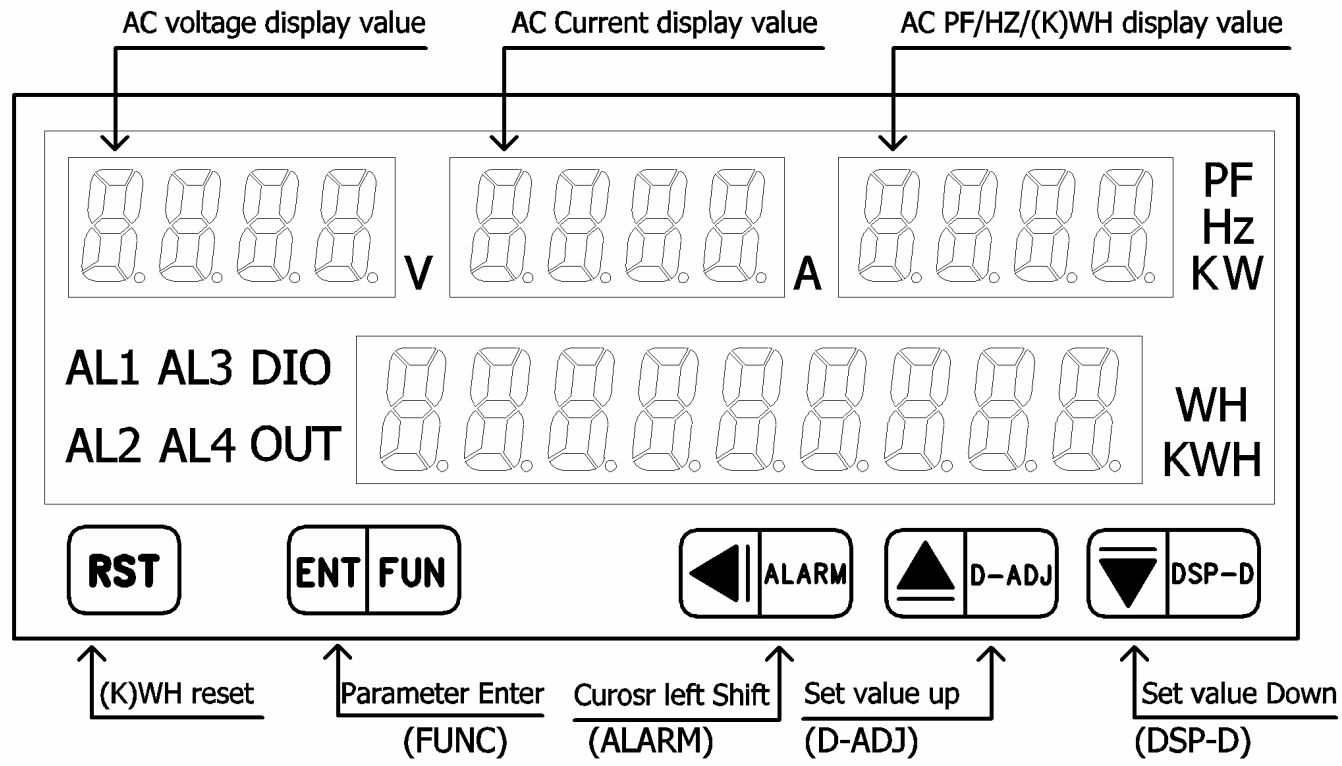
AXE MULTI-FUNCTION POWER METER

MMP-1

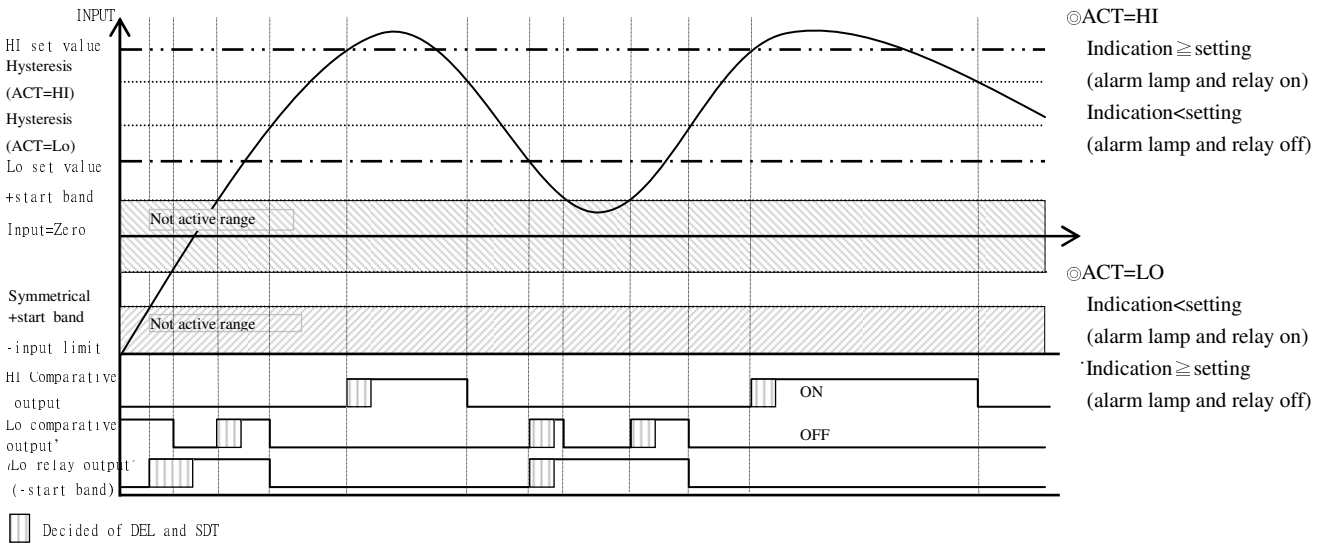
■ Features

- ◎Accuracy 0.25% F.S.(W(WH)/KW(KWH)/Frequency)
- ◎Accept CURRENT, VOLTAGE, WATT, POWER FACTOR, FERQUENCY SIGNALS.
- ◎VOLTAGE, CURRENT, WATT are TRMS
- ◎Surge test 4KV(1.2x50us)
- ◎16BIT DAC analog output(option)
- ◎4 Alarm function(option)
- ◎RS485 interface, MODBUS RTU MODE(option)
- ◎BAUD RATE:38400/19200/9600/4800/2400
- ◎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



Key introduce	Operation Manual
RST key function	Reset (K)WH hour key, Press about 10 sec will reset (K)WH value.
㊥/FUNC 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 introduce	Operation Manual
◀/ALARM 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.(Key response about 0.2 sec.)
▲/D-ADJ key function	1.In normal display, The key function is call out adjustment rate display page (DS-V&DS-A) 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 parameter data will increment .(Key response about 0.2 sec.)
▼/ key function	1.In Normal display, Change display (K)W, PF, Hz 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 parameter data will increment .(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, but if in setting page the modify data will be lost

Step	Parameter Mark Description	Parameter Mark	Operation Manual
1	Normal display	1234	Press ENT/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 ENT 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) AOP(Analog setting group)	SYS roP doP AoP	1.Select setting group with ◀key 2.Press ENT key into setting page of selection setting group
4	SYS(System setting group)	SYS	Press ◀ key decide SYS setting group , press ENT key into Inv-S(input voltage select) setting page
4-1	Inv-S(input voltage select) Default : 300V	In.uS 300	1.Decide input voltage select with ▲&▼ key (100V / 300V / 600V) 2.Press ENT key enter data and into v.dP setting page
4-2	v.dP(voltage decimal point) Default : 1	u.dP 1.	1.Decide voltage decimal point with ▲&▼key (0~2) 2.Press ENT key enter data and into v.dsP setting page
4-3	v.dsP(voltage display value) Default : 300.0	u.dSP 300.0	1.Decide voltage display value with ◀&▲&▼key (0~9999)(1) 2.Press ENT key enter data and into InA-S setting page
4-4	InA-S(input current select) Default : 5A	In A.S 5A	1.Decide input current select with ▲&▼ key (2A/5A/10A) 2.Press ENT key enter data and into A.dP setting page
4-5	A.dP(current decimal point) Default : 3	A.dP 3.	1.Decide current decimal point with ▲&▼ key (0~3) 2.Press ENT key enter data and into A.dsP setting page
4-6	A.dsP(Current display value) Default : 5.000	A.dSP 5.000	1.Decide Current display value with ◀&▲&▼ key (0~9999)(2) 2.Press ENT key enter data and into Unit setting page
4-7	Unit(Wattage display unit) Default : W	Un.t 0	1.Decide Wattage display unit with ▲&▼ key (0:W/1:KW) 2.Press ENT key enter data and into W.dP setting page
4-8	W.dP(Wattage decimal point) Default : 1	W.dP 1.	1.Decide Wattage decimal point with ▲&▼ key (0~3) 2.Press ENT key enter data and into RST setting page IF DOFL, Wattage decimal point must change smaller
4-9	RST(WH/KWH reset) Default : 0	rSt 0	1.Decide WH/KWH reset with ▲&▼ key(0~2) 2.Press ENT key enter data and into AUTO setting page RST=0 (front panel RST key press 10sec/ rear connector(RST) / RS485(MODBUS)) Can reset WH/KWH value RST=1 (rear connector(RST) /RS485(MODBUS)) Can reset WH/KWH value RST=2 (RS485(MODBUS)) Can reset WH/KWH value
4-10	AUTO(Auto scan) Default : NO	AUto no	1.Decide Auto scan with▲&▼ key (NO or YES) 2.Press ENT key enter data and into CODE setting page YES: Change display page (K)W/HZ/PF every 10 sec
4-11	CODE(Pass Code) Default : 0	CodE 0000	1.Decide Pass Code with ◀&▲&▼key (0~9999) 2.Press ENT key enter data and into LOCK setting page

4-12	LOCK(Panel Lock) Default : NO	LOCK no	1.Decide Panel Lock with ▲&▼ key 2.Press (M)key data and return System setting group When LOCK=YES, Parameter can not change
4	SYS(System setting group)	SYS	Press ◀ key decide setting group , press (M) key into Inv-S(input voltage select) setting page
5	ROP(Alarm setting group)	roP	Press ◀ key decide setting group , press (M) key into AL1.S (Alarm 1 Select) setting page
5-1	AL1.S (Alarm 1 Select) Default : V	AL 1.S V	1.Decide Alarm 1 Select with ▲&▼ (V, A, (K)W, Hz, PF, (K)WH) 2.Press (M)key enter data and into ACT1(Active 1) setting page
5-2	ACT1(Active 1) Default : HI	ACt 1 HI	1.Decide Active 1 with ▲&▼ key (HI or LO) 2.Press (M)key enter data and into HYS1(Hysteresis 1) setting page
5-3	HYS1(Hysteresis 1) Default : 0	HYS 1 0000	1.Decide Hysteresis 1 with ◀&▲&▼ key (0~999) 2.Press (M)key enter data and into DEL1(Delay 1) setting page
5-4	DEL1(Delay 1) Default : 0	dEL 1 000.0	1.Decide Delay 1 with ◀&▲&▼ key (0~±99.9 秒 sec)(4) 2.Press (M)key enter data and into AL2.S (Alarm 2 Select) setting page When value is (-0.1~-99.9), alarm active time When value is (0~99.9), alarm delay time
5-5	AL2.S (Alarm 2 Select) Default : V	AL 2.S V	1.Decide Alarm 1 Select with ▲&▼ (V, A, (K)W, Hz, PF, (K)WH) 2.Press (M)key enter data and into ACT2(Active 2) setting page
5-6	ACT2(Active 2) Default : HI	ACt 2 HI	1.Decide Active 1 with ▲&▼ key (HI or LO) 2.Press (M)key enter data and into HYS2(Hysteresis 2) setting page
5-7	HYS2(Hysteresis 2) Default : 0	HYS 2 0000	1.Decide Hysteresis 1 with ◀&▲&▼ key (0~999) 2.Press (M)key enter data and into DEL2(Delay 2) setting page
5-8	DEL2(Delay 2) Default : 0	dEL 2 000.0	1.Decide Delay 1 with ◀&▲&▼ key (0~±99.9sec)(4) 2.Press (M)key enter data and into AL3.S (Alarm 3 Select) setting page When value is (-0.1~-99.9), alarm active time When value is (0~99.9), alarm delay time
5-9	AL3.S (Alarm 3 Select) Default : V	AL 3.S V	1.Decide Alarm 3 Select with▲&▼ (V, A, (K)W, Hz, PF, (K)WH) 2.Press (M)key enter data and into ACT3(Active 3) setting page
5-10	ACT3(Active 3) Default : HI	ACt 3 HI	1.Decide Active 3 with ▲&▼ key (HI or LO) 2.Press (M)key enter data and into HYS3(Hysteresis 3) setting page
5-11	HYS3(Hysteresis 3) Default : 0	HYS 3 0000	1.Decide Hysteresis 3 with ◀&▲&▼ key (0~999) 2.Press (M)key enter data and into DEL3(Delay 3) setting page
5-12	DEL3(Delay 3) Default : 0	dEL 3 000.0	1.Decide Delay 1 with ◀&▲&▼ key (0~±99.9sec)(4) 2.Press (M)key enter data and into AL4.S (Alarm 4 Select) setting page When value is (-0.1~-99.9), alarm active time When value is (0~99.9), alarm delay time
5-13	AL4.S (Alarm 4 Select) Default : V	AL 4.S V	1.Decide Alarm 4 Select with ▲&▼ (V, A, (K)W, Hz, PF, (K)WH) 2.Press (M)key enter data and into ACT4(Active 4) setting page
5-14	ACT4(Active 4) Default : HI	ACt 4 HI	1.Decide Active 1 with ▲&▼ key (HI or LO) 2.Press (M)key enter data and into HYS4(Hysteresis 4) setting page
5-15	HYS4(Hysteresis 4) Default : 0	HYS 4 0000	1.Decide Hysteresis 4 with ◀&▲&▼ key (0~999) 2.Press (M)key enter data and into DEL4(Delay 4) setting page
5-16	DEL4(Delay 4) Default : 0	dEL 4 000.0	1.Decide Delay 4 with ◀&▲&▼ key (0~±99.9sec)(4) 2.Press (M)key enter data and into SDT(Start Delay Time) setting page When value is (-0.1~-99.9), alarm active time When value is (0~99.9), alarm delay time
5-17	SDT(Start Delay Time) Default : 0	Sdt 0000	1.Decide Start Delay Time with ◀&▲&▼ key (0~99sec) 2.Press (M)key data and return Alarm setting group
5	ROP(Alarm setting group)	roP	Press ◀key select setting group and Press (M) into setting group
6	DOP(Communication setting group)	doP	Press ◀key decide DOP setting group, press (M) key into ADDR setting page
6-1	ADDR(Communication	Addr	1. Decide address with ◀&▲&▼key (0~255)

	Address) Default : 0	0000	2. Press ㊎key enter data and into BAUD setting page
6-2	BAUD(Communication Baud Rate) Default : 19200	bAUd 1922	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	DOP(Communication setting group)	doP	Press ◀key select setting group and Press ㊎ into setting group
7	AOP(Analog setting group)	AoP	Press◀key decide AOP setting group , press㊎key into AO.S setting page
7-1	AO.S(Analog Output Select) Default : A	Ao.S A	1.Decide Analog Output Select with ▲&▼ (V, A, (K)W, Hz, PF, (K)WH) 2.Press㊎key enter data and into ANLO setting page
7-2	ANLO(Analog Output Zero-According to Display) Default : 0	AnLo 0000	1.Decide Analog Output Zero-According to Display with ◀&▲&▼ key(5) 2.Press㊎key enter data and into ANHI setting page
7-3	ANHI(Analog Output Span-According to Display) Default : 9999	AnH1 9999	1.Decide Analog Output Span-According to Display with ◀&▲&▼ key(5) 2.Press㊎key enter data and into AO.ZO setting page
7-4	AO.ZO(Analog Output Zero) Default : 0	Ao.Po 0000	1.Decide Analog Output Zero with◀&▲&▼ 2.Press㊎key enter data and into AO.SP setting page
7-5	AO.SP(Analog Output Span) Default : 0	Ao.SP 0000	1.Decide Analog Output Span with◀&▲&▼ 2.Press㊎key enter data and return AOP setting group
7	AOP(Analog setting group)	AoP	Press ◀key select setting group and Press ㊎ into setting group
Step	Parameter Mark Description	Parameter Mark	Operation Manual
8	Normal display	1234	Press ◀/ALARM key 3sec, into AL1 setting page
8-1	AL1 (Alarm 1) Default : 300.0	AL 1 300.0	1.Decide Alarm 1 with◀&▲&▼ key(3)(5) 2.Press㊎key enter data and into AL2 setting page
8-2	AL2 (Alarm 2) Default : 300.0	AL2 300.0	1.Decide Alarm 2 with◀&▲&▼ key(3)(5) 2.Press㊎key enter data and into AL3 setting page
8-3	AL3 (Alarm 3) Default : 300.0	AL3 300.0	1.Decide Alarm 3 with◀&▲&▼ key(3)(5) 2.Press㊎key enter data and into AL4 setting page
8-4	AL4 (Alarm 4) Default : 300.0	AL4 300.0	1.Decide Alarm 4 with◀&▲&▼ key(3)(5) 2.Press㊎key enter data and return Normal display
9	Normal display	1234	Press▲/D-ADJ key 3 ec, into DS-V setting page
9-1	DS-V(Display span voltage) Default : 300.0	dS-u 300.0	1.Decide Display span voltage up with▲ (0~+10%) Decide Display span voltage down with▼ (0~-10%) 2.Press㊎key enter data and into DS-A setting page
9-2	DS-A(Display span Current) Default : 5.000	dS-A 5.000	1.Decide Display span Current up with▲ (0~+10%) Decide Display span Current down with▼ (0~-10%) 2.Press㊎key enter data and return into Normal display
1	Display over error detect	doFL	Display over range (9999)
2	Display negative over error detect	-doFL	Display over range (-1999)
3	EEPROM error detect	E-00 no YES	1.External interference when EEPROM read/write 2.EEPROM write over 100 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 ㊎key return normal display EEPROM was reset, Please follow step 1~ set again

(1): Voltage display value include PT ratio. If external PT is 600V:300V, Input 300V, Set v.DSP = 600.0
(2): Current display value include CT ratio. If external CT is 100A:5A, Input 5A, Set A.DSP = 100.0
(3): When Display value >= SB:
AL1、AL2、AL3、AL4 into active mode
When Display value <SB:
AL1、AL2、AL3、AL4 into disable mode
SB = 1% F.S. (A)
SB = 2% F.S. (V)
SB = 0 (W, HZ, PF)
(4): DEL:
When DEL(0~3) > 0:
When alarm occur, alarm will delay first then output.
When DEL(0~3) < 0:
When alarm occur, alarm will output first them turn off.
(5): AL1, AL2, AL3, AL4 alarm value set range
0~9999 (V, A, Hz)
-1999~9999 (W, KW, PF)
0~999999999 (WH, KWH)

MMP-0 Modbus RTU Mode Protocol Address Map

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

address	Name	Description	Accept
0000	ID	Range: 00	R
0001	STATUS	Range: 0000~000F(0~15)(0:OFF,1:ON), (Bit0:AL1,Bit1:AL2,Bit2:AL3,Bit3:AL4)	R
0002	DISP-MODE	Input range: 000~0002(0~2) (0:PF,1:Hz,2:(K)W)	R/W
0003	INV-S	Input range: 0000~0002(0~2),(0:100V, 1:300V, 2:600V)	R/W
0004	V.DP	Input range: 0000~0002(0~2)	R/W
0005	V.DSP	Input range: 0000~270F(0~9999)	R/W
0006	INA-S	Input range: 0000~0002(0~2),(0:2A, 1:5A, 2:10A)	R/W
0007	A.DP	Input range: 0000~0003(0~3)	R/W
0008	A.DSP	Input range: 0000~270F(0~9999)	R/W
0009	UNIT	Input range: 0000~0001(0~1),(0:W, 1:KW)	R/W
000A	W.DP	Input range: 0000~0003(0~3)	R/W
000B	RST	Input range: 0000~0002(0~2)	R/W
000C	AUTO	Input range: 0000~0001(0~1),(0:NO,1:YES)	R/W
000D	CODE	Input range: 0000~270F(0~9999)	R/W
000E	LOCK	Input range: 0000~0001(0~1),(0:NO,1:YES)	R/W
000F	AL1	Input range: 00000000~3B9AC9FF(0~999999999)high word	R/W
0010		Input range: 00000000~3B9AC9FF(0~999999999)low word	R/W
0011	AL2	Input range: 00000000~3B9AC9FF(0~999999999)high word	R/W
0012		Input range: 00000000~3B9AC9FF(0~999999999)low word	R/W
0013	AL3	Input range: 00000000~3B9AC9FF(0~999999999)high word	R/W
0014		Input range: 00000000~3B9AC9FF(0~999999999)low word	R/W
0015	AL4	Input range: 00000000~3B9AC9FF(0~999999999)high word	R/W
0016		Input range: 00000000~3B9AC9FF(0~999999999)low word	R/W
0017	AL1.S	Input range: 0000~000(0~5) (0:V, 1:A, 2:(K)W, 3:Hz, 4:PF, 5:(K)WH)	R/W
0018	AL2.S	Input range: 0000~000(0~5) (0:V, 1:A, 2:(K)W, 3:Hz, 4:PF, 5:(K)WH)	R/W
0019	AL3.S	Input range: 0000~000(0~5) (0:V, 1:A, 2:(K)W, 3:Hz, 4:PF, 5:(K)WH)	R/W
001A	AL4.S	Input range: 0000~000(0~5) (0:V, 1:A, 2:(K)W, 3:Hz, 4:PF, 5:(K)WH)	R/W
001B	ACT1	Input range: 0000~0001(0~1)(0:HI,1:LO)	R/W
001C	ACT2	Input range: 0000~0001(0~1)(0:HI,1:LO)	R/W
001D	ACT3	Input range: 0000~0001(0~1)(0:HI,1:LO)	R/W
001E	ACT4	Input range: 0000~0001(0~1)(0:HI,1:LO)	R/W
001F	HYS1	Input range: 0000~03E7(0~999)	R/W
0020	HYS2	Input range: 0000~03E7(0~999)	R/W
0021	HYS3	Input range: 0000~03E7(0~999)	R/W
0022	HYS4	Input range: 0000~03E7(0~999)	R/W
0023	DEL1	Input range: FC19~03E7(-999~999)	R/W
0024	DEL2	Input range: FC19~03E7(-999~999)	R/W
0025	DEL3	Input range: FC19~03E7(-999~999)	R/W
0026	DEL4	Input range: FC19~03E7(-999~999)	R/W
0027	SDT	Input range: 0000~0063(0~99)	R/W
0028	ADDR	Input range: 0000~00FF(0~255)	R/W
0029	BAUD	Input range: 0000~0004(0~4) 0:38K4,1:19K2,2:9600,3:4800,4:2400	R/W
002A	PARI	Input range: 0000~0003(0~3) 0:N.8.2.,1:N.8.1.,2:EVEN,3:ODD	R/W
002B	AO.S	Input range: 0000~000(0~5) (0:V, 1:A, 2:(K)W, 3:Hz, 4:PF, 5:(K)WH)	R/W
002C	ANLO	Input range: FFFFF831~3B9AC9FF(-1999~999999999)high word	R/W
002D		Input range: FFFFF831~3B9AC9FF(-1999~999999999)low word	R/W
002E	ANHI	Input range: FFFFF831~3B9AC9FF(-1999~999999999)high word	R/W

002F		Input range: FFFFF831~3B9AC9FF(-1999~999999999)low word	R/W
0030	AOZERO	Input range: FC19~03E7(-999~999)	R/W
0031	AOSPAN	Input range: FC19~03E7(-999~999)	R/W
0032	DISP-V	Display range: 0000~2710(0~10000)(1)	R
0033	DISP-A	Display range: 0000~2710(0~10000)(1)	R
0034	DISP-(K)W	Display range: D8F0~2710(-10000~10000)(2)	R
0035	DISP-PF	Display range: FC18~03E8(-1000~1000)	R
0036	DISP-HZ	Display range: 1194~1964(4500~6500)	R
0037	DISP-(K)WH	Display range: 00000000~3B9AC9FF(0~999999999)high word(3)	R/C
0038		Display range: 00000000~3B9AC9FF(0~999999999)low word(3)	R/C

R: read ; W: write ; C: clear

(1):MODBUS value range 0~2710(0~10000), Display range 0~270F(0~9999)

(2):MODBUS value range D8F0~2710(-10000~10000), Display range F831~270F(-1999~9999)

(3):Reset (K)WH, write (0x55AA) to address 37H、38H