SERIES KG IMPACT SENSOR

PRINCIPLE OF OPERATION

The Series KG Impact Sensor constantly monitors the impact of the mass to which it is attached. It provides a time-based signal driven by two user-defined set points indicating excessive impact. A PLC can interpret this signal and warn of erratic operation or shut down a system to prevent catastrophic failure.

The signal is fail-safe meaning a normally closed signal is provided during normal operating conditions. Absence of the signal indicates excessive impact or a problem.

When an impact exceeds the non-latching (warning) set point, the signal is momentarily dropped (50ms) and the sensor’s LED flashes from green to red. When an impact exceeds the latching (trip) set point, the signal is permanently dropped and the LED remains red until power is cycled, which resets the sensor.

The user defines set point values and whether these points are monitored together or individually. The Series KG Impact Sensor is available preset from the factory or set on-site by the user (programmer required). Set point values can be modified at any time.

The Series KG Impact Sensor is also able to measure an impact and relay that value to the user (programmer required). This is helpful for diagnostics or during initial set up of the Series KG Impact Sensor. Impacts and set points are indicated in g-force.

FEATURES

• Single axis/Bi-directional sensitivity
• Single or dual point operation
• User defined, re-writable set-points (programmer required)
• Attaches easily to moving mass
• Multi-color LED for visual monitoring
• Fail-safe output signal
• Available preset from PHD or field programmable
• 3 pin quick connect option
• Optional programmer available for additional functionality

USES

• Predictive maintenance
  - Detect changes in impact force that can indicate cushion, flow control, or shock absorber failure
  - Sense both failure and impending failure of components allowing for scheduled shutdown and maintenance
  - Minimize unnecessary preventative maintenance and extend preventative maintenance schedules

• Productivity
  - Prevent damage to product and equipment caused by failed components or machine crash
  - Reduce unanticipated downtime
  - Alert personnel of component failure and machine crash

• Benchmarking
  - Measure impact (programmer required)
  - Count impacts or extreme vibration (<400Hz)
  - Monitor centripetal forces

TO ORDER SPECIFY:

Product, Series, Design No, Options, Circuit Type, and Settings.

PRODUCT
K - Sensor

DESIGN NO.
1 - Digital

CABLE OPTIONS
K - Quick Connect
5 - 5 meter Cable

NON-LATCHING SETTING
000 - Off
005-120 - Impact (g)
Blank - Unprogrammed

SERIES
G - Impact

OPTIONS
S - Solid State

CIRCUIT TYPE
N - NPN (Sink)
P - PNP (Source)
Blank - Unprogrammed

LATCHING SETTING
000 - Off
005-120 - Impact (g)
Blank - Unprogrammed

NOTES:

1) Circuit type, non-latching setting, and latching setting must be filled out entirely or all three must be left blank.
2) ‘000 - OFF’ setting indicates single point operation and must be accompanied with a setting in the adjacent field.
3) Non-latching and latching settings specified in increments of 1 using a 3-digit format.
4) Default configuration is KG1Sx-P-010-020.
5) Programmer sold separately.
**SPECIFICATIONS & OPERATION: SERIES KG IMPACT SENSOR**

### CONFIGURABLE CIRCUIT TYPE

**SINK/NPN**

<table>
<thead>
<tr>
<th>PIN 1/BROWN</th>
<th>LOAD</th>
<th>1 DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN 2/4/BLACK</td>
<td></td>
<td>2/4</td>
</tr>
<tr>
<td>PIN 3/BLUE</td>
<td></td>
<td>3</td>
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</tbody>
</table>

**SOURCE/PNP**

<table>
<thead>
<tr>
<th>PIN 1/BROWN</th>
<th>LOAD</th>
<th>1 DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN 2/4/BLACK</td>
<td></td>
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</tr>
<tr>
<td>PIN 3/BLUE</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Set Points

- **Point 1**: Non-Latching (Warn)
- **Point 2**: Latching (Trip)
  - 50ms Output Interruption
  - Permanent Output Interruption (Cycle power to reset)

### Mode

- **Single Point A**: Non-Latching
- **Single Point B**: Latching
- **Dual Point**: Non-Latching and Latching

1) Output is normally closed and opens or turns off when the sensor detects an excessive impact.
2) Includes bracket, fastener, and cable

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**DIMENSIONS: SERIES KG IMPACT SENSOR**

### 5 Meter Cable - KG1S5

- Ø .200 [.51]
- 1.000 [25.4]
- 4.3 [12]
- 1.78 [4.52]
- 322 [8.2]

### Quick Connect - KG1SK

- 4.000 [101.6]
- 4.3 [12]
- .177 [4.5]
- 314 [8]
- 322 [8.2]
- 323 [8.2]
- 4.000 [101.6]

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**INSTANTANEOUS IMPACT** (Figure 1)

As normal impact increases and exceeds the non-latching point, the fail-safe signal drops for 50 milliseconds with every excessive impact. A PLC monitoring the signal can utilize timer logic to issue an appropriate action, alert, or warning. When the impact increases beyond the latching point, the fail-safe signal permanently drops and the PLC can shut the machine down to prevent catastrophic failure.

**CONSTANT FORCE AND CENTRIPETAL MOTION** (Figure 2)

In the case of constant force or centripetal motion where the force profile is flat, the fail-safe signal remains low, returning high 50ms after the force falls below the non-latching point. If the latching point is exceeded, the fail-safe signal permanently drops.

**SENSOR RESET PROCEDURE**

To reset from a latched condition, power must be cycled to the sensor. Allow 200ms for sensor initialization before returning to normal operation.

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**NOTE:** All dimensions are reference only unless specifically toleranced.
FEATURES

Use of the optional Series KG Programmer unlocks the total potential and flexibility of the Series KG Impact Sensor. With the programmer, the end user is able to modify the circuit type (NPN or PNP), whether the sensor is in dual or single point mode, and what the value of these set points is.

In addition, the programmer simplifies setting up the Series KG Impact Sensor. If the user doesn't know what “normal impact” is or where to start, the programmer has the ability to put the sensor in “measure impact” mode where the programmer will read the experienced impact. This feature is applicable in measure impact mode or when a latching point is exceeded.

A single programmer may be used with an unlimited number of impact sensors throughout an entire plant.

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>84424-01</td>
<td>Programmer &amp; Power Supply</td>
</tr>
<tr>
<td>84440</td>
<td>Programmer Only</td>
</tr>
<tr>
<td>84441</td>
<td>Power Supply Only</td>
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CORDSETS

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<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>63549-02</td>
<td>M8, 3 pin, Straight Female Connector, 2 meter cable</td>
</tr>
<tr>
<td>63549-05</td>
<td>M8, 3 pin, Straight Female Connector, 5 meter cable</td>
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</tbody>
</table>

MOUNTING BRACKET KITS

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
<td>84462</td>
<td>Bracket</td>
</tr>
<tr>
<td>84463</td>
<td>Band Clamp</td>
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</tbody>
</table>

One bracket provided with each sensor. Band clamp will attach KG to rod diameter .875 in [22 mm] min. to 2.875 in [73 mm] max.

Proper cable management is critical to the operation of the Impact Sensor. All cabling must be secured as not to influence the motion of the sensor in any way.

<table>
<thead>
<tr>
<th>PIN 2/4</th>
<th>WIRE COLOR</th>
<th>BLACK</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIN 1</td>
<td>WIRE COLOR</td>
<td>BROWN</td>
</tr>
<tr>
<td>PIN 3</td>
<td>WIRE COLOR</td>
<td>BLUE</td>
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NOTE: ALL DIMENSIONS ARE REFERENCE ONLY UNLESS SPECIFICALLY TOLERANCED.