DESCRIPTION
The Model PC20 transducer provides three separate outputs proportional to true power, VA, and power factor in single- or polyphase power systems. These are the most significant parameters in the efficient utilization of electrical energy in manufacturing or building management.

True power (Watts) is accurately measured by a continuous multiplication of instantaneous voltage and current by a four-quadrant multiplier. Average true power is then provided as the output.

The apparent power (VA) is determined by taking the product of RMS voltage and RMS current.

Power factor is derived from the ratio of true power to apparent power. This measurement does not rely on phase-angle measurement and is accurate for sinusoidal or distorted waveforms in the 50-400Hz frequency range.

FEATURES
- True power and VA measurement for sinusoidal and distorted waveforms.
- Power factor is derived from the ratio of true power to apparent power and remains accurate for SCR-controlled or otherwise-distorted waveforms.
- Three separate output signals – one each for Watts, power factor, and VA.

APPLICATIONS
- Equipment monitoring to determine and/or maintain efficiency.
- Process monitoring and/or controlling to maintain consistent product quality.
- For use with SCR-controlled, chopped, or otherwise-distorted waveforms.

MODEL SELECTION

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

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>F.S. (W, VA)</th>
<th>STANDARD OUTPUTS (W, PF, VA) MODEL PC20-</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC VOLTS</td>
<td>AC AMPS</td>
<td>0-1mAdc*</td>
</tr>
<tr>
<td>0-150 Nominal 115</td>
<td>0-1</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>0-5</td>
<td>500</td>
</tr>
<tr>
<td></td>
<td>0-10</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>0-20</td>
<td>2000</td>
</tr>
<tr>
<td>0-300 Nominal 230</td>
<td>0-1</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>0-5</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>0-10</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>0-20</td>
<td>4000</td>
</tr>
<tr>
<td>0-600 Nominal 480</td>
<td>0-1</td>
<td>400</td>
</tr>
<tr>
<td></td>
<td>0-5</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td>0-10</td>
<td>4000</td>
</tr>
<tr>
<td></td>
<td>0-20</td>
<td>8000</td>
</tr>
</tbody>
</table>

* Denotes self-powered units. Input voltage ranges limited to:
85-135V for 150Vac models
200-280V for 300Vac models
380-550V for 600Vac models

All others require a separate 120Vac (85-135V) instrument power.

For optional 230Vac instrument power - Add suffix “-22”

ORDERING INFORMATION
Example: Three-Phase, Three-Wire, 230V, 5A, 0-10Vdc Output, Proportional to 0-2000W (VA), with Separate 120Vac Instrument Power.
PC20-005D
### THREE-PHASE, THREE-WIRE MODELS (TWO-ELEMENT)

<table>
<thead>
<tr>
<th>INPUTS</th>
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</tr>
</thead>
<tbody>
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<td>AC VOLTS</td>
<td>AC AMPS</td>
<td>0-1mAdc*</td>
</tr>
<tr>
<td>0-150</td>
<td>0-1</td>
<td>200</td>
</tr>
<tr>
<td>Nominal 115</td>
<td>0-5</td>
<td>1000</td>
</tr>
<tr>
<td>0-10</td>
<td>2000</td>
<td>013A</td>
</tr>
<tr>
<td>0-20</td>
<td>4000</td>
<td>112A</td>
</tr>
<tr>
<td>0-300</td>
<td>0-1</td>
<td>400</td>
</tr>
<tr>
<td>Nominal 230</td>
<td>0-5</td>
<td>2000</td>
</tr>
<tr>
<td>0-10</td>
<td>4000</td>
<td>014A</td>
</tr>
<tr>
<td>0-20</td>
<td>8000</td>
<td>113A</td>
</tr>
<tr>
<td>0-600</td>
<td>0-1</td>
<td>800</td>
</tr>
<tr>
<td>Nominal 480</td>
<td>0-5</td>
<td>4000</td>
</tr>
<tr>
<td>0-10</td>
<td>8000</td>
<td>015A</td>
</tr>
<tr>
<td>0-20</td>
<td>16000</td>
<td>114A</td>
</tr>
</tbody>
</table>

### THREE-PHASE, FOUR-WIRE MODELS (THREE-ELEMENT)

<table>
<thead>
<tr>
<th>INPUTS</th>
<th>F.S. (W, VA)</th>
<th>STANDARD OUTPUTS (W, PF, VA) MODEL PC20-</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC VOLTS</td>
<td>AC AMPS</td>
<td>0-1mAdc*</td>
</tr>
<tr>
<td>0-150 L-N</td>
<td>0-1</td>
<td>300</td>
</tr>
<tr>
<td>Nominal 115</td>
<td>0-5</td>
<td>1500</td>
</tr>
<tr>
<td>0-10</td>
<td>3000</td>
<td>016A</td>
</tr>
<tr>
<td>0-20</td>
<td>6000</td>
<td>115A</td>
</tr>
<tr>
<td>0-300 L-N</td>
<td>0-1</td>
<td>600</td>
</tr>
<tr>
<td>Nominal 277</td>
<td>0-5</td>
<td>3000</td>
</tr>
<tr>
<td>0-10</td>
<td>6000</td>
<td>017A</td>
</tr>
<tr>
<td>0-20</td>
<td>12000</td>
<td>116A</td>
</tr>
</tbody>
</table>

### SPECIFICATIONS

**INPUT**
- Voltage: See Tables
- Current: See Tables
- Frequency Range: 50 to 400Hz
- Power Factor: Any
- Response (to 90%): 1ms
- Burden: Voltage: 0.1VA/phase, Current: 0.28VA/phase
- Over-range (w/o damage):
  - Voltage: 150V Range: 175V, 300V Range: 350V, 600V Range: 600V
  - Current: 1A, 5A, 10A Range: 2 X Rated, 20A Range: 20A Range

**DIELECTRIC TEST**
- Input/Output/Case: 1500Vac

**OUTPUTS**
- Power Factor: F.S. at unity, Zero at lead or lag zero
- Loading:
  - "A", "B" models: 0-1mAdc: 0-10kΩ
  - "E" models: 4-20mAdc: 0-500Ω
  - All other models: 0-5, 0-10Vdc: 2kΩ min.
- Response Time: (to 90%): 250ms
- Response Time: (to 90%): 250ms

**ACCURACY**
- Includes effects of linearity, setpoint, repeatability and power factor at nominal voltage input @ ±10%.
- W/VA: 50-60Hz: ±0.25% F.S.
- Power Factor: 10-100%VA, 50/60Hz: ±0.005 PF
- W/VA: 50-400Hz: ±0.5% F.S.
- Power Factor: 10%-100%VA, 50-400Hz: ±0.01 PF
- Ripple: <1%F.S.

**TEMPERATURE**
- Operating Range: -10°C to +60°C
- Effect: ±1.0% of Rdg., ±0.1% F.S.
SINGLE-PHASE CONNECTIONS (ONE-ELEMENT)

1 2 3 4 5 6 7 8 9 10 11 12

COM W PF VA

OUTPUTS INST POWER *

LINE LOAD

L1
L2

USING INTERNAL SENSORS

USING EXTERNAL SENSORS

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

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

COM W PF VA

OUTPUTS INST POWER *

LINE LOAD

L1
L2
L3

USING INTERNAL SENSORS

USING EXTERNAL SENSORS

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

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

COM W PF VA

OUTPUTS INST POWER *

LINE LOAD

L1
L2
L3
N

USING INTERNAL SENSORS

USING EXTERNAL SENSORS

CASE DIMENSIONS

ALL DIMENSIONS IN INCHES.

CASE HEIGHT 5.88''
3PH 3W 3.7 LBS

CASE HEIGHT 5.88''
1PH 2W 3.0 LBS

CASE HEIGHT 5.88''
3PH 4W 4.5 LBS

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