P7.23 PIDnN C	\$Db 0) 1 0
---------------	-------------

0 u(1 Cu(
u(\$PIDGHOP@W- JOP@: <=7 _; OP2' (@O O * C/
Cu(\$PIDGHOP@W- JOP@: <=7 _; %/2' (@O=Y * C/

P7.24 bnN' u	\$Db 0) 1 0
--------------	-------------

0 -Jk. y2@ p bnN 1 -Jk. y2@9[bnN

& BC*

R r k~ MIJU0M /) F)]M P 9 N

P7.25 • (\$Db 0) 1 0
-----------	-------------

0 X•(1 •(

& BC*

2 PID] (nN

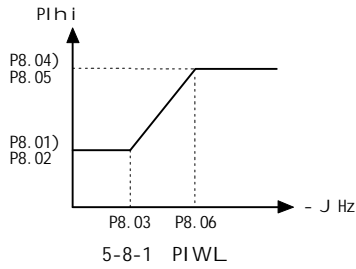
P7.26 " 2	\$Db 0) 999s 120s
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P7.27	\$Db 0.00Hz) . y - J 20.00Hz
-------	------------------------------

P7.28	\$Db 0.0) 100% 80%
-------	--------------------

Lfg(j 9; >i 2 p, ; } : y ! #~j ^67 @O ; ; 7-JA!
p@" 2 • %/

O j L" 2l s@- J A! @+, ; #/! o \$v ! p| } /
^9Hv | } @ C (T - v p /L2, ; /%} Oi : / 5-7-2~ \$
Db =B7 > PIDC 7 b /
{ O ~^(^_ . nN@ \$D@Qt PCh PC.01-PC.20 S@PC.16,PC.17 \$ > 1@{ \$ > 0@
j l <' / | } nN @@ \$D4 * H@ + , /O nNHs@Qq ENTERphn/WP
86 MN@hnh7@ vyL/



pQ\$DBznN. 7 *i F b2e@QRnN: ; <=7Bz%} B C/OP O @
 %/ b2e@ QP BzY7%} B/ O Qxd b2eQ/ QgP* CgE /
 nNS(O H)hi Xg{ | ^• @+j H) hi nG. 6NEN #Ox O @a
 *CX =vsC(g) Tj /9 () Tj /F187. 44 Tf7O TD (B44 O TD (

P8.14 \$D * i	\$Db 0.0%) 200.0% 102.4%
---------------	--------------------------

: ; <=SZ @ hi =EFZc6N @%, hi QR%, GH89@p X %/

P8.15 EFPB2e	\$Db 0.00) 120.0s 0.50s
--------------	-------------------------

P8.16 EF%B2e	\$Db 0.00) 120.0s 0.50s
--------------	-------------------------

\$PEF>Z27EFP%B2e@Bz>Z Lfg L
EFB0k] CDEF72e>EFPB2e@BCDEFk] 072e>EF%B2e/

P8.17 AB TEU	\$Db 50.0%) 200.0% 117.0%
--------------	---------------------------

= Bz \$. : ; <=@ AB2=AMNXLD@Q \$OxLhi /

P8.18 FB TEU	\$Db 50.0%) 200.0% 117.0%
--------------	---------------------------

= Bz \$. : ; <=@ hi (Dno8#7LBEz \$8#=A2Bz A+Px hi @
Cl +%/ hi /

P8.23 i BEFI W	\$Db 0.0) 50.0% 0.0%
----------------	----------------------

P8.24 i B	\$Db 0) 20% 5%
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P8.23i BEFI W >2 i B27GHEF@P8#j i B2a#8D7 F/
i B \$Db =B7 0) 20%75xGH- J

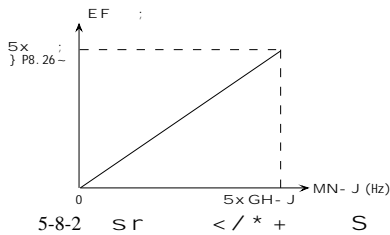
P8.25 =%EF\$DU	\$Db 0) 5 0
----------------	-------------

- 0 f P8.11 TURK75 \$%EF\$D 8T 1 AII
- 2 AI2 (\$2R4GB) S2R75GBaj) 3 aj
- 4 GV 5 ANpq

P8.26 FB F O	\$Db 40.0%) 160.0% 100.0%
--------------	---------------------------

P8.27 FB F yL	\$Db 0) 1) 2 0
---------------	----------------

0 qMN- J 1 qkBz } aj ~
2 aj
F+MNBz 7I F@#6* C4 D [7EF@FBEF >2 j b #6* C
7 F a#yL@ Rk7EFnOX, /
P8.26\$D7 5x ; @100.0%=B8#CDGHEF@\$ yL> qMN- J p2@ F
; f\$ MN- J 7: *Oi 5-8-2



P8.28 i J2e	\$Db 0.05) 10.00s y# hD
-------------	-------------------------

i Jfg(D 8#*% J] @Ohi \$P QR# [72e/

5.10 V/F " P9 \$

P9.00 V/F k \$D

\$Db 0) 4 0

0

& BC*

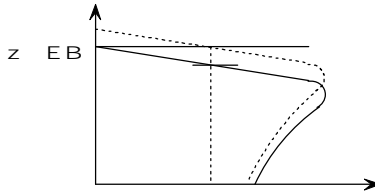
1p j kgI q m &' \$3K
 2p ? c &'] MI J, ` , ? 23B Md &' j kv`, & nV/F \N

P9.08 q%EF I W px	\$Db 0.00) 50.00Hz 16.67 Hz
-------------------	-----------------------------

f gD4q%EF I W7 p- J@1i 5-9-3/ p- J (! P9.00hD7ghV/F k/

P9.09 EU- J	\$Db 0.0) 250.0% 75kw cR 80.0%=93kw cR. 0.0%
P9.10 EU 2e i	\$Db 0.10) 25.00s 2.00s

8#@AEF7, t 8#MNEU@mT8#Bz, /pQEU @aL8#@AEFG
 %no, - . GH- J@RI F8##6 C7 z@Oi 5-9-4: //



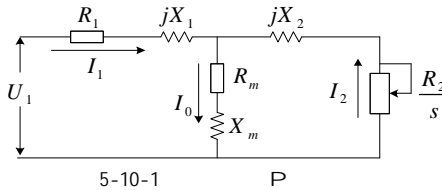
PA.01 8#17i	\$Db 2) 56 4
PA.02 8#1CDf J	\$Db 0.4) 999.9kW y# hD
PA.03 8#1CDE B	\$Db 0) 24000r/m-280.85#0.8#1 0.86H
PA.04 8#1CD89	\$Db 0.1) 999.9A y# hD

PA.01) PA.04(! \$P <8#17i @ > <=Cg@[qz 8#7Z[hi h\$P
 J: /
 8#f, - J; sBdQQP@8 I!" - . / dx8s Q @Xga 7 44. f

4p j kn73 ' b D PA.29m? I r 0N
 5p j kn73 M T } C -At- M j kn7q{ (M T } s C AtE N
 4 J p oD2@8#dA89TUS(F8# \$TUS(> Z: @ { SL>8# \$@ I_0>dA8
 9@L_m > \$@h>8#LJ @I>8#CD89@U>8#CD8@@f>8#n- /

$$dA89 \quad I_0 = I \cdot \sqrt{1-h^2} \quad \$TU \quad L_m = \frac{U}{2\sqrt{3}pf \cdot I_0} - L$$

R. `8#hi 7 3 4Oi 5-10-1: //



i 5-10-1S7R1) Xi) R2) X2) Xm) I0 b m Dx8) Dx \$) Ex8) Ex \$)
 \$) dA89/

5.12 MODBUS23" Pb \$

* +, - . QR1(MODBUS pq3 FQ3Rb<=. } PLC-6NANpq/MODBUS Q
 8Sf< PLC F 1-31 | O* +, - . h /f<F <l e7 K f<•% K@ <=L
 uH B/
 f<8wF8| <, - . 6N K/ <, - . r. kf< D7Zcs N{ fg@ gB
 Pf</
 pq* r s RS-485 z SZ q+8
 Ghi • J QB 1200) 2400) 4800)

SzT mnfg{|

Pb.03 pql 2R 2e \$Db 0) 100.0s 0.0s

>0 y| 2R /
X>0 y| 2R /Ve' Pb.03 \$D @*CWR pq|}@ i L. Wd j pq@
A} EF0~ #=-q%D\$=

& BC*

[] Fb k MqTr 2 M }

Pb.04 B" 2e \$Db 0) 500ms 5ms

fgD4, -.r.i Ls@; \$D7" 2esOB /

Pb.06 pqi LEepromU ' u \$Db 0) 1 0

0 Xer UEeprom 1 er UEeprom

fgt(! \$Dpq %fgthhi 2@ serU Eeprom=\$D>12@Vw %fgthh
i! tU Eeprom=\$D>02@+@ % U @=! ~^U Eeprom7i LQpQ fgghi =B7
MODBUS6U. U kaUK(U 0x00FFS@thi OoaUK EEPROM@J \$! ^_7ENTER/

rs Eeprom tuvwx yz Eeprom TU{| }a ~• &! Rvw "R#
\$%RAM& ' (/)*+TUS, - "R Pb.06' Y0. /

Pb.07 CCF6@A _ \$Db 0) 1 0

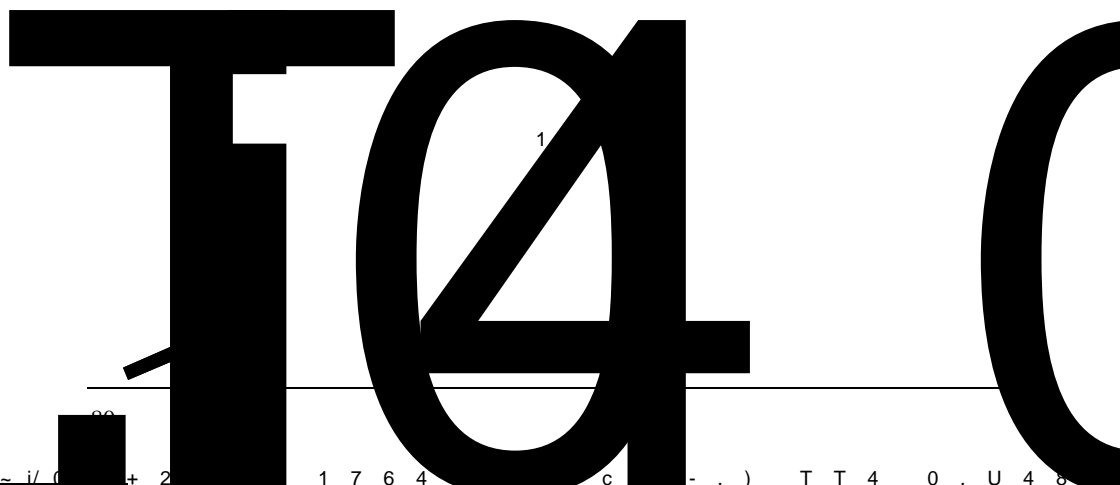
0 Xd@A9[N 1 d@A GQ #
fgt(\$Dpq2 s`/pq@A=\$D>12@pq E@AW` q7@A27 #
SZ #.\$D>02@X`/pq@A@ 9[MN/

i.88 0

Pb.08 B <= \$Db 0) 1 0

0 B 1 ZcXB

fg\$D>12@, -. . k Zc} 0x06) 0x10~s@ZcV7) __ @ O. 48 O. 48 re



&[E@nNBj QB 0.01Hz@nk 0.1Hz@5FQnk 1Hz@VW- J BO%@m6h1 P0.17/

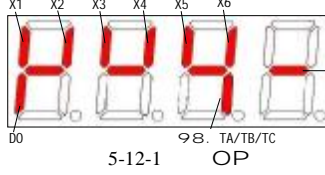
PC.05 MNEB} r/min~	\$Db 0) 1 1
PC.06 \$DEB} r/min ~	\$Db 0) 1 0

0 X` / 1 ` / \$DEBDEE
 PC.05 \$D> 1@j | m| } ` /MNEB@ E> r/min/ \$D> 0@+XD Ø Tc (@j | f 176

SzT mnfg{ |

PC.19 wx | } } E ~	\$Db 0) 1 0
--------------------	-------------

0 X` / 1 ` /
 PC.19 \$D> 1@+` / wx | } @ \$D> 0@+X` / = /
 wx | } () [fgwx X1) X6) +cWW687GHwx D0@RcGH98. 17 | } @1 (LED
 i tuZDz 7] Dms` fgw7 | } @i tuz m/JBwx | } >yL | } @] +m/JBwx
 > L | } @i tuSyxS 78z @ST9: /Oi 5-12-1: /



PC.21 W#` / ' u	\$Db 1) 20 1
-----------------	--------------

PC.21 W#` / ' u@Of gt (! \$DW# #` / hi / \$D 1) 20 b =B PC.01) PC.20/
 \$: \$D` / hi 7` / <=> 0 X` / 2@B\$ \$D qbcS} i B/kx@] 20 2 g 1~
 S; @evHW` / <=X> 07hi @` //
 W# #` / hi @y PC.01) PC.20 hi #@@W# 2yL / \$W# Uj @A) , edpq CALL` /
 2qby #s` / @L2 #` / X/u (/

PC.22 EB` / * i	\$Db 0.1) 999.9% 100.0%
-----------------	-------------------------

PC.22 EB` / * i Of gt (! EB z` / ~U@=V4EB y /
 # 6EB=V EB PC.22} PG~
 # 6EB=120 MN- J 8# 7i PC.22} ' PG~
 \$DEB=PID \$DEB PC.22} PG~
 \$DEB=120 \$D- J 8# 7i PC.22} ' PG~

PC.23 kBz * i	\$Db 0.1) 999.9% 100.0%
---------------	-------------------------

PC.23 kBz * i (! kBz z` / ~U@=V4EB y /
 kBz =MN- J PC.23} ' PG~ kBz =# 6EB PC.23} PG~
 \$DkBz=\$D- J PC.23} ' PG~ \$DkBz=\$DEB PC.23} PG~

& BC*

C~ 67 @9 DT D D DT C 67 87 () T.26.48 (1688) 26.4 (19) 14. T.r) T.44 Tf7. Tf7k (P)f14./F2+1 7.

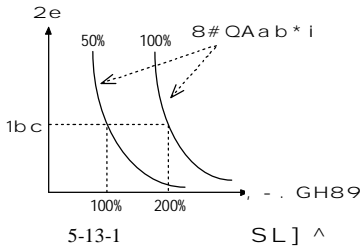
\$. ab} Q Wab ~@VW28# r, 98. 7abfg@pQPd.01f Pd.03\$P8#1F
 8#27ab =pQPd.02f Pd.04\$P \$. p /

Pd.01 8# 1ab	\$Db 0.0) 10.0V 10.0V
Pd.02 8# 1ab \$. GVp	\$Db 0) 4 0
Pd.03 8# 2ab	\$Db 0.0) 10.0V 10.0V
Pd.04 8# 2ab \$. GVp	\$Db 0) 4 0

0 wx All 1 A12(S2R4GB) S2R75GB aj)
 2 aj 3 GV
 4 pq\$D

Pd.05 8x, 98. ab	\$Db 20) 110% 100%
------------------	--------------------

/O' > 2=8#VPyL7QAab@B =Xz 8#f J =, -. ! " GH8975x 6Nno/O
 i 5-13-1: //



noQQ 7^ZhD
 { Sp! " 5x@A89p8 >8#7CD89/
 8#o, H2Qj 7nG. Ox 8 (O10%)@o, U2@%/ 8 /

& BC*

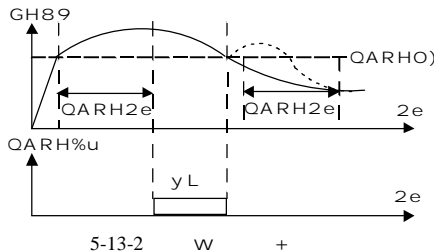
&' ~67&K . /O~67&Kq %] M23g7Pd.05~ m(&' ~ N
 ?T] PWMMd OLI N

Pd.06 , -. QAI deRHO)	\$Db 20.0) 200.0% 160.0%
Pd.07 , -. QAI deRH2e	\$Db 0.0) 60.0s 60.0s

/O' QAI deRHO) } Pd.06~D42QAI de%u789= @{ \$D J =! , -. CD8
 97 b /

QAI deRH2e} Pd.07~D42, -. GH89#[x! QARHO) } Pd.06~#[I H8D2
 es@GHQAI de OLP2/

QAI de| } yLW, -. 8u89I QQARHO) a#72eI QQARH2e/



& BC*

1p3/ S! OA] ~gI 1" k # dR. /O3/ ?TN
2pv3/ S] M[ST&K R3/ S! OMx' ~3/ S]
0N

Pd.08 89y	\$Db 0) 3 1
-----------	-------------

0 L 1 P%ByL@ B L

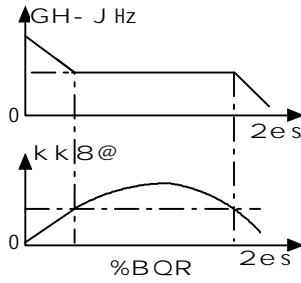
2 ! yL 3 Q92- AMNBz

Pd.09 89y O)	\$Db G 30) 180% 160% P 60) 140% 120%
--------------	--------------------------------------

/O , - . j P%BdL} MN2@Q! PB2ef 8# ; XdQd@AEFu, @4HW >. W7

89/><=GH89@Pd.08' u1) 2d32@, - . GH- J QgG%no/

\$D>1d2@P%B2@\$GH89] 0o6D; (d) Tj /F1+3 7. 44 Tf 7. 44[6[4



5-13-5 z s i

Pd.12	GV	JR	n•	\$Db	1)	100%	100%
Pd.13	GV	JR	2e	\$Db	2)	255s	10s

f gQR GV JdGVoj 56X) @Rab, - . .O GV JabQ! 9\$@Q \$O. 96 Td

SzT mnfg{ |

Pd.33	ky9x} S2R4GB F S2R75GB aj -	\$Db	100.0%) 300.0%	y# hD
Pd.34	ky9Pg S2R4GB F S2R75GB aj ~	\$Db	0) 1 1	

0 p 1 ! "

ky9x 100.0%=B, -. CD89/ Pd.33\$ D> 300.0% 2@Pd.33 L
ky9x D>, -. CD897230.0%e @ 3i f#. y: /
ky9 ky9fgCB\$ @: Rp X ; ky9fg/

Pd.35 ky9 J R Pg1 3030G/3037P f e y 9 B 309 fig. 48 0 TD . 477.12 TD 15 f e 60 0 TD bo

PE.11 TW#2e}h~	\$Db 0) 65530h 0
PE.12 T(8;(MWh)	\$Db 0) 9999MWh 0
PE.13 T(8;(KWh)	\$Db 0) 999KWh 0

T MN2e(h) , - . ! MN| } 72eQT /
 TW#2e(h) , - . W# | } 2e T /
 T(8;(MWh) , - . T(8; 7FE /
 T(8;(KWh) , - . T(8; 7AE /

PE.14 IGBTaz	\$Db 0.0) 200.0(0.0(
--------------	-----------------------

(!` / , - . IGBT7\$ az /

PE.15 o9 az	\$Db 0.0) 200.0(0.0(
-------------	-----------------------

(!` / , - . o9 7\$ az /

5.16 WL " PF \$

PF.00 () t	\$Db 0) 9999 0
-------------	----------------

() t \$D () tv \$D > 0@m / tab \$D @L2(+3 7. 44 Tf 7. 4 Tj / F1

SzT mnfg{ |

PF.01 \$D> 0@ kj hi ! " % / y l y hi m SO 7 hi @ Q j MNF p 2 % @ O 7 h
i @ l g j p 2 Q % @ { | hi + X g % / : ! MNF p 2 s QR % @ 1 S 4 T / di S ^
_ . 7 hi ` / @ hi yi { ` / @ + m / hi ! " % = i { ` / @ + X ! " % /
PF.01 \$D> 1 \$ \$ D - J } P 0.02 ~ F f g t @ { | f g t hi p % /
PF.01 \$D> 2 \$ O f g t @ k j p % /

& BC*

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

PF.02 hi v	\$Db	0) 3 0
0 tu	1	D\$@A R
2 HH) \$D (R\ t\ 8#hi \$)	3	HH) \$D (R\ t\$)

PF.02 \$D> 0@ tu/
PF.02 \$D> 1@t D\$ P e h B P E . 0 0 k P E . 0 8 hi O 7 : y @ A R @ T ! (} n } b 7 @ A /
PF.02 \$D> 2@t HH) \$D (MN R) (} t \$ D F 8 # hi \$) /
PF.02 \$D> 3@t HH) \$D (MN R F (} t \$ D \$) /

& BC*

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

PF.03 hi	\$Db	0) 3 0
0 tu	1	k j hi A
2 hi . A	3	X 8#hi A

1-kj hi A ^ _ . U 7 () \$ D hi t k , - . =
2-hi . A () \$ D 7 : y hi t B , - . k ^ _ . =
3-' 8#hi A t ^ _ . U 7 \$ 8#hi 7 () \$ D hi @ k , - . /
p q \$ D P F . 0 3 L @ @ ! " ^ _ \$ D P F . 0 3 • % hi @ Q R S p q L) X R @ A =
^ _ \$ D P F . 0 3 • % @ ^ _ l / S @ _ P F . 0 3 G % H > 0 @ ^ _ l / 2 @ q S T O P
^ @ H ^ _ l m | } ` // < = X U E e p r o m + e r d C C F 3 /
l / 3 t 4 O

3t	4	3t	4	3t	4
dn0	kj hi AS	dn1	X 8#hi AS	uP	hi . AS
SUCC	f	StP	^ _ Stop ^ y L	rEt	6}
EFLF	#) * + XBT	bdAF	^ _ . i L	rEF	Ai L
Ur0	< = X r . l 2	br0	^ _ r . l 2	Ldt0	l 2

& BC*

. / O v P S 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 ' - ~ . / O l G Q R }
6000M-S2R4GBA S2R75GB XWY3 V110 S () M6000M S21R5GBA S22R2GBA 6000E ! XWY
3 V140 S () Y3 j k Q R N

PF.04 GP' u	\$Db	0) 1 0
0 G } EF@A# ~	1	P } &#) O } @A# ~

fghi \$P@= G/P 8* +, -. yL=s+ hi > 0=PF.02v H) hi 2X %
 hi =
 , -. H) hi \$P> G @O ^' uP t fgt\$P> 1=
 O H) 2>5.5kWG #@^\$%>7.5kW P #@~^\$PPF.04=1=

& BC*
 ZM (n QP- rG-]M T1 [N

PF.09 g/ * +	\$Db 0) 9999 y# hD
PF.10 k O	\$Db 0.00) 99.99 y# hD
PF.11 ' O OFb	\$Db 0.000) 9.999 y# hD
PF.12 kB t	\$Db 0) 9999 y# hD

1 2034

-. R H8S@A2@j ^_. 4` / @A@z 2X PWM GH@6V@Aab| } @@
RIPp @Ar xGH@8#GQ ~/L2TRS@AbKF1; =P/O : 7
PXgVW @[erFB^_\`*/@Ak\$S@>26 •%@Qq p/HE^ p
vxHE/45 \$wxMN X`\$67 @WP@AD\$, -. 3Xg•%@(T#
kWX OgMN/3QR WfgW8U8w@P@AHE/ HW7 S0p@A@+^a
" HE/j @A`/S ^S @A E2787} OGH- J) \$D- J) GH89) e9
@Rc5M E7ow@AOo@" #q 3R/ H^ p6Vfgt3 | }@xpQ
PE.00) PE.08 6NSC/

6-1

		Q
--	--	---

k @	I GV8@	I RS8U8@
		I RSR 8) \$P

TD O Tc () *) Tj /+1 6. 48 Tf6. 48 O TD () Tj /F5 6. 48 Tf- 53. 04 -8. 4

T			Q
OL2	, - . QA	| , - . GHI Q, - . QA | e9=%; Qx | V/F kX | 8F8@QA | @AQx | PB2e | 89y o) QA	| %/ @A@" #PB2e | %/ e9=%89@" #=%2e | no V/F kFEFI W | RS8F8@ | ' Wf 6. 48e O TD ( | ) Tj / F1 6.

6.3

O j 8#SgE +g8@A@RS{ bK 1; J B =P/O RSF =PXgVW
 @[F• >? <H/

6-3

8#XE	8U8@ sPj 8Uwx R) S) T. @CHARGE LEDZ/[s	I r p8U I W8Usxwp8 I RS8U8@ I hnwx pl
8#XE	(o9 8@m } GHwx U) V) W 78@ s h	I W8Usxwr p
	Q! OA@8# s X	I % @AFa\$X
	^_. y @A` /@RSTRIP[s	I aL@A tS; m6-1
	syMNZc	I RSMNwxrk sQG
	<CE' u\$P sfScZcJK	I \$P! " CEd%, ScZc
	@AswxMN s# Wsx .	I wxMN # Wsx .
8#EcJ C	- JPD8@ sGV MESZ7\$D s h	I RS- JPD8@ I GV h\$D
8# Ey Xg, B	wxU) V) W 7rk s h	I no8# U) V) W 7=Br k I nofgt P2.45
8#EB Fd A	- JPD8W7rk s h	I % rk
	@A sQx	I % @Ad" #P%B2e
ME e8 #EBXL	5xGH-J\$D s h	I RS5xGH-J\$D
	(o98@mRS8#wxle8@- 7 sQ [	I RS V/F C
	@A sQx	I % @A
	@A, % sQx	I % @A7, %
8# Q x	oJ8USy J	I RSoJ8U7rky J I !=! J8U@&r AC 8 . v8U
	- JPDUXL	I RS- J PDU
	K7) L X') Ex M	I H8#
8# % x	A• -J A	I I FA• -J
	#6v	I no" -J
	#MX)	I no#M
	oJGHX)	I RS, - . GH

A

5 6789

7.1 #]

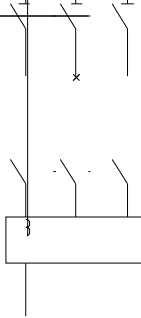
C

R
S
T

' NW:

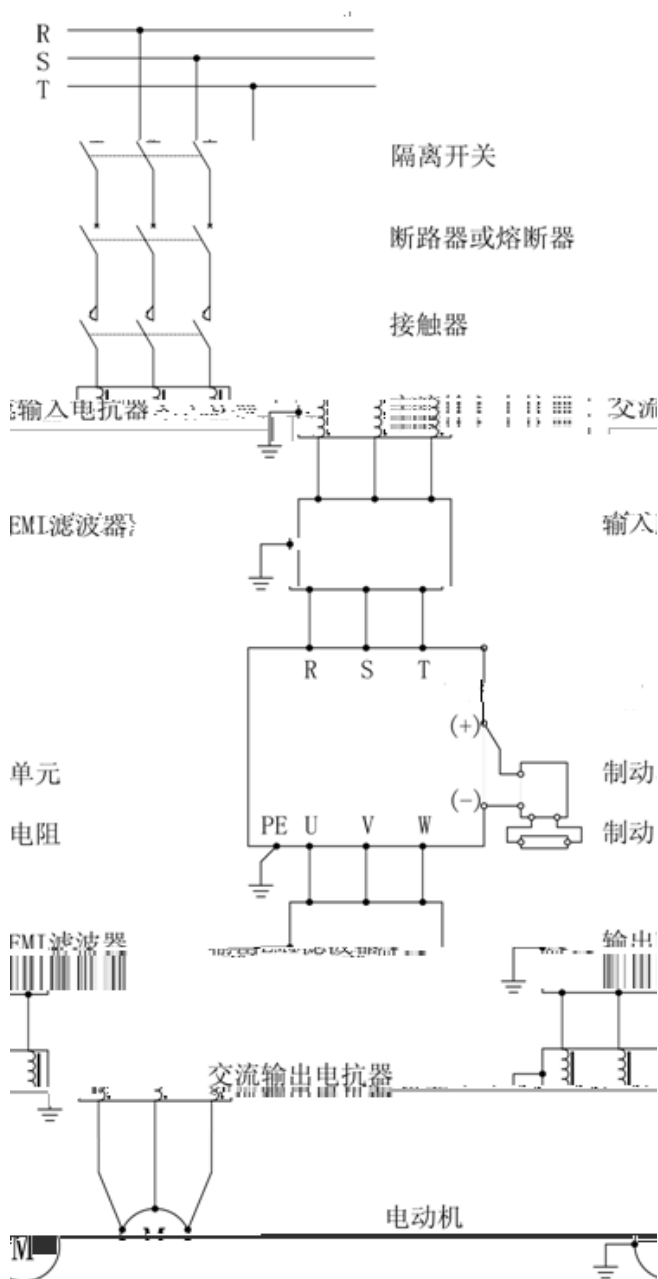
W. dN . . .

U V



EM

%
P



7-2 3018G/3022P

]

7.2 #]

7-1 | #] G

]/ c			* h	*EMI	* qN q
rs	(! B9 , -. 7@A89 < p, -. c{ kW@Am T8U@A	j, -. @A 29 f8U <p 8c @As7x/ %	(! %` G VfJ Ki @ - AFwO • c = 8 U7XY	(! %/, -. gE7 k 8KL/8#f, -. eQ k(N/! 20j 2@ & rj 8U @Qk(Nx! 20j 2@&rj GH ~	j =% FXg{ | ^• 2' (@ (! x ; @Ac - O=%d B -7]

v4 =*i >g' k/

7.2.1 h* -

u9GV8 . Q =, -. GV897FwO• @s` %` , -. 7fJ Ki @ j +67 P
(u98 .
I , - . : (I 78Uo; f, -. 7o; I > 10P1 R. /
I z88U. r yQ<Q@Ad=yW: <=7fJ Ki ?P/
I oJ8U78@X) z x} 3%-

7.2.2 qN q

O* +15kwcR # , -. OP=% @~ ^g =%2() @~ r=%8 /18.5kwv93kw@
Q' Q=% /110kwcR. # OP=% @O~g =%@+~ r=% /OP=%
(<=j b) \$%j bcq88 /<=j bBhzO*+, -. Q8@ab%u 6Nno@q88
j bO?yQ, ab@ { <=r xB&r vf <=gWO/
8 =%J >10%@=%8 cfJhz m
7-2 q cdQR

=%28#7xEg; RSkj j =%8 . , QaLO ^ZTU=%f J

UmU; R = Pb

^ZSR %8 aL

S T \$ \$

8.1.2 ^

, -. D a RS2@8D^9 8U@ l m. ` /cf 8W8UZ/[\] 5) 10 bcRs@
 Og6NRS@R9, -. 78o. rj 78@Gca ~L/
 D bRSOoOm 8-2 : //

8-2 ^

RS<Q	RSOo	=c
f gWwx) <=gWw x d	d ss%	(del
+,	sy?@	(4) 6kg/cm ² @ 7Kf@ dMg
PCB 2V8WX	sy?@	(4) 6kg/cm ² @ 7Kf@ dMg
YZ&[	E% svw@ sy K) %@ s @) - E	\$HYZ&[@D\$ @F
fJ k	sy?@	(4) 6kg/cm ² @ 7Kf@ dMg
8V8o	s, h) a) i j) > ;	\$H8V8o
=%8	fxU" h s' H	t=%8 qj Kf)" h7US

j RSS@XQF5j t. kdk%. k@\$XQF5P rGk@s+QgmT, -. Xg M
 Nd6V@A` / | } @. vmT. k@AdfW: . kIGBT>?d{ | . k778/
 j ~^ ; 2@B45` ^Xz l mOgRHU x7 ; 2 / +, P(%) Z8@m ; GV8
 @@(Z8@m ; GH8@@(l Z89m ; GV) GH89@(8% m m ; fJ/j kX
 v2@Q1(z8^m6N ; VH RRT! /
 O-6N•) } @ P(n -Jx! 40MHz 7/. @ } , •) 2+BP(100MHz R
 , 7/. . >o/ } /•. (TVH8M' N/
 j 8U56X=JdoJ89X) 2@ 1(om T(; fJ/
 Q! Og/H) pVQ8M" h} c{ 8Dz} @KL({ ~aVL}} } } VV
 8w 4- Ag/7" ho@O) @X \$7L}} . vQg. /g/. k78/O h~^VL}} @
 QMp7>? ~L6Ntu/
 Vf gWo@} @ (TP(2e) 89Q\$D7o; J \$7o@l @O} t- Ag/%&/O
 Vf gW" h} @ (Tt f gWwx R) S) T) U) V) W) PB(P1)) + - ; kj QG W@vs(8@
 ; sJM7fgm) 220V s(250V@380V s(500V@660V s(1000V-6N ; / <=gWXQ(
 fgm ; @Q(q(m8 r ; /
 =! 380Vs 7g/f gW=U" h8 XB/! 5M @<=gW=U" h8 XB/! 3M /

8.1.3 ^ m[

>2P, -. # QGMN@(T =, -. Oj 8x . k7P(%&@D 6Na F b/,
 -. 8x . k7P(%& K{ P(Y`FP(k7Xz Xz/8 &[P(2@Qq m7*D
 \$H@sBmP(Y` @ 67c, -. W| ; 367 D/
 Om 83 : /, -. 7a y@ () P(2h2/

8-3

8 m[4

. kYJ	O• \$Hti
YZ&[	2) 3t
8V8o.	4) 5t
2V8WX	5) 8t

8.2 /

, -. UVsX WP(@~ 2d# U2@BVkO
 I Bqj *D7a) . zb O u.) ?@) 8 v@) p&' H7] : /
 I OI Q8t ! P(+B6NY8) /RP#Of gW8V8o. 7 CRR H/Y82BP
 (n@. WF, -. 7GV8@evCD8@@p82ej 1) 2 / 2R. /
 I . } v Vt8w/
 XQF5VPo@V @| tmT, -. %&- A@. vg/. k78/=! " h} @QR1(500V
 fgm6N ; } @{" h8 XR/! 4M /

B N

EC CD NF ! GHI '
a b @Z, -. O3@a W //Og/7a >U
ws \S^@yXI QZ[A7 \O/
OO! bK. /7@A@W y
I X h7tud! a! " G 7 =
I I HO• * b^• P(, - .
I Uwsx7dyz M* 7
I Kj XA O({ qr ^• 7. k\ d@A=
I j 6V7 } O{ | ; - =
I &r ko~* 7, -. 78
I Q! UI) O1) &O1H) [| Gv1HFf 1HJ } 72:)f 8.
I :)
I :)*))
I } 8

f.8}

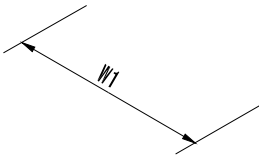
>c~3d{ E&7 +(@' ([; #C O^_/
I (! upMG\$v=
I ' (?P=
I)g) 8 \$v=
I *d) *+?P=
I `^j k?P=
I { | (/

LsOUM PQ'

, #- x({ =O^_7g/\$T) Cg) / c ' I H7 @O^_tX. \$
%/

1 /





2

WRS

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

31R

ALPHA6000E

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

X YZc[

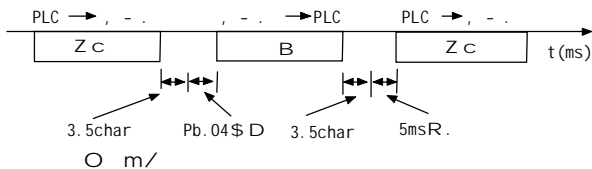
CDGH8@	0) CDGV8@
5xQA89	G # 150% 1bc@180% 20 = P #: 120% 1bc@150% 1 =
<=SZ	Jp: ; <=/89: ; <=
-J<=b	A->Z 0.00) 650.0Hz=F->Z 0.0) 1000Hz} aj ~
-JEz	i { Zc /0.01 } -10() +40(~> Zc /0.01 } 25(/10(~
\$D-Jb J	i { Zc 0.01Hz=> Zc 1/1000 5x-J
GH-Jb J	0.01Hz
-J\$D	0) 10V@0) 20mA
P%B2e	0.1) 3600 } P) %B2ei \$D-
=%EF	- P=%8 Q] 125%
8@/- J C	4 ^ D V/F CQ' ucg5 V/F C7\$D@= PG V/F <=
abfg	Q@) @) 89y) Q9) QA) 8x, 98.) Q,) Q@JB) @A W) r U@ @ab@GV J@GH J@=UcJe W@8#QAab;
P(Y`az	-10() +40(@

3 MODBUS 23

O* +, -. Q(Q3R<=. } PLC~; . E \$vpQMODBUSpq3 6Ni LuH/
 I MODBUS pq7"
 pqi LQk>1| f<=. (PLC) F1) 31| 7, -. " / Bf<=. W K@, -. V
 H B/
 f<=. @z2f1| 7, -. 6N K@`, -. ^\$DG 7U 3 @f<=. qZD3
 6N K/, -. r kf<=7Zcs@VP%u@ ; BC Pf<=. /
 I pqO•

rs	RS-485
pqSZ	q+8
pqhi	BJ 1200/2400/4800/9600/19200/38400bpsS' u 54R ' u 4i /5i / i L#z RTU>Z D8E@ASCII>Z7) 8EO' pE RTU>Z D1E@ASCII>Zy 21E) 22E=
pq3	MODBUS RTU>Z) ASCII>Z} aj ~
Qr, -. | i	31 |

I pq&r wx 7rs
 MODBUSpqP(wx 485+@485-wx /
 I rk2745; <
 (1) pqrk^ffgWrkc{ | 7% k@8 kbN/
 (2) pq(Qk^(mnk@mn?^rj, -. rUwx. @ { 8wuX&r _/((><pKL. / ~
 %u)
 f PLC 6Npq7 bO
 1. j 8U9 7|} @&r PLC F, -. e7pq8I /
 2. rV8U/
 3. j ^_. \$Dpq: ~7hi (Pb.00) Pb.08)/
 4. 9 8U@; ^_` /_k J/
 5. xwW• 8U/
 6. 6Nf PLC 7pq/
 I pqhi \$D
 f PLCpq2@~^\$Df pqy: 7hi /() O hi @ 3rs [SoS 4) 5T=
 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=
 *41: ly' u2 pq\$Dpp @OgtZci L VJB6U. @s+d 02H/
 *42: • J' uF54 ' u E%%@+(T #sx•%@ 7\$DOEL/. E#F E
 #L{ <\$P(T8T/s+ (pqdpqHo/
 *43: \$, -. U \$P>02@, -. Xr. pqZc@() - OZc/\$, -. U >02@U
 E%%Q WEL/
 I Kb yD
 >- ApqKL. /7I (J@ R5 7pqL @[j f 1RbS@aL~^yDi L Kb /
 B a KFr. i L! /j' u4 7SZ @({)Q R5 7pq B/
 I 3 Z
 pq2f<=. (PLC ;)=, -. HZc@, -. 6N B/FZc f g) OoXz@i Lg) @Z/



/	, - . U	Zc3	i LOo	CRC	2_
e' 3.5charR.	1 char	1 char	n char	2 char	e' 3.5charR.

i L 1 (CRC-16@oS hf @CRC 7TUS(O :
 1~8 CRC-16 TU2v > 0@pq w* +7v \$D> 1/(16 E! 1)
 2~q, - . U 7 LSB > MSB@5s7i L MSB (LSB TUCRC-16/
 3~, - . 7 BZc3^TU CRC-16@f BZcS7 CRC-16 6N= /

2) MODBUS-ASCII > Z

P(ASCII > Z @ ` > 2 } : ~ { A } ASCII t 3AH~ @ 3 > g ~ HNA } ASCII t 0DH, 0AH ~ /
 \$2 ` F 3I @QRP(7 G { A 6 = 70) 9 @ A } F } @ x ~ @ k j RASCII t SZ
 K @ # K F 4 E @ s K A 4 E / i L 1 (LRC @ , - . U) Zc) i L O o h f @
 ; ! : y h f i L 7 { A F } 4 5 6 E E ~ 7 t / 8 K _ 2 e 5 # X g l Q 1 @ s + t
 n > G o ~ / V 4 B " 2 X / ! 1 m s / 8 S O : /

/ E	, - . U	Zc3	i LOo	LRC	2_A
1 char} 3AH~	2 char	2 char	n char	2 char	2 char} 0DH@0AH~

\]'

, - . U (0) 31) @\$D > 02 @ . k g h Z c @ ! X _ /

I Zc3

O* + , - . < # 7 MODBUS Zc3 yR 4 ^

Zc3 (16 E)	fg	Zc#z		B#z		B#z	
		5/{ Ni	5x{ Ni	5/{ Ni	5x{ Ni	5/{ Ni	5x{ Ni
03H	pH R	8	8	7	7	5	5
06H	S{	8	8	8	8	5	5
08H	gY }	8	8	8	8	5	5
10H	V R	11	11	8	8	5	5

I ^ _ ` UaH

16

[03H]

p; S{ Zc B: ZD73 S@p; 1S{ 7 ROo/ ROob > F 8 EFA 8 E@q b >
 BOo78j b/

p; 1 , - . 7 | } /

- R3 P(MODBUS pq

RTU> Z

ZcOo			BOo			BOo		
7) 89:		01	7) 89:		01	7) 89:		01
; <= 6		03	; <= 6		03	; <= 6		83
> ?	@A	00	# D C #		02	GH= 6		03
9:	BA	20	# D	@A	00	CRC	@A	01
9:	@A	00	E F	BA	C1		BA	31
C #	BA	01	CRC	@A	79			
CRC	@A	85		BA	D4			
	BA	C0						

45 i LSi U Si 72

ASCII> Z

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

[06H]

V S{ Zc S{ kZD6U. S@j ZD76U. . UZD7i L@ Ui L(Tj R3 b
 S@qF 8 E@A 8 E7 bk+ZcOo/
 • %1 , - . MN/

RTU> Z

ZcOo			BOo			BOo		
7) 89:		01	7) 89:		01	7) 89:		01
; <= 6		06	; <= 6		06	; <= 6		86
> ?	@A	00	> ?	@A	00	GH= 6		02
9:	BA	01	9:	BA	01	CRC	@A	C3
# D	@A	00	# D	@A	00		BA	A1
E F	BA	01	E F	BA	01			
CRC	@A	19	CRC	@A	19			
	BA	CA		BA	CA			

ASCII> Z

Z c 3A 3031 3036 3030 3031 3030 3031 4637 0D0A } LRC F7~
 B 3A 3031 3036 3030 3031 3030 3031 4637 0D0A } LRC F7~
 B 3A 3031 3836 3032 3737 0D0A } LRC 77~

[08H]

gW } Zc ZcOotb\ R B} ZC @(! f <= . f , - . e7 K } / } 3 @i LQ
 P(g5 /
 gWC }

RTU> Z

ZcOo			BOo			BOo		
7) 89:		01	7) 89:		01	7) 89:		01
; <= 6		08	; <= 6		08	; <= 6		88
, I	@A	00	, I	@A	00	GH= 6		03
# D	BA	00	# D	BA	00	CRC	@A	06
, I	@A	12	, I	@A	12		BA	01
# D	BA	34	# D	BA	34			
CRC	@A	ED	CRC	@A	ED			
	BA	7C		BA	7C			

ASCII> Z

Z c 3A 3031 3038 3031 3030 3132 3334 4237 0D0A(032) Tj / F1+ 5Tj - O. 12 Tc (O) Tj

[10H]

V S{ Zc Oo k ZD6U. S@ ZD76U. . VZD7i L@ Vi L(Tj R3 bS@
qF 8 E@A 8 E7 bk+ZcOo/

\$D- J > 50.00Hz/

RTU> Z

Zc Oo			B Oo			B Oo		
7) 89:		01	7) 89:		01	7) 89:		01
Zc 3		10	; <= 6		10	; <= 6		90
> ?	@A	00	> ?	@A	00	GH= 6		03
9:	BA	02	9:	BA	02	CRC	@A	0C
9:	@A	00	9:	@A	00		BA	01
C #	BA	01	C #	BA	01			
#DC #		02	CRC	@A	A0			
#D	@A	13		BA	90			
EF	BA	88						
CRC	@A	AA						
	BA	E4						

45 i L Si U Si 72

ASCII> Z

Z c 3A 3031 3130 3030 3032 3030 3031 3032 3133 3838 3446 0D0A } LRC 4F~
 B 3A 3031 3130 3030 3032 3030 3031 4543 0D0A } LRC EC~
 B 3A 3031 3930 3033 3643 0D0A } LRC 6C~

[10H]

i LaUZc fghi =B7MODBUS6U. U kaUK(U 0x00FFS@thi OoaUK EEPROM@
J \$! ^_7ENTER@ti LaU 83XI J/qF 8 E@A 8 E7 bk+ZcOo/00FFH>i LaU
K(@Pb.06=02yL/

\$DP0.02> 30.0Hz@ a UK EEPROM/

RTU> Z

Zc Oo			Zc Oo			B Oo		
} V- J ~			} aUi L ~					
7) 89:		01	7) 89:		01	7) 89:		01
; <= 6		10	; <= 6		10	; <= 6		90
> ? 9:	@A	01	# DEF			GHJ K		23
	BA	02				CRC	@A	0D
9: C #	@A	00					BA	D9
	BA	01						
#DC #		02						
#DEF	@A	0B						
	BA	B8						
CRC	@A	B0						
	BA	30						

RTU>Z

Z c 0 o	B 0 o	B 0 o
7) 8 9: 01		
Z c 3		

hi aU [GVZc]} Q V~

R3	YJ	Oo	\$Db	v
00FFH	GVZc	f gymSMODBUSU	0100H) 0FFFH	7

06 F10 Vi LZc@I ti L VRAMSMN@=OwMNYL/ 8sx•%@+.w V
7i L L/ ~ 9g

- R3 P(MODBUS pq

MODBUSU	YJ	bit	Oo		
0026H	A12>		GV(V)@0~10.00V= B0~1000		
0027H	GH89	(A)			
0028H	GH8@	(V)			
0029H	\$D-	J Hz			
002AH	aj				
002BH	[f gG Vw x | ]	0	wx X1	1 X	0 W
		1	wx X2	1 X	0 W
		2	wx X3	1 X	0 W
		3	wx X4	1 X	0 W
		4	wx X5	1 X	0 W
		5	wx X6	1 X	0 W
6-F	] aj ~			
002CH	(aj)				
[f gG 3-F	0	DO	1 pONp	0 pOFFp	
	1	aj			
	2	TA-TB-TC 98.	1 pONp	0 pOFFp	
	3-F	aj			
>	GH} V~0~10.00V= B0~1000				
	kk8@				
	EF				
	EB				
	EB				
	kkBz				
	kkBz				
	fJ				
	C ; (%)				
	GV; (%)				
	Ti				
)				
	] } @0040H 004AHy w= B002BH7 BIT0-BITAE			
)				

J m:		Modbus 6U. U (6 = HEX)	
(6 = DEC)			
U)			(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 (0) Tj/F1 6

fgtmhi 3 (6= DEC)	Modbus 6U. U (6= HEX)
PF.00) PF.12	1000H) 100CH
(hi 89())	(1100H) FFFFH)

I Modbus U 3tS(:
h f g t m S f g t @ F 8 E H I = f g h > 1 = A 8 E L 0 = f g t . { | ! + s 6 U . U a j /

I 3 86m

3	Oo
01H	Zc3 o~ Zc3 j 03H@08H@10H R / 6U. U o~ 6U. U @1 S! !: /
02H	p; ENTERhnK(6U. [0x00FFH] ! j f g t \$ D S @ W p U 7 p q f g / 4 1 - Si o~
03H	opd V7i L Si Xj 1 R. 16 R V03

5

N

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\ * ~	8 =
> 3	?
	3
Uw t ^	@A t ^

@A | 7

8# KW 7	8# (
@A E 2e V8U dA @A	{
@AW	
@A` / OC OL OU OH LU	{
P(< = wx	
HEsMN Q XQ	GH8@ y
Q8u2e: / 2	@A - J

j ?] 6 7

8U8@ U-V V@ V-W V@W-U V
, @. o; KVA , - . r U y
v8U(N m v8#(N m
% 8 D @@ 8 [
{ | 6 7

X