MICROPROCESS WATT & WATTHOUR (VAR & VARHOUR) CONTROLLER METER

FEATURES

- Programmable rate 0 to 9999 digit (watt or var), 0 to 99999999 digit (watthour or varhour)
- Accuracy 0.25% F.S.
- Programmable time base (1, 60, 3600 second)
- Programmable scale factor (0.0001 to 9999.9999)
- Decimal point can be modified
- Dual alarm, compare hysteresis function
- 15 bit DAC analog output function
- Dielectric strength 2KVac (input/output/power)
- Surge test 4KV (1.2x50μs)

1. MODEL: PF-M ☐☐☐ ☐ - ☐ ☐ ☐ - ☐ - ☐ ☒ X=0 (non alarm) X=1 (one alarms) X=2 (two alarms)

NO	Input Type
WWH	Watt/Watthour
VVH	Var/Varhour

NO	Input Unit
1	1Ø2W
3	3Ø3W
4	3Ø4W
9	SPECIFIED

NO	Input Voltage (range)
1	0-120V (85-150V)
2	0-240V (180-300V)
3	0-400V (320-480V)
9	SPECIFIED

NO	Input Current (range)
1	0-1 A (0-1.2A)
2	0-5 A (0-6A)
9	SPECIFIED

NO	Input Frequency
A	50 Hz
B	60 Hz
C	400 Hz
0	SPECIFIED

NO	Output Voltage (current)
N	None
F	DC 1-5 V
H	DC 0-10 V
P	DC 0-20 mA
Q	DC 4-20mA
G	1 Pulse/WH
R	SPECIFIED

NO	Aux. Power
1	AC 110/220V
2	DC 24V
3	DC 48V
4	DC 110V
5	DC 220V
6	AC 90~260V
9	SPECIFIED

- ±10% of rate, less 5.5VA for AC switching input
- ±20% of rate, less 4.5W for DC input

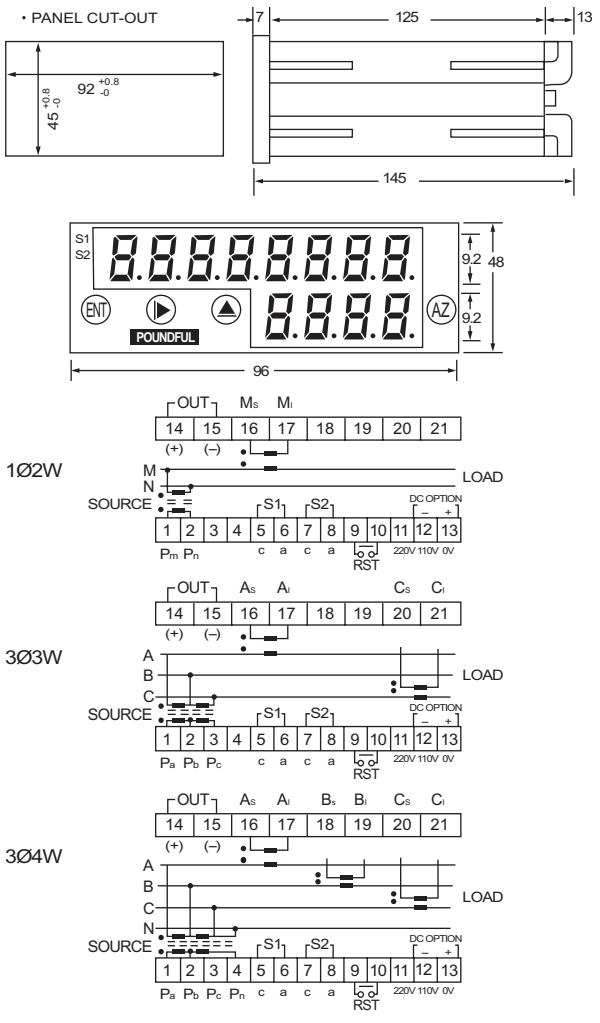
2. Specification

- Aux. power supply : AC110 & 220V ± 20% (50 or 60Hz) ≤ 4.5VA (Optional DC24, 48, 110, 220V, AC/DC 110/220V) switching AC 90~260V±10%
- Measuring accuracy : 0.25% F.S. (23 ±5°C)
- Readout (compare) range : "0" to "9999" adjustable (watt) "0" to "99999999" adjustable (watt hour)
- Input burden : ≤ 0.2VA (Voltage); ≤ 0.2VA (Current)
- Max. input over : 3 x rated continuous (Current) 2 x rated continuous (Voltage)
- Compare hysteresis range : "0" to "99" adjustable
- Alarm action : "Hi" to "Lo" adjustable (watt)
- Relay contact output : AC 250-3A, DC 30V-5A
- Parameter setting : Touch switches
- Temp. coefficient : 100ppm/°C (0-50°C)
- Display : Red high efficiency LEDs high 9.2mm (0.36")
- Analog output resolution : 15 bit DAC
- Output ripple (p-p) : < 0.1% F.S.
- Response time : ≤ 300ms (0-90%)
- Output drive capability : ≤ 10mA for voltage mode ≤10V for current mode
- Dielectric strength : 2Kvac/1 min. (power/input & output)
- Surge test : ANSI C37.90/1974, DIN-IEC255-4 impulse voltage 4KV (1.2x50μs)
- Operating condition : 0~50°C (20 to 90% RH non-condensed)
- Storage condition : 0~70°C (20 to 90% RH non-condensed)
- Memory type : Non-volatile EEPROM memory

3. Standard analog calibration table (SAC)

Model		Element connection	Standard analog calibration (Watts or Vars)					
Watts	Vars		V = 120V		V = 240V		V = 400V	
			1A	5A	1A	5A	1A	5A
WWH1	VVH1	1Ø2W	100	500	200	1K	400	2K
WWH3	VVH3	3Ø3W	200	1K	400	2K	800	4K
WWH4	VVH4	3Ø4W	300	1.5K	600	3K	1.2K	6K

4. Outside dimension and connection diagram



MICROPROCESS WATT & WATTHOUR (VAR & VARHOUR) CONTROLLER METER

FEATURES

- Resolution of 5 digits rate and 10 digits totalizer simultaneously
- Accuracy 0.25% F.S.
- Automatic, external, or button totalizer reset
- Decimal point can be modified
- Programmable time base (1,60,3600 seconds)
- Programmable scale factor (0.00001 to 19999.99999)
- Dielectric strength 2KVac (input / output / power)
- Four alarms with hysteresis and delay functions (optional)
- 16 bit DAC analog output type can be modified (optional)
- RS485/ RS232 communication with Modbus RTU mode (optional)

1. MODEL: PF-M □□□□ - □ □ - □□□□ - □

NO	Input Type	NO	Input Unit	NO	Input Voltage	NO	Input Current	NO	Analog Output	NO	Alarm	NO	Pulse	NO	Communication (Modbus RTU)	NO	Aux. Power
WWHA	Watt/Watthour	1	1Ø2W	1	0-120V (85-150V)	1	0-1A (0-1.2A)	See analog output table		0	None	0	None	0	None	1	AC 90~240V
VVHA	Var/Varhour	3	3Ø3W	2	0-240V (180-300V)	2	0-5A (0-6A)			1	1 Alarm	1	Relay	1	RS485	2	DC 24~70V
		4	3Ø4W	3	0-400V (320-480V)	9	SPECIFIED			2	2 Alarms	2	Open Collector	2	RS232	3	AC/DC 24V
		9	SPECIFIED	9	SPECIFIED					3	3 Alarms					4	DC 110V
										4	4 Alarms*					9	SPECIFIED
										*Pulse output unavailable if 4 alarms specified						≤ 15VA for AC ≤ 10W for DC	

2. Specification

- Aux. power supply : AC 90~240V ± 10% 50/60 Hz
  DC 24~70V ± 10%
  AC/DC 24 ± 10%
  DC 110V ± 10% , DC 220V ± 10%
- Measure accuracy : 0.25% F.S. (23 ± 5°C)
- Input burden : ≤ 0.2VA (Voltage); ≤ 0.2VA (Current)
- Readout (compare) : "0" to "24999" adjustable (Watt / Var)
  "0" to "2147483647" adjustable (Watthour / Varhour)
- Alarm selection : Watt / Var and Watthour / Varhour can be modified
- Compare hysteresis range : "0" to "999" adjustable
- Alarm action : "Hi" or "Lo" adjustable
- Alarm relay contact output : AC 250V/ 3A DC 30V/5A
- Analog output resolution : Watt / Var or Watthour / Varhour can be modified
- Analog output resolution :16 bit DAC (isolating)
- Output drive capability : ≤ 20mA for voltage mode
  ≤ 14V for current mode
- Output ripple (p-p) : ≤ 0.1% F.S.
- Response time : < 250 ms (0-90 %)
- Pulse relay contact output : DC 100V / 0.5A ≤ 10VA
- Pulse open collector : ≤ DC 30V / 40mA
- Communication address : 2400, 4800, 9600, 19200 BPS
- RTU Data format : < 8,N,1>, < 8,N,2>, < 8,E,1>, < 8,O,1>
- Communication address : "1" to "247" can be modified
- Parameter setting : Touch switches
- Memory type : Non-volatile EEPROM
- Dielectric type : 2Kvac/1min. (power / input / output)
- Temp. coefficient : 100ppm/°C (0-50°C)
- Operating condition : 0~50°C (20~90% RH non-condensed)
- Storage condition : 0~70*C (20~90% RH non-condensed)

3. Standard Analog Calibration Table(SAC)

See Page 68

4. Analog output table

X	Output Range	O/P Range 1-2-3-4-5-6	O/P Mode 7-8
0	SPECIFIED	switching status	on=1 off=0
1	0 ~ 1V	1-0-1-1-1-0	1-1
2	0 ~ 5V	1-0-1-0-1-0	1-1
3	1 ~ 5V	1-1-1-0-1-1	1-1
4	0 ~ 10V	1-1-0-1-0-0	1-1
5	2 ~ 10V	1-1-1-1-0-1	1-1
6	0 ~ 1mA	0-1-1-1-1-0	0-0
7	0 ~ 10mA	1-0-1-0-1-0	0-0
8	0 ~ 20mA	1-1-0-1-0-0	0-0
9	4 ~ 20mA	1-1-1-1-0-1	0-0

5. Dimension and connection diagram