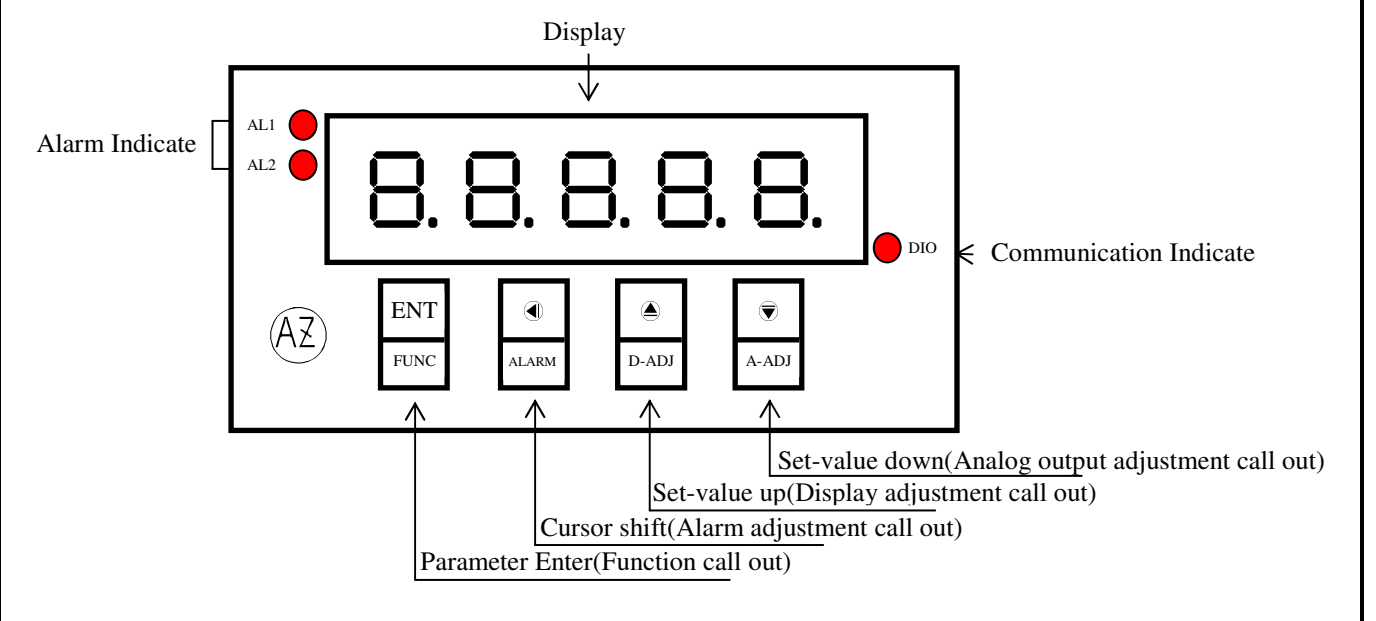


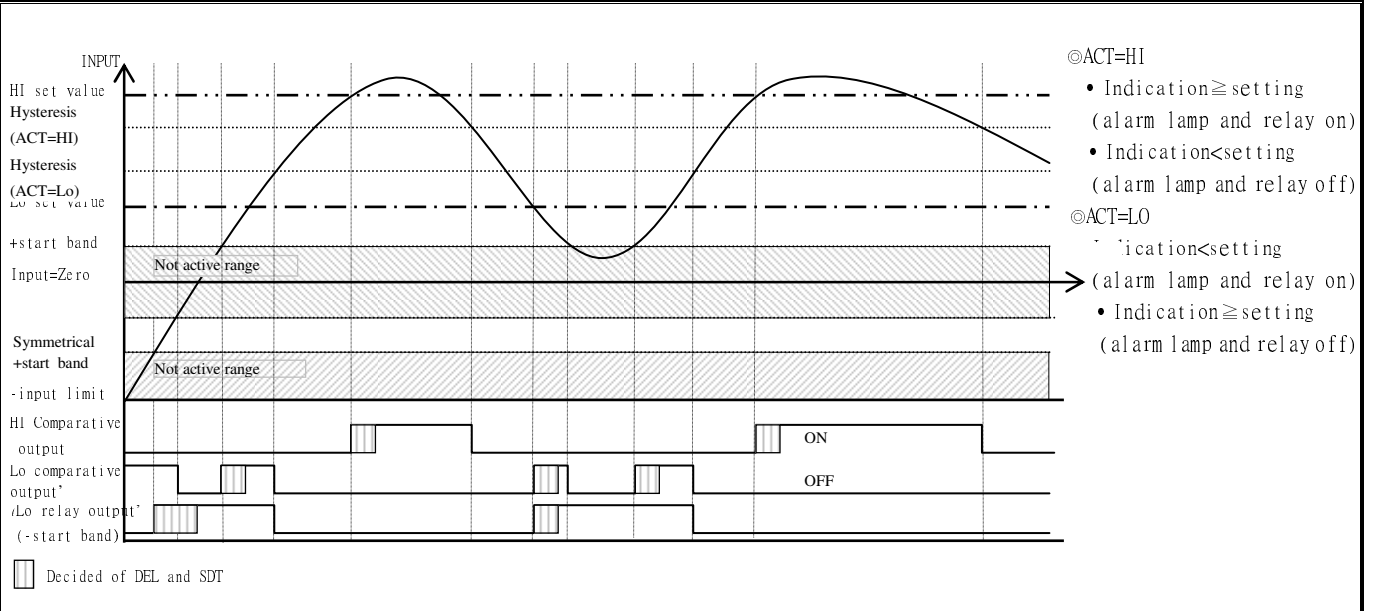
■ Features

- ◎ Accept Watt, Var, Power factor, Phase angle (1 ϕ 2W, 3 ϕ 3W, 3 ϕ 4W.....)
- ◎ Accuracy 0.25%F.S. \pm 1digit
- ◎ Display range -19999~19999 can be modified
- ◎ Decimal point can be modified
- ◎ Dual alarm function
- ◎ Display average can be modified (1~99)
- ◎ 15BIT DAC analog output can be modified, 0~10V /4~20mA by inside switch jumper
- ◎ RS485 Communication interface, Protocol MODBUS RTU MODE
- ◎ BAUD RATE: 19200/9600/4800/2400
- ◎ 0.56" highlight display
- ◎ Man-machine interface, easy to operate
- ◎ EEPROM Saving, data safekeeping about 10 years
- ◎ Modified inside parameter, must have pass code

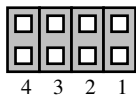
■ Name Of Parts



■ Alarm Function Diagram



■ Analog Output Function Jumper Table



Position: 1&3 ON: DC 4~20 mA OUTPUT

Position: 2&4 ON: DC 0~10V OUTPUT

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. (Key Response about 0.2 sec)		
▲ Key Function	1.In normal display,The key function is call out adjustment display value (DZERO&DSPAN)page 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 call out adjustment analog output (AZERO&ASpan)page 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,but if in Setting page the modify data will be lost		
Step	Parameter Mark Description	Parameter Mark	Operation Manual
1	Normal display	1 2 3 4 5	Press ☰/FUNC key into P.COD setting page
2	P.COD(Pass code input page)	P.C o d	1.Key in 5 digit pass code with ◀ or ▲ or ▼ key 2.Press ☰ key,the pass code is right into setting group , otherwise return normal display
		□ □ □ □ □	
3	SYS(System setting group)	S Y S	1. Select setting group with ◀ key 2. Press ☰ key into setting page of selection setting group
	ROP(Alarm setting group)	r o P	
	AOP(Analog output setting group)	A o P	
	DOP(Communication setting group)	d o P	
4	SYS(System setting group)	S Y S	Press ◀ key decide SYS setting group , press ☰ key into DP setting page
4-1	DP(Decimal Point) Default=0	d P	1.Decide decimal point position with ▲ or ▼ key (0 to 4) 2.Press ☰ key enter data and into DSPL setting page
		□	
4-2	DSPL(Display Low Scale) Default=0	d S P L	1.Decide display low scale with ◀&▲&▼ key (-19999~19999) 2.Press ☰ key enter data and into DSPH setting page
		□ □ □ □ □	
4-3	DSPH(Display High Scale) Default=19999	d S P H	1.Decide display high scale with ◀&▲&▼ key (-19999~19999) 2.Press ☰ key enter data and into AVG setting page *DSPH=Standard Watts(Vars)*PT RATE*CT RATE, $\theta / \cos \theta$ DSPH=60°
		1 9 9 9 9	
4-4	AVG (Average) Default=1	A v G	1.Decide display Average times with ◀&▲&▼ key (1~99) 2.Press ☰ key enter data and into LCUT setting page
		□ □ □ □ □	
4-5	LCUT (Low Cut) Default=0	L C U T	1.Decide display low cut with ◀&▲&▼ key (0~99) 2.Press ☰ key enter data and into CODE setting page
		□ □ □ □ □	
4-6	CODE(Pass Code) Default=0	C o d E	1.Decide Pass code with ◀&▲&▼ key (0~19999) 2.Press ☰ key enter data and into LOCK setting page
		□ □ □ □ □	
4-7	LOCK(Panel Lock) Default=NO	L o C K	3.Decide panel lock with ▲ or ▼ key (NO or YES) 4. Press ☰ key enter data and return ROP setting group
		r o	
5	ROP(Alarm setting group)	r o P	Press ◀ key decide ROP setting group,press ☰ key into ACT1 setting page
5-1	ACT1(Alarm Active 1 setting page)Default=HI	A C T 1	1.Decide active 1 with ▲ or ▼ key(HI or LO) 2.Press ☰ key enter data and into ACT2 setting page
		H I	
5-2	ACT2(Alarm Active 2 setting page)Default=HI	A C T 2	1.Decide active 2 with ▲ or ▼ key(HI or LO) 2.Press ☰ key enter data and into HYS1 setting page
		H I	

5-3	HYS1(Alarm Hysteresis 1 setting page)Default=0	H Y S 1 0 0 0 0	1.Decide Hysteresis 1 with ◀ or ▲ or ▼ key(0~999) 2.Press Ⓜ key enter data and into HYS2 setting page
5-4	HYS2(Alarm Hysteresis 2 setting page)Default=0	H Y S 2 0 0 0 0	1.Decide Hysteresis 1 with ◀ or ▲ or ▼ key(0~999) 2.Press Ⓜ key enter data and into DEL1 setting page
5-5	DEL1(Alarm Delay 1 setting page)Default=0	d E L 1 0 0 0 0	1.Decide delay 1with ◀ or ▲ or ▼ key(0~99.9 sec) 2.Press Ⓜ key enter data and into DEL2 setting page
5-6	DEL2(Alarm Delay 2 setting page)Default=0	d E L 2 0 0 0 0	1.Decide delay 2 with ◀ or ▲ or ▼ key(0~99.9sec) 2.Press Ⓜ key enter data and into SB setting page
5-7	SB(Start band)Default=0	S b 0 0 0 0	1.Decide start band with ◀ or ▲ or ▼ key(-999~999) 2.Press Ⓜ key enter data and into SDT setting page
5-8	SDT(Start Delay Time)Default=0	S d t 0 0 0 0	1.Decide start delay time with ◀ or ▲ or ▼ key(0~99.9sec) 2.Press Ⓜ key enter data and return ROP setting group
6	AOP(Analog output setting group)	A o p	Press ◀ key decide AOP setting group , press Ⓜ key into ANLO setting page
6-1	ANLO(A/O Zero According to Display setting page)Default=0	A n l o 0 0 0 0	1.Decide ANLO with ◀ or ▲ or ▼ key(-19999~19999) 2.Press Ⓜ key enter data and into ANHI setting page
6-2	ANHI(A/ O Span According to Display setting page)Default=0	A n h i 1 9 9 9 9	1.Decide ANHI with ◀ or ▲ or ▼ key(-19999~19999) 2.Press Ⓜ key enter data and return AOP setting group
7	DOP(Communication setting group)	d o p	press ◀ key decide DOP setting group,press Ⓜ key into ADDR setting page
7-1	ADDR(Communication –Address setting page)Default=0	A d d r 0 0 0 0	1.Decide address with ◀ or ▲ or ▼ key(0~255) 2.Press Ⓜ key enter data and into BAUD setting page
7-2	BAUD(Communication Baud Rate setting page)Value on Default=19200	b a u d 1 9 2 0 0	1.Decide baud rate with ▲ or ▼ key(19200,9600,4800,2400) 2.Press Ⓜ key enter data and into PARI setting page
7-3	PARI(Communication Parity Check setting page)Default=n.8.2.	P a r i n . 8 . 2	1.Decide parity check with ▲ or ▼ key(n82,N81,even,odd) 2.Press Ⓜ key enter data and return DOP setting group
Step	Parameter mark description	Parameter mark	Operation manual
8	Normal display	1 2 3 4 5	Press ◀/ALARM key about 3 sec,into AL1 lsetting page
8-1	AL1 (Alarm value 1 setting page) Default=0	A L 1 0 0 0 0	1.Decide alarm value 1 with ◀ or ▲ or ▼ key(-19999~19999) 2.Press Ⓜ key enter data and into AL2 setting page
8-2	AL2 (Alarm value 2 setting page) Default=0	A L 2 0 0 0 0	1.Decide alarm value 2 with ◀ or ▲ or ▼ key(-19999~19999) 2.Press Ⓜ key enter data and return normal display
Step	Parameter mark description	Parameter mark	Operation manual
9	Normal display	1 2 3 4 5	Press ▼/A-ADJkey about 3 sec,into AZERO adjustment page
9-1	DZERO(Display Zero Adjust)Default=0	d z e r o 0 0 0 0	1.Adjustment display zero with ▲ or ▼ key 2.Press Ⓜ key enter data and into DSPAN adjustment page
9-2	DSPAN(Display Span Adjust)Default=0	d s p a n 0 0 0 0	1.Adjustment display span with ▲ or ▼ key 2.Press Ⓜ key enter data and return normal display
Step	Parameter mark description	Parameter mark	Operation manual
10	Normal display	1 2 3 4 5	Press ▼/A-ADJkey about 3 sec,into AZERO adjustment page
10-1	AZERO(Analog Output Zero Adjustment page)Value on EEPROM reset=0	A z e r o 0 0 0 0	1.Adjustment analog output zero with ◀ or ▲ or ▼ key(±9999) 2.Press Ⓜ key enter data and into ASPAN adjustment page
10-2	ASPAN(Analog Output Span Adjustment page)Value on EEPROM reset=0	A s p a n 0 0 0 0	1.Adjustment analog output span with ◀ or ▲ or ▼ key(±9999) 2.Press Ⓜ key enter data and return normal display

Appendix	Error Mark Description	Error Mark	Analyze & Description
1	Input over error detect	， 0 FL	Input signal over range(120%)
2	Input under error detect	- ， 0 FL	Input signal under range(-20%)
3	Display over error detect	d 0 FL	Display over range(99999)
4	Display under error detect	- d 0 FL	Display under range(-19999)
5	A/D Converter error detect	ADER	1.Input signal over range (180%) 2. Inside circuit damage Please moving input signal if still display ADER,please contact us
6	EEPROM error detect	E - 00	1.External interference when EEPROM read/write
		00	2.EEPROM write over 100 million times(guarantee 10 years)
		YES	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 3.EEPROM was reset,Please follow step 1~10 set again

MODEL		Element connection	Standard analog calibration Watts or Vars					
Watts	Vars		V = 120V		V = 240V		V = 400V	
			1A	5A	1A	5A	1A	5A
PW1	PV1	1 φ 2W	100	500	200	1K	400	2K
PW3	PV3	3 φ 3W	200	1K	400	2K	800	4K
PW4	PV4	3 φ 4W	300	1.5K	600	3K	1.2K	6K

MMP Modbus RTU Mode Protocol Address Map

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

Address	Name	Description	Accept
0000	TYPE	TYPE, range 0000~0002(0:POWER,1:ANGLE,2:FACT)	R/W
0002	DP	DP, range 0000~0004(0~4)0:10 ⁰ ,1:10 ⁻¹ ,2:10 ⁻² ,3:10 ⁻³ ,4:10 ⁻⁴	R/W
0004	DSPL	DSPL, range B1E1~4E1F(-19999~19999)	R/W
0006	DSPH	DSPH, range B1E1~4E1F(-19999~19999)	R/W
0008	AVG	AVG, range 0001~0063(1~99)	R/W
000A	LCUT	LCUT, range 0000~0063(0~99)	R/W
000C	CODE	CODE, range 0000~4E1F(0~19999)	R/W
000E	LOCK	LOCK, range 0000~0001(0:NO LOCK,1:LOCK)	R/W
0010	ACT1	ACT1, range 0000~0001(0:HI,1:LO)	R/W
0012	ACT2	ACT2, range 0000~0001(0:HI,1:LO)	R/W
0014	HYS1	HYS1, range 0000~03E7(0~999)	R/W
0016	HYS2	HYS2, range 0000~03E7(0~999)	R/W
0018	DEL1	DEL1, range 0000~03E7(0~999)	R/W
001A	DEL2	DEL2, range 0000~03E7(0~999)	R/W
001C	SB	SB, range FC19~03E7(-999~999)	R/W
001E	SDT	SDT, range 0000~03E7(0~999)	R/W
0020	AL1	AL1, range B1E1~4E1F(-19999~19999)	R/W
0022	AL2	AL2, range B1E1~4E1F(-19999~19999)	R/W
0024	ANLO	ANLO, range B1E1~4E1F(-19999~19999)	R/W
0026	ANHI	ANHI, range B1E1~4E1F(-19999~19999)	R/W
0028	AZERO	AZERO, range D8F1~270F(-9999~9999)	R/W
002A	ASpan	ASpan, range D8F1~270F(-9999~9999)	R/W
002C	ADDR	ADDR, range 0000~00FF(0~255)	R/W
002E	BAUD	BAUD, range 0000~0003(0~3)0:19200,1:9600,2:4800,3:2400	R/W
0030	PARI	PARI, range 0000~0003(0~3)0:N82,1:N81,2:EVEN,3:ODD	R/W
003A	DISPLAY	Display, range B1E1~4E1F(-19999~19999)	R