LW/LQ AC Watt / Var Transducer

■ FEATURES

- Measuring Watts, Vars or Watts & Vars
- 1P2W, 1P3W, 3P3W, 3P4W Balanced or Unbalanced systems
- Precision measurement even for distorted waveforms with our True RMS option
- Output range programmable by dip-switch
- Low output ripple
- High impulse & surge protection
- High stability & low cost

■ SPECIFICATIONS

INPUT: Watt / Var

Connection	AC Input		Basic Ref. Value Watt or Var	Input Burden
	Voltage	Current		
1P2W	110V or 120V	5A (1A)	± 0.5 K (± 0.1K)	≦0.10VA or ≦0.15VA
	220V or 240V		± 1.0 K (± 0.2K)	
1P3W	220V-110V		± 1.0 K (± 0.2K)	
3P3W	110V or 120V		± 1.0 K (± 0.2K)	
	220V or 240V		± 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 $415V_{LL}$-$240V_{LN}$		± 3.0 K (± 0.6K)	

* The maximum input is 450V and 5A as standard (10A option), if the input is above this level then a CT or VT needs to be connected to the transducer.
* V_{ll} means Voltage line to line; V_{ln} means Voltage line to neutral.
* The basic reference value is based on the VT & CT secondaries.

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	≧500Ω	≦0.001Ω	≦0.2% of F.S.
0 ~ 5 V / 0 ~ 2.5 ~ 5 V	≧500Ω		
0 ~ 10 V / 0 ~ 5 ~ 10 V	≧1000Ω		
1 ~ 5 V / 1 ~ 3 ~ 5 V	≧500Ω		
0 ~ 1 mA / 0 ~ 0.5 ~ 1 mA	0 ~ 12KΩ	≧20MΩ	
0 ~ 5 mA	0 ~ 2400Ω	≧6MΩ	
0 ~ 10 mA / 0 ~ 5 ~ 10 mA	0 ~ 1200Ω		
0 ~ 20 mA / 0 ~ 10 ~ 20 mA	0 ~ 600Ω		
4 ~ 20 mA / 4 ~ 12 ~ 20 mA	0 ~ 600Ω		

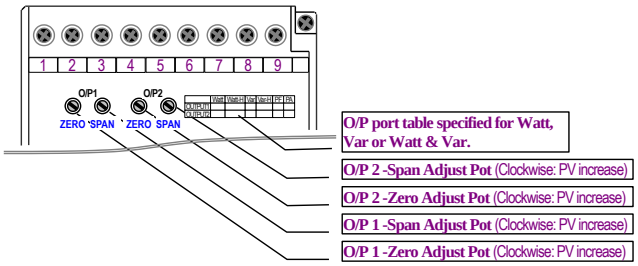
Accuracy: ≦ ±0.5% of F.S.
Waveform effect: ≦ 0.2% of F.S. at 30% distortion
Max. input over capability: Voltage: 1.5 x rated continuous
2 x rated for 10 seconds
4 x rated for 2 seconds
Current: 3 x rated continuous
10 x rated for 10 seconds
50 x rated for 1 second
Input frequency: 50 Hz ±3 Hz, 60 Hz ±3 Hz
Response time: ≦250 mS
Span adjustment: ≦±5% of F.S.
Zero adjustment: ≦±2% of F.S.
Output load effect: Current output≦0.1% F.S.
Voltage output≦0.05% F.S.
Power supply: ADH: 85~264V AC; 100~300V DC
ADL: 20~56V AC/DC
Self-Powered: Internal connection from input
Working voltage: ±15% rated of input voltage

Power effect: ≦0.05% F.S.
Power consumption: ≦8VA
Mutual interference effect: ≦0.1% between each element
Magnetic field strength: 400ATM ≦0.2% of F.S.
Operating temperature: 0~60℃
Operating relative humidity: 20~95 %RH, non-condensing
Temperature coefficient: ≦100 PPM/℃

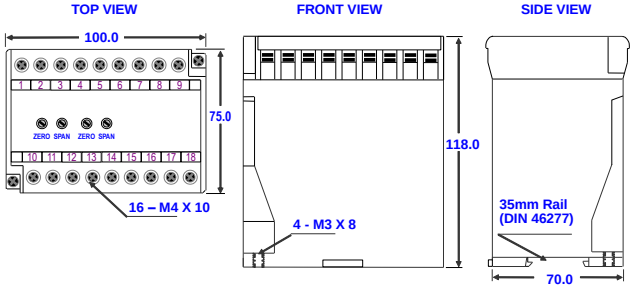
Storage temperature: -10~70 ℃
Surge test: IEC 414, IEC 688:1992, ANSI C37.90a
Input / Output / Power / Case
AC 3KV, 50/60Hz, 1 minute
IEC 255-4, ANSI C37.90a
6KV, 1.2 x 50 µsec.
Common mode & differential mode
Insulation resistance: ≧100MΩ, DC 500V
Safety: IEC 414, BS 5458
Enclosure: IEC 529 (IP50)
Performance: IEC 60688
CE: EMC: EN61326:2003
LVD: EN61010:2001
Case material: ABS Non-flammable (UL 94V-0)
Mounting: Wall or DIN rail (EN 50022)
Weight: Approx. 750g

■ ADJUSTMENT

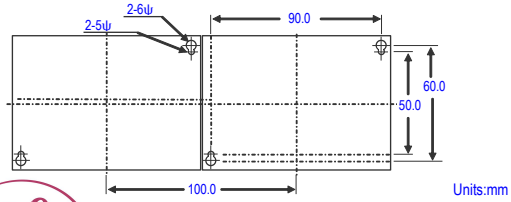
Watt / Var / Watt & Var:



■ DIMENSIONS



■ PANEL MOUNTING HOLES



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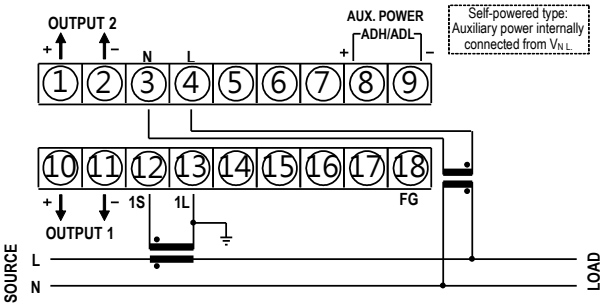
OUTPUT RANGE PROGRAMMING

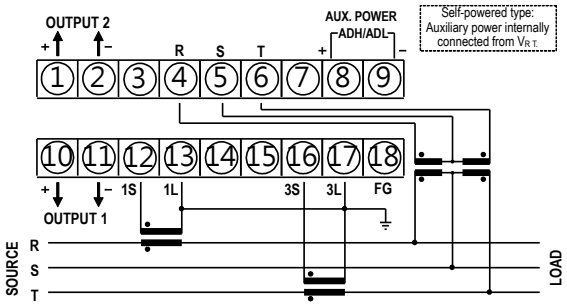
OUTPUT	Internal PCB Reference #WQHP2-2 DIP SWITCH									
	1	2	3	4	5	6	7	8	9	10
0 ~ 1 mA					on					
0 ~ 5 mA					on	on				on
0 ~ 10 mA					on	on				
0 ~ 20 mA					on		on			
4 ~ 20 mA	on				on		on			
0 ~ 0.5 ~ 1 mA					on				on	on
0 ~ 5 ~ 10 mA					on	on			on	on
0 ~ 10 ~ 20 mA					on		on		on	on
4 ~ 12 ~ 20 mA	on				on		on		on	on
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

CONNECTION DIAGRAM

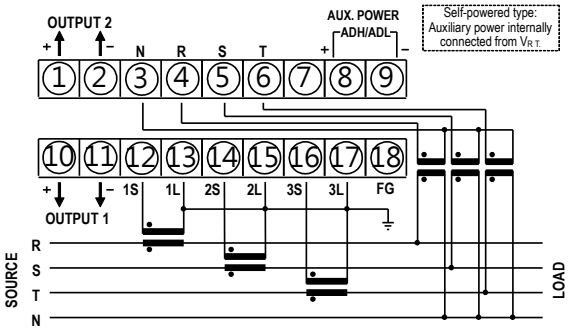
- **Watt / Var / Watt & Var - 1Φ2W (Unbalanced Load)**



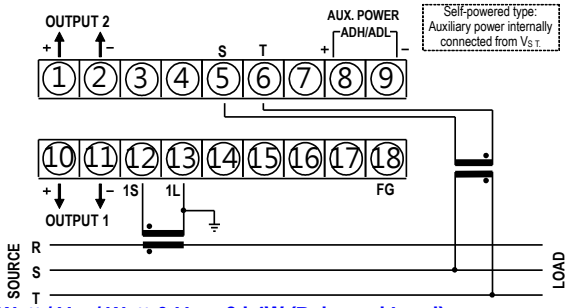
- **Watt / Var / Watt & Var - 3Φ3W (Unbalanced)**



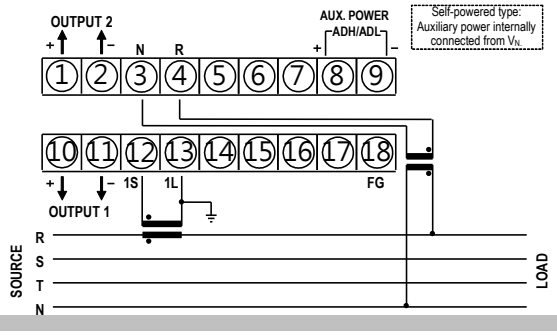
- **Watt / Var / Watt & Var - 3Φ4W (Unbalanced Load)**



- **Watt / Var / Watt & Var - 3Φ3W (Balanced Load)**



- **Watt / Var / Watt & Var - 3Φ4W (Balanced Load)**



ORDERING INFORMATION

L — 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
	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} or415V_{LL} - 240V_{LN}
	V7	220V-110V(1P3W)
AO	VO	Specify (A or V)

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	VC	2 ~ 6 ~ 10V
AO	Specify (mA)	VO	Specify (V)

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

CODE	AUX. POWER
ADH	85~264V AC 100~300V DC
ADL	20~56V AC/DC
AS	Self-Powered

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