

4 1/2 DIGITAL WATT / VAR / PF METER

CSM-421

FEATURE

- Measuring WATT, VAR, Power Factor
- Accuracy: WATT / VAR: $\pm 0.2\%$, Power Factor: ± 0.02 P.F.
- 4 1/2 Digital display: 19999
- Measuring reverse Watt / Var is available in option
- Built-in analog output & low output ripple
- Easy-to-wire, screw type terminal
- Outside dimensions is 1/8 DIN standard (96x48 mm)
- High stability & low cost



MEASUREMENT

WATT / VAR:

Connection	AC Input		Basic Ref. Value Watt or Var	Input Burden	
	Voltage	Current			
1P2W	110V or 120V	5A (1A)	$\pm 0.5K (\pm 0.1K)$	≤ 0.1 VA Current	
	220V or 240V		$\pm 1.0K (\pm 0.2K)$		
3P3W	110V or 120V		$\pm 1.0K (\pm 0.2K)$		≤ 0.5 VA Voltage (Per Phase)
	220V or 240V		$\pm 2.0K (\pm 0.4K)$		
3P4W	380V or 416V	$\pm 3.0K (\pm 0.6K)$	$\pm 1.5K (\pm 0.3K)$		
	110V-63.5V or 120V-69.3V	$\pm 1.0K (\pm 0.2K)$			
	190V-110V or 208V-120V	$\pm 3.0K (\pm 0.6K)$			
	380V-220V or 416V-240V	$\pm 3.0K (\pm 0.6K)$			

Remark: If an input value exceeds the level please connect with a CT or PT to the panel meter.

Power Factor:

Connection	AC Input		Display	Input Burden	
	Voltage	Current			
1P2W	110V or 120V	5A (1A)	-0.500~1.000~+0.500	≤ 0.1 VA Current	
	220V or 240V				
3P3W	110V or 120V				≤ 0.5 VA Voltage (Per Phase)
	220V or 240V				
3P4W	380V or 416V	≤ 0.5 VA Voltage (Per Phase)			
	110V-63.5V or 120V-69.3V				
	190V-110V or 208V-120V				
	380V-220V or 416V-240V				

Remark: If an input value exceeds the level please connect with a CT or PT to the panel meter.

OUTPUT:

Output Range	Load Resistance	Output Resistance	Output Ripple	Response Time
0 ~ 1 V	≥ 500 ohm	≤ 0.001 ohm	$\leq 0.4\%$ R.O. (peak)	≤ 400 ms. 0 ~ 99%
0 ~ 5 V	≥ 500 ohm			
1 ~ 5 V	≥ 500 ohm			
0 ~ 10 V	≥ 500 ohm			
-10 ~ 0 ~ 10 V	≥ 500 ohm	$\geq 20M$ ohm	$\leq 0.4\%$ R.O. (peak)	≤ 400 ms. 0 ~ 99%
0 ~ 1 mA	0 ~ 15K ohm			
0 ~ 10 mA	0 ~ 1500 ohm			
0 ~ 20 mA	0 ~ 750 ohm			
4 ~ 20 mA	0 ~ 750 ohm	$\geq 20M$ ohm	$\leq 0.4\%$ R.O. (peak)	≤ 400 ms. 0 ~ 99%
4 ~ 12 ~ 20 mA	0 ~ 750 ohm			

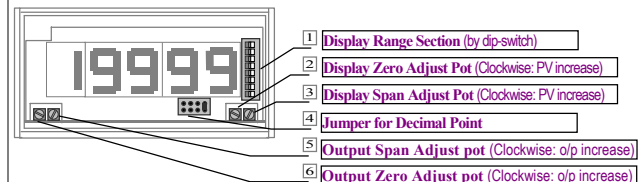
SPECIFICATION

- Measuring: Watt / Var:
 $\pm 0.2\%$ F.S. ± 1 digit (PF ≥ 0.5)
Power Factor: ± 0.02 PF ± 1 digit
- Measuring mode: Transducer type
- Input frequency: 45 ~ 65 Hz
- Effect of frequency variation: $\leq \pm 0.03\%$ per frequency change
- Span adjustment: $\leq 10\%$ of R.O.
- Zero adjustment: $\leq 2\%$ of R.O.
- Sampling time: About 0.8 sec.

- Polarity display: When input is negative "-"
- Over-range indication: "0000" flash
- Display Range: Programmable by dip-switch on front panel
- Max. input over capability: Voltage: 1.2 x rated continuous
2 x rated for 10 seconds
50 x rated for 1 second
Current: 2 x rated continuous
10 x rated for 10 seconds
20 x rated for 5 seconds
- Decimal point: Settable to any digit position
- Operation temperature: 0~60 °C
- Operation relative humidity: 20~95 %R.H.
- Temperature coefficient: ≤ 150 PPM/°C (0~50°C)
- Storage temperature: -10~70°C
- Power Supply: AC: 115 or 230V $\pm 10\%$, 50/60 Hz
- Power consumption: AC 5VA
- Dielectric Strength: AC 2.0 KV for 1 min.
(Between Power / Input / Output)
AC 3.0 KV for 1 min.
(Between Terminal / Case)
- Weight: Under 650g

ADJUSTMENT

Watt / Var :

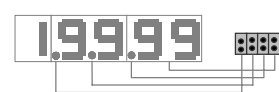


1 Display Range Section:

DIP SWITCH NO.	DISPLAY WEIGHTING
1	12800
2	6400
3	3200
4	1600
5	800
6	400
7	200
8	100

Caution:
The dip-switch must be pushed to either side named "+" for "ON" or "-" for "OFF". Left it in middle position is not allowable.

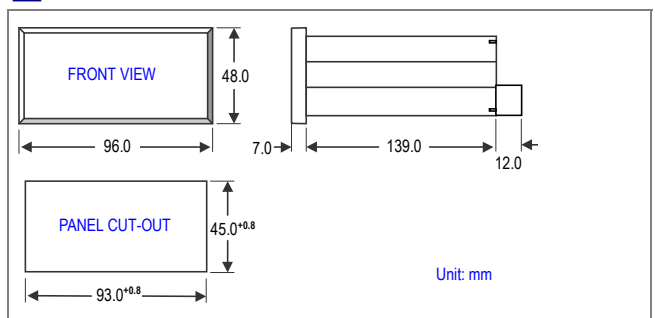
4 Decimal Point Jumper:



For example:
If you wish to display "1500.0" at rated input
Because of 15000=12800+1600+400+200
The No. 1,4,6,7 of dip switch should be pushed to the right side named "+", And the others should be pushed to the left side named "-".

The meter is calibrated at the factory per order. If your meter will need to be re-calibrated you must "contact us" or send back the unit for proper calibration.

DIMENSIONS



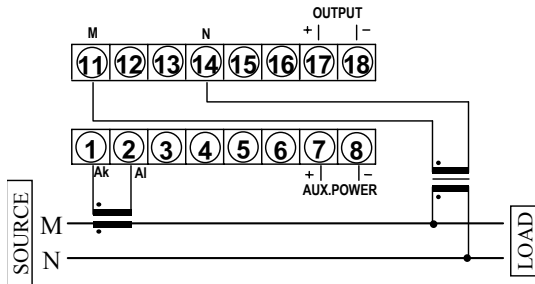
Unit: mm

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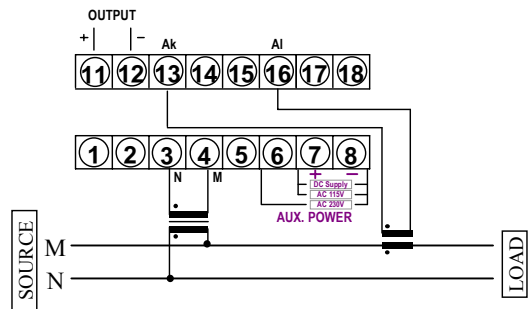
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CONNECTION DIAGRAM

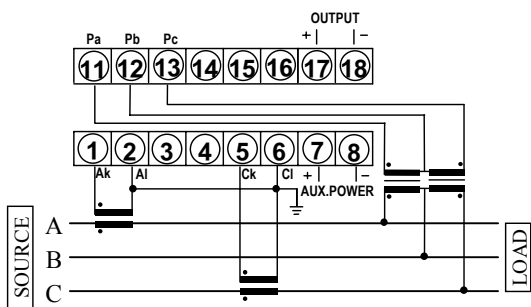
1Phase 2Wire - CSM-421W(T) / CSM-421Q(T)



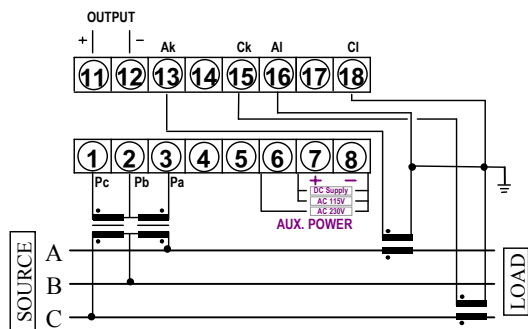
1Phase 2Wire - CSM-421PF(T)



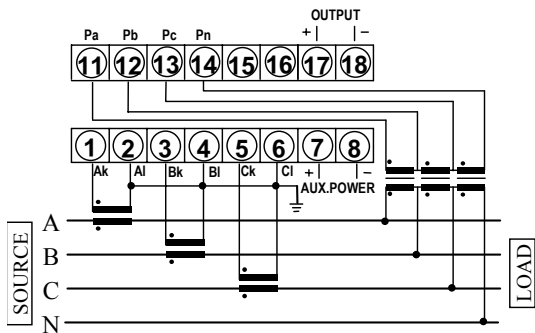
3Phase 3Wire - CSM-421W(T) / CSM-421Q(T)



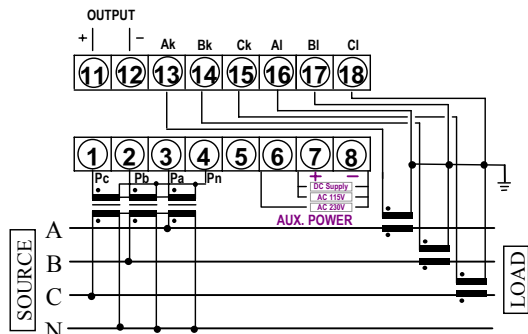
3Phase 3Wire - CSM-421PF(T)



3Phase 4Wire - CSM-421W(T) / CSM-421Q(T)



3Phase 4Wire - CSM-421PF(T)



ORDER INFORMATION

