Wireless Sensor Node Assessment Kit (wSNAK)

Perpetuum’s Wireless Sensor Node Assessment Kit has been developed to confirm to both OEMs and End Users the benefits and simplicity of wireless condition monitoring systems, powered by vibration energy harvesting.

The kit consists of four wireless sensor nodes each powered by a PMG17 energy harvester and incorporating an LCD display of the harvested power for straightforward installation. The nodes monitor temperature and vibration and the resulting data is transmitted to a laptop-based receiver for display and analysis.

The wireless sensor nodes are also available separately for integration with an OEM’s own system and can be adapted for other parameters such as pressure or flow.

wSNAK is open source; accelerating OEM product development time by up to 12 months, leading to $100,000s in cost savings.

About Perpetuum:

Perpetuum is the world leader in vibration energy harvesting and has led the way since the development and launch of the first practical power source harvesting machinery vibration in 2005.

With Headquarters in the UK, this highly customer focused management team covers the USA and Europe offering technology innovation, quality of service and customer technical support in a wide variety of industries.

At Perpetuum we are committed to technology innovation, and our goal is to create the future of wireless condition monitoring for our customers.
**Kit contents:**

- A laptop with software
- A receiver box & USB cable
- A receiver antenna
- Four wireless sensor nodes
- Four accelerometers & cables
- Four accelerometer magnetic mounts
- Operating instructions
- A Peli case
  
(Motor not included)

**wSNAK Features:**

- **Power Source:** Perpetuum Micro Generator (PMG17) for either 50Hz or 60Hz regions.
- **LCD:** Harvested power shown on LCD display.
- **Sensor:** Industry standard; Monitran MTN110TC IEPE accelerometer with integral temperature sensor on 2m lead.
- **Operating Conditions:** -20°C to +65°C temperature range.
- **Environmental:** IP65 sealed in a stainless steel construction.
- **Installation:** Rapid with magnetic mounts for node and accelerometer.
- **Radio:** 802.15.4 radio, RF power output +10dbm, range greater than 300m line-of-sight.

**PMG17**

Designed to resonate at twice mains frequency (100 or 120 Hz) it gives excellent performance on most AC induction or synchronous motor-powered equipment. With up to 45mW power output, the device has an estimated **Mean-Time-Between-Failure (MTBF) of 440 years.**

<table>
<thead>
<tr>
<th>ACCELERATION (RMS)</th>
<th>VELOCITY (PEAK)</th>
<th>TYPICAL CENTRE POWER</th>
<th>TYPICAL 50% POWER BANDWIDTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>f = 100Hz</td>
<td>f = 120Hz</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.015g</td>
<td>0.33mm/s</td>
<td>0.28mm/s</td>
<td>0.6mW</td>
</tr>
<tr>
<td>0.025g</td>
<td>0.55mm/s</td>
<td>0.46mm/s</td>
<td>1.2mW</td>
</tr>
<tr>
<td>0.100g</td>
<td>2.2mm/s</td>
<td>1.8mm/s</td>
<td>4.5mW</td>
</tr>
<tr>
<td>1.000g</td>
<td>22mm/s</td>
<td>18mm/s</td>
<td>45mW</td>
</tr>
</tbody>
</table>

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