

DESCRIPTION

Model WVx transducers utilize a microprocessor based design with high speed analog-to-digital converters to provide accurate measurement of real power, reactive power and energy delivered to a load. 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 for all single-phase and three-phase power systems.

Analog output signals are available in industry standard formats: i.e. $\pm 1\text{mA}$, $\pm 10\text{V}$, $4-20\text{mA}$, etc. Forward (consumed) power is indicated with a positive polarity and reverse (generated) power with a negative polarity. Unidirectional outputs ($4-20\text{mA}$) only indicate forward (consumed) power.

Solid-state relays provide pulse/relay closure outputs indicating predetermined amounts of energy usage: i.e. scaling of 1kWh per closure.

All outputs are galvanically isolated from the measured inputs and instrument power.



**5 YEAR
WARRANTY**



FEATURES

- DIN rail mountable package - small, lightweight.
- Wide variety of input and output configurations.
- Measures instantaneous power (real and reactive) as well as energy.
- Indication of forward/reverse power and leading/lagging VARs.
- Universal power supply.
- Models with direct current and with optional CT's provided in the calibration.

APPLICATIONS

- Process control.
- High accuracy CT's feature a 0.1A secondary output.
- Variable frequency drives.
- SCR controlled heater waveforms
- 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 ... WV6 48 - 62Hz
WV7 10 - 500Hz

40th harmonic measurement only available with WV6 solid-core models.

Burden

Voltage All models $\leq 0.5\text{mA/phase}$
Current All models $\leq 0.25\text{VA/phase}$

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)

WV6 models Watts $\pm 0.2\%$ Rdg./PF, $\pm 0.04\%$ F.S.
VARs $\pm 0.2\%$ Rdg./sin θ , $\pm 0.04\%$ F.S.
WV7 models $\pm 0.25\%$ F.S.

TEMPERATURE

Range Operating -10 to 50°C
Storage -25 to 75°C
Effect $\pm 0.005\%/^{\circ}\text{C}$, $\pm 0.05\%$ F.S.

PHYSICAL

Humidity Operating Any non-condensing
Weight $\leq 1\text{lb}$.
Enclosure Mounting DIN rail, 35mm
(may be panel mounted using 19754 adaptors)
Material ABS, UL94HB
Connections Screw terminals

OUTPUT

Analog

Note: WVx models = 2 outputs, 1ea for watts and VARs

Type Select from table

Scaling... **1** (1Ø 2W) F.S. = $V_{L-N}(\text{NOM}) \times I_{\text{NOM}}$
2 (3Ø 3W) F.S. = $V_{L-L}(\text{NOM})/1.2 \times I_{\text{NOM}} \times 2$
3 (3Ø 4W) F.S. = $V_{L-N}(\text{NOM}) \times I_{\text{NOM}} \times 3$
4 (1Ø 3W) F.S. = $V_{L-N}(\text{NOM}) \times I_{\text{NOM}} \times 2$
Loading **B** ($\pm 1\text{mA}_{\text{dc}}$) $\leq 10\text{k}\Omega$
D, X5 ($\pm 10\text{V}_{\text{dc}}$, $\pm 5\text{V}_{\text{dc}}$) $\geq 2\text{k}\Omega$
E, EM (4-20mA_{dc}, 4-12-20mA_{dc}) $\leq 500\Omega$

Response Standard (typical, to 90% F.S.) 50mS
1(for zero-crossing SCRs) 5S

Polarity... Watt ... Pos(+) = Forward Neg(-) = Reverse
VAR ... Pos(+) = Lagging Neg(-) = Leading

Ripple ... Input frequency $\geq 48\text{Hz}$ $\leq \pm 0.5\%$ F.S.

Pulse

WV6, WV7 2 Wh outputs, 1ea forward/reverse
2 VARh outputs, 1ea lagging/leading

Type Wh Form C, solid-state relay
VARh Open collector transistor
T(Wh) 5Vdc, TTL compatible pulse
K(Wh) KYZ operation, solid-state relay

Scaling... Pulse weight is 0.0001, 0.001, 0.01, 0.1 or 1kWh/kVARh as required to provide best resolution while maintaining pulse rates up to 2000 pulses per hour at F.S. input.

Solid-state relay rating 125Vac/dc, 0.1A
Open collector transistor rating 28Vdc, 50mA
Closure / pulse duration Nominal 200mS

INSTRUMENT POWER

Standard universal 85-265V, 47-63Hz, $\leq 10\text{VA}$
115-300Vdc, $\leq 10\text{VA}$



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MODEL SELECTION

TYPE	SYSTEM	VOLTAGE	CURRENT	ANALOG	RESPONSE	PULSE
WV				*	*	*

Skip or leave ☐ blank if not applicable

MODEL

Type:

- | | | |
|---|---|----------|
| 6 | Watt and Wh, VAR and VARh..... (Frequency Range)..... | 48-62Hz |
| 7 | Watt and Wh, VAR and VARh..... (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 | 3Φ 3W | 3Φ 4W | 1Φ 3W |
|-----------|-----------|-------------------|-------------------|
| 1 120VL-N | 1 120VL-L | 1 69VL-N/120VL-L | 1 120VL-N/240VL-L |
| 2 240VL-N | 2 240VL-L | 2 120VL-N/208VL-L | |
| 3 480VL-N | 3 480VL-L | 3 277VL-N/480VL-L | |
| | | 4 346VL-N/600VL-L | |

Current:

Direct:

WV6 only

- | | |
|-----|-----|
| 001 | 1A |
| 005 | 5A |
| 010 | 10A |

Solid-Core WV6 & WV7

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

External CT's:

Split-Core - WV6 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 |

OUTPUT

Analog:

- | | |
|----|-------------|
| B | ±1mAdc |
| D | ±10Vdc |
| E | 4-20mAdc |
| EM | 4/12/20mAdc |
| X5 | ±5Vdc |

Response Time:

- | | |
|------------|------|
| (Standard) | 50ms |
| 1 | 5S |

Pulse:

- | | |
|------------|---|
| (Standard) | Form C solid-state relay |
| T | 5V, TTL pulse |
| K | Form C, solid-state relay, KYZ operation. |

ORDERING INFORMATION

EXAMPLE: 10-500Hz, 3ph 3W, 240V, 300A CT's, 4/12/20mAdc output, 50ms, TTL
Model number: WV7-22-301-EM-T

EXAMPLE: 60Hz, 1ph 2W, 120V, 10A direct, 0-10Vdc output
Model number: WV6-11-010-D



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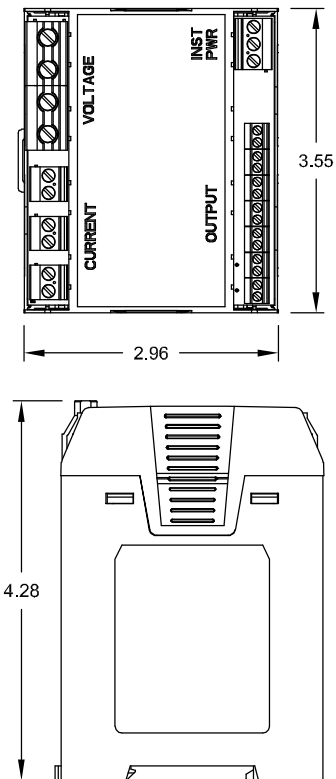
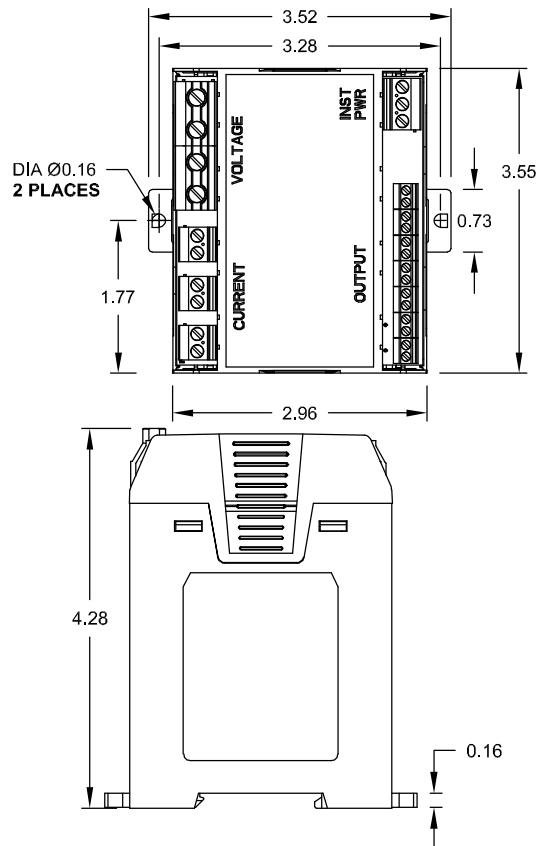
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TERMINAL IDENTIFICATION

With Panel Mount Adapters (OSI P/N 19754)

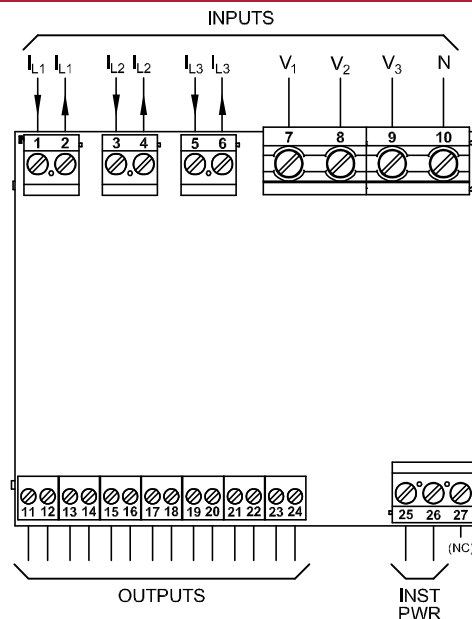
DIN Rail Mounting (35mm)



Dwg# 0902-01016-B Rev-F

DIMENSIONS FOR ALL MODELS

All dimensions in inches. Tolerance - 0.00 ± 0.03
(unless otherwise specified)



Outputs based on table below.

Note: terminal 12 & 14 are internally common (non-isolated).

Dwg# 0902-01016-B Rev-F

	TB11	TB12	TB13	TB14	TB15	TB16	TB17	TB18	TB19	TB20	TB21	TB22	TB23	TB24
Mode	Analog				Wh-FWD			Wh-REV			Vh-LEAD		Vh-LAG	
STD/KYZ	Watts	COM	VARs	COM	C	N.C.	N.O.	C	N.C.	N.O.	N.O.	C	N.O.	C
TTL	Watts	COM	VARs	COM	COM	Wh-FWD	Wh-REV	(N/C)	(N/C)	(N/C)	N.O.	C	N.O.	C



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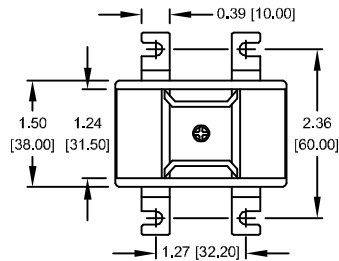
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DIMENSIONS

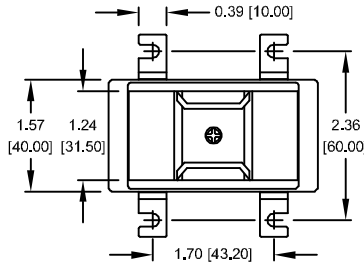
Solid-Core CTs

100A - 300A



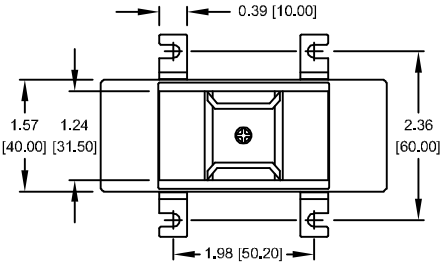
SIZE 1

400A - 600A

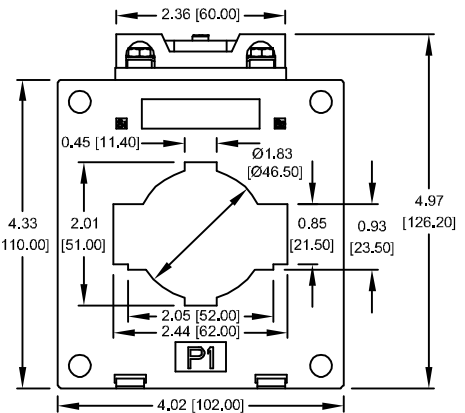
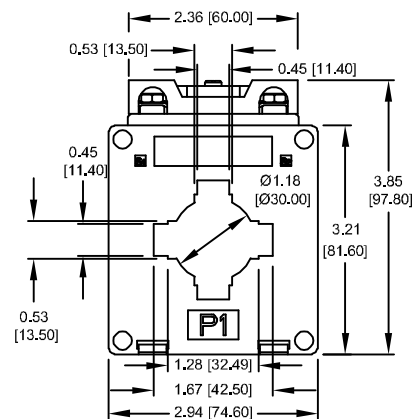
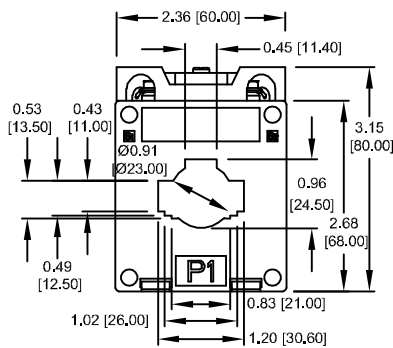


SIZE 2

800A - 1000A

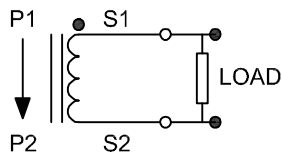


SIZE 3



Dwg# 0902-01025-B Rev-A

Polarity Markings



Recommended Lead Lengths

72in., 16AWG, Twisted Pair

High accuracy CT's feature a 0.1A secondary output



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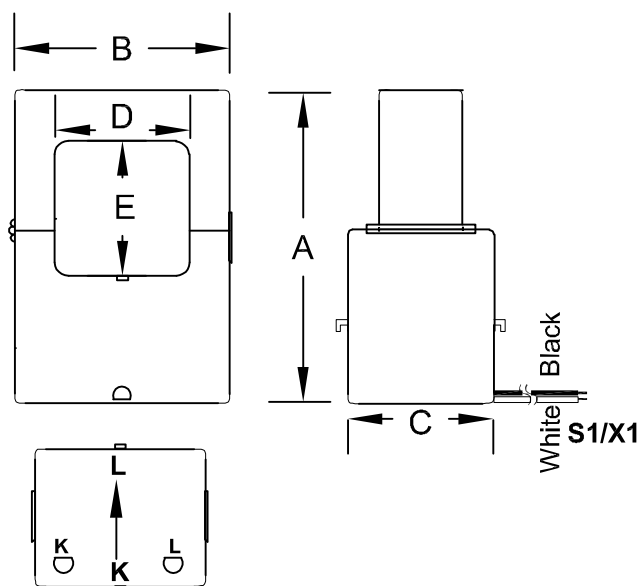
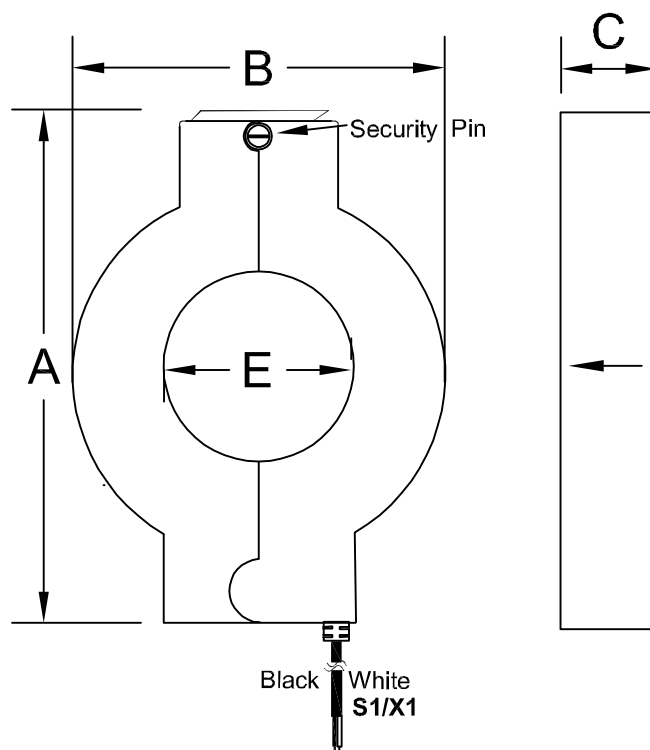
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Split-Core CTs for WV6 ONLY.

High accuracy CT's feature a 0.1A secondary output

100A - 600A**800A - 1000A**

Dwg# 0902-01095-B Rev--

CURRENT RANGE	DIMENSIONS (inches)					WT. (lbs.)	LEAD LENGTHS
	A	B	C	D	E		
100A-300A	2.62	1.77	0.89	0.94	0.94	0.40	22AWG 72"
400A-600A	3.21	2.24	1.51	1.40	1.40	0.77	
800A-1000A	5.72	4.25	1.10	2.16	2.16	1.00	18AWG 72"


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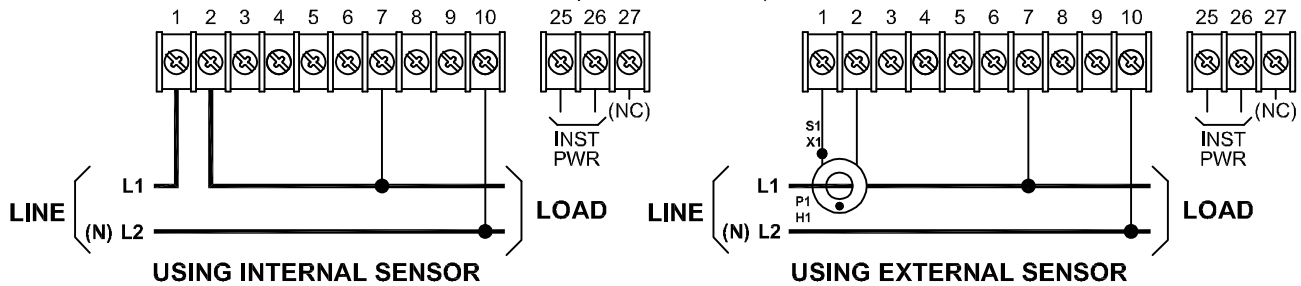
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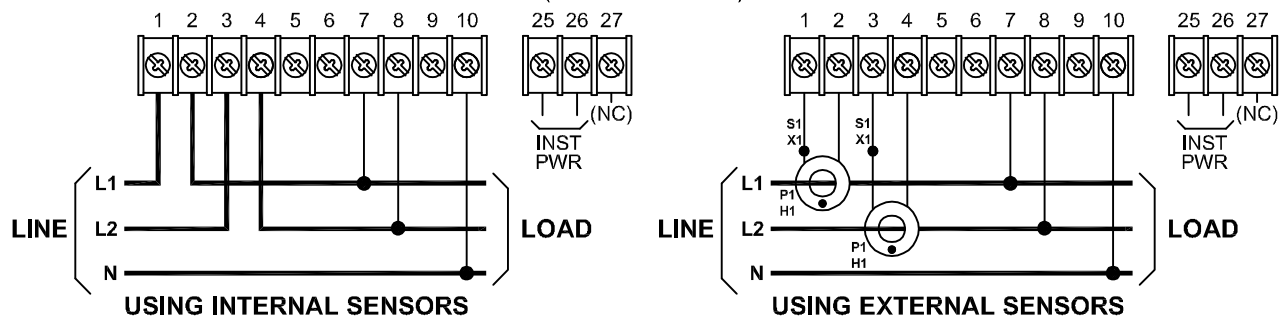
FAX: 614-777-4511

CONNECTIONS

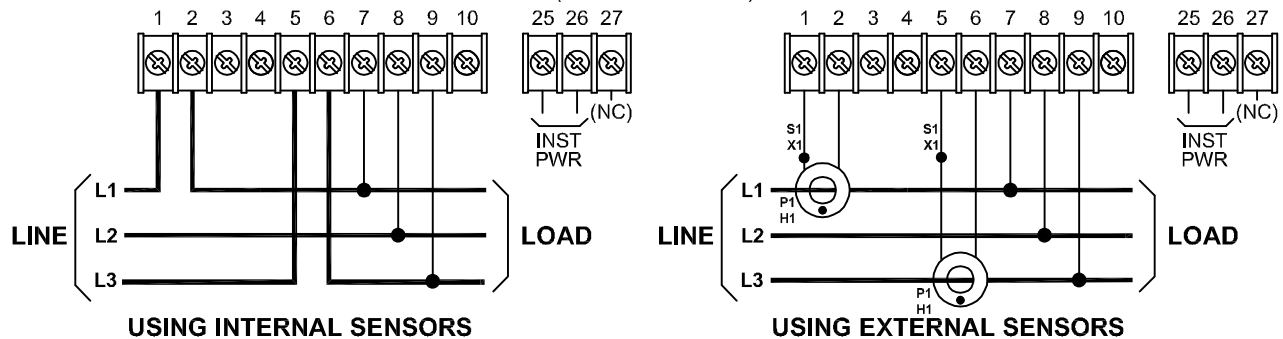
SINGLE-PHASE, TWO-WIRE CONNECTIONS (ONE ELEMENT)



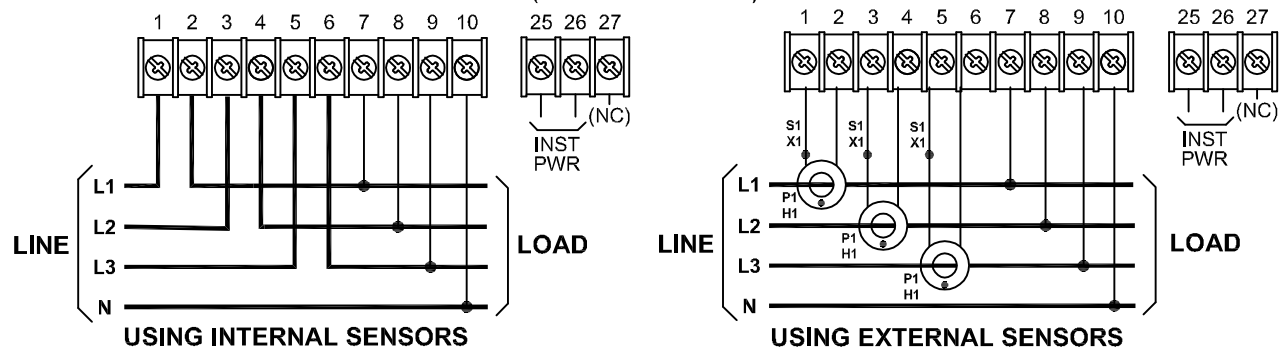
SINGLE-PHASE, THREE-WIRE EDISON CONNECTIONS (TWO ELEMENT)



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



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



Dwg# 0902-01016-B Rev-F



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