# SIDEWINDER® - CURRENT SENSOR

PA320XNL Series

- 50/60 Hz, Single Phase, AC Current Sensor
- Dynamic Range from 0.1 to 1000 Amps
- Meets ANSI C12.20 Accuracy Class 0.2
- Meets IEC 62053-21 class 1
- Phase error < 0.05 degree
- Bandwidth 500KHz
- Immune to external AC magnetic fields
- Immune to DC current & DC magnetic field
- Very low temperature coefficient
- Patent pending

## Electrical Specifications at 25°C Temp Range -40°C to 130°C

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Accuracy Class</th>
<th>$K_r$ ($\mu \Omega$/Hz typ)</th>
<th>Pri-Sec Isolation (V min)</th>
<th>$L_s$ (mH typ)</th>
<th>$R_s$ (Ohms typ)</th>
<th>SRF (Hz typ)</th>
<th>@ 50 Hz ($\mu$V/A)</th>
<th>@ 60 Hz ($\mu$V/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA3202NL</td>
<td>0.2</td>
<td>8.33</td>
<td>6,000</td>
<td>1.75</td>
<td>57.3</td>
<td>160,000</td>
<td>416</td>
<td>500</td>
</tr>
<tr>
<td>PA3206NL</td>
<td>0.2</td>
<td>7.66</td>
<td>6000</td>
<td>1.14</td>
<td>37.6</td>
<td>200,000</td>
<td>383</td>
<td>460</td>
</tr>
<tr>
<td>PA3208NL</td>
<td>0.2</td>
<td>7.66</td>
<td>6000</td>
<td>1.14</td>
<td>37.6</td>
<td>200,000</td>
<td>383</td>
<td>460</td>
</tr>
</tbody>
</table>

### Equations:

$$ Vsa = K_r F_r I_{pa} $$

$$ F_r << SRF $$

### NOTES:

1. Output Voltage is proportional to the derivative (di/dt) of the input current based on the Rogowski Coil principle.
2. All current and voltages assumed to be sinusoidal waveforms at $F_r$, the constant rated frequency in Hz, measured as RMS values.
3. Accuracy Class per IEC 60044-1 Table 11 where:
   - Percentage current error = \( (K_r \cdot F_r \cdot I_{pa} - Vout) / Vout \) x 100
   - Phase displacement = the difference between the primary current ($I_{pa}$) phase vector and the (secondary voltage ($Vout$) phase vector minus 90 degrees)
4. $K_r$ = Rated transformation constant
5. $L_s$ = Secondary winding inductance
6. $R_s$ = Secondary winding resistance
7. SRF = Self Resonate Frequency
8. $I_{pa}$ = Actual primary current
9. $Vsa$ = Actual secondary output voltage

## Low Frequency Equivalent Circuit

![Low Frequency Equivalent Circuit](image)

## Mechatronics

PA3202NL

![Mechanicals](image)

## Schematics

![Schematics](image)
SIDEWINDER® - CURRENT SENSOR
PA320XNL Series

Mechanicals

PA3206NL

PA3208NL

Schematics

For More Information

Pulse Worldwide Headquarters
12220 World Trade Drive
San Diego, CA 92128
U.S.A.

Pulse Europe
Einsteinstrasse 1
D-71083 Herrenberg
Germany

Pulse China Headquarters
B402, Shenzhen Academy of Aerospace Technology Bldg.
10th Kejinian Road
High-Tech Zone
Nanshan District
Shenzhen, PR China 518057
Tel: 86 755 33966678
Fax: 86 755 33966700

Pulse North China
Room 2704/2705
Super Ocean Finance Ctr.
2067 Yan An Road West
Shanghai 200336
China

Pulse South Asia
135 Joo Seng Road
#03-02
PM Industrial Bldg.
Singapore 368363

Pulse North Asia
3F, No. 198
Zhongyuan Road
Zhongyi City
Taiyuan County 320
Taiwan R. O. C.
Tel: 886 3 4356768
Fax: 886 3 4356823 (Pulse)
Fax: 886 3 4356820 (FRC)

Performance warranty of products offered on this data sheet is limited to the parameters specified. Data is subject to change without notice. Other brand and product names mentioned herein may be trademarks or registered trademarks of their respective owners. © Copyright, 2011. Pulse Electronics, Inc. All rights reserved.