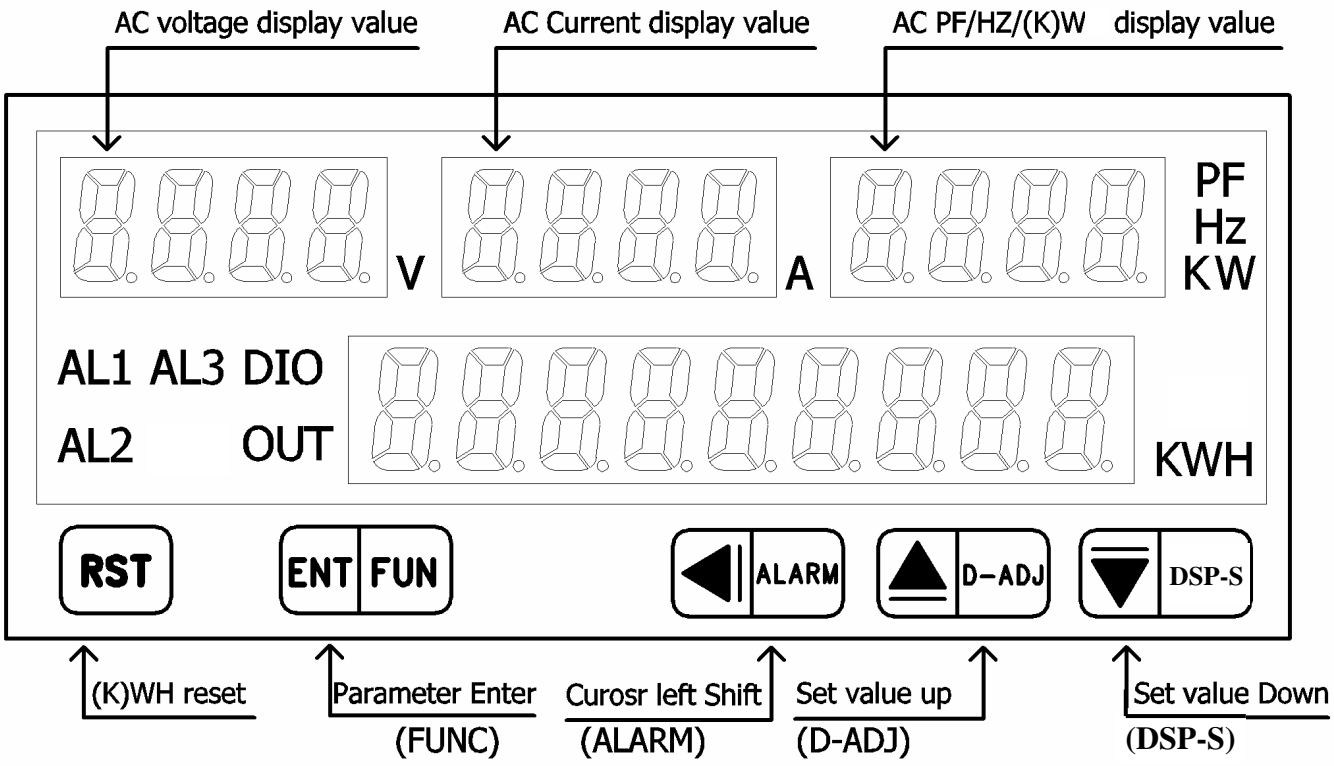
AXE A SLIMMED DOWN MODE MULTI-FUNCTION POWER METER MMP-3S

■ Features

◎Measuring ACV/ACA/Watt/KWH/Power factor/Frequency
◎Accuracy ±0.15% FS (ACV/ACA/F),
Accuracy ±0.5% FS (KW/KWH/PF)
◎VOLTAGE, CURRENT, WATT for True RMS
◎Surge test 4KV(1.2x50us)
◎KWH pulse output function(option)
◎3 Alarm function(option)
◎RS485 interface, MODBUS RTU MODE(option)
◎BAUD RATE:19200/9600/4800/2400
◎Man-machine interface, easy to operate
◎EEPROM Saving ,data safekeeping about 10 year
◎Modified inside parameter , must have pass code

■ Name Of Parts



■Alarm Function Diagram

◎ When ACT=HI,DEL= 0 : Display value > Setting value(AL) → (Relay on)
Display value <= Setting value(AL) - Hysteresis (HYS) → (Relay off)
◎ When ACT=LO,DEL= 0 : Display value >= Setting value(AL) + Hysteresis (HYS) → (Relay off)
Display value < Setting value(AL) → (Relay on)
◎ When ACT=HI,DEL= 1 ~ 999 sec.: Display value > Setting value(AL) + Delay time(DEL) and then → (Relay on)
Display value <= Setting value(AL) - Hysteresis (HYS) → (Relay off)
◎ When ACT=LO,DEL= 1 ~ 999 sec.: Display value >= Setting value(AL) + Hysteresis (HYS) → (Relay off)
Display value < Setting value(AL) + Delay time(DEL) and then → (Relay on)
◎ When ACT=HI,DEL= -1 ~ -999 sec.:Display value > Setting value(AL) → (Relay one shoot(DEL) and then off)
Display value <= Setting value(AL) - Hysteresis (HYS) → (Relay restore normal after the procedure)
◎ When ACT=LO,DEL= -1 ~ -999 sec.:Display value >= Setting value(AL) + Hysteresis (HYS) → (Relay restore normal after the procedure)
Display value < Setting value(AL) → (Relay one shoot(DEL) and then off)

Key Introduce	Operation Manual
RST key function	Reset (K)WH hour key, Press about 10 sec will reset (K)WH value.
ENT 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(press 3S) 2.Into parameter setting page, If need modify data can press shift key into setting procedure, 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 call out display value adjustment setting page(press 3S) 2.Into parameter setting page, If need modify data can press up key into setting procedure, 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 select KW/PF/Hz display mode 2.Into parameter setting page, If need modify data can press down key into setting procedure, 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) ROP(Alarm setting group) DOP(Communication setting group)	SYS roP doP	1.Select setting group with ◀key 2.Press FUNC key into setting page of selection setting group
4	SYS(System setting group)	SYS	Press ◀key select setting group and Press FUNC into setting group
4-1	NET(NET) Default=3φ4L	nEt 3P4L	1. Decide net with ▲&▼key(1φ2L,1φ3L,3φ3L,3φ4L) 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=1.0	Pt.r 1.0	1. Decide PT rate with ◀&▲&▼key (1.0~999.9) 2. Press FUNC key enter data and into RST setting page
4-4	RST(KWH reset) Default=1	rSt 1	1. Decide KWH reset mode with ▲&▼key (0~1) 2. Press FUNC key enter data and into CODE setting page Note: RST=0: (Front panel RST key press 10S/ RS485(communication)) Reset KWH RST=1: only RS485(communication) Reset KWH
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= Σ A	AL 1.S ΣA	1. Decide AL1.S with ▲&▼key(Σ V, Σ A, Σ KW, KWH, Σ PF, Σ Hz) 2. Press FUNC key into AL2.S setting page
5-2	AL2.S (Alarm 2 Select) Default= Σ A	AL2.S ΣA	1. Decide AL2.S with ▲&▼key (Σ V, Σ A, Σ KW, KWH, Σ PF, Σ Hz) 2. Press FUNC key into AL3.S setting page
5-3	AL3.S (Alarm 2 Select) Default= Σ A	AL3.S ΣA	1. Decide AL3.S with ▲&▼key (Σ V, Σ A, Σ KW, KWH, Σ PF, Σ Hz,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 FUNC key enter data and into HYS2 setting page
5-8	HYS2(Alarm Hysteresis 2 setting page2)Default=0	HYS2 0000	1. Decide HYS2 with ◀&▲&▼key (0~999) 2. Press FUNC key enter data and into HYS3 setting page Note:If AL3.S=KWHP Press FUNC key enter data and into DEL1 setting page

5-9	HYS3(Alarm Hysteresis 3 setting page2)Default=0	HYS3 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	dEL2 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	dEL3 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	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 (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

Step	Parameter mark description	Parameter mark	Operation manual
7	Normal display	1234	Press◀/ALARM about 3 sec, into AL1setting page
7-1	AL1 (Alarm value 1 setting page) Default=3.000	AL 1 ΣA 0000003.000	1. Decide alarm value 1 with ◀&▲&▼key (0~999999999) 2. Press Ⓜkey enter data and into AL2 setting page
7-2	AL2 (Alarm value 2 setting page) Default=3.000	AL2 ΣA 0000003.000	1. Decide alarm value 2 with ◀&▲&▼key (0~999999999) 2. Press Ⓜkey enter data and into AL3 setting page Note:If AL3.S=KWHP Press Ⓜkey enter data and return Normal display
7-3	AL3 (Alarm value 3 setting page) Default=3.000	AL3 ΣA 0000003.000	1.Decide alarm value 3 with ◀&▲&▼key (0~999999999) 2.Press Ⓜ key enter data and return Normal display
8	Normal display	1234	Press ▲/D-ADJ about 3 sec, into AL1setting page
8-1	R.V.P(R Phase Voltage Adjust)	rUP 250.0	1. Input Max. voltage to phase R ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into S.V.P setting page
8-2	S.V.P(S Phase Voltage Adjust)	SUP 250.0	1. Input Max. voltage to phase S ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into T.V.P setting page
8-3	T.V.P(T Phase Voltage Adjust)	tUP 250.0	1. Input Max. voltage to phase T ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into R.A setting page
8-4	R.A(R Phase Current Adjust)	rA 2.500	1. Input Max. current to phase R ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into S.A setting page
8-5	S.A(S Phase Current Adjust)	SA 2.500	1. Input Max. current to phase S ,Adjustment display span with ▲&▼key 2. Press Ⓜkey enter data and into T.A setting pag

8-6	T.A(T Phase Current Adjust)	t A 2.500	1. Input Max. current to phase T ,Adjustment display span with ▲&▼key 2. Press ㊥key enter data and into RW setting pag
8-7	RW(R Phase Watt Adjust)	r U 625	1. Input Max. watt to phase R ,Adjustment display value with ▲&▼key 2.Press ㊥key enter data and into SW setting page
8-8	SW(S Phase Watt Adjust)	S U 625	1. Input Max. watt to phase S ,Adjustment display value with ▲&▼key 2. Press ㊥key enter data and into TW setting pag
8-9	TW(T Phase Watt Adjust)	t U 625	1. Input Max. watt to phase T ,Adjustment display value with ▲&▼key 2. Press ㊥ 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)
2	Net error detect	LnEr	Voltage/Current Input direction error
3	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 display for inquire reset EEPROM 2.Decide Yes with▲ or▼ key, press ㊥key return normal display EEPROM was reset, Please follow step 1~8 set again

Note1. DEL:

Active time setting:

Alarm signal active time while alarm generate

Delay time setting

Alarm signal delay time while alarm generate

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

CT.r	Max. disp	LCUT Value	SB Value
x 1	0.000~5.000A	CT.r*0.2A	0.050A
x 2~10	0.00~50.00A		0.50A
x 11~100	0.0~500.0A		5.0A
x 101~1000	0000~5000A		50A
x 1001~9999	0.0~50.0KA		0.50KA

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

PT.r	Max. disp	LCUT Value	SB Value
x 1.0	0.0~500.0V	PT.r*25V	0V
x 1.1~10.0	0~5000V		
x 10.1~100.0	0.0~50.0KV		
x 100.1~999.9	0~500KV		

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

CT.r *PT.r	Max. disp	LCUT Value	SB Value
x 1.0	0.000~7.500KW	CT.r*PT.r*5W	0KW
x 1.1~10.0	0.00~75.00KW		
x 10.1~100.0	0.0~750.0KW		
x 100.1~1000.0	0~7500KW		
x 1000.1~10000.0	0.0~75.0KKW(MW)		
≧ 10000.1	0~750KKW(MW)		

5. Relation watt-hour with CT*PT & max. display value & SB value

CT.r * PT.r	Max. disp	SB Value
x 1.0	0.000~999999.999KWH	0KWH
x 1.1~10.0	0.00~9999999.99KWH	
x 10.1~100.0	0.0~99999999.9KWH	
≧ 100.1	0~999999999KWH	

6. 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

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

MMP-3S Modbus RTU Mode Protocol Address Map

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

位址	名稱	說明	動作
0000	ID	Judge type code MMP-3S is 00	0000
0001	STATUS	STATUS, range 0000~0007(0~7)(0:OFF,1:ON) (Bit0:AL1,Bit1:AL2,Bit2:AL3)	0001
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	Input range 0000~0001(0~1)(0:HI,1:LO)	R/W
0004	ACT2	Input range 0000~0001(0~1)(0:HI,1:LO)	R/W
0005	ACT3	Input range 0000~0001(0~1)(0:HI,1:LO)	R/W
0006	AL1.S	Input range 0000~0005(0~5) (0: Σ V, 1: Σ A, 2: Σ KW, 3:KWH, 4: Σ PF, 5: Σ Hz)	R/W
0007	AL2.S	Input range 0000~0005(0~5) (0: Σ V, 1: Σ A, 2: Σ KW, 3:KWH, 4: Σ PF, 5: Σ Hz)	R/W
0008	AL3.S	Input range 0000~0005(0~6) (0: Σ V, 1: Σ A, 2: Σ KW, 3:KWH, 4: Σ PF, 5: Σ Hz, 6:KWHP)	R/W
0009	RST	Input range 0000~0001(0~1) (0: (front panel RST key press 10sec/ RS485(communication) Reset KWH 1: only RS485(communication) Reset KWH)	R/W
000A	KWHP	Input range 0000~0006(0~6) 0:0.001,1:0.01,2:0.1,3:1,4:10,5:100,6:1000	R/W
000B	NET	Input range 0000~0003(0~3) (0:1 ϕ 2L,1:1 ϕ 3L,2:3 ϕ 3L3:3 ϕ 4L)	R/W
000C	LOCK	Input range 0000~0001(0~1),(0:NO,1:YES)	R/W
000D	BAUD	Input range 0000~0003(0~3) (0:19K2,1:9600,2:4800,3:2400)	R/W
000E	PARI	Input range 0000~0003(0~3) 0:N.8.2.,1:N.8.1.,2:EVEN,3:ODD	R/W
000F	ADDR	Input range 0000~00FF(0~255)	R/W
0010	HYS1	Input range 0000~03E7(0~999)	R/W
0011	HYS2	Input range 0000~03E7(0~999)	R/W
0012	HYS3	Input range 0000~03E7(0~999)	R/W
0013	DEL1	Input range FC19~03E7(-999~999) Map(-999S~999S)	R/W
0014	DEL2	Input range FC19~03E7(-999~999) Map(-999S~999S)	R/W
0015	DEL3	Input range FC19~03E7(-999~999) Map(-999S~999S)	R/W
0016	SDT	Input range 0000~0063(0~99) Map(0S~99S)	R/W
0017	CT.R	Input range 0001~270F(1~9999)	R/W
0018	PT.R	Input range 000A~270F(10~9999) Map PT.R(1.0~999.9)	R/W
0019	CODE	Input range 0000~270F(0~9999)	R/W
001A	AL1	Input range 00000000~3B9AC9FF(0~999999999) high word	R/W
001B		Input range 00000000~3B9AC9FF(0~999999999) low word	R/W
001C	AL2	Input range 00000000~3B9AC9FF(0~999999999) high word	R/W
001D		Input range 00000000~3B9AC9FF(0~999999999) low word	R/W

001E	AL3	Input range 00000000~3B9AC9FF(0~999999999) high word	R/W
001F		Input range 00000000~3B9AC9FF(0~999999999) low word	R/W
0020	DISP- ∑ V	Display range 0000~2710(0~10000)(1)	R
0021	DISP- ∑ A	Display range 0000~2710(0~10000)(1)	R
0022	DISP- ∑ KW	Display range 0~2710(0~10000)(1)	R
0023	DISP- ∑ PF	Display range 0~03E8(0~1000)	R
0024	DISP-ΣHZ	Display range 0000~1964(0~6500)	R
0025	DISP-KWH	Display range 00000000~3B9AC9FF(0~999999999) high word	R
0026		Display range 00000000~3B9AC9FF(0~999999999) low word	R

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

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

Note (3): DISP-MODE:

0: Display (∑ V), (∑ A), (∑ KW) & (KWH)

1: Display (∑ V), (∑ A), (∑ PF) & (KWH)

2: Display (∑ V), (∑ A), (∑ Hz) & (KWH)

Note (4): ∑ Hz detect by voltage of phase R.

Note (5): Written 0x55AA to DISP-KWH address(0025 or 0026), reset DISP-KWH.