

AC WATT / VAR TRANSDUCER

CW/CQ

► FEATURES

- Measures Watts, Vars or both Watts & Vars (Dual output)
- 1P2W, 1P3W, 3P3W, 3P4W Balanced or Unbalanced systems
- 0.2% fs Accuracy and 4kV/1min dielectric strength
- Output range programmable by dip-switch
- Low output ripple
- High impulse & Surge protection
- High stability & low cost



0.2% Accuracy

► SPECIFICATION

INPUT: Watt / Var

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

* The maximum inputs are 450V and 10A. If the input over this level please connect with CT or VT to the transducer.
* V_{LL} means Voltage of line to line; V_{LN} means Voltage of line to neutral.
* Basic ref. value are secondary values of VT & CT converted to Watts/Vars

OUTPUT: Programming by Dip Switch

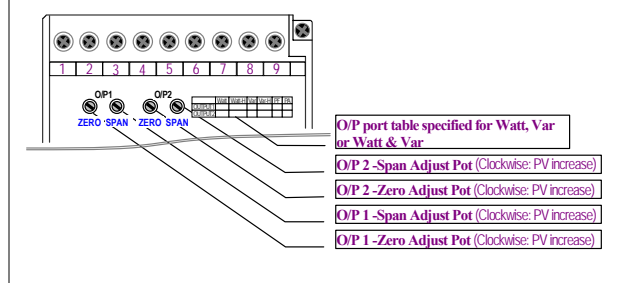
Output Range	Load Resistance	Output Resistance	Output Ripple	
0 ~ 1 V / 0 ~ 0.5 ~ 1 V	$\geq 50 \text{ ohm}$	$\approx 0.001 \text{ ohm}$	$\leq 0.2\%$ of F.S.	
0 ~ 5 V / 0 ~ 2.5 ~ 5 V	$\geq 250 \text{ ohm}$			
0 ~ 10 V / 0 ~ 5 ~ 10 V	$\geq 500 \text{ ohm}$			
1 ~ 5 V / 1 ~ 3 ~ 5 V	$\geq 250 \text{ ohm}$			
-1 ~ 0 ~ 1 V	$\geq 75 \text{ ohm}$			
-5 ~ 0 ~ +5 V	$\geq 375 \text{ ohm}$			
-10 ~ 0 ~ +10 V	$\geq 750 \text{ ohm}$			
0 ~ 1 mA / 0 ~ 0.5 ~ 1 mA	0 ~ 15K ohm			$\geq 20\text{M ohm}$
0 ~ 5 mA	0 ~ 3000 ohm			$\geq 6\text{M ohm}$
0 ~ 10 mA / 0 ~ 5 ~ 10 mA	0 ~ 1500 ohm			
0 ~ 20 mA / 0 ~ 10 ~ 20 mA	0 ~ 750 ohm	$\geq 20\text{M ohm}$		
4 ~ 20 mA / 4 ~ 12 ~ 20 mA	0 ~ 750 ohm			
-1 ~ 0 ~ +1 mA	0 ~ 11K ohm	$\geq 6\text{M ohm}$		
-5 ~ 0 ~ +5 mA	0 ~ 2200 ohm			
-10 ~ 0 ~ +10 mA	0 ~ 1100 ohm			
-20 ~ 0 ~ +20 mA	0 ~ 550 ohm			

- Accuracy :** $\leq \pm 0.2\%$ of F.S.
- Waveform effect:** $\leq 0.2\%$ 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
- Input frequency** 50 Hz ± 3 Hz, 60 Hz ± 3 Hz
- Response time:** ≤ 250 msec.
- Span adjustment:** $\leq \pm 5\%$ of F.S. (or $\pm 20\%$ of F.S. specify)
- Zero adjustment:** $\leq \pm 2\%$ of F.S. (or $\pm 20\%$ of F.S. specify)
- Output load effect:** Current output $\leq 0.1\%$ of F.S.
Voltage output $\leq 0.05\%$ of F.S.
- Power supply:** AC 115/230V $\pm 15\%$, 50/60 Hz
AC 380 or 415V $\pm 15\%$, 50/60 Hz
Option: DC 24V, 48V, 110V, 220V $\pm 10\%$
Self Powered: Interior connection from input volt
Working Volt: $\pm 15\%$ rated of input voltage
- Power effect:** $\leq 0.05\%$ of F.S.
- Power consumption:** $\leq 4\text{VA}$

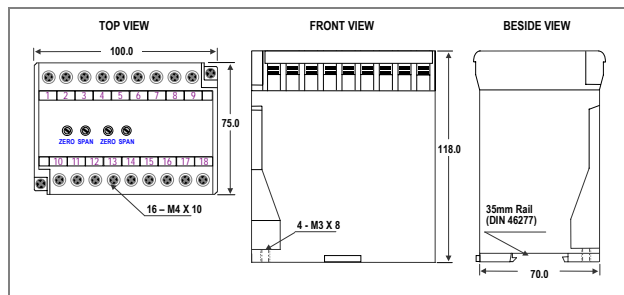
- Mutual interference effect:** $\leq 0.1\%$ of F.S. between each element
- Magnetic field strength:** 400ATM $\leq 0.2\%$ of F.S.
- Operating temperature:** 0-60 °C
- Operating relative humidity:** 20-95 %RH, non-condensing
- Temperature coefficient:** ≤ 100 PPM/°C
- Storage temperature:** -10-70 °C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

► ADJUSTMENT

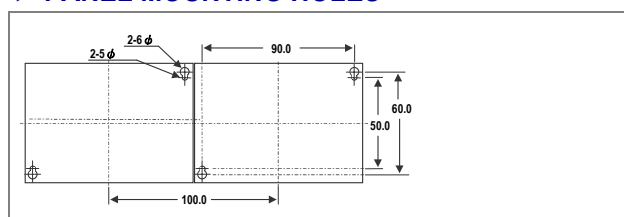
- Watt / Var / Watt & Var:



► DIMENSIONS



► PANEL MOUNTING HOLES



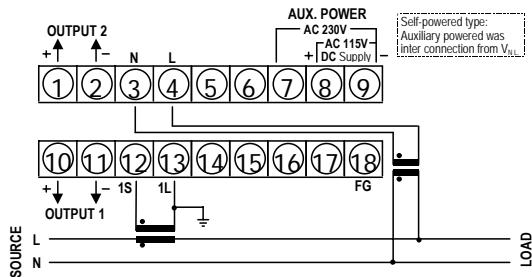
► OUTPUT RANGE PROGRAMMING

OUTPUT	pcb no. WQHP2-2										JUMPER	
	1	2	3	4	5	6	7	8	9	10	CN10	CN11
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				on				
1 ~ 5 V	on	on	on	on				on				
2 ~ 10 V	on	on	on	on				on				
0 ~ 0.5 ~ 1 V		on	on	on				on	on	on		
0 ~ 2.5 ~ 5 V		on	on	on				on	on	on		
0 ~ 5 ~ 10 V		on	on	on				on	on	on		
1 ~ 3 ~ 5 V	on	on	on	on				on	on	on		
2 ~ 6 ~ 10 V	on	on	on	on				on	on	on		
-1 ~ 0 ~ +1 V		on	on	on				on				
-5 ~ 0 ~ +5 V		on	on	on				on				
-10 ~ 0 ~ +10 V		on	on	on				on				

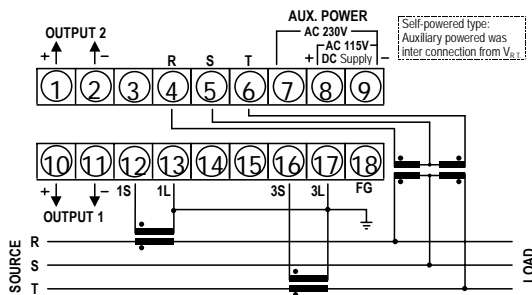
* JUMPER: (1) * closed by jumper. (2) blank fields mean open.

► CONNECTION DIAGRAM

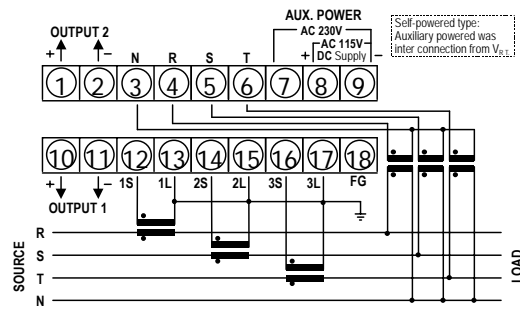
• Watt / Var / Watt & Var - 1Φ2W (Unbalanced Load)



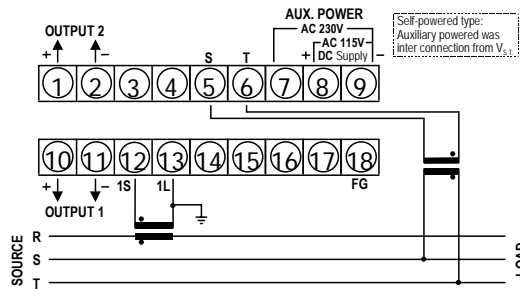
• Watt / Var / Watt & Var - 3Φ3W (Unbalanced Load)



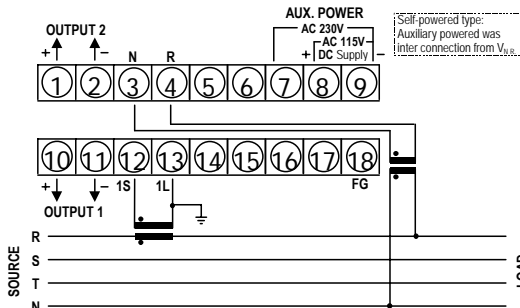
• Watt / Var / Watt & Var - 3Φ4W (Unbalanced Load)



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



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



► ORDER CODING

