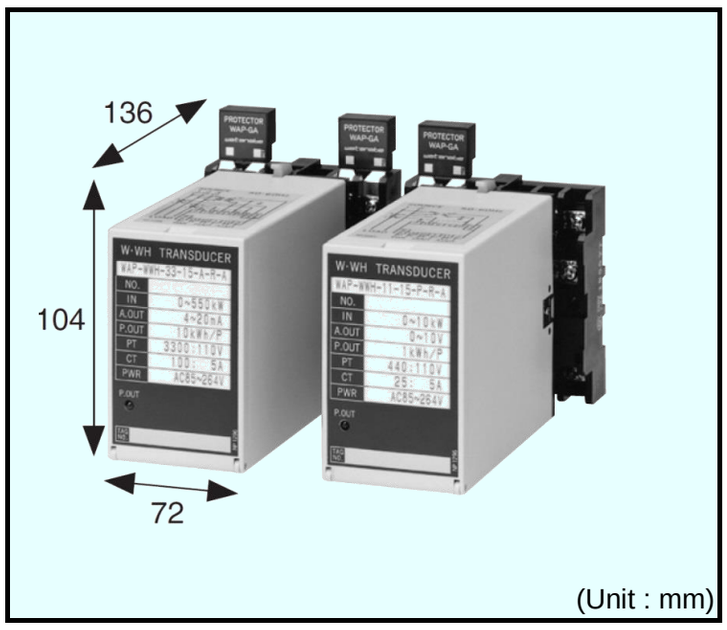
Power / Electric Energy Converter with Integrating Pulse Output

WAP-WWH



(Unit : mm)

This plug-in signal converter inputs AC voltage and current and outputs the power as DC signal and electric energy as a unit pulse.
current output.
WAP-WWH can monitor instantaneous power and integral power of the lights and machines at the same time.

Features

★ Measurable from 0% of rating.
★ Dielectric strength of 2000Vac between input, outputs and power supply.
★ Accurate measurement of distorted waves at RMS measuring.
★ Both AC and DC power supply are available.
★ Easy to maintain by plug-in structure.

Ordering code

WAP- WWH - □□ - □□ □T - □

Code	Distribution system
11	Single-phase 2 wire 50/60Hz
13	Single-phase 3 wire 50/60Hz
33	Three-phase 3 wire 50/60Hz

Code	Rated input	Power consumption
01	100Vac 1A	Voltage : approx. 0.10VA per phase
05	100Vac 5A	Current : approx. 0.75VA per phase
11	110Vac 1A	Voltage : approx. 0.11VA per phase
15	110Vac 5A	Current : approx. 0.75VA per phase
21	220Vac 1A ＊1	Voltage : approx. 0.22VA per phase
25	220Vac 5A ＊1	Current : approx. 0.75VA per phase

＊1･･･Cannot make when Single-phase 3wire.
(Rated input 220Vac)

Code	Output	Allowable Load
A	4 to 20mAdc	500Ω or less
D	0 to 1mAdc	10kΩ or less
E	0 to 10mAdc	1kΩ or less
G	0 to 20mAdc	500Ω or less
H	1 to 5Vdc	2.5kΩ or more
K	0 to 100mVdc	100kΩ or more
L	0 to 1Vdc	500Ω or more
N	0 to 5Vdc	2.5kΩ or more
P	0 to 10Vdc	5kΩ or more
R	±10Vdc	5kΩ or more
S	Contact us for other than the above Current output 20mA or less Voltage output 10V or less	

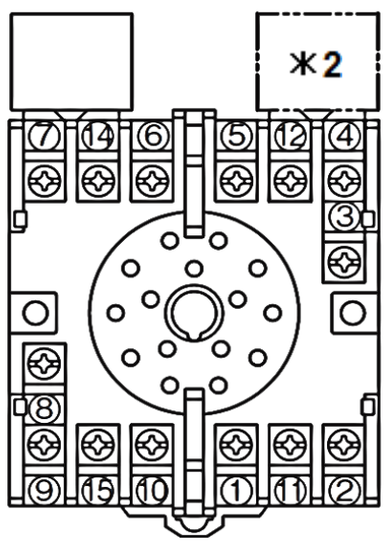
Code	Power Supply
A	85 to 264Vac 50/60Hz
8	110Vdc ±10%

Code	Unit pulse output
T	Open collector

★ Items to specify when you order

1) Model code
2) Primary side measurement electricity :
e.g. 0 to 10kW
3) Unit pulse : e.g. 1kWh per pulse
(Select from the Unit pulse list on the next page)
4) PT / CT ratio : e.g. 440 / 110V, 15 / 5A

Terminal connections



No	1 phase 2 wire	1 phase 3 wire	3 phase 3 wire
1	P-	P-	P-
2	A-	A-	A-
3		P1	P1
4	P1	1S	1S
5		P0	P2
6		P2	P3
7	1L	2L	3L
8			
9	U(+)	U(+)	U(+)
10	P+	P+	P+
11	A+	A+	A+
12	P2	1L	1L
14	1S	2S	3S
15	V(-)	V(-)	V(-)

＊2･･･Protector
Standard equipment only if single-phase 3 wire or three-phase 3 wire.

Specifications

Operating principles	Time-division multiplication system
Accuracy	Power : ±0.5% FS (cosθ= -0.5 to 1 to +0.5) (at 23 ±2°C) Electric energy : ±0.5%
Influence of frequency	±0.1% / 45 to 65Hz
Influence of power supply variation	±0.1% / 85 to 264Vac, 110Vdc ±10%
Output ripple	1% (p-p) or less
Allowable load resistance	Current output 10V or less of voltage drop between output Voltage output Load current 2mA or less For 1V FS or less of output the current is 1μA or less
Response time	1s or less (0 to 90%)
Effective measuring range	Voltage : 0 to 120% Current : 0 to 120%
Allowable excessive input	Voltage : 150% 10 seconds Current : 1000% 3 seconds
Zero adjustment	±5% FS
Span adjustment	±10% FS
Operating temperature	-5 to +55°C
Operating relative humidity	90% or less (non-condensing)
Temperature coefficient	±0.015% FS of span per °C
Dielectric strength	2000Vac for 1 minute
Power consumption	Approx. 4VA (AC), Approx. 2W (110Vdc)
Unit pulse output	Measuring : forward Time of ON output : 100ms
Open collector	Output capacity : 55Vdc 50mA (Max.) Saturation voltage : 0.4V/Ic1mA (Max.) Leakage current : 100nA/24Vdc (Max.) Life span : semipermanent
Protector	Standard equipment on current input terminal
Dimensions	104(H) X 72(W) X 136(D)mm
Weight	Approx. 400g
Structure	Plug-in
Connection	M3.5 SEMS screw part of the base socket
Material of terminal screw	Chromated iron
Case color and material	Ivory, heat-resistant ABS resin
Mounting	DIN rail or wall surface

Product range

1) Single-phase 2 wire

Rated value	standard electric energy measurement	Product range
100Vac / 1A, 110Vac / 1A	100W	±50 to ±120W FS
100Vac / 5A, 110Vac / 5A	500W	±250 to ±600W FS
220Vac / 1A	200W	±100 to ±240W FS
220Vac / 5A	1000W	±500 to ±1200W FS

2) Single-phase 3 wire

Rated value	standard electric energy measurement	Product range
100Vac / 1A, 110Vac / 1A	200W	±100 to ±240W FS
100Vac / 5A, 110Vac / 5A	1000W	±500 to ±1200W FS

3) Three-phase 3 wire

Rated value	standard electric energy measurement	Product range
100Vac / 1A, 110Vac / 1A	200W	±100 to ±240W FS
100Vac / 5A, 110Vac / 5A	1000W	±500 to ±1200W FS
220Vac / 1A	400W	±200 to ±480W FS
220Vac / 5A	2000W	±1000 to ±2400W FS

When PT and CT is external

Input to Power converter (W) = $\frac{\text{Primary power measurement}}{\text{(PT ratio) x (CT ratio)}}$

Please check the caluculated input value above is in the range of product range.

Unit pulse list

Please select unit pulse output for integration according to the total load power from the list below.

Rated value	Unit pulse output kWh / pulse	
	Standard	Manufacturable
to 9kW	0.1	0.01, 1
10 to 99kW	1	0.1, 10
100 to 999kW	10	1, 100
1,000 to 9,999kW	100	10, 1,000
10,000 to 99,999kW	1,000	100, 10,000
100,000 to 999,999kW	10,000	1,000, 100,000

1) Single-phase 2 wire

Total load power (kW) = Rated voltage(V) x Rated current(A) x 10^{-3}

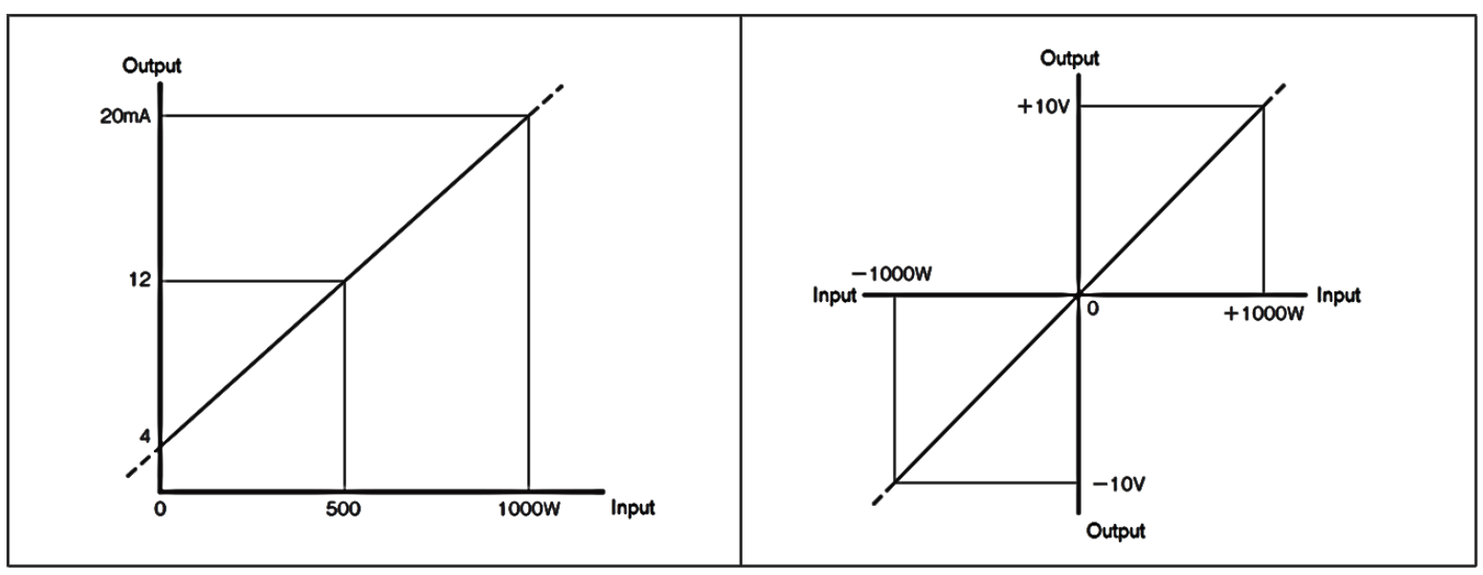
2) Single-phase 3 wire

Total load power (kW) = 2 x Rated voltage(V) x Rated current(A) x 10^{-3}

3) Three-phase 3 wire

Total load power (kW) = $\sqrt{3}$ x Rated voltage(V) x Rated current(A) x 10^{-3}

Relation between input / output signal



∗ Specification is subject to change without notice