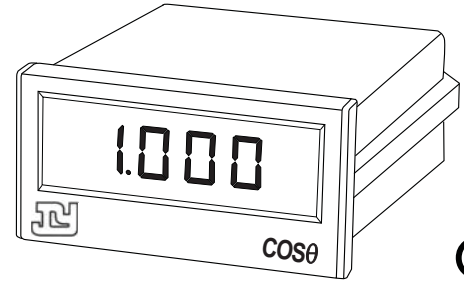




FEATURES

- Resolution 0.001 COS θ , 0.1°
- Precision measurement even for unbalance system
- Easy-to-wire. screw-type terminals
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

Model: J-496P for Power Factor meter
J-496U for Phase Angle meter

• Input

Circuit	AC Input		Display
	Voltage	Ampere	
Single Phase	110V	5A • 1A	-0.5 ~ 1 ~ 0.5 (COS θ) or -60° ~ 0 ~ 60° (ϕ)
	220V		
3-Phase, 3-Wire	110V		
	220V		
3-Phase, 4-Wire	$\sqrt{3}$ 110V/110V		
	$\sqrt{3}$ 220V/220V		

Display 14.2mm (0.56") H, red LED

Max. input over capability Amp. 3 x rated continuous
10 x rated 30 seconds
50 x rated 1 second
Volt. 750V continuous

Accuracy $\pm 0.5\%$ F.S. $\pm 0.3^\circ$
(Option: Depending on actual measuring)

Input burden Volt. input ≤ 0.5 VA/Phase
Amp. Input ≤ 0.1 VA/Phase

Input frequency range 45 ~ 70HZ

Sampling time Abt. 0.8 sec.

Polarity "-" is LEAD side
Bank is LAG side

Aux. power source AC/DC 85 ~ 265V
DC 20 ~ 60V

Power consumption \leq AC 6.5 VA, \leq DC 5W

Operating temperature range 0 ~ 60°C

Storage temperature range -10 ~ 70°C

Max. relative humidity 95%

Dielectric strength (IEC 60688) AC 2KV/1 minute
Input to power terminals
AC 3KV/1 minute
All terminals to case

Connection diagram See page 23, figure G.

Dimensions See page 23, figure 01.

• Electromagnetic compatibility

Electrostatic discharge IEC 61000-4-2

Electromagnetic fields immunity IEC 61000-4-3

Electrical transient in burst IEC 61000-4-4

Withstanding impulse voltage IEC 61000-4-5

Immunity to voltage dips IEC 61000-4-11

ORDERING INFORMATION

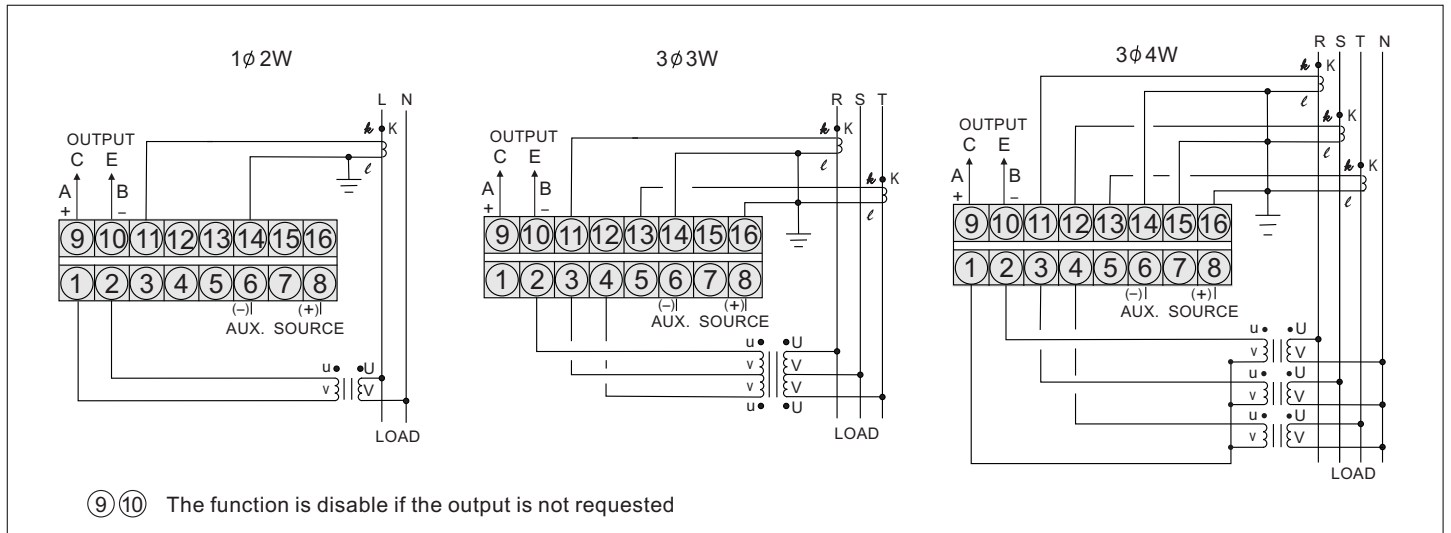
J-496P -
J-496U -



Circuit	Input Voltage	Input Current	Aux. Power Source
12: single phase, 2-wire 13: single phase, 3-wire 33: 3-phase, 3-wire 34: 3-phase, 4-wire	1: AC 110V 2: AC 220V 3: AC $\sqrt{3}$ 110V/110V 4: AC $\sqrt{3}$ 220V/220V 0: Option	A: AC 5A B: AC 1A 0: Option	1: AC/DC 85 ~ 265V 2: DC 20 ~ 60V 0: Option

CONNECTION DIAGRAMS

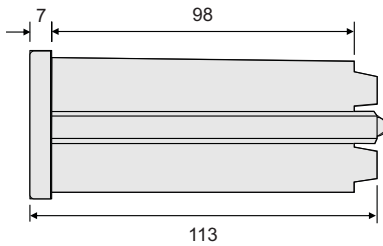
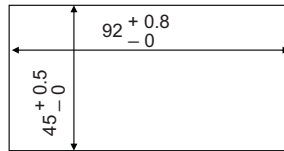
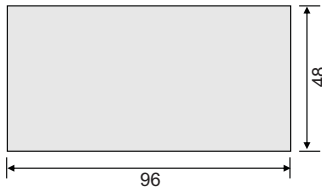
Figure G.



OUTSIDE DIMENSION (UNIT:mm)

Figure 01.

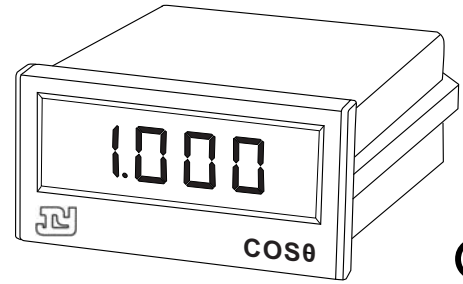
• PANEL CUT-OUT





FEATURES

- Resolution 0.001 COS θ
- Precision measurement even for unbalance system
- Input/Output/Power/Case is isolated
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

• Input

Circuit	AC Input		Display
	Voltage	Ampere	
Single Phase	110V	5A • 1A	-0.5 ~ 1 ~ 0.5 (COS θ)
	220V		
3-Phase, 3-Wire	110V		
	220V		
3-Phase, 4-Wire	$\sqrt{3}$ 110V/110V		
	$\sqrt{3}$ 220V/220V		

• Output

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
- 1 ~ 0 ~ 1V	$\geq 1K\Omega$	$\leq 0.05\Omega$	$\leq 0.5\%$ R.O. (Peak)	$\leq 400mS$ 0 ~ 99%
- 5 ~ 0 ~ 5V				
1 ~ 3 ~ 5V				
0 ~ 5 ~ 10V				
- 1 ~ 0 ~ 1mA	0 ~ 10K Ω	$\geq 20M\Omega$		
- 10 ~ 0 ~ 10mA	0 ~ 1K Ω			
0 ~ 10 ~ 20mA	0 ~ 500 Ω	$\geq 5M\Omega$		
4 ~ 12 ~ 20mA				

• Communication

Interface..... RS 485
 Protocol MODBUS, RTU framing
 Baud rate 1200 ~ 38400
 Address range 1 ~ 255
 Data format N82, O81, E81, N81

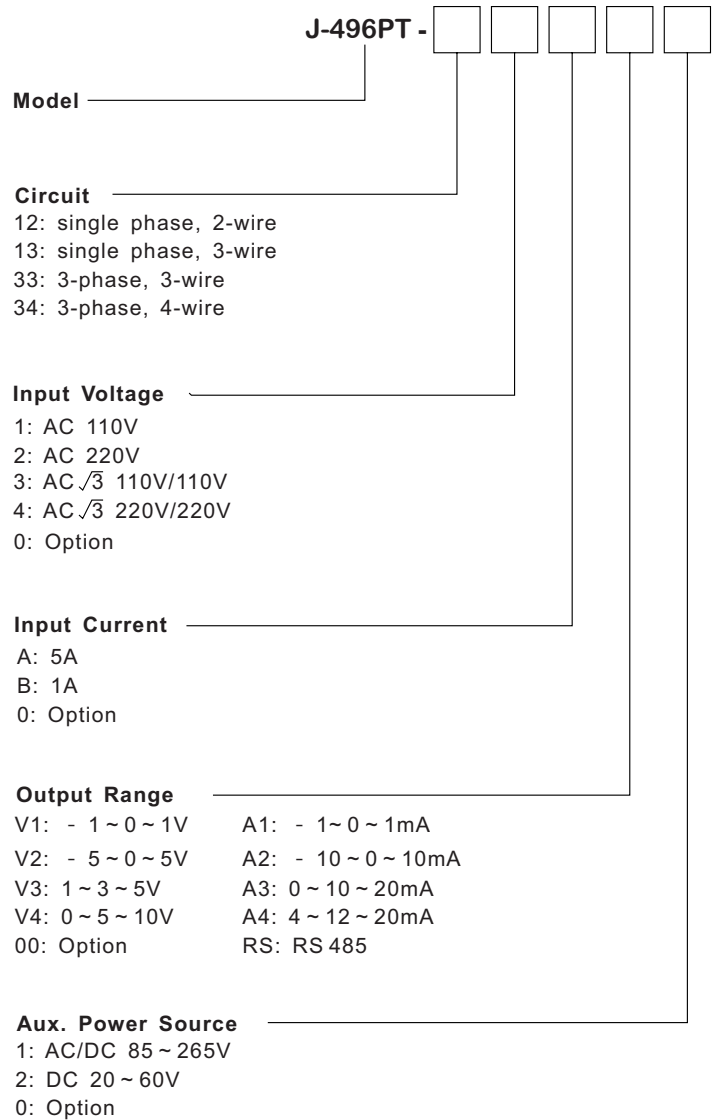
• General

Display 14.2mm (0.56") H, red LED
 Max. input over capability..... Amp. 2 x rated continuous
 10 x rated 30 seconds
 Volt. 1.5 x rated continuous
 Accuracy $\pm 0.5\%$ F.S. $\pm 0.3^\circ$, indicator
 $\pm 0.5\%$ RO. $\pm 0.3^\circ$, output
 Input burden Volt. input ≤ 0.5 VA/Phase
 Amp. Input ≤ 0.1 VA/Phase
 Input frequency range..... 45 ~ 70Hz
 Sampling time Abt. 0.8 sec.
 Polarity display "-" is LEAD side, Blank is LAG side
 Aux. power source AC/DC 85 ~ 265V
 DC 20 ~ 60V
 Power consumption..... $\leq AC$ 6.5VA, $\leq DC$ 5W
 Waveform effect..... ≤ 0.02 PF
 Output load effect $\leq 0.05\%$ RO.
 Magnetic field strength ≤ 0.02 PF, 400A/M.
 Operating temperature range..... 0 ~ 60 $^\circ C$
 Storage temperature range..... - 10 ~ 70 $^\circ C$
 Max. relative humidity 95%
 Dielectric strength (IEC 60688)..... AC 2KV/1 minute
 Input/output/power terminates
 AC 3KV/1 minute
 All terminals to case
 Connection diagram..... See page 23, figure G.
 Dimensions See page 23, figure 01.

• Electromagnetic compatibility

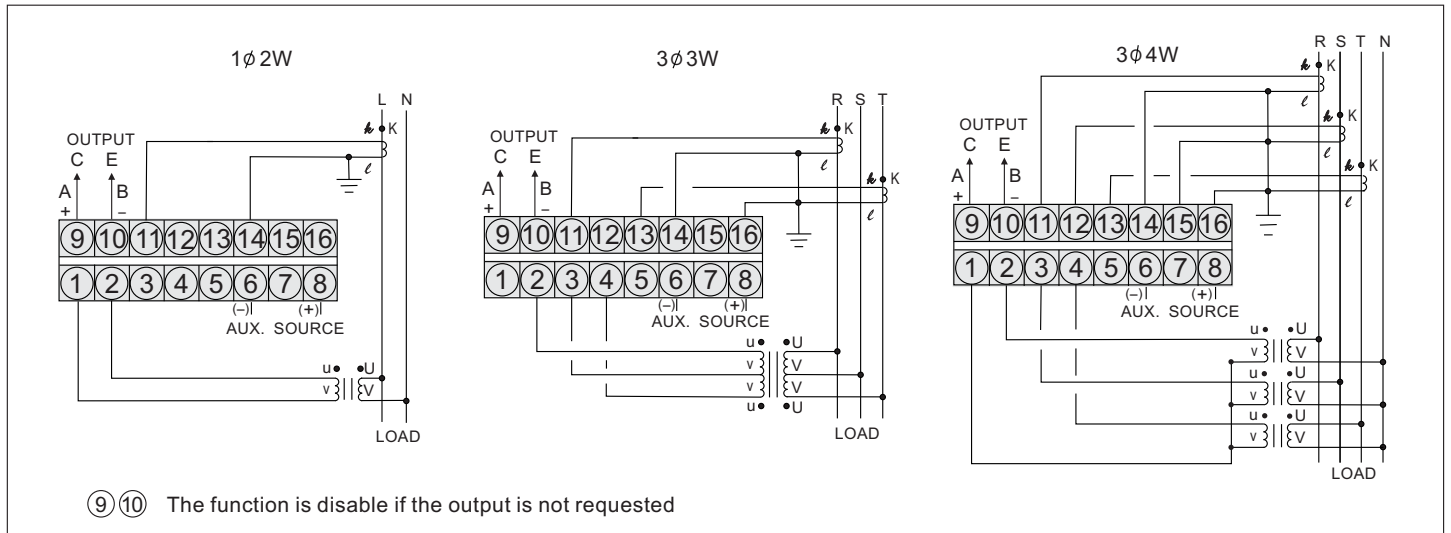
Electrostatic discharge..... IEC 61000-4-2
 Electromagnetic fields immunity IEC 61000-4-3
 Electrical transient in burst IEC 61000-4-4
 Withstanding impulse voltage..... IEC 61000-4-5
 Immunity to voltage dips IEC 61000-4-11

ORDERING INFORMATION



CONNECTION DIAGRAMS

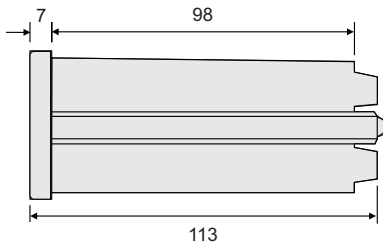
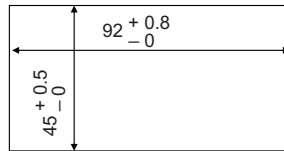
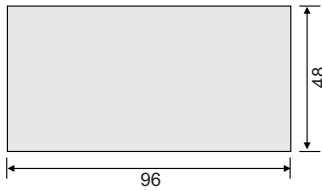
Figure G.



OUTSIDE DIMENSION (UNIT:mm)

Figure 01.

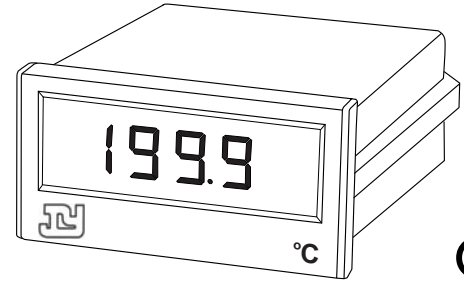
• PANEL CUT-OUT





FEATURES

- Accuracy: $\pm 0.25\%$ to 0.5% F.S.
- Easy-to-wire. screw-type terminals
- Cold junction compensated
- J、K、T、E、R thermocouple selection
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

• Direction Input

Input Mode		Measuring Range	Resolution
T/C	K	-200 ~ 1200°C	1 °C
		-328 ~ 1999°F	1 °F
	J	-200 ~ 754°C	1 °C
		-328 ~ 1390°F	1 °F
	T	-200 ~ 400°C	1 °C
		-328 ~ 752°F	1 °F
	E	-200 ~ 999°C	1 °C
		-328 ~ 1830°F	1 °F
R	0 ~ 1600°C	1 °C	
	0 ~ 1999°F	1 °F	
RTD	Pt-100	-200 ~ 850°C	1 °C
		-328 ~ 1562°F	1 °F
		-199.9 ~ 199.9°C	0.1 °C
		-199.9 ~ 199.9°F	0.1 °F

Display 14.2mm (0.56") H, red LED

Polarity display Only "-" display

Accuracy $\pm 0.25\%$ F.S. ± 1 digit(RTD)
 $\pm 0.5\%$ F.S. ± 0.5 °C(T/C)
(Option: Depending on actual measuring)

Sampling time Abt. 0.8 sec. typically

Over input indication "1"

Aux. power source AC 110V/220V $\pm 15\%$, 50/60Hz
DC 24V, 48V, 110V $\pm 10\%$

Power consumption \leq AC 3VA

Operating temperature range 0~60°C

Storage temperature range -10~70°C

Temperature coefficient ≤ 100 PPM/°C

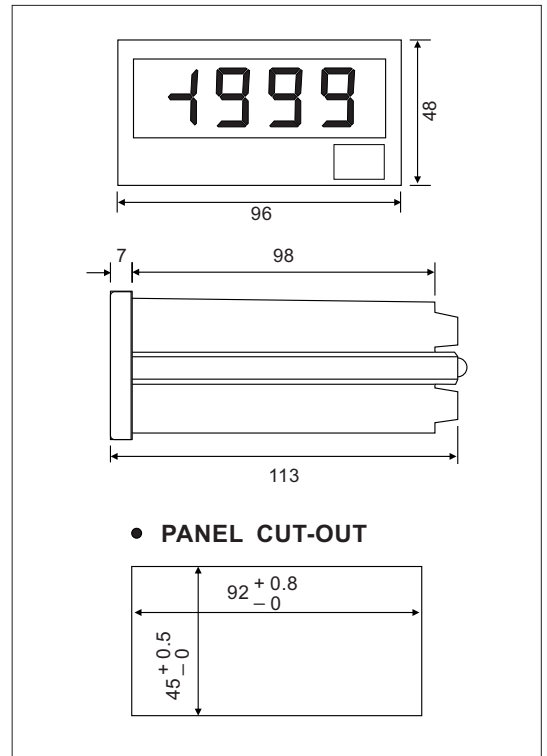
Max. relative humidity 95%

Dielectric strength (IEC 60688) AC 2KV/1 minute
Input to power terminals
AC 3KV/1 minute
All terminals to case

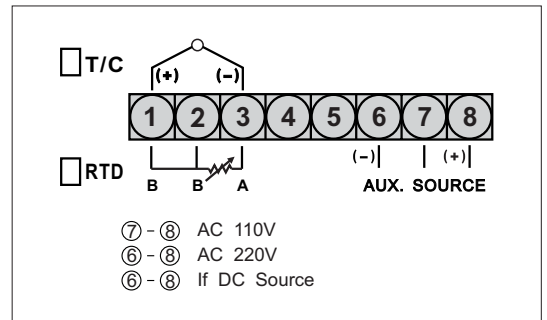
• Electromagnetic compatibility

Withstanding impulse voltage IEC 61000-4-5

OUTSIDE DIMENSION (UNIT:mm)



CONNECTION DIAGRAM



ORDERING INFORMATION

J-496T - □ □ □ □

Type	Measuring Range		DC Output	Aux. Power Source
1: K TYPE	A: -100 ~ 400°C	H: 0 ~ 200°C	V2: 0 ~ 5V	1: AC 110V/220V
2: J TYPE	B: -50 ~ 100°C	I: 0 ~ 300°C	V3: 1 ~ 5V	2: DC 110V
3: T TYPE	C: -50 ~ 50°C	J: 0 ~ 400°C	V4: 0 ~ 10V	3: DC 48V
4: E TYPE	D: -100 ~ 50°C	K: 0 ~ 1000°C	A1: 0 ~ 1mA	4: DC 24V
5: R TYPE	E: -10 ~ 100°C	L: 0 ~ 1200°C	A4: 4 ~ 20mA	0: Option
6: Pt100	F: 0 ~ 50°C	M: 0 ~ 1400°C	N : None	
7: Option	G: 0 ~ 100°C	0: Option	0 : Option	

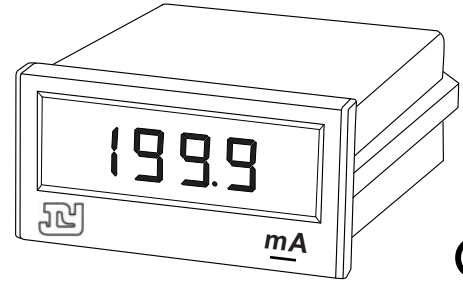
• EXAMPLE

Input mode : Pt 100
 Input temperature : 0 ~ 100°C
 Output : DC 4 ~ 20mA
 Aux. power source : AC 110/220V
 Ordering model : S2-312T-6GA41



FEATURES

- 3 1/2 display: 1999
- Accuracy: ±0.1% to ±0.25%
- Easy-to-wire. screw-type terminals
- Outside dimension is DIN standard (96x48mm)
- Low unit cost



SPECIFICATION

• Direct Input

Variable to be Measured	Measuring Range	Input Impedance	Resolution
DC	199.9μA	1KΩ	0.1μA
	1.999mA	100Ω	0.001mA
	19.99mA	10Ω	0.01mA
	199.9mA	1Ω	0.1mA
	1.999A	0.1Ω	0.001A
AC	15.00A	0.1Ω	0.01A
	199.9mV	≥ 5MΩ	0.1mV
TRMS	1.999V	≥ 1MΩ	0.001V
	19.99V	≥ 1MΩ	0.01V
	199.9V	≥ 1MΩ	0.1V
	750V	≥ 3MΩ	1V

• Ratio Input (Secondary of CT, PT)

Variable to be Measured	Input Range	Input Impedance	Display Range
AC	0~1A	0.1Ω	appointed as primary value of CT, PT
	0~5A	0.1Ω	
TRMS	0~110V	≥ 1MΩ	
	0~220V	≥ 1MΩ	

• Receiving Meter

Variable to be Measured	Input Range	Input Impedance	Display Range
DC	0~50mV	≥ 5MΩ	appointed
	0~60mV	≥ 5MΩ	
AC	0~5V	≥ 1MΩ	
	1~5V	≥ 1MΩ	
TRMS	0~10V	≥ 1MΩ	
	0~1mA	100Ω	
	4~20mA	10Ω	

- Display 14.2mm (0.56") H, red LED
- Max. input over capability Amp. 3 x rated continuous
10 x rated 30 seconds
50 x rated 1 second
Volt. 750V continuous
- Accuracy DC range ± 0.1% F.S. ± 1 digit
AC range ± 0.25% F.S. ± 1 digit
(Option: Depending on actual measuring)
- Measuring mode Dual Slope
- Sampling time Abt. 0.8 sec. typically
- Frequency range 45~400Hz for AC range
- Over input indication "1"
- Polarity Only "-" display
- Aux. power source AC 110V/220V ±15%, 50/60Hz
DC 24V, 48V, 110V ±10%
- Power consumption ≤ AC 3VA, ≤ DC 3W
- Operating temperature range 0 ~ 60°C
- Sensor power supply DC 12V or 24V, 30mA
(Option function)
- Storage temperature range -10 ~ 70°C
- Temperature coefficient ≤ 100PPM/°C
≤ 60PPM/°C, 25°C+10°C
- Max. relative humidity 95%
- Dielectric strength (IEC 60688) AC 2KV/1 minute
Input to power terminals
AC 3KV/1 minute
All terminals to case
- Connection diagram See page 23, figure A.
- Dimensions See page 23, figure 01.
- Electromagnetic compatibility
Withstanding impulse voltage IEC 61000-4-5

ORDERING INFORMATION

J-496 -

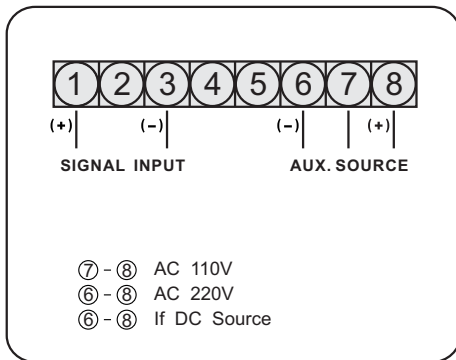
Input Signal	Measuring Range		Aux. Power Source
D: DC	A1: 199.9μA	A7: 0~1A	1: AC 110V/220V
A: AC	A2: 1.999mA	A8: 0~5A	2: DC 110V
T: TRMS	A3: 19.99mA	V6: 0~110V	3: DC 48V
0: Option	A4: 199.9mA	V7: 0~220V	4: DC 24V
	A5: 1.999A	P1: 0~50mV	0: Option
	A6: 15.00A	P2: 0~60mV	
	V1: 199.9mV	P3: 0~5V	
	V2: 1.999V	P4: 1~5V	
	V3: 19.99V	P5: 0~10V	
	V4: 199.9V	P6: 0~1mA	
	V5: 750V	P7: 4~20mA	
	00: Option		

• EXAMPLE

- Measured range : AC 750V
- Aux. power source : AC 110V/220V
- Ordering model : S2-312-AV51
- Measured range : DC 4~20mA
- Display : 0 ~ 100.0%
- Aux. power source : AC 110V/220V
- Ordering model : S2-312-DP71
(appointed display range : 0 ~ 100.0%)

CONNECTION DIAGRAMS

Figure A.

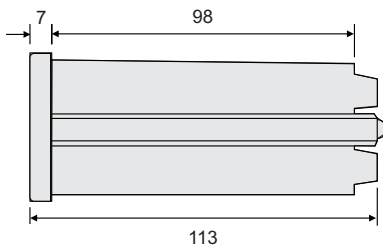
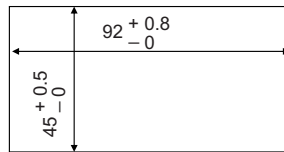


OUTSIDE DIMENSION (UNIT:mm)

Figure 01.



• PANEL CUT-OUT



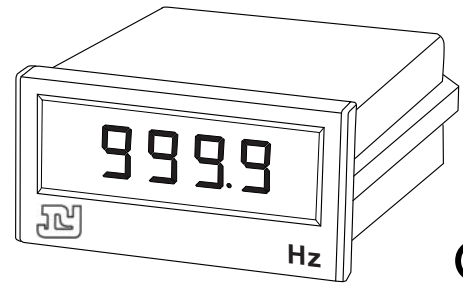


4 DIGITAL FREQUENCY METER

J-4F

FEATURES

- 4 digits display: 9999
- High accuracy: $\pm 0.05\%$
- Easy-to-wire. screw-type terminals
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

● Frequency Input

Measuring Range	Resolution	Input Impedance
99.99Hz	0.01Hz	$\geq 1 M\Omega$
999.9Hz	0.1Hz	
9999Hz	1Hz	

Display.....14.2mm (0.56") H, red LED
 Max. input over capability..... 600V for signal input
 Accuracy..... $\pm 0.05\%$ F.S.
 (Option: Depending on actual measuring)
 Sampling time..... Abt. 1 sec. typically
 Aux. power source..... AC 110V/220V $\pm 15\%$, 50/60Hz
 DC24V,48V,110V $\pm 10\%$
 Power consumption..... AC $\leq 3VA$,DC $\leq 3W$
 Operating temperature range..... 0 ~ 60 °C
 Storage temperature range..... -10 ~ 70 °C
 Temperature coefficient..... $\leq 100ppm/^{\circ}C$
 Max. relative humidity..... 95%
 Dielectric strength (IEC 60688)..... AC 2KV/1 minute
 Input to power terminals
 AC 3KV/1 minute, all terminals to case

● Electromagnetic compatibility

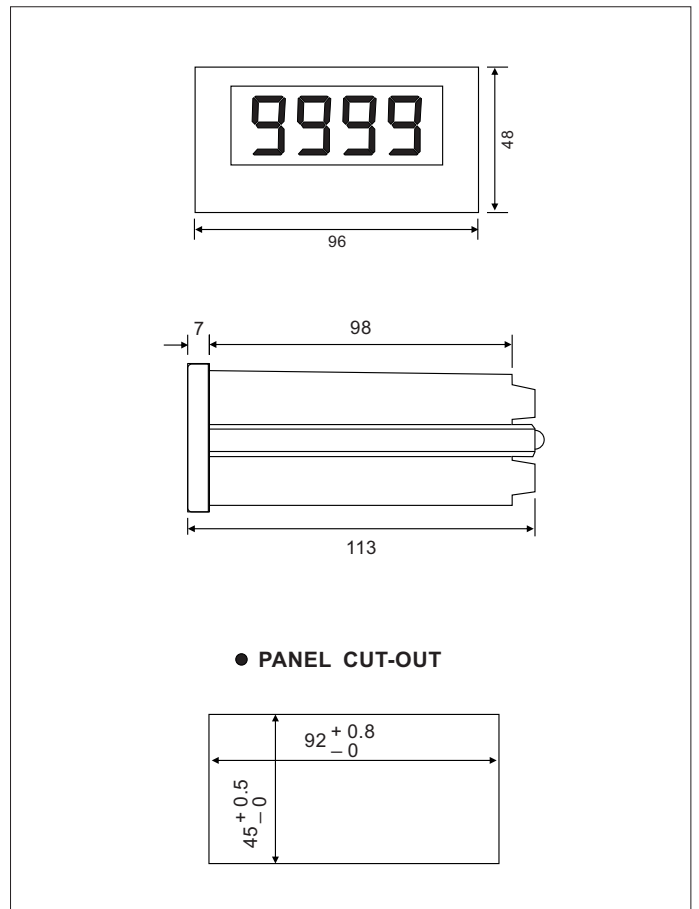
Withstanding impulse voltage.....IEC 61000-4-5

● ORDERING INFORMATION

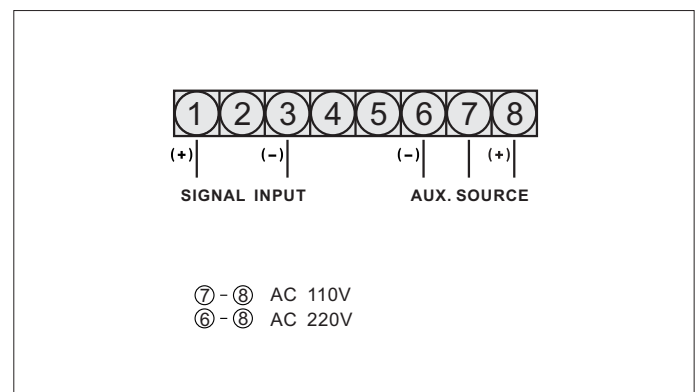
J-4F -

Measuring Range	Input Voltage	Aux. Power Source
1: 99.99HZ 2: 999.9HZ 3: 9999HZ	1: 2 ~ 30V 2: 90 ~ 600V 0: Option	1: AC 110V/220V 0: Option

OUTSIDE DIMENSION (UNIT:mm)



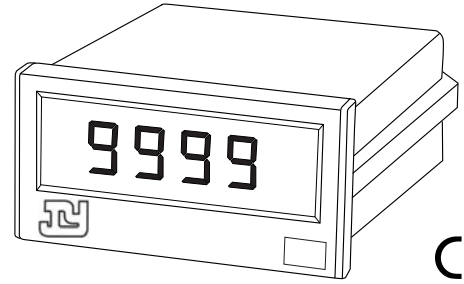
CONNECTION DIAGRAM





FEATURES

- 4 digits display: ± 9999
- Accuracy : $\pm 0.05\%$ to $\pm 0.25\%$
- Measuring adjustment in input sensing deviation
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

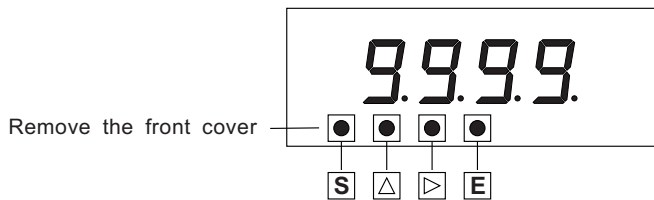
• Input

Variable to be Measured	Input Range	Input Impedance	Display Range
DC	0 ~ 5V	$\geq 1M\Omega$	0 ~ ± 9999 Programmable
	1 ~ 5V	$\geq 1M\Omega$	
	0 ~ 10V	$\geq 1M\Omega$	
	0 ~ 1mA	100 Ω	
	4 ~ 20mA	10 Ω	
AC • TRMS	0 ~ 1A	0.1 Ω	
	0 ~ 5A	0.1 Ω	
	0 ~ 110V	$\geq 1M\Omega$	
	0 ~ 220V	$\geq 1M\Omega$	

• Analog OUTPUT

Output Range	Load Resistance	Output Resistance	Output Ripple
1 ~ 5V	$\geq 1K\Omega$	$\leq 0.05\Omega$	$\leq 0.5\%$ RO. (Peak)
0 ~ 10V			
0 ~ 1mA	0 ~ 10K Ω	$\geq 20M\Omega$	
0 ~ 20mA	0 ~ 500 Ω	$\geq 5M\Omega$	
4 ~ 20mA			

• Display (Programmable process)



- [S]: Press [S] to enter the setting process
 - [Δ]: Press [Δ] to change the value as required
 - [▷]: Press [▷] to move on the LED digit as required
 - [E]: Press [E] to confirm the setting value and function
- * All details on operation must refer to the instruction manual

ORDERING INFORMATION

J-596AT
J-596VT

Input	Measuring Range	Output	Aux. Source	Option	
D: DC A: AC T: TRMS R: Pt100 K: K TYPE 0: Option	P1: 0 ~ 50mV P2: 0 ~ 60mV P3: 0 ~ 5V P4: 1 ~ 5V P5: 0 ~ 10V P6: 0 ~ 1mA P7: 4 ~ 20mA P8: 0 ~ 20mA	A7: 0 ~ 1A A8: 0 ~ 5A V6: 0 ~ 110V V7: 0 ~ 220V T1: 0 ~ 400°C T2: 0 ~ 1200°C 00: Option	V2: 1~5V V4: 0~10V A2: 0~1mA A3: 0~20mA A4: 4~20mA RS: RS 485 NO: None 00: Option	1: AC/DC 85 ~ 265V 2: DC 20V ~ 60V 0: Option	D: Exciting DC 24V N: None

• Communication

Interface RS 485
Protocol MODBUS, RTU
Baud rate 1200 ~ 38400
Address range 1 ~ 255
Data format N81, N82, O81, E81

• General

Display 14.2mm(0.56")H, red LED
Max. input over capability Amp. 3 x rated continuous
10 x rated 30 seconds
50 x rated 1 second
Volt. 750V continuous
Accuracy DC range $\leq \pm 0.05\%$ F.S. ± 2 digits
AC range $\leq \pm 0.15\%$ F.S. ± 2 digits
Output $\leq \pm 0.1\%$ ~ $\pm 0.25\%$ R.O.
(Option: Depending on actual measuring)

Sampling time Abt. 0.8 sec. Typically
Frequency range 45 ~ 70HZ for AC range
Over indication Flash "OFL" or "-OFL"
Over input signal Flash display
Aux. power source AC/DC 85 ~ 265V, DC 20 ~ 60V
Power consumption \leq AC 8.5VA \leq DC 5W
Sensor power supply DC 24V, 30mA
Operating temperature range 0 ~ 60°C
Storage temperature range -10 ~ 70°C
Temperature coefficient ≤ 100 PPM/°C
 ≤ 60 PPM, 25°C ± 10 °C

Max. relative humidity 95%
Dielectric strength (IEC 60688) AC 2KV/1 minute
Input/output/power terminals
AC 3KV/1 minute
All terminals to case

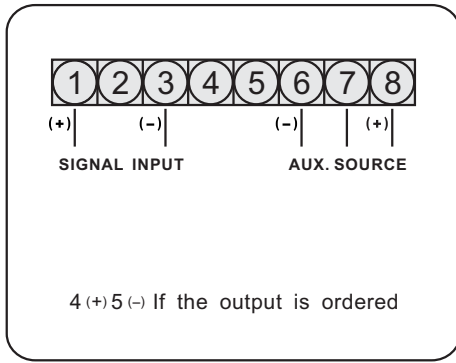
Connection diagram See page 23, figure A.
Dimensions See page 23, figure 01.

• Electromagnetic compatibility

Electrostatic discharge IEC 61000-4-2
Electromagnetic fields immunity IEC 61000-4-3
Electrical transient in burst IEC 61000-4-4
Withstanding impulse voltage IEC 61000-4-5
Immunity to voltage dips IEC 61000-4-11

CONNECTION DIAGRAMS

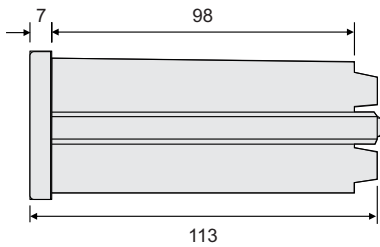
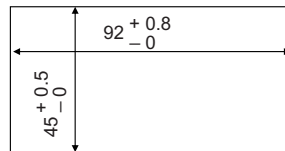
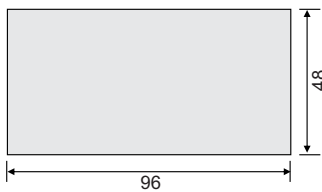
Figure A.



OUTSIDE DIMENSION (UNIT:mm)

Figure 01.

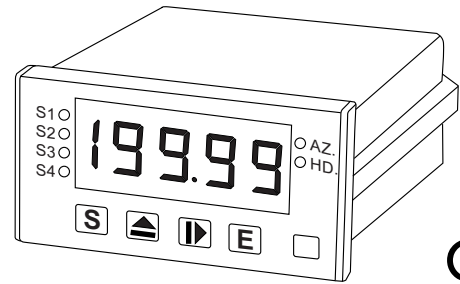
• PANEL CUT-OUT





FEATURES

- 4 1/2 digits display: ±19999
- Accuracy: ±0.05% to ±0.25%
- Auto-zero and hold function
- Measuring adjustment in input sensing deviation
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

• Input

Variable to be Measured	Input Range	Input Impedance	Display Range
DC	0 ~ 5V	≥ 1MΩ	0 ~ ±19999 Programmable
	1 ~ 5V	≥ 1MΩ	
	0 ~ 10V	≥ 1MΩ	
	0 ~ 1mA	100Ω	
	4 ~ 20mA	10Ω	
AC • TRMS	0 ~ 1A	0.1Ω	
	0 ~ 5A	0.1Ω	
	0 ~ 110V	≥ 1MΩ	
	0 ~ 220V	≥ 1MΩ	

• Analog output

Output Range	Load Resistance	Output Resistance	Output Ripple
1 ~ 5V	≥ 1KΩ	≤ 0.05Ω	≤ 0.5% R.O. (Peak)
0 ~ 10V			
0 ~ 1mA	0 ~ 10KΩ	≥ 20MΩ	
0 ~ 20mA	0 ~ 500Ω	≥ 5MΩ	
4 ~ 20mA			

• Communication

Interface RS 485
 Protocol MODBUS, RTU
 Baud rate 1200 ~ 38400
 Address range 1 ~ 255
 Data format N81, N82, O81, E81

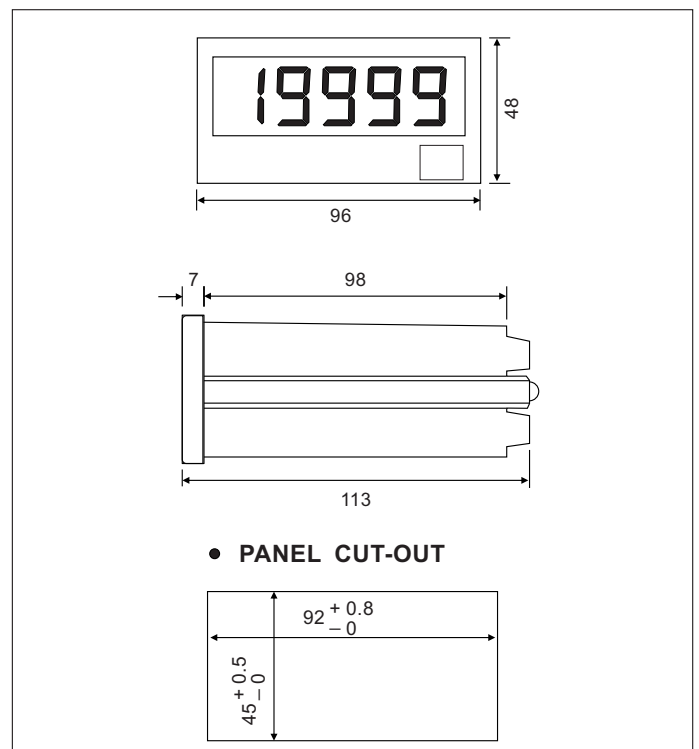
• General

Display 14.2mm(0.56")H, red LED
 Accuracy DC range ≤±0.05% F.S. ±2 digits
 AC range ≤±0.15% F.S. ±2 digits
 Output ≤±0.1% ~ ±0.25% R.O.
 (Option: Depending on actual measuring)
 Sampling time Abt. 0.8 sec. Typically
 Frequency range 45 ~ 70HZ for AC range
 Over indication Flash "OFL" or "-OFL"
 Over input signal Flash display
 Aux. power source AC/DC 85 ~ 265V, DC 20 ~ 60V
 Power consumption ≤AC 8.5VA ≤DC 5W
 Sensor power supply DC 24V, 30mA
 Operating temperature range 0 ~ 60°C
 Storage temperature range -10 ~ 70°C
 Temperature coefficient ≤ 100PPM/°C
 ≤ 60PPM, 25°C±10°C
 Max. relative humidity 95%
 Dielectric strength (IEC 60688) AC 2KV/1 minute
 Input/output/power terminals
 AC 3KV/1 minute
 All terminals to case

• Electromagnetic compatibility

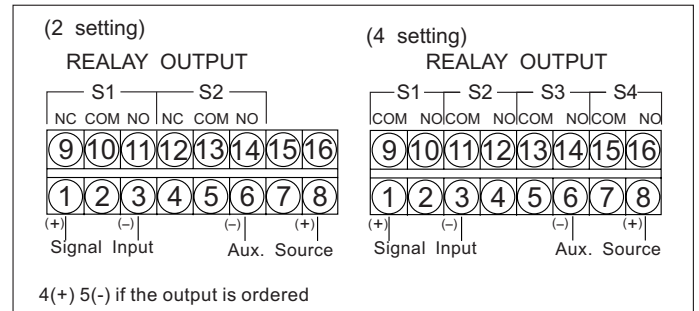
Electrostatic discharge IEC 61000-4-2
 Electromagnetic fields immunity IEC 61000-4-3
 Electrical transient in burst IEC 61000-4-4
 Withstanding impulse voltage IEC 61000-4-5
 Immunity to voltage dips IEC 61000-4-11

OUTSIDE DIMENSION (UNIT:mm)



• PANEL CUT-OUT

CONNECTION DIAGRAMS



ORDERING INFORMATION

J-596R4 -

Mode	Input	Measuring Range	Output	Aux. Source	Option
2: 2 setting 4: 4 setting	D: DC A: AC T: TRMS R: Pt100 K: K TYPE 0: Option	P1: 0 ~ 50mV P2: 0 ~ 60mV P3: 0 ~ 5V P4: 1 ~ 5V P5: 0 ~ 10V P6: 0 ~ 1mA P7: 4 ~ 20mA P8: 0 ~ 20mA	A7: 0 ~ 1A A8: 0 ~ 5A V6: 0 ~ 110V V7: 0 ~ 220V T1: 0 ~ 400°C T2: 0 ~ 1200°C 00: Option	V2: 1~5V V4: 0~10V A2: 0~1mA A3: 0~20mA A4: 4~20mA RS: RS 485 NO: None 00: Option	1: AC/DC 85 ~ 265V 2: DC 20V ~ 60V 0: Option H: Data hold D: Exciting DC 24V N: None



FEATURES

- 4 digits display: ± 9999
- Accuracy : ± 0.05% to ± 0.25%
- Measuring adjustment in input sensing deviation
- Outside dimension is DIN standard (96*48mm)



SPECIFICATION

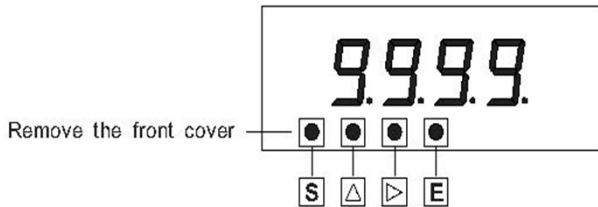
• Input

Variable to be Measured	Input Range	Input Impedance	Display Range
DC	0 ~ 5V	≥1MΩ	0 ~ ± 9999 Programmable
	1 ~ 5V	≥1MΩ	
	0 ~ 10V	≥1MΩ	
	0 ~ 1mA	100Ω	
	4 ~ 20mA	10Ω	
	0 ~ 20mA	10Ω	
AC	0 ~ 1A	0.1Ω	0 ~ ± 9999 Programmable
	0 ~ 5A	0.1Ω	
	0 ~ 110V	≥1MΩ	
TRMS	0 ~ 220V	≥1MΩ	0 ~ ± 9999 Programmable

• General

Display..... 14.2mm(0.56")H, red LED
 Max. Input over capability..... Amp. 3x rated continuous
 10 x rated 30 seconds
 50 x rated 1 second
 Volt. 750V continuous
 Accuracy.....DC range ≤±0.05% F.S. ±2 digits
 AC range ≤±0.15% F.S. ±2 digits
 Output ≤±0.1% ~ ±0.25% R.O.
 (Option: Depending on actual measuring)
 Sampling time..... Abt. 0.8 sec. Typically
 Frequency range..... 45 ~ 70HZ for AC range
 Over indication..... Flash "OFL" or "-OFL"
 Over input signal..... Flash display
 Aux. power source..... AC/DC 85 ~ 265V, DC 20 ~ 60V
 Power consumption..... ≤ AC 8.5VA ≤ DC 5W
 Sensor power supply..... DC 24V, 30mA
 Operating temperature range..... 0 ~ 60°C
 Storage temperature range..... -10 ~ 70°C
 Temperature coefficient..... ≤ 100PPM/°C
 ≤ 60PPM, 25°C ±10°C
 Max. relative humidity..... 95%
 Dielectric strength (IEC 60688)..... AC 2KV/1 minute
 Input/output/power terminals
 AC 3KV/1 minute
 All terminals to case
 Connection diagram..... See page 23, figure A.
 Dimensions..... See page 23, figure 01.

• Display (Programmable process)



- [S]: Press [S] to enter the setting process
 - [Δ]: Press [Δ] to change the value as required
 - [▷]: Press [▷] to move on the LED digit as required
 - [E]: Press [E] to confirm the setting value and function
- * All details on operation must refer to the instruction manual

• Electromagnetic compatibility

Electrostatic discharge..... IEC 61000-4-2
 Electromagnetic fields immunity..... IEC 61000-4-3
 Electrical transient in burst..... IEC 61000-4-4
 Withstanding impulse voltage..... IEC 61000-4-5
 Immunity to voltage dips..... IEC 61000-4-11

ORDERING INFORMATION

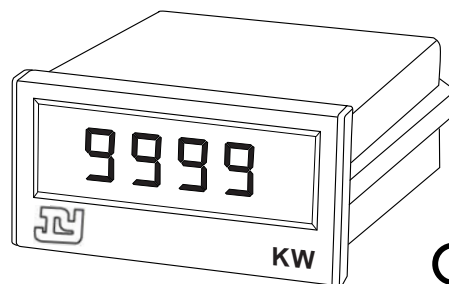
J-596S -

Input	Measuring Range		Aux. Source
D: DC	P1: 0 ~ 50mV	A7: 0 ~ 1A	1: AC/DC 85 ~ 265V 2: DC 20V ~ 60V 0: Option
A: AC	P2: 0 ~ 60mV	A8: 0 ~ 5A	
T: TRMS	P3: 0 ~ 5V	V6: 0 ~ 110V	
R: Pt100	P4: 1 ~ 5V	V7: 0 ~ 220V	
K: TYPE	P5: 0 ~ 10V	T1: 0 ~ 400°C	
0: Option	P6: 0 ~ 1mA	T2: 0 ~ 1200°C	
	P7: 4 ~ 20mA	00: Option	
	P8: 0 ~ 20mA		



FEATURES

- 4 digits display: ± 9999
- Accuracy: $\pm 0.25\%$
- Programmable adjustment for current, voltage transformers ratio
- Precision measurement even for unbalance system
- Easy-to-wire. screw-type terminals
- Outside dimension is DIN standard (96x48mm)

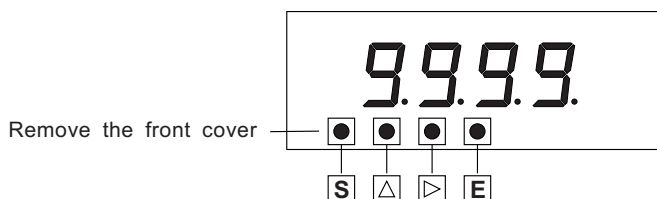


SPECIFICATION

• Input

Circuit	AC Input		Basic Watt/VAR
	Voltage	Ampere	
Single Phase	110V	5A	0.5KW/ ± 0.5 KVAR
	220V		1KW/ ± 1 KVAR
3-Phase, 3-Wire	110V		1KW/ ± 1 KVAR
	220V		2KW/ ± 2 KVAR
3-Phase, 4-Wire	$3\sqrt{3}110V/110V$		1.5KW/ ± 1.5 KVAR
	$3\sqrt{3}220V/220V$		3KW/ ± 3 KVAR

• Display (Programmable process)



- [S]: Press [S] to enter the setting process
- [Δ]: Press [Δ] to change the value as required
- [▷]: Press [▷] to move on the LED digit as required
- [E]: Press [E] to confirm the setting value and function

* All details on operation must refer to the instruction manual

• Electromagnetic compatibility

Electrostatic discharge	IEC 61000-4-2
Electromagnetic fields immunity	IEC 61000-4-3
Electrical transient in burst	IEC 61000-4-4
Withstanding impulse voltage	IEC 61000-4-5
Immunity to voltage dips	IEC 61000-4-11

Display	14.2mm (0.56") H, red LED
Max. input over capability	Amp. 3 x rated continuous 10 x rated 30 seconds 50 x rated 1 second Volt. 750V continuous
Accuracy	$\pm 0.25\%$ F.S. ± 3 digits, PF ≥ 0.5 (Option: Depending on actual measuring)
Input burden	Volt. input $\leq 0.5VA/Phase$ Amp. Input $\leq 0.1VA/Phase$
Input frequency range	45 ~ 70HZ
Sampling time	Abt. 0.8 sec. Typically
Polarity	Only "-" display
Aux. power source	AC/DC 85 ~ 265V DC 20 ~ 60V
Power consumption	$\leq AC 6.5VA, \leq DC 5W$
Power effect	$\leq 0.1\%$
Operating temperature range	0 ~ 60°C
Storage temperature range	-10 ~ 70°C
Temperature coefficient	$\leq 150PPM/°C$
Max. relative humidity	95%
Dielectric strength (IEC 60688)	AC 2KV/1 minute Input to power terminals AC 3KV/1 minute All terminals to case
Connection diagram	See page 23, figure G.
Dimensions	See page 23, figure 01.

ORDERING INFORMATION

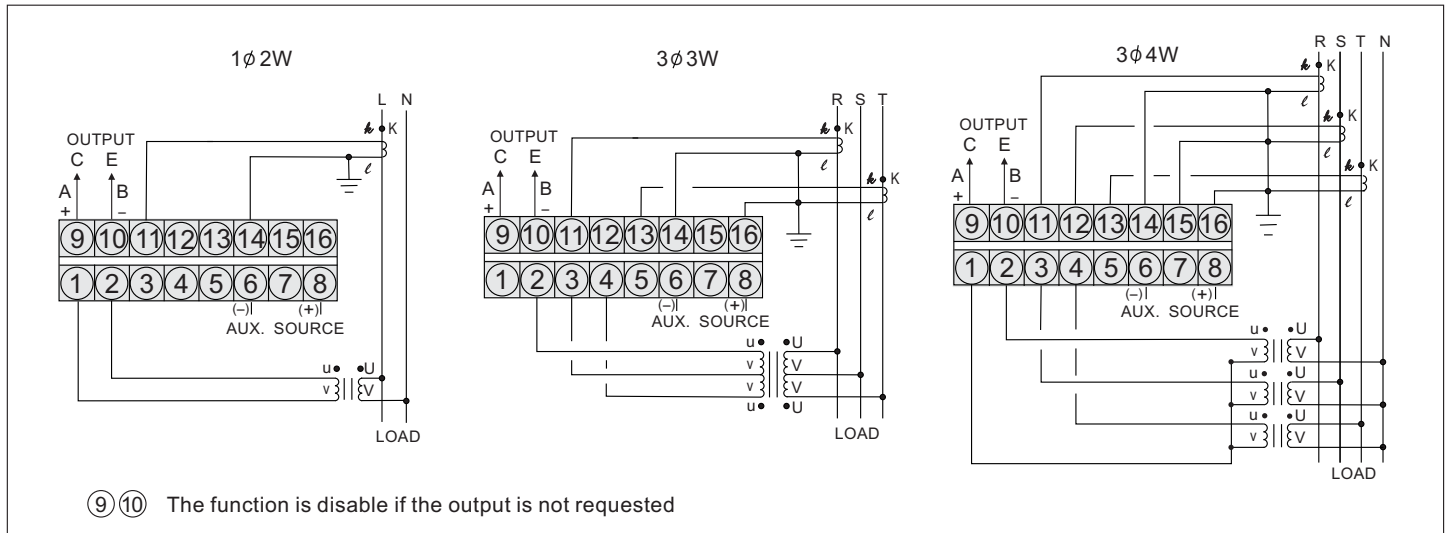
J-596WS -

J-596RS -

Circuit	Input Voltage	Input Current	Aux. Power Source
12: single phase, 2-wire 13: single phase, 3-wire 33: 3-phase, 3-wire 34: 3-phase, 4-wire	1: AC 110V 2: AC 220V 3: AC $\sqrt{3}110V/110V$ 4: AC $\sqrt{3}220V/220V$ 0: Option	A: AC 5A B: AC 1A 0: Option	1: AC /DC 85 ~ 265V 2: DC 20 ~ 60V 0: Option

CONNECTION DIAGRAMS

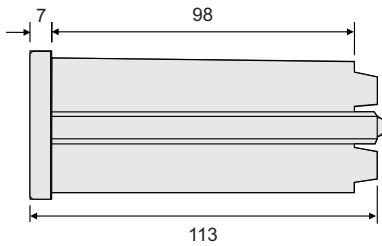
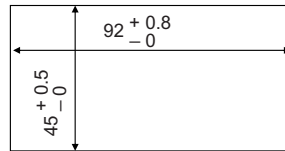
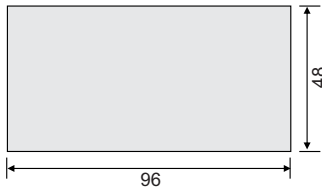
Figure G.



OUTSIDE DIMENSION (UNIT:mm)

Figure 01.

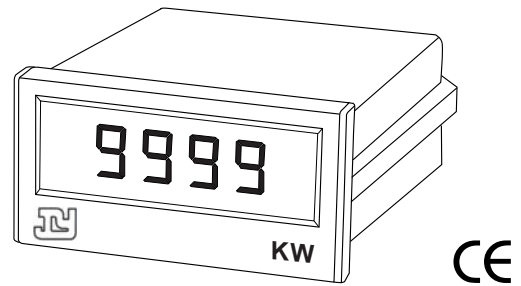
• PANEL CUT-OUT





FEATURES

- 4 digits display: ± 9999
- Accuracy: $\pm 0.25\%$
- Programmable process rate monitor
- Precision measurement even for unbalance system
- Input/Output/Power/Case is isolated
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

• Input

Circuit	AC Input		Basic Watt/VAR
	Voltage	Ampere	
Single Phase	110V	5A	0.5KW/±0.5KVAR
	220V		1KW/±1KVAR
3-Phase, 3-Wire	110V		1KW/±1KVAR
	220V		2KW/±2KVAR
3-Phase, 4-Wire	$3\sqrt{110V/110V}$		1.5KW/±1.5KVAR
	$3\sqrt{220V/220V}$		3KW/±3KVAR

• Output

DC Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0 ~ 1V	≥ 1KΩ	≤ 0.05Ω	≤ 0.5% RO. (Peak)	≤ 400mS 0 ~ 99%
0 ~ 5V				
1 ~ 5V				
0 ~ 10V				
0 ~ 1mA	0 ~ 10KΩ	≥ 20MΩ		
0 ~ 10mA	0 ~ 1KΩ	≥ 5MΩ		
0 ~ 20mA	0 ~ 500Ω			
4 ~ 20mA				

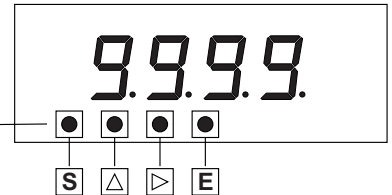
• Communication

Interface RS 485
 Protocol MODBUS, RTU framing
 Baud rate 1200 ~ 38400
 Address range 1 ~ 255
 Data format N82, O81, E81, N81

• General

Display 14.2mm (0.56") H, red LED
 Max. input over capability Amp. 2x rated continuous
 10x rated 30 seconds
 Volt. 1.5x rated continuous
 Accuracy ± 0.25% F.S. ± 3 digits, PF ≥ 0.5, indicator
 ± 0.25% RO., PF ≥ 0.5, output
 Input burden Volt, input ≤ 0.5VA/Phase
 Amp. Input ≤ 0.1VA/Phase
 Input frequency range 45 ~ 70Hz
 Sampling time Abt. 0.8 sec.
 Aux. power source AC/DC 85 ~ 265V
 DC 20 ~ 60V
 Power consumption ≤ AC 6.5VA, ≤ DC 5W
 Power effect ≤ 0.1%
 Waveform effect ≤ 0.2%, at distortion factor 15%
 Output load effect ≤ 0.05% RO.
 Magnetic field strength ≤ 0.2%, 400A/M.
 Operating temperature range 0 ~ 60°C
 Storage temperature range - 10 ~ 70°C
 Temperature coefficient ≤ 150PPM/°C
 Max. relative humidity 95%
 Dielectric strength (IEC 688) AC 2KV/1 minute
 Input/output/power terminals
 AC 3KV/1 minute
 All terminals to case
 Connection diagram See page 23, Figure G.
 Dimensions See page 23, Figure 01.

• Display (Programmable process)



Remove the front cover

- [S]: Press [S] to enter the setting process
- [Δ]: Press [Δ] to change the value as required
- [▷]: Press [▷] to move on the LED digit as required
- [E]: Press [E] to confirm the setting value and function

* All details on operation must refer to the instruction manual

• Electromagnetic compatibility

Electrostatic discharge IEC 61000-4-2
 Electromagnetic fields immunity IEC 61000-4-3
 Electrical transient in burst IEC 61000-4-4
 Withstanding impulse voltage IEC 61000-4-5
 Immunity to voltage dips IEC 61000-4-11

■ ORDERING INFORMATION

J-596WT
J-596RT

Model _____

Circuit _____
 12: single phase, 2-wire
 13: single phase, 3-wire
 33: 3-phase, 3-wire
 34: 3-phase, 4-wire

Input Voltage _____
 1: AC 110V 3: AC $\sqrt{3}$ 110V/110V
 2: AC 220V 4: AC $\sqrt{3}$ 220V/220V
 0: Option

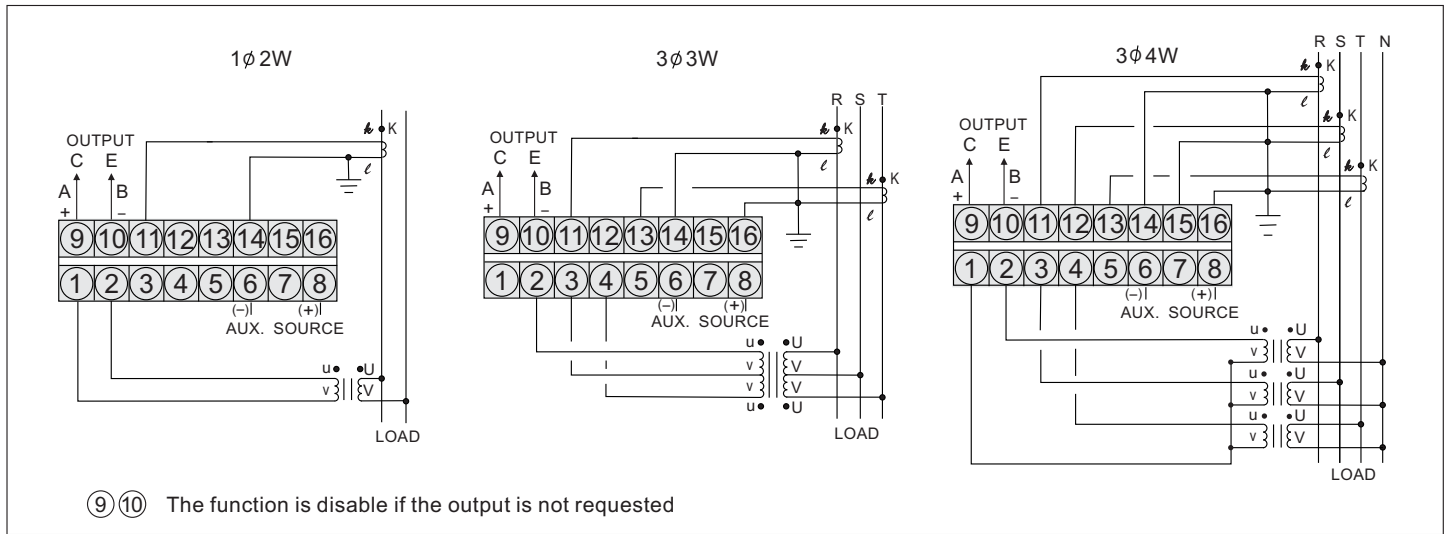
Input Current _____
 A: 5A
 B: 1A
 0: Option

Output Range _____
 V1: 0 ~ 1V A1: 0 ~ 1mA
 V2: 0 ~ 5V A2: 0 ~ 10mA
 V3: 1 ~ 5V A3: 0 ~ 20mA
 V4: 0 ~ 10V A4: 4 ~ 20mA
 00: Option RS: RS 485

Aux. Power Source _____
 1: AC/DC 85 ~ 265V
 2: DC 20 ~ 60V
 0: Option

CONNECTION DIAGRAMS

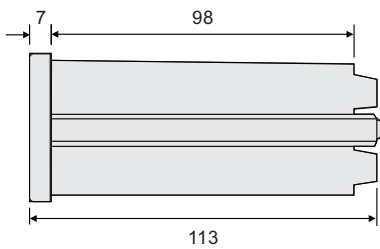
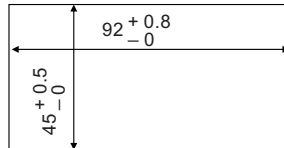
Figure G.



OUTSIDE DIMENSION (UNIT:mm)

Figure 01.

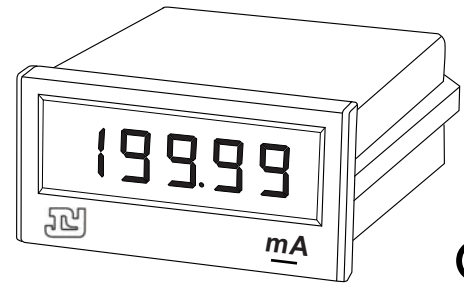
• PANEL CUT-OUT





FEATURES

- 4 1/2 display: 19999
- Accuracy: $\pm 0.05\%$ to $\pm 0.15\%$
- Easy-to-wire. screw-type terminals
- Outside dimension is DIN standard (96x48mm)
- Data holding is available



SPECIFICATION

• Direct Input

Variable to be Measured	Measuring Range	Input Impedance	Resolution
DC	199.99 μ A	1K Ω	0.01 μ A
	1.9999mA	100 Ω	0.0001mA
	19.999mA	10 Ω	0.001mA
	199.99mA	1 Ω	0.01mA
	1.9999A	0.1 Ω	0.0001A
AC	15.000A	0.1 Ω	0.001A
	199.99mV	$\geq 5M\Omega$	0.01mV
TRMS	1.9999V	$\geq 1M\Omega$	0.0001V
	19.999V	$\geq 1M\Omega$	0.001V
	199.99V	$\geq 1M\Omega$	0.01V
	750.0V	$\geq 3M\Omega$	0.1V

• Ratio Input (Secondary of CT, PT)

Variable to be Measured	Input Range	Input Impedance	Display Range
AC	0 ~ 1A	0.1 Ω	appointed as primary value of CT, PT
	0 ~ 5A	0.1 Ω	
TRMS	0 ~ 110V	$\geq 1M\Omega$	
	0 ~ 220V	$\geq 1M\Omega$	

• Receiving Meter

Variable to be Measured	Input Range	Input Impedance	Display Range
DC	0 ~ 50mV	$\geq 5M\Omega$	appointed
	0 ~ 60mV	$\geq 5M\Omega$	
AC	0 ~ 5V	$\geq 1M\Omega$	
	1 ~ 5v	$\geq 1M\Omega$	
	0 ~ 10V	$\geq 1M\Omega$	
TRMS	0 ~ 1mA	100 Ω	
	4 ~ 20mA	10 Ω	

- Display 14.2mm (0.56") H, red LED
- Max. input over capability Amp. 3 x rated continuous
10 x rated 30 seconds
50 x rated 1 second
Volt. 750V continuous
- Accuracy DC range $\pm 0.05\%$ F.S. ± 2 digits
AC range $\pm 0.15\%$ F.S. ± 2 digits
(Option: Depending on actual measuring)
- Measuring mode Dual Slope
- Sampling time Abt. 0.8 sec. typically
- Frequency range 45~400Hz for AC range
- Over input indication "0000" Flash
- Polarity Only "-" display
- Aux. power source AC 110V/220V $\pm 15\%$, 50/60Hz
DC 24V, 48V, 110V $\pm 10\%$
- Power consumption \leq AC 3VA, \leq DC 3W
- Operating temperature range 0 ~ 60°C
- Sensor power supply DC 12V or 24V, 30mA
(Option function)
- Storage temperature range -10 ~ 70°C
- Temperature coefficient ≤ 100 PPM/ $^{\circ}$ C
 ≤ 60 PPM/ $^{\circ}$ C, 25°C $\pm 10^{\circ}$ C
- Max. relative humidity 95%
- Dielectric strength (IEC 60688) AC 2KV/1 minute
Input to power terminals
AC 3KV/1 minute
All terminals to case
- Connection diagram See page 23, figure A.
- Dimensions See page 23, figure 01.
- Electromagnetic compatibility
- Withstanding impulse voltage IEC 61000-4-5

ORDERING INFORMATION

J-596 -

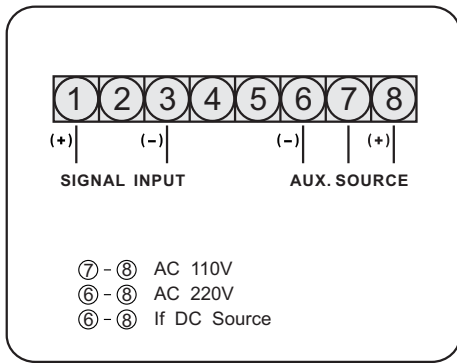
Input Signal	Measuring Range		Aux. Power Source
D: DC	A1: 199.99 μ A	A7: 0~1A	1: AC 110V/220V
A: AC	A2: 1.9999mA	A8: 0~5A	2: DC 110V
T: TRMS	A3: 19.999mA	V6: 0~110V	3: DC 48V
0: Option	A4: 199.99mA	V7: 0~220V	4: DC 24V
	A5: 1.9999A	P1: 0~50mV	0: Option
	A6: 15.000A	P2: 0~60mV	
	V1: 199.99mV	P3: 0~5V	
	V2: 1.9999V	P4: 1~5V	
	V3: 19.999V	P5: 0~10V	
	V4: 199.99V	P6: 0~1mA	
	V5: 750.0V	P7: 4~20mA	
	00: Option		

• EXAMPLE

- Measured range : AC 750V
- Aux. power source : AC 110V/220V
- Ordering model : S2-412-AV51
- Measured range : DC 4~20mA
- Display : 0 ~ 100.0%
- Aux. power source : AC 110V/220V
- Ordering model : S2-412-DP71
- (appointed display range : 0 ~ 100.0%)

CONNECTION DIAGRAMS

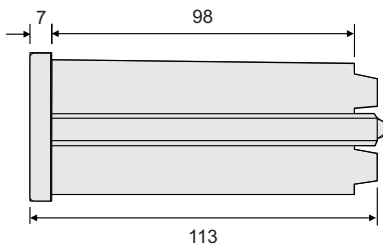
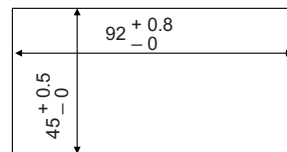
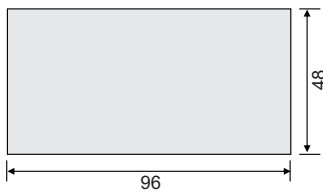
Figure A.



OUTSIDE DIMENSION (UNIT:mm)

Figure 01.

• PANEL CUT-OUT



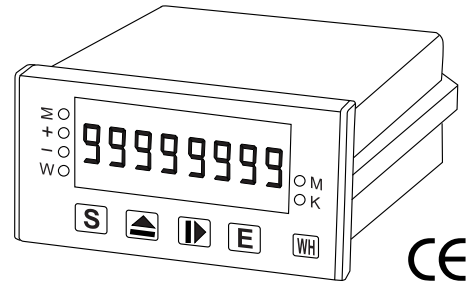


MICROPROCESSOR WATT(VAR) HOUR METER

J-8WH
J-8RH

FEATURES

- 8 digits display: 99999999
- Accuracy: $\pm 0.3\%$
- Programmable adjustment for current, voltage transformers ratio
- Easy-to-wire. screw-type terminals
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

• Input

Circuit	AC Input		Display (KWH/KVARH)
	Voltage	Ampere	
Single Phase	110V	5A	99999999 (Auto-change decimal point)
	220V		
3-Phase, 3-Wire	110V		
	220V		
3-Phase, 4-Wire	$\sqrt{3}$ 110V/110V		
	$\sqrt{3}$ 220V/220V		

- Display** 9.1mm (0.36") H, red LED
- WATT/VAR display** 4 digits (9999)
- Max. input over capability** Amp. 3 x rated continuous
10 x rated 30 seconds
50 x rated 1 second
- Volt. 750V continuous
- Accuracy** $\pm 0.3\%$ F.S. ± 1 digit, $PF \geq 0.5$
(Option: Depending on actual measuring)
- Input burden** Volt. input $\leq 0.5VA/Phase$
Amp. Input $\leq 0.1VA/Phase$
- Input frequency range** 45 ~ 70HZ
- Aux. power source** AC/DC 85 ~ 265V
DC 20 ~ 60V
- Power consumption** $\leq AC 6.5VA, \leq DC 5W$
- Operating temperature range** 0 ~ 60°C
- Storage temperature range** -10 ~ 70°C
- Temperature coefficient** $\leq 150PPM/^\circ C$
- Max. relative humidity** 95%
- Memory time** 10 years
- Dielectric strength (IEC 60688)** AC 2KV/1 minute
Input to power terminals
AC 3KV/1 minute
All terminals to case

• Electromagnetic compatibility

- Electrostatic discharge** IEC 61000-4-2
- Electromagnetic fields immunity** IEC 61000-4-3
- Electrical transient in burst** IEC 61000-4-4
- Withstanding impulse voltage** IEC 61000-4-5
- Immunity to voltage dips** IEC 61000-4-11

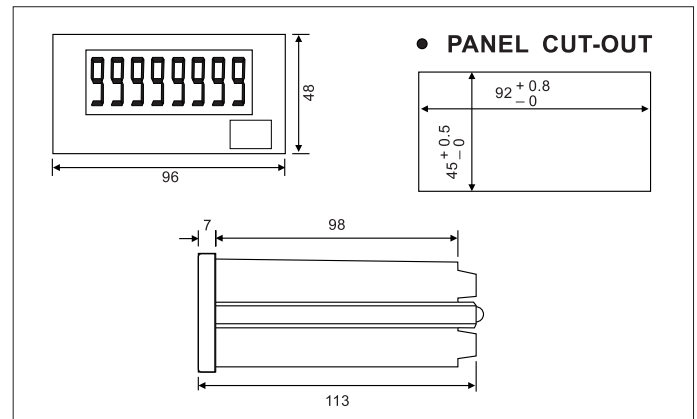
ORDERING INFORMATION

J-8WH - [] [] [] []

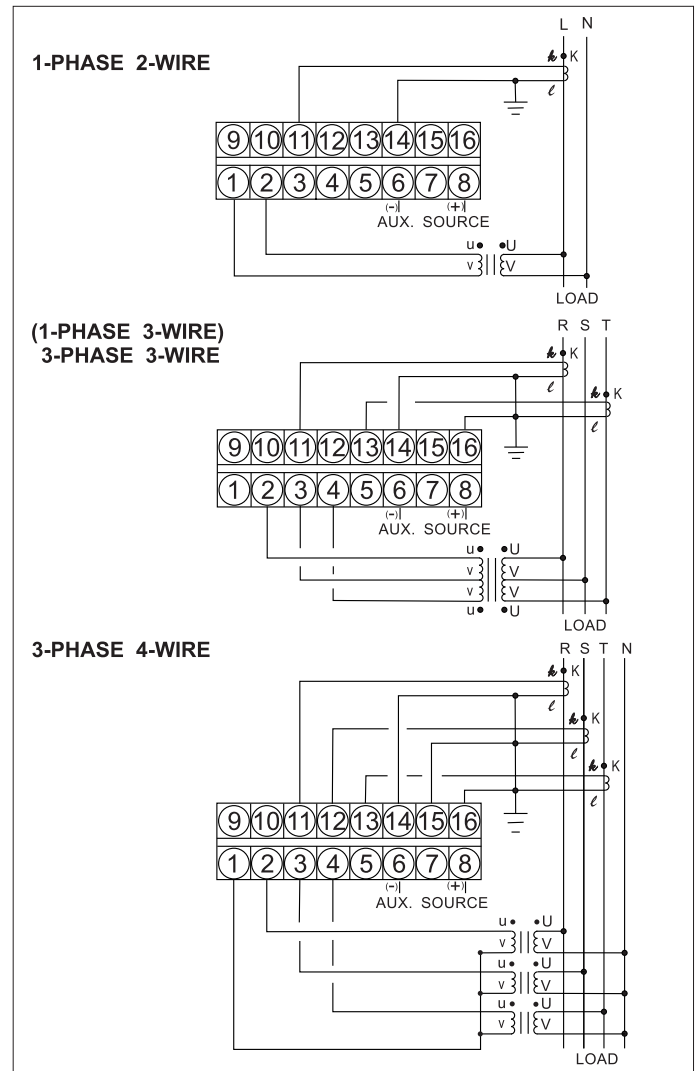
J-8RH - [] [] [] []

Circuit	Input Voltage	Input Current	Aux. Power Source
12: 1 Φ 2W	1: AC 110V	A: AC 5A	1: AC/DC 85 ~ 265V
13: 1 Φ 3W	2: AC 220V	B: AC 1A	2: DC 20 ~ 60V
33: 3 Φ 3W	3: AC $\sqrt{3}$ 110V/110V	0: Option	0: Option
34: 3 Φ 4W	4: AC $\sqrt{3}$ 220V/220V		
	0: Option		

OUTSIDE DIMENSION (UNIT:mm)



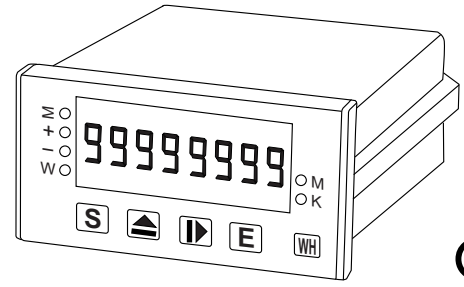
CONNECTION DIAGRAMS





FEATURES

- 8 digits display: 99999999
- Accuracy: $\pm 0.3\%$
- Programmable process rate monitor
- Easy-to-wire, screw-type terminals
- Input/Output/Power/Case is isolated
- Outside dimension is DIN standard (96x48mm)



SPECIFICATION

Input

Circuit	AC Input		Display	
	Voltage	Ampere		
Single Phase	110V	5A	99999999 (Auto-Cal. Decimal point)	
	220V			
3-Phase, 3-Wire	110V			1A
	220V			
3-Phase, 4-Wire	$\sqrt{3}$ 110V/110V			
	$\sqrt{3}$ 220V/220V			

Output

Per 1KWH or 1KVARH	1 counts 10 counts 100 counts	Pulse DC 5V, 5mA	Open Collect DC 30V, 100mA	SPST Relay Contacts AC 110V, 0.5A DC 24V, 1A

Communication

Interface..... RS 485
Protocol MODBUS, RTU framing
Baud rate 1200 ~ 38400
Address range 1 ~ 255
Data format N82, O81, E81, N81

General

Display 9.1mm (0.36") H, red LED
WATT/VAR max. display 4 digits (9999)
Max. input over capability Amp. 3 x rated continuous
10 x rated 30 seconds
50 x rated 1 second
Volt. 750V continuous
Accuracy $\pm 0.3\%$ F.S. ± 1 digit, PF ≥ 0.5 , indicator
 $\pm 0.3\%$ R.O., PF ≥ 0.5 , output
Input burden Volt. input ≤ 0.5 VA/Phase
Amp. Input ≤ 0.1 VA/Phase
Input frequency range 45 ~ 70Hz
Aux. power source AC/DC 85 ~ 265V
DC 20 ~ 60V
Power consumption \leq AC 6.5VA, \leq DC 5W
Operating temperature range 0 ~ 60°C
Storage temperature range -10 ~ 70°C
Temperature coefficient ≤ 150 PPM/°C
Max. relative humidity 95%
Memory times ≥ 10 years
Dielectric strength (IEC 60688) AC 2KV/1 minute
Input/output/power terminates
AC 3KV/1 minute
All terminals to case
Connection diagram See page 23, Figure G.
Dimensions See page 23, Figure 01.

Electromagnetic compatibility

Electrostatic discharge IEC 61000-4-2
Electromagnetic fields immunity IEC 61000-4-3
Electrical transient in burst IEC 61000-4-4
Withstanding impulse voltage IEC 61000-4-5
Immunity to voltage dips IEC 61000-4-11

ORDERING INFORMATION

J-8WHT
J-8RHT

Model

Circuit

- 12: single phase, 2-wire
- 13: single phase, 3-wire
- 33: 3-phase, 3-wire
- 34: 3-phase, 4-wire

Input Voltage

- 1: AC 110V
- 2: AC 220V
- 3: AC $\sqrt{3}$ 110V/110V
- 4: AC $\sqrt{3}$ 220V/220V
- 0: Option

Input Current

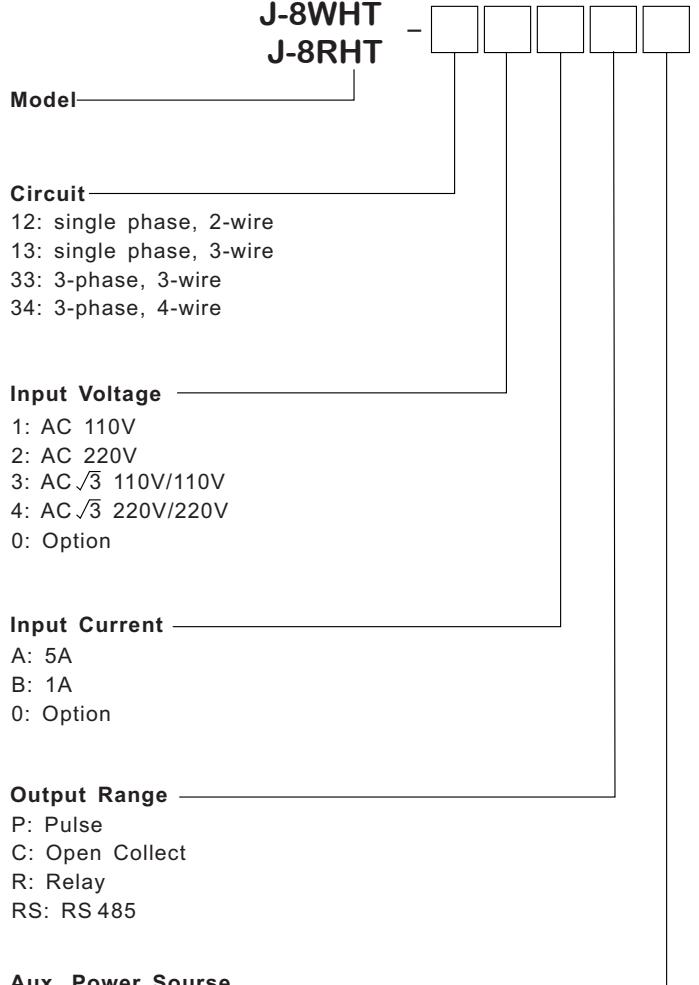
- A: 5A
- B: 1A
- 0: Option

Output Range

- P: Pulse
- C: Open Collect
- R: Relay
- RS: RS 485

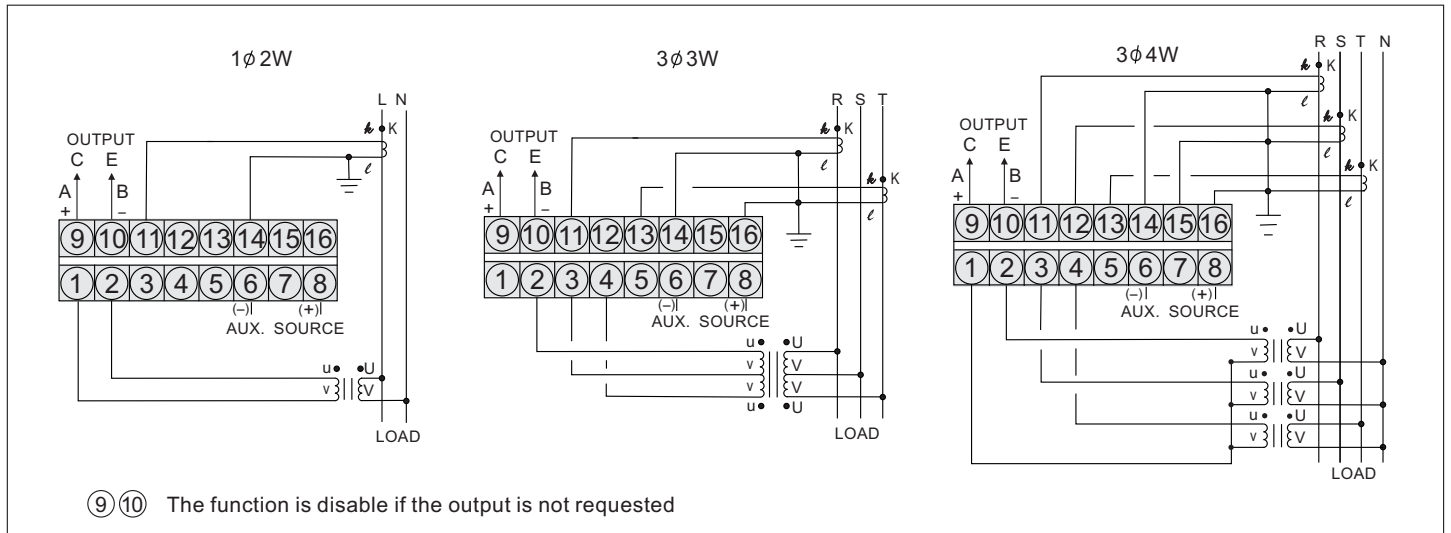
Aux. Power Source

- 1: AC/DC 85 ~ 265V
- 2: DC 20 ~ 60V
- 0: Option



CONNECTION DIAGRAMS

Figure G.



OUTSIDE DIMENSION (UNIT:mm)

Figure 01.

• PANEL CUT-OUT

