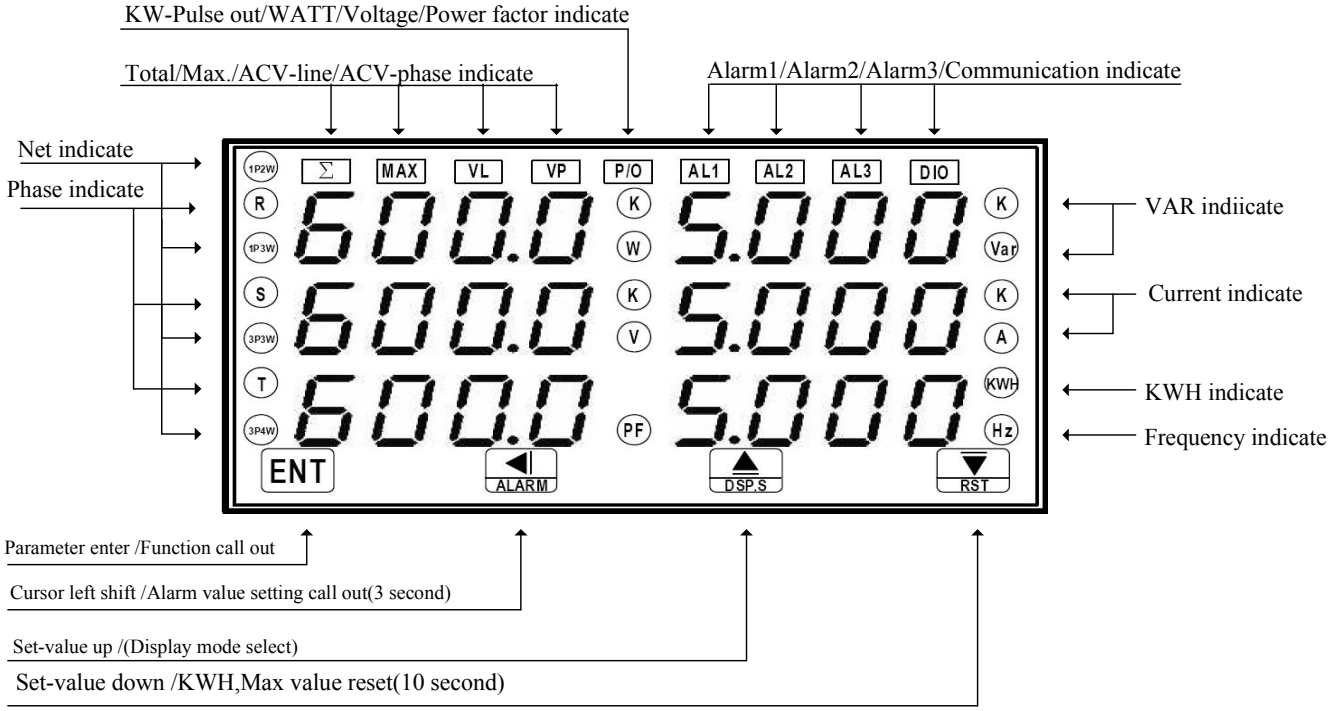
AXE MULTI-FUNCTION POWER METER MMP-3

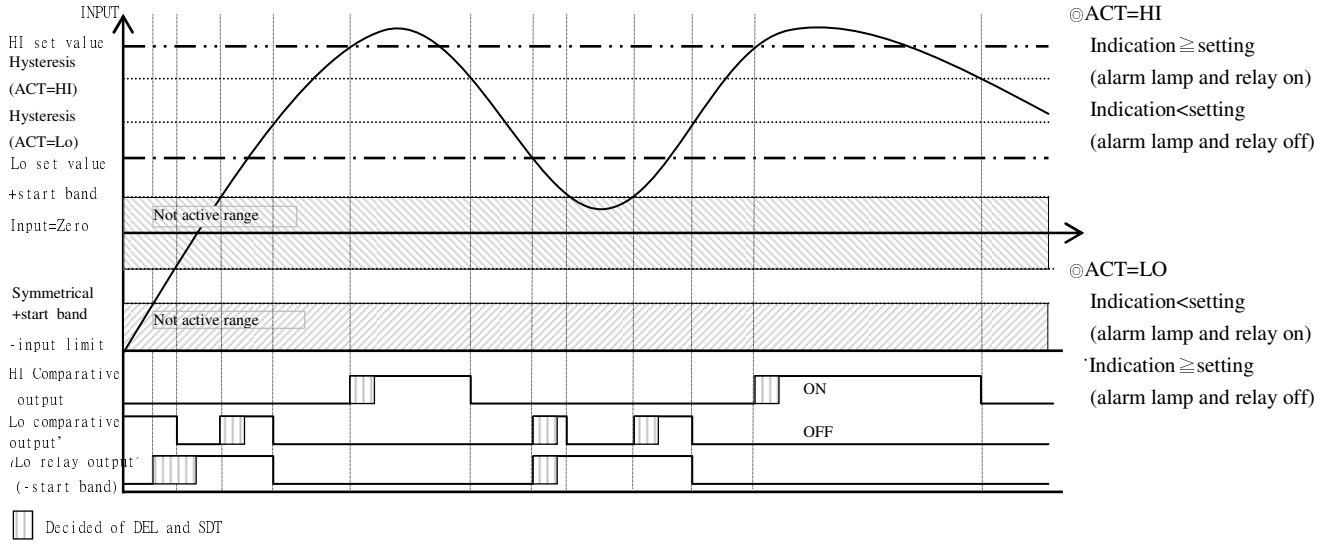
■ Features

◎Accuracy ±0.25% FS
◎Measuring ACV/ACA/Watt/Var/Power factor/Frequency/KWH
◎Input measurement network can be selectives(1 φ 2W/ 1 φ 3W/3 φ 3W/3 φ 4W)
◎CT rate/PT rate can be modifien(1 to 9999)
◎Manual or auto scanning mode can be modified
◎Three alarm control function(option)
◎Digital RS-485 interface function(option)
◎BAUD RATE:38400/19200/9600/4800/2400
◎Man-machine interface ,easy to operate
◎EEPROM Saving ,data safekeeping over 10 years
◎Modified inside parameter must have pass code

■ Name Of Parts



■Alarm Function Diagram



Key Introduce	Operation Manual
㊥Key Function	1. In normal display, The key function is call out setting group 2. In parameter setting page, The key function is data enter , and goto next page

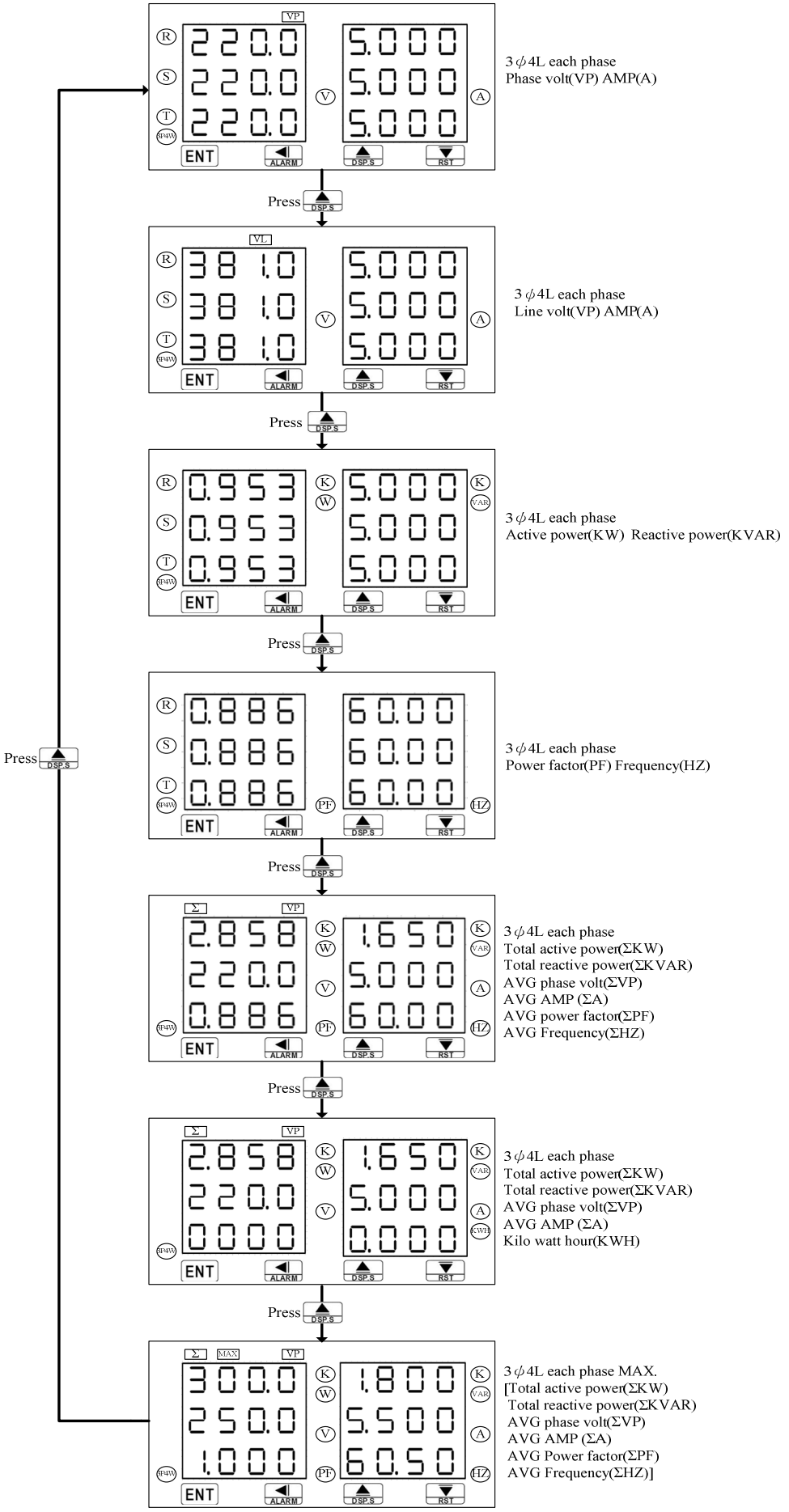
◀ Key Function	1. In normal display, The ◀ key function is call out alarm value setting page 2.Into parameter setting page, the parameter mark& data is alternate display, If need modify data can press shift key into setting procedure, The display is lock parameter data, this time must let off key about 0.2 sec, press again, the cursor(twinkle express)is cycle moving left/right. (Key Response about 0.2 sec)
▲ Key Function	1. In normal display, The key function is select display mode 2.Into parameter setting page, the parameter mark& data is alternate display, If need modify data can press up key into setting procedure, The display is lock parameter data, this time must let off key about 0.2 sec, press again, the parameter data will increment. (Key Response about 0.2 sec)
▼ Key Function	1.In normal display, The key function is Max value reset 2.Into parameter setting page, the parameter mark& data is alternate display, If need modify data can press down key into setting procedure, The display is lock parameter data, this time must let off key about 0.2 sec, press again the parameter data will decrement. (Key Response about 0.2 sec)
▲&▼ Key Function	In setting group or setting page press ▲&▼ key return normal display, but if in setting page the modify data will be lost
No Key in anything	In setting group or setting page no key in anything about 2 minutes, return normal display

Step	Parameter Mark Description	Parameter Mark	Operation Manual
1	Normal display	1234	Press FUNC/FUNC key into P.COD setting page
2	P.COD(Pass code input page) Default=0	P.Cod 0000	1. Key in 4 digit pass code with ◀&▲&▼key 2.Press FUNC key, the pass code is right into setting group , otherwise return normal display
3	SYS(System setting group)	SYS	1. Select setting group with ◀key 2. Press FUNC key into setting page of selection setting group
	ROP(Alarm setting group)	roP	
	DOP(Communication setting group)	doP	
	DSP(Display value adjust)	dSP	
4	SYS(System setting group)	SYS	Press ◀key select setting group and Press FUNC into setting group
4-1	NET(NET) Default=3 φ 4L	nEt 3P4L	1. Decide net with ▲&▼key(1 φ 2L,1 φ 3L,3 φ 3L,3 φ 4L) 2. Press FUNC key enter data and into CT rate setting page
4-2	CT.R(CT Rate) Default=1	Ct.r 1	1. Decide CT rate with ◀&▲&▼key (1~9999) 2. Press FUNC key enter data and into PT rate setting page
4-3	PT.R(PT Rate) Default=1	Pt.r 1	1. Decide PT rate with ◀&▲&▼key (1~9999) 2. Press FUNC key enter data and into AUTO setting page
4-4	AUTO(Auto scan) Default=NO	AUto no	1. Decide display mode auto scan with ▲&▼key (NO or YES) 2. Press FUNC key enter data and into CODE setting page
4-5	CODE(Code) Default=0	CodE 0000	1. Decide Pass code with ◀&▲&▼key (0~9999) 2. Press FUNC key enter data and into LOCK setting page
4-6	LOCK(Panel Lock) Default=NO	LoCk no	1. Decide panel lock with▲&▼ key (NO or YES) 2. Press FUNC key enter data and return SYS setting group
4-7	SYS(System setting group)	SYS	Press ◀key select setting group and Press FUNC into setting group
5	ROP(Alarm setting group)	roP	Press ◀key decide ROP setting group, press FUNC key into AL1.S setting page
5-1	AL1.S (Alarm 1 Select) Default=R-VP	AL 1.S r-uP	1. Decide AL1.S with ▲&▼key (R-VL,R-VP,R-A,Σ-VP,Σ-A,Σ-W, Σ-VAR,Σ-PF,Σ-HZ,KWH) 2. Press FUNC key into AL2.S setting page
5-2	AL2.S (Alarm 2 Select) Default=S-VP	AL 2.S S-uP	1. Decide AL2.S with ▲&▼key(S-VL,S-VP,S-A,Σ-VP,Σ-A,Σ-W, Σ-VAR,Σ-PF,Σ-HZ,KWH) 2. Press FUNC key into AL3.S setting page
5-3	AL3.S (Alarm 2 Select) Default=T-VP	AL 3.S t-uP	1. Decide AL3.S with ▲&▼key (T-VL,T-VP,T-A,Σ-VP,Σ-A,Σ-W, Σ-VAR,Σ-PF,Σ-HZ,KWH,KWHP) 2. Press FUNC key into ACT1 setting page
5-4	ACT1(Alarm Active 1 setting page)Default=HI	ACt 1 Hi	1.Decide active 1 with ▲&▼key(HI or LO) 2.Press FUNC key enter data and into ACT2 setting page
5-5	ACT2(Alarm Active 2 setting page)Default=HI	ACt2 Hi	1. Decide active 2 with ▲&▼key(HI or LO) 2. Press FUNC key enter data and into ACT3 setting page Note:If AL3.S=KWHP Press FUNC key enter data and into HYS1 setting page
5-6	ACT3(Alarm Active 3 setting page)Default=HI	ACt3 Hi	1.Decide active 3 with ▲&▼key(HI or LO) 2. Press FUNC key enter data and into HYS1 setting page

5-7	HYS1(Alarm Hysteresis 1 setting page1)Default=0	HYS 1 0000	1. Decide HYS1 with ◀&▲&▼key (0~999) 2. Press Ⓜkey enter data and into HYS2 setting page
5-8	HYS2(Alarm Hysteresis 2 setting page2)Default=0	HYS 2 0000	1. Decide HYS2 with ◀&▲&▼key (0~999) 2. Press Ⓜkey enter data and into HYS3 setting page Note:If AL3.S=KWHP Press Ⓜkey enter data and into DEL1 setting page
5-9	HYS3(Alarm Hysteresis 3 setting page2)Default=0	HYS 3 0000	1. Decide HYS3 with ◀&▲&▼key (0~999) 2. Press Ⓜkey enter data and into DEL1 setting page
5-10	DEL1(Delay 1) Default=0	dEL 1 0000	1. Decide DEL1 with ◀&▲&▼key (0~±999 sec.) 2. Press Ⓜkey enter data and into DEL2 setting page Note:-1~-999 is active time setting,0~999 is delay time setting
5-11	DEL2(Delay 2) Default=0	dEL 2 0000	1. Decide DEL2 with ◀&▲&▼key (0~±999 sec.) 2. Press Ⓜkey enter data and into DEL3 setting page Note:-1~-999 is active time setting,0~999 is delay time setting Note2:If AL3.S=KWHP Press Ⓜkey enter data and into KWHP setting page
5-12	DEL3(Delay 3) Default=0	dEL 3 0000	1. Decide DEL3 with ◀&▲&▼key (0~±999 sec.) 2. Press Ⓜkey enter data and into SDT setting page Note:-1~-999 is active time setting,0~999 is delay time setting
5-13	KWHP(Pulse out) Default=1	KWHP 1	1. Decide KWHP with ◀&▲&▼key (0.001,0.01,0.1,1,10, 100,1000) 2. Press Ⓜkey enter data and into SDT setting page
5-14	SDT(Start Delay Time) Default=0	SdT 0000	1. Decide SDT with ◀&▲&▼key (0~99 sec.) 2.Press Ⓜkey return Alarm Active setting group
5-14	ROP(Alarm setting group)	roP	Press ◀key select setting group and Press Ⓜ into setting group
6	DOP(Communication setting group)	doP	Press ◀key decide DOP setting group, press Ⓜ key into ADDR setting page
6-1	ADDR(Communication –Address) Default=0	Addr 0000	1. Decide address with ◀&▲&▼key (0~255) 2. Press Ⓜkey enter data and into BAUD setting page
6-2	BAUD(Communication Baud Rate) Default=19200	bAUd 19E2	1. Decide baud rate with ▲&▼key (38400,19200,9600,4800,2400) 2. Press Ⓜkey enter data and into PARI setting page
6-3	PARI(Communication Parity Check) Default=n.8.2.	PAr1 n.8.2.	1. Decide parity check with ▲&▼key(n.8.2,n.8.1,even,odd) 2. Press Ⓜkey enter data and return DOP setting group
6-4	DOP(Communication setting group)	doP	Press ◀key select setting group and Press Ⓜ into setting group
7	DSP(Display value adjust)	dSP	Press ◀key decide DSP setting group, Press Ⓜkey into R.V.P setting page
7-1	R.V.P(R Phase Voltage Adjust) Default=0	rUP 0000	1. Input Max. voltage to phase R ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into S.V.P setting page
7-2	S.V.P(S Phase Voltage Adjust)Default=0	SUP 0000	1. Input Max. voltage to phase S ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into T.V.P setting page
7-3	T.V.P(T Phase Voltage Adjust)Default=0	tUP 0000	1. Input Max. voltage to phase T ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into R.A setting page
7-4	R.A(R Phase Current Adjust)Default=0	rA 0000	1. Input Max. current to phase R ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into S.A setting page
7-5	S.A(S Phase Current Adjust)Default=0	SA 0000	1. Input Max. current to phase S ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into T.A setting pag
7-6	T.A(T Phase Current Adjust)Default=0	tA 0000	1. Input Max. current to phase T ,Adjustment display span with ▲&▼key 3.Press Ⓜkey enter data and into R-PH setting pag
7-7	R-PH(R Phase Voltage & Current Adjust)Default=0	r-PH 0000	1. Input Max. watt to phase R ,Adjustment display value with ▲&▼key let 0.5PF = -0.5PF watt 2.Press Ⓜkey enter data and into S-PH setting page

7-8	S-PH(S Phase Voltage & Current Adjust)Default=0	S-PH 0000	1. Input Max. watt to phase S ,Adjustment display value with ▲&▼key let 0.5PF = -0.5PF watt 2. Press ENT key enter data and into T-PH setting pag
7-9	T-PH(T Phase Voltage & Current Adjust)Default=0	t-PH 0000	1. Input Max. watt to phase T ,Adjustment display value with ▲&▼key let 0.5PF = -0.5PF watt 2. Press ENT key enter data and into RW setting pag
7-10	RW(R Phase Watt Adjust)Default=0	rW 0000	1. Input Max. watt to phase R ,Adjustment display value with ▲&▼key 2.Press ENT key enter data and into SW setting page
7-11	SW(S Phase Watt Adjust)Default=0	SW 0000	1. Input Max. watt to phase S ,Adjustment display value with ▲&▼key 2. Press ENT key enter data and into TW setting pag
7-12	TW(T Phase Watt Adjust)Default=0	tW 0000	1. Input Max. watt to phase T ,Adjustment display value with ▲&▼key 2. Press ENT key e enter data and into RVAR setting pag
7-13	RVAR(R Phase VAR Adjust)Default=0	rUAr 0000	1. Input Max. VAR to phase R ,Adjustment display value with ▲&▼key 2.Press ENT key enter data and into SVAR setting page
7-14	SVAR(S Phase VAR Adjust)Default=0	SUAr 0000	1. Input Max. VAR to phase S ,Adjustment display value with ▲&▼key 2. Press ENT key enter data and into TVAR setting pag
7-15	TVAR(T Phase VAR Adjust)Default=0	tUAr 0000	1. Input Max. watt to phase T ,Adjustment display value with ▲&▼key 2. Press ENT key e enter data and return DSP setting group
Step	Parameter mark description	Parameter mark	Operation manual
8	Normal display	1234	Press◀/ALARM about 3 sec, into AL1setting page
8-1	AL1 (Alarm value 1 setting page) Default=300.0	AL 1 00003000	1. Decide alarm value 1 with ◀&▲&▼key (0~99999999) 2. Press ENT key enter data and into AL2 setting page
8-2	AL2 (Alarm value 2 setting page) Default=300.0	AL2 00003000	1. Decide alarm value 2 with ◀&▲&▼key (0~99999999) 2. Press ENT key enter data and into AL3 setting page Note:If AL3.S=KWHP Press ENT key enter data and return Normal display
8-2	AL3 (Alarm value 3 setting page) Default=300.0	AL3 00003000	1.Decide alarm value 3 with ◀&▲&▼key (0~99999999) 2.Press ENT key enter data and return Normal display
Appendix	Error Mark Description	Error Mark	Analyze & Description
1	Display over error detect	doFL	Display over range (9999)
1	Display negative over error detect	-doF	Display over range (-1999)
2	EEPROM error detect	E-00 no YES	1.External interference when EEPROM read/write 2.EEPROM write over 10 million times(guarantee 10 years) Please power reset, if still display E-00,doing following step: 1.E-00 & No alternate display for inquire reset EEPROM 2.Decide Yes with▲ or▼ key, press ENT key return normal display EEPROM was reset, Please follow step 1~8 set again

■Display switch indication(press ▲/DSP.S or AUTO = YES)



NOTE: It will changed display indication each 10S while AUTO = YES

Note1. DEL:

Active time setting:

Alarm signal active time while alarm generate

Delay time setting

Alarm signal delay time while alarm generate

2. Relation with CT & max. display value & LCUT value & SB value

CT.r	Max. disp	LCUT Value	SB Value
x 1	0.000~5.000A	0.045A	0.05A
x 2~10	0.00~50.00A	CT.r*0.045A	0.5A
x 11~100	0.0~500.0A	CT.r*0.045A	5.0A
x 101~1000	0.000~5.000KA	CT.r*0.045A	0.05KA
x 1001~9999	0.00KA~50.00KA	CT.r*0.045A	0.5KA

3. Relation with PT & max. display value & Lcut value & SB value

PT.r	Max. disp	LCUT Value	SB Value
x 1	0.0~600.0V	24.0V	10.0V
x 2~10	0.000~6.000KV	PT.r*0.024KV	0.100KV
x 11~100	0.00~60.00KV	PT.r*0.024KV	1.00KV
x 101~1000	0.0KV~600.0KV	PT.r*0.024KV	10.0KV
x 1001~9999	0~6000KV	PT.r*0.024KV	100KV

4. Relation with CT *PT & max. display value & LCUT value & SB value

CT.r *PT.r	Max. disp	LCUT Value	SB Value
x 1	0.000~2.500KW	±0.003W	±0.003W
x 2~10	0.00~25.00KW	±0.03KW	±0.03KW
x 11~100	0.0~250.0KW	±0.3KW	±0.3KW
≧101	0~2500KW	±3KW	±3KW

5. LCUT(low value cut out):while display value ≦ LCUT value, display value = 0

SB(start band): while ALx ≦ SB ,clear alarm signal and never deal with alarm mode

while ALx ＞SB, into alarm mode

6. KWHP pulse out max value:61pulse/S

MMP-3 Modbus RTU Mode Protocol Address Map

Data format 16Bit/32Bit, sign bit 8000~7FFF(–32768~32767),80000000~7FFFFFFF(-2147483648~2147483647)

Address	Name	Description	Accept
0000	ID	Judge type code MMP-3 is 00	R
0001	STATUS	STATUS, range 0000~0007(0~7)(0:OFF,1:ON) (Bit0:AL1,Bit1:AL2,Bit2:AL3)	R
0002	DISP-MODE	Display mode,range000~0006(0~6) (0:VP&A,1:VL&A,2:(KW&KVAR),3:(PF&HZ),4(Σ(KW,VAR,VP,A,PF, HZ),5:Σ(KW,VAR,VP,A)&KWH),6:MAX(Σ(KW,VAR,VP,A,PF,HZ)))	R/W
0003	ACT1	ACT1, range 0000~0001(0~1)(0:HI,1:LO)	R/W
0004	ACT2	ACT2, range 0000~0001(0~1)(0:HI,1:LO)	R/W
0005	ACT3	ACT3, range 0000~0001(0~1)(0:HI,1:LO)	R/W
0006	AL1.S	AL1 select, range 0000~0009(0~9) (0:R-VL,1:R-VP,2:R-A,3:ΣVP,4:ΣA,5:ΣKW,6:ΣKVAR,7:ΣPF, 8:ΣHZ,9:KWH)	R/W
0007	AL2.S	AL2 select, range 0000~0009(0~9) (0:S-VL,1:S-VP,2:S-A,3:ΣVP,4:ΣA,5:ΣKW,6:ΣKVAR,7:ΣPF, 8:ΣHZ,9:KWH)	R/W
0008	AL3.S	AL3 select, range 0000~000A(0~10) (0:T-VL,1:T-VP,2:T-A,3:ΣVP,4:ΣA,5:ΣKW,6:ΣKVAR,7:ΣPF, 8:ΣHZ,9:KWH,10:KWHP)	R/W
0009	KWHP	KWHP, range 0000~0006(0~6) 0:0.001,1:0.01,2:0.1,3:1,4:10,5:100,6:1000	
000A	NET	NET, range 0000~0001(0~3),(0:1 ϕ 2L,1:1 ϕ 3L,2:3 ϕ 3L 3:3 ϕ 4L)	R/W
000B	AUTO	AUTO, range 0000~0001(0~1),(0:NO,1:YES)	R/W
000C	LOCK	LOCK, range 0000~0001(0~1),(0:NO,1:YES)	R/W
000D	BAUD	BAUD, range 0000~0004(0~4)0:38K2,1:19K2,2:9600,3:4800,4:2400	R/W
000E	PARI	PARI, range 0000~0003(0~3) ,0:N.8.2.,1:N.8.1.,2:EVEN,3:ODD	R/W
000F	ADDR	ADDR, range 0000~00FF(0~255)	R/W
0010	HYS1	HYS1, range 0000~03E7(0~999)	R/W
0011	HYS2	HYS2, range 0000~03E7(0~999)	R/W
0012	HYS3	HYS3, range 0000~0063(0~99)	R/W
0013	DEL1	DEL1, range FC19~03E7(-999~999)	R/W
0014	DEL2	DEL2, range FC19~03E7(-999~999)	R/W
0015	DEL3	DEL3, range FC19~03E7(-999~999)	R/W
0016	SDT	SDT, range 0000~0063(0~99)	R/W
0017	CT.R	CT rate, range 0001~270F(1~9999)	R/W
0018	PT.R	PT rate, range 0001~270F(1~9999)	R/W
0019	CODE	CODE, range 0000~270F(0~9999)	R/W
001A	AL1	AL1, range 00000000~05F5E0FF(0~99999999) high byte	R/W
001B		AL1, range 00000000~05F5E0FF(0~99999999) low byte	R/W
001C	AL2	AL1, range 00000000~05F5E0FF(0~99999999) high byte	R/W
001D		AL1, range 00000000~05F5E0FF(0~99999999)low byte	R/W
001E	AL3	AL1, range 00000000~05F5E0FF(0~99999999) high byte	R/W
001F		AL1, range 00000000~05F5E0FF(0~99999999)low byte	R/W
0020	DISP-RVP	DISP-RVP , range 0000~2710(0~10000)(1)	R
0021	DISP-SVP	DISP-SVP , range 0000~2710(0~10000)(1)	R
0022	DISP-TVP	DISP-TVP , range 0000~2710(0~10000)(1)	R
0023	DISP-RA	DISP-RA , range 0000~2710(0~10000)(1)	R

0024	DISP-SA	DISP-SA , range 0000~2710(0~10000)(1)	R
0025	DISP-TA	DISP-TA , range 0000~2710(0~10000)(1)	R
0026	DISP-RVL	DISP-RVL , range 0000~2710(0~10000)(1)	R
0027	DISP-SVL	DISP-SVL , range 0000~2710(0~10000)(1)	R
0028	DISP-TVL	DISP-TVL , range 0000~2710(0~10000)(1)	R
0029	DISP-RKW	DISP-RKW , range D8F0~2710(-10000~10000)(2)	R(3)
002A	DISP-SKW	DISP-SKW , range D8F0~2710(-10000~10000)(2)	R(3)
002B	DISP-TKW	DISP-TKW , range D8F0~2710(-10000~10000)(2)	R(3)
002C	DISP-RKVAR	DISP-RKVAR, range D8F0~2710(-10000~10000)(2)	R(3)
002D	DISP-SKVAR	DISP-SKVAR, range D8F0~2710(-10000~10000)(2)	R(3)
002E	DISP-TKVAR	DISP-TKVAR, range D8F0~2710(-10000~10000)(2)	R(3)
002F	DISP-RPF	DISP-RPF, range FC18~03E8(-1000~1000)	R
0030	DISP-SPF	DISP-SPF, range FC18~03E8(-1000~1000)	R
0031	DISP-TPF	DISP-TPF, range FC18~03E8(-1000~1000)	R
0032	DISP-RHZ	DISP-RHZ, range 0000~1964(0~6500)	R
0033	DISP-SHZ	DISP-SHZ, range 0000~1964(0~6500)	R
0034	DISP-THZ	DISP-THZ 0000~1964(0~6500)	R
0035	DISP-ΣKW	DISP-ΣKW 0000~2710(0~10000)(1)	R
0036	DISP-ΣKVAR	DISP-ΣKVAR 0000~2710(-10000~10000)(1)	R
0037	DISP-ΣVP	DISP-ΣVP 0000~2710(0~10000)(1)	R
0038	DISP-ΣA	DISP-ΣA 0000~2710(0~10000)(1)	R
0039	DISP-ΣPF	DISP-ΣPF FC18~03E8(-1000~1000)	R
003A	DISP-ΣHZ	DISP-ΣHZ 0000~1964(0~6500)	R
003B	DISP-KWH	DISP-KWH 00000000~05F5E0FF(0~99999999)high byte	R
003C		DISP-KWH 00000000~05F5E0FF(0~99999999)low byte	R
003D	MAX(DISP-ΣKW)	MAX(DISP-ΣKW) 0000~2710(0~10000)(1)	R
003E	MAX(DISP-ΣKVAR)	MAX(DISP-ΣKVAR) 000~2710(0~10000)(1)	R
003F	MAX(DISP-ΣVP)	MAX(DISP-ΣVP) 0000~2710(0~10000)(1)	R
0040	MAX(DISP-ΣA)	MAX(DISP-ΣA) 0000~2710(0~10000)(1)	R
0041	MAX(DISP-ΣPF)	MAX(DISP-ΣPF) FC18~03E8(-1000~1000)	R
0042	MAX(DISP-ΣHZ)	MAX(DISP-ΣHZ) 0000~1964(0~6500)	R

Note (1):MODBUS range 0~2710(0~10000),display of MMP-3 range 0~270F(0~9999)

(2):MODBUS range D8F0~2710(-10000~10000), display of MMP-3 range (-1999~9999)

(3):When in 3 φ 3L mode, these value not exist