

CW/CQ AC WATT / VAR Transducer

FEATURE

- Measuring Watt, Var or Watt & Var
- 1P2W, 1P3W, 3P3W, 3P4W Balanced or Unbalanced systems
- Precision measurement even for distorted wave
- Output range programmable by dip-switch
- Low output ripple
- High impulse & Surge protection
- High stability & low cost



SPECIFICATION

INPUT: Watt / Var

Connection	AC Input		Basic Ref. Value Watt or Var	Input Burden
	Voltage	Current		
1P2W	110V or 120V 220V or 240V	5A (1A) 10A**	± 0.5 K (± 0.1K) ± 1.0 K (± 0.2K)	≤ 0.10VA or ≤ 0.15VA
1P3W	220V-110V		± 1.0 K (± 0.2K)	
3P3W	110V or 120V 220V or 240V		± 1.0 K (± 0.2K) ± 2.0 K (± 0.4K)	
	380V or 416V		± 3.0 K (± 0.6K)	
3P4W	190V _{ℓℓ} -110V _{ℓn} or 208V _{ℓℓ} -120V _{ℓn}		± 1.5 K (± 0.3K)	
	380V _{ℓℓ} -220V _{ℓn} or 416V _{ℓℓ} -240V _{ℓn}		± 3.0 K (± 0.6K)	

* The maximum input is 450V and 5A in standard (10Amax input available in option), If the input over the level please connects with CT or PT to the transducer.

* V_{ℓℓ} means Voltage of line to line; V_{ℓn} means Voltage of line to neutral.

* The basic ref. value is base on second of PT & CT, and versus the high range of output.

OUTPUT: Watt or Var O/P Programming by Dip Switch inside

Output Range	Load Resistance	Output Resistance	Output Ripple
0 ~ 1 V / 0 ~ 0.5 ~ 1 V	≥ 100 ohm	≈ 0.001 ohm	≤ 0.2% of F.S.
0 ~ 5 V / 0 ~ 2.5 ~ 5 V	≥ 500 ohm		
0 ~ 10 V / 0 ~ 5 ~ 10 V	≥ 1000 ohm		
1 ~ 5 V / 1 ~ 3 ~ 5 V	≥ 500 ohm		
-1 ~ 0 ~ +1 V	≥ 100 ohm		
-5 ~ 0 ~ +5 V	≥ 500 ohm		
-10 ~ 0 ~ +10 V	≥ 1000 ohm	≈ 6M ohm	
0 ~ 1 mA / 0 ~ 0.5 ~ 1 mA	0 ~ 15K ohm		
0 ~ 5 mA	0 ~ 3000 ohm		
0 ~ 10 mA / 0 ~ 5 ~ 10 mA	0 ~ 1500 ohm		
0 ~ 20 mA / 0 ~ 10 ~ 20	0 ~ 750 ohm		
4 ~ 20 mA / 4 ~ 12 ~ 20	0 ~ 750 ohm		
-1 ~ 0 ~ +1 mA	0 ~ 11K ohm	≈ 20M ohm	
-5 ~ 0 ~ +5 mA	0 ~ 2200 ohm		
-10 ~ 0 ~ +10 mA	0 ~ 1100 ohm		
-20 ~ 0 ~ +20 mA	0 ~ 550 ohm		

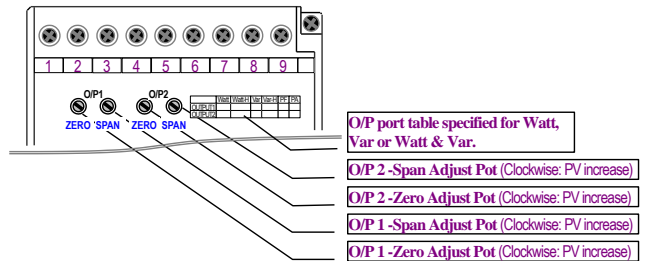
※When Aux Powered is DC, The Load Resistance is about 70%

- Accuracy :** ≤ ±0.2% of F.S.
- Waveform effect:** ≤ 0.2% of F.S. at 30% distortion
- Max. input over capability:** Voltage: 1.5 x rated continuous
2 x rated for 10 seconds
4 x rated for 2 seconds
Current: 3 x rated continuous
10 x rated for 10 seconds
50 x rated for 1 second
50 Hz ±3 Hz, 60 Hz ±3 Hz
- Response time:** ≤ 250 m-sec.
- Span adjustment:** ≤ ±5% of F.S. (or ±20% of F.S. specify)
- Zero adjustment:** ≤ ±2% of F.S. (or ±20% of F.S. specify)
- Output load effect:** Current output ≤ 0.1% of F.S.
Voltage output ≤ 0.05% of F.S.
- Power supply:** AC 115/230V ±15%, 50/60 Hz
AC 380 or 415V ±15%, 50/60 Hz
Option: DC 24V, 48V, 110V, 220V ±10%
Self Powered: Interior connection from input volt
Working volt: ±15% rated of input voltage
- Power effect:** ≤ 0.05% of F.S.
- Power consumption:** ≤ 4VA

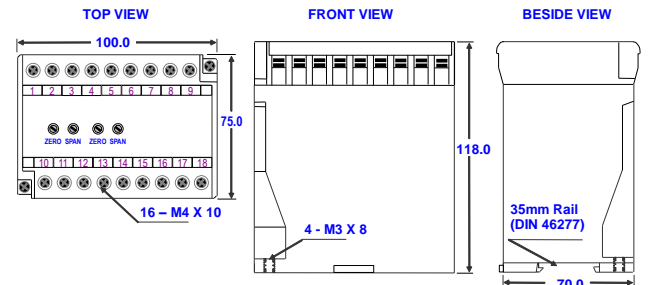
- Mutual interference effect:** ≤ 0.1% of F.S. between each element
- Magnetic field strength:** 400ATM ≤ 0.2% of F.S.
- Operating temperature:** 0~60 °C
- Operating relative humidity:** 20~95 %RH, non-condensing
- Temperature coefficient:** ≤ 100 PPM/°C
- Storage temperature:** -10~70 °C
- Dielectric Strength:** IEC 414, IEC 688:1992, ANSI C37.90a
Between Input / Output / Power / Case
AC 4KV, 50/60Hz, 1 min.
IEC 255-4, ANSI C37.90a
6KV, 1.2 x 50 μsec.
Common mode & differential mode
IEC 414, BS 5458
IEC 529 (IP50)
Input / Output / Power / Case
≥ 100M ohm, DC 500V
- Surge test:** Designed it comply with IEC 688
Wall or DIN rail (EN 50022)
Under 650g
- Safety:**
- Enclosure:**
- Isolation:**
- Insulation resistance:**
- Performance:**
- Mounting:**
- Weight:**

ADJUSTMENT

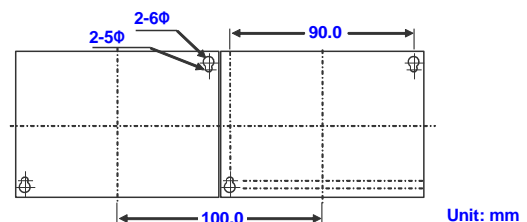
Watt / Var / Watt & Var:



DIMENSIONS



PANEL MOUNTING HOLES

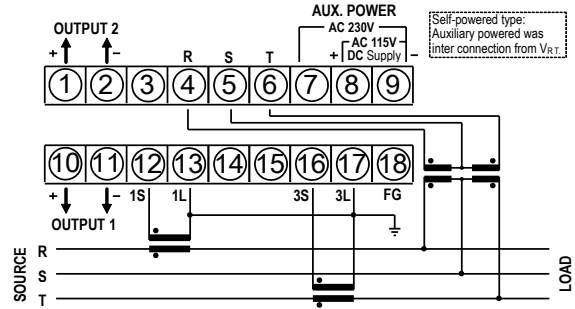


OUTPUT RANGE PROGRAMMING

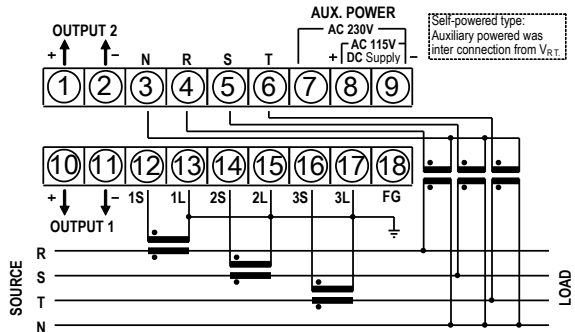
OUTPUT	pcb no. WQHP2-2										JUMPER	
	DIP SWITCH										10	11
0 ~ 1 mA					on							■
0 ~ 5 mA					on	on				on		■
0 ~ 10 mA					on	on						■
0 ~ 20 mA					on		on					■
4 ~ 20 mA	on				on		on					■
0 ~ 0.5 ~ 1 mA					on				on	on		■
0 ~ 5 ~ 10 mA					on	on			on	on		■
0 ~ 10 ~ 20 mA					on		on		on	on		■
4 ~ 12 ~ 20 mA	on				on		on		on	on		■
-1 ~ 0 ~ +1 mA					on							■
-5 ~ 0 ~ +5 mA					on	on				on		■
-10 ~ 0 ~ +10 mA					on	on						■
-20 ~ 0 ~ +20 mA					on		on					■
0 ~ 1 V		on	on	on				on				■
0 ~ 5 V			on	on				on				■
0 ~ 10 V				on				on				■
1 ~ 5 V	on		on	on				on				■
2 ~ 10 V	on			on				on				■
0 ~ 0.5 ~ 1 V		on	on	on				on	on	on		■
0 ~ 2.5 ~ 5 V			on	on				on	on	on		■
0 ~ 5 ~ 10 V				on				on	on	on		■
1 ~ 3 ~ 5 V	on		on	on				on	on	on		■
2 ~ 6 ~ 10 V	on			on				on	on	on		■
-1 ~ 0 ~ +1 V		on	on	on				on				■
-5 ~ 0 ~ +5 V			on	on				on				■
-10 ~ 0 ~ +10 V				on				on				■

* JUMPER: (1) "■" closed by jumper; (2) blank field mean open.

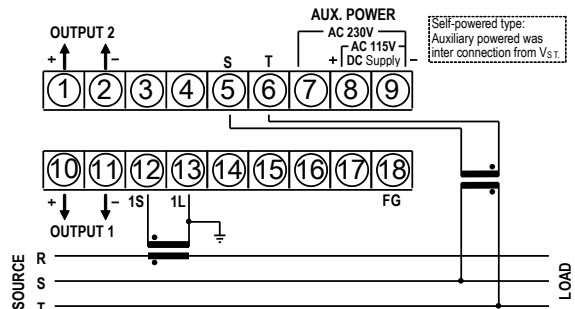
Watt / Var / Watt & Var - 3Φ3W (Unbalanced)



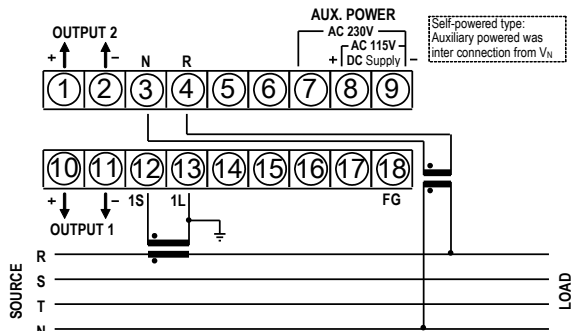
Watt / Var / Watt & Var - 3Φ4W (Unbalanced Load)



Watt / Var / Watt & Var - 3Φ3W (balanced Load)

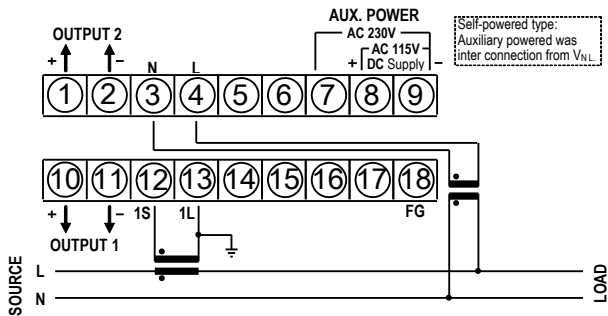


Watt / Var / Watt & Var - 3Φ4W (balanced Load)



CONNECTION DIAGRAM

Watt / Var / Watt & Var - 1Φ2W (Unbalanced Load)



ORDERING INFORMATION

C Input Type — Connection — Input — Input Freq. — Output — Aux. Power

CODE	INPUT TYPE
W	Watt
Q	Var
WQ	Watt & Var

CODE	CONNECTION
12	1P2W Unbalanced
13	1P3W Unbalanced
33	3P3W Unbalanced
34	3P4W Unbalanced
35	3P3W Balanced
36	3P4W Balanced

CODE	INPUT RANGE
A1	0 ~ 1 A
A5	0 ~ 5 A
AA	0 ~ 10A(Option)
V1	110V or 120 V
V2	220V or 240V
V3	380V or 416V
V4	110V _{LL} -63.5V _{LN} or 120V _{LL} -69.3V _{LN}
V5	190V _{LL} -110V _{LN} or 208V _{LL} -120V _{LN}
V6	380V _{LL} -220V _{LN} or 416V _{LL} -240V _{LN}
V7	220V-110V(1P3W)
AO VO	Specify(A or V o/p)

*V4, V5, V6 will be selected in 3P4W connection.

CODE	INPUT FREQ.
5	50Hz ±3Hz
6	60Hz ±3Hz
F	Specify

CODE	OUTPUT	CODE	OUTPUT
A1	0 ~ 1 mA	V1	0 ~ 1 V
A2	0 ~ 5 mA	V2	0 ~ 5 V
A3	0 ~ 10 mA	V3	0 ~ 10 V
A4	0 ~ 20 mA	V4	1 ~ 5 V
A5	4 ~ 20 mA	V5	0 ~ 0.5 ~ 1V
A6	0 ~ 0.5 ~ 1mA	V6	0 ~ 2.5 ~ 5V
A7	0 ~ 5 ~ 10mA	V7	0 ~ 5 ~ 10V
A8	0 ~ 10 ~ 20mA	V8	1 ~ 3 ~ 5V
A9	4 ~ 12 ~ 20mA	V9	-1 ~ 0 ~ +1V
AA	-1 ~ 0 ~ +1mA	VA	-5 ~ 0 ~ +5V
AB	-5 ~ 0 ~ +5mA	VB	-10 ~ 0 ~ +10V
AC	-10 ~ 0 ~ 10mA	VO	Specify(V o/p)
AD	-20 ~ 0 ~ 20mA	AO	Specify(mA o/p)

CODE	AUX. POWER
A1	AC 115/230 V
A2	AC 380 V
A3	AC 416 V
D2	DC 24 V
D1	DC 110 V
D3	DC 220 V
AS	Self Powered
DO	Specify DC
AO	Specify AC

*If the output range above have a middle point., (EX. A9: 4~12~20mA), it means bi-polar output.