MULTI-FUNCTION TRANSDUCER MODEL WMx-

DESCRIPTION

Model WMx transducers utilize a microprocessor based design with high speed analog-to-digital converters to provide accurate measurement of true power, apparent power, reactive power, energy, power factor, voltage, current and frequency. Bi-directional capability allows indication of forward (consumed) as well as reverse (generated) power and energy conditions.

Models are available in a variety of configurations with current ranges up to 1000A and nominal voltage ratings up to 600V (suitable for 693VL-L applications). Models are available in 1, 2 and 3 element versions and are suitable for all single-phase and three-phase power systems.

Serial interface is galvanically isolated from the measured inputs and instrument power.

RoHS compliant

5 YEAR WARRANTY

FEATURES

- DIN rail mountable package - small, lightweight.
- Wide variety of input configurations.
- Measures instantaneous power (real and reactive) as well as energy.
- Indication of forward/reverse power and leading/lagging VARs.
- Universal power supply.
- Modbus RTU serial communications using RS232, RS422, or RS485.

APPLICATIONS

- Process control.
- Variable frequency drives
- Energy management systems.
- Sub-metering.
- 40th harmonic measurement per DOE requirement.

SPECIFICATIONS

INPUT

Voltage Nominal ..... Select from table
Range ..... With accuracy 10% to 125% of Nominal
Overrange ... Without damage ..... 150% of Nominal

Current Nominal ..... Select from table
Range ..... With accuracy .. 5% to 110% of Nominal
Overrange ... Without damage ..... 200% Nominal

Power Factor With accuracy ..... 0.5Lead - 1 - 0.5Lag

Frequency
Range ..... With accuracy .. WM6 ..... 48-62Hz,
WM7 ..... 10 - 500Hz

40th harmonic measurement only available with WM6 solid-core models

Burden
Voltage ..... All models ..... ≤0.5mA/phase
Current ..... All models ..... ≤0.25VA/phase

DIELECTRIC TEST

Input to Output/Inst. Pwr./Case ..... 3000V, 60Hz, 1min.
Inst. Pwr. to Output/Case ..... 3000V, 60Hz, 1min.
Output to Case ..... 500V, 60Hz, 1min.

ACCURACY (setpoint/linearity/repeatability at 25°C)

WM6 models ... Watts ..... ±0.2% Rdg./PF, ±0.04% F.S.
VARs ..... ±0.2% Rdg./sinθ, ±0.04% F.S.
All other measurements ..... ±0.25% F.S.
WM7 models ..... ±0.25% F.S.
All other measurements ..... ±0.25% F.S.

TEMPERATURE

Range ..... Operating ..... -10 to 50ºC
Storage ..... -25 to 75ºC
Effect ..... ±0.005%/°C, ±0.05% F.S.

OUTPUT - Modbus RTU Serial Measurements

Digital Measurements:
Totals: ..... Watts,VA, VARs, and Power Factor
Per channel: ..... Volts, Current, Watts, VARs, VA and Power Factor
In addition: ..... Frequency: Consumed and/or Generated energy meter.
(Refer to user manual 7004-00108-A for Modbus Register mapping.)

Polarity ..... Watt .... Pos(+) = Fwd ..... Neg(-)= Rev
VAR .... Pos(+) = Lead ..... Neg(-) = Lag
Ripple ..... Input .. frequency >48Hz ..... <±0.5% F.S.

Energy Registers
Scaling ..... Pulse weight is 0.0001, 0.001, 0.01, 0.1 or 1kWh/kVARh as required to provide best resolution while maintaining pulse rate between 1000 and 10,000 pulses per hour at F.S. input.

INSTRUMENT POWER

Standard universal ..... 85-265V, 47-63Hz, ≤10VA
115-300Vdc, ≤10VA

PHYSICAL

Humidity .... Operating ..... Any non-condensing
Weight ..... ≤1lb.
Enclosure .. Mounting ..... DIN rail, 35mm
(may be panel mounted using 19754 adaptors)
Material ..... ABS, UL94HB
Connections ..... Screw terminals
Modbus ..... Screw terminal/RJ45

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MULTI-FUNCTION TRANSDUCER MODEL WMx-

MODEL SELECTION

TYPE	SYSTEM	VOLTAGE	CURRENT		COMM FORMAT	CONN
WM [ ] -	[ ]	[ ] -	[ ]	*	- [ ]	- [ ]

MODEL

Type:

6	Frequency Range ..... (High Accuracy)	48-62Hz
7	Frequency Range	10-500Hz

INPUT

System:

1	1Φ 2W (1 element)
2	3Φ 3W (2 element)
3	3Φ 4W (3 element)
4	1Φ 3W (2 elements)

Voltage:

1Φ 2W

1	120VL-N
2	240VL-N
3	480VL-N

3Φ 3W

1	120VL-L
2	240VL-L
3	480VL-L

3Φ 4W

1	69VL-N/120VL-L
2	120VL-N/208VL-L
3	277VL-N/480VL-L
4	346VL-N/600VL-L

1Φ 3W

1	120VL-N/240VL-L

Current:

Direct:

WM6 only

001	1A
005	5A
010	10A

External CT's:

Solid-Core

101	100A	501	500A
201	200A	601	600A
301	300A	801	800A
401	400A	102	1000A

Split-Core - WM6 Only

101	S	100A	501	S	500A
201	S	200A	601	S	600A
301	S	300A	801	S	800A
401	S	400A	102	S	1000A

SERIAL COMMUNICATIONS

Communication Format:

M2	Modbus RS422 (4-WIRE)
M3	Modbus RS232
M5	Modbus RS485 (2-WIRE)

Connector:

R	RJ-45 connector (std.)
B	Screw terminals

NOTE: Models WM7 are not available with direct input or with split-core CTs. Solid-core external CTs only.

ORDERING INFORMATION

EXAMPLE: 3Ø 4W, 277VL-N/480VL-L, 200A with solid-core CTs, ±0.5%F.S. accuracy with Modbus RS-485 and RJ-45 connector.

Pulse counter scaling: 0.1kWh per pulse

Model number is: **WM5-33-200-M5-R**

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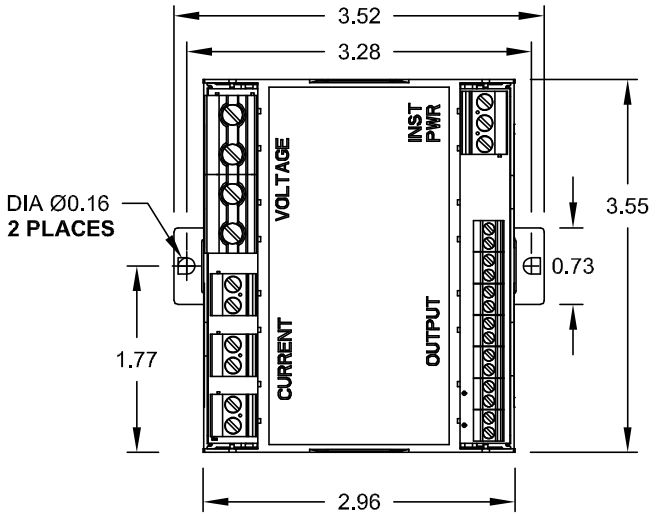
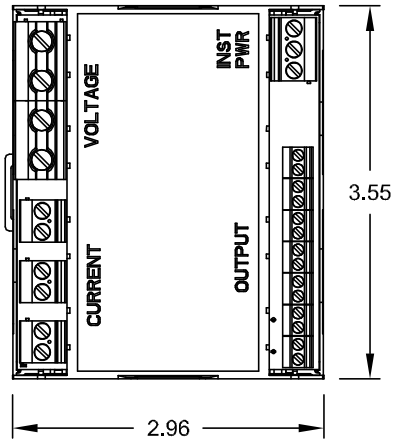
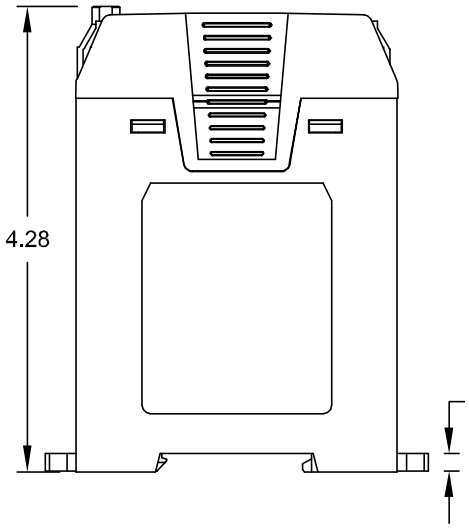
DIMENSIONS

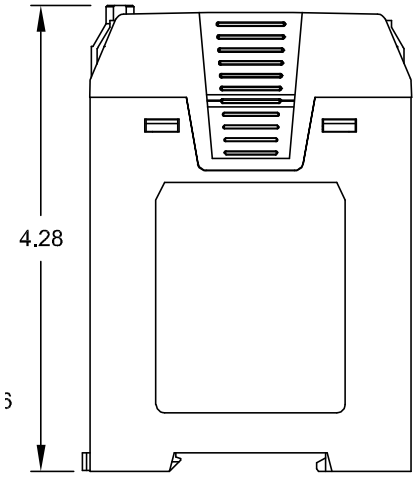
With Panel Mount Adapters (OSI P/N 19754)



DIN Rail Mounting (35mm)







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DIMENSIONS FOR ALL MODELS
All dimensions in inches. Tolerance - 0.00±0.03
(unless otherwise specified)

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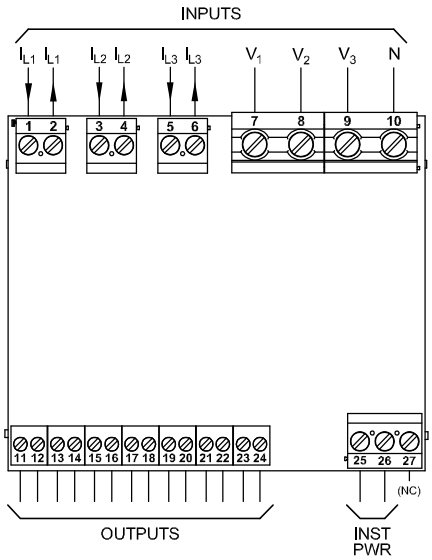
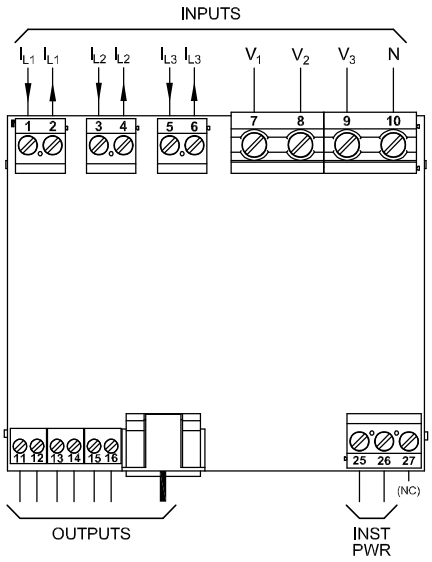
TERMINAL IDENTIFICATION



Terminals are identified using the tables below.



(FIGURE 1)

(FIGURE 2)

OPTION "B" - Modbus implemented with screw terminals

OPTION "R" - Modbus implemented with RJ45

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COMM OPTION = B (Modbus RTU w/Term. Blocks) (FIGURE 1)														
Mode	TB11	TB12	TB13	TB14	TB15	TB16	TB17	TB18	TB19	TB20	TB21	TB22	TB23	TB24
RS422	(N/C)	COM	(N/C)	(N/C)	(N/C)	Tx+	Tx-	Rx+	Rx-	(N/C)	(N/C)	5V	(N/C)	(N/C)
RS485	(N/C)	COM	(N/C)	(N/C)	(N/C)	Tx+/Rx+	Tx-/Rx-	Tx+/Rx+	Tx-/Rx-	(N/C)	(N/C)	5V	(N/C)	(N/C)
RS232	(N/C)	COM	(N/C)	(N/C)	(N/C)	(N/C)	(N/C)	Rx	Tx	(N/C)	(N/C)	5V	(N/C)	(N/C)

COMM OPTION = R (Modbus RTU w /RJ45) (FIGURE 2)												
	RJ45								Term. Blocks			
Mode	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	TB 11	TB 12	TB 13	TB 14-16
RS422	Rx-	Rx+	(N/C)	Tx+	Tx-	(N/C)	5V	COM	(N/C)	COM	5V	(N/C)
RS485	Tx-/Rx-	Tx+/Rx+	(N/C)	Tx+/Rx+	Tx-/Rx-	(N/C)	5V	COM	(N/C)	COM	5V	(N/C)
RS232	Tx	Rx	(N/C)	(N/C)	(N/C)	(N/C)	(N/C)	COM	(N/C)	COM	5V	(N/C)

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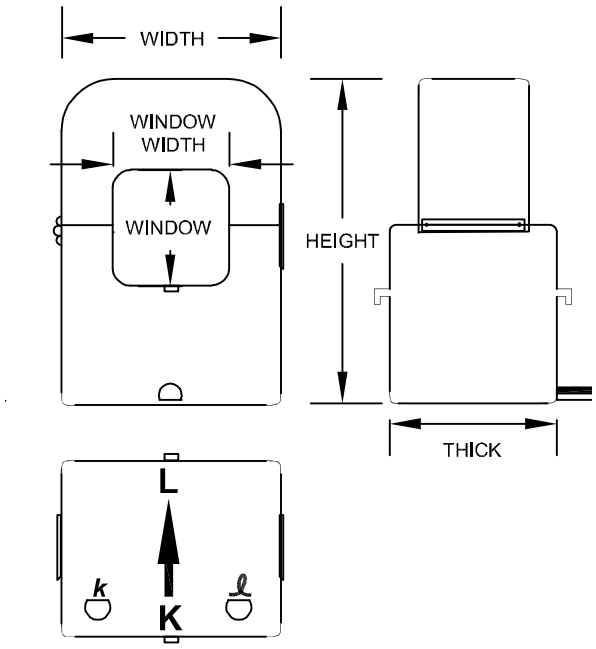
DIMENSIONS

Split-Core CTs for WM6 ONLY.

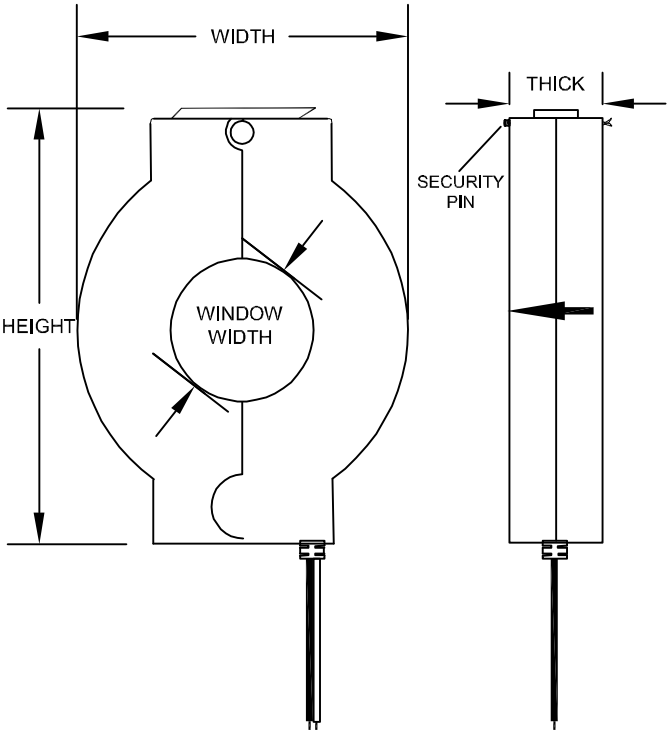
High accuracy CT's feature a 0.1A secondary output

SENSOR SIZE 100A - 600A



Lead Length..... 72"
Wire ..... WHITE =S1/k, 22AWG

SENSOR SIZE 800A -1000A



Lead Length..... 72"
Wire ..... WHITE = S1, 18AWG

SENSOR Size	Dimensions in Inches (mm)					Weight
	Height	Width	Thick	Window		
				High	Wide	lbs. (grams)
100A-300A	2.62 (66.5)	1.77 (45)	1.35 (34.4)	0.94 (23.8)	0.94 (23.8)	0.40 (180)
400A-600A	3.21 (81.5)	2.24 (57)	1.51 (38.4)	1.41 (35.7)	1.41 (35.7)	0.77 (350)
800A-1000A	5.72 (145.2)	4.25 (108)	1.1 (28)	2.16 (55)	2.16 (55)	0.97 (440)

Dwg# 0902-01100-B Rev-A

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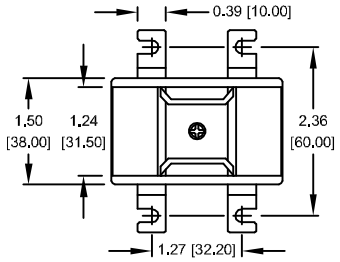
DIMENSIONS

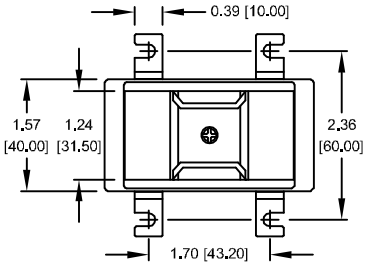
Solid-Core CTs

100A - 300A



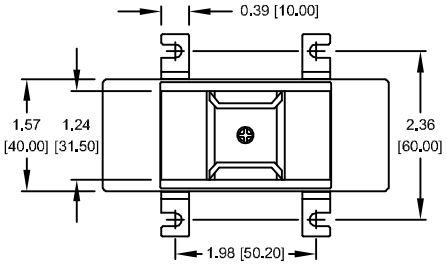
SIZE 1

400A - 600A

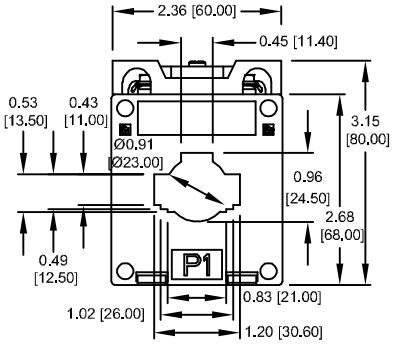


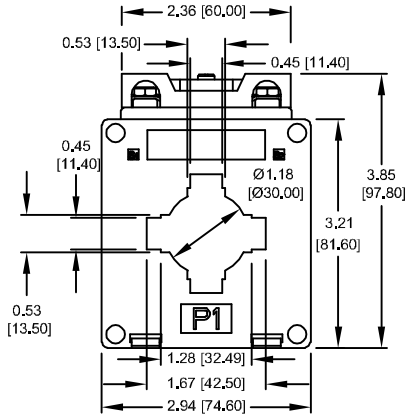
SIZE 2

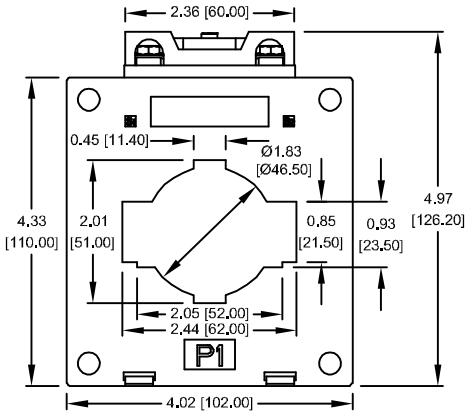
800A - 1000A



SIZE 3







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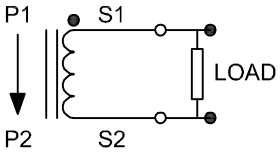
Polarity Markings



Recommended Lead Lengths
72in., 16AWG, Twisted Pair

High accuracy CT's feature a 0.1A secondary output

Dwg# 0902-01025-B Rev-A

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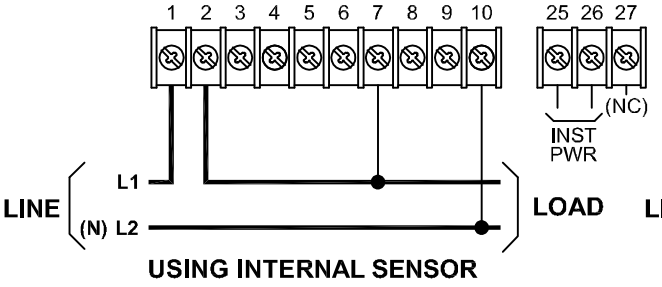
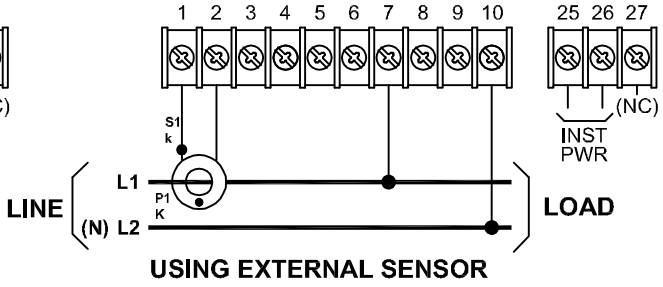
CONNECTIONS

SINGLE-PHASE, TWO-WIRE CONNECTIONS
(ONE ELEMENT)

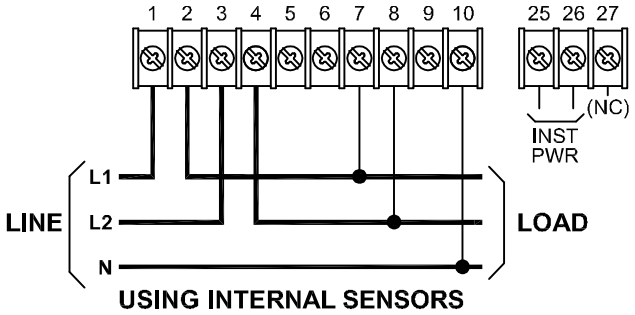


USING INTERNAL SENSOR

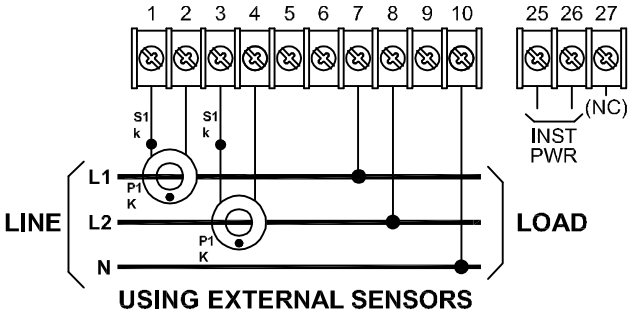


USING EXTERNAL SENSOR

SINGLE-PHASE, THREE-WIRE EDISON CONNECTIONS
(TWO ELEMENT)

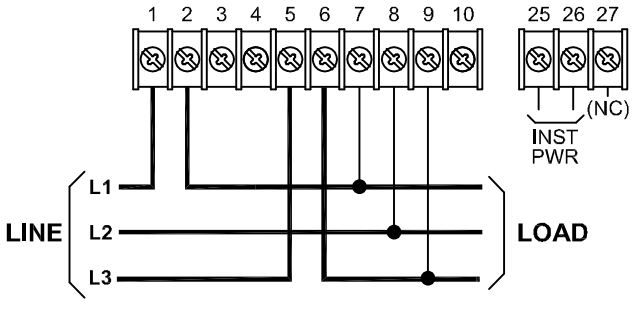


USING INTERNAL SENSORS

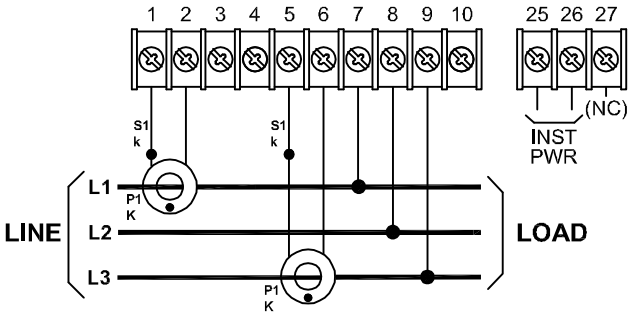


USING EXTERNAL SENSORS

THREE-PHASE, THREE-WIRE CONNECTIONS
(TWO ELEMENT)

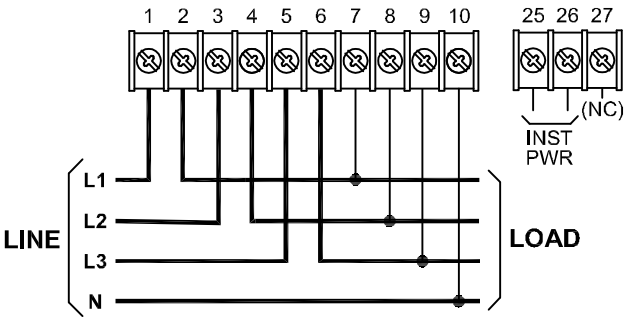


USING INTERNAL SENSORS

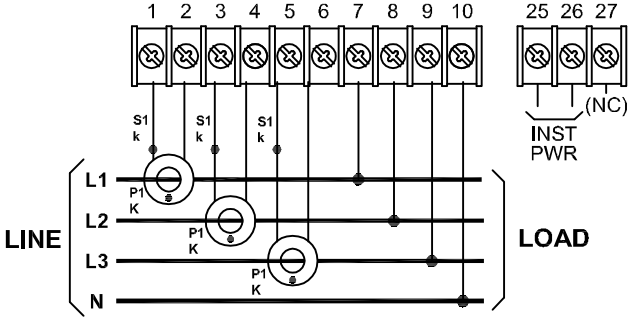


USING EXTERNAL SENSORS

THREE-PHASE, FOUR-WIRE CONNECTIONS
(THREE ELEMENT)



USING INTERNAL SENSORS



USING EXTERNAL SENSORS

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