

HALL-EFFECT ROTARY POSITION SENSORS FOR CHASSIS HEIGHT DETECTION

Application Brief



Honeywell

BACKGROUND

With off-road wheeled and track equipment, it is common to be operating the equipment on sloped or uneven terrain. This type of equipment is typical to the agriculture, construction, oil and gas, and defense industries.

As a result of operating on uneven or sloped terrain, the operator may also be in an undesirable position for extended periods. In addition to the optimal position for the operator of the equipment, there may also be portions of the equipment such as engine management or hydraulics that should be compensated while on sloped terrain.

SOLUTION

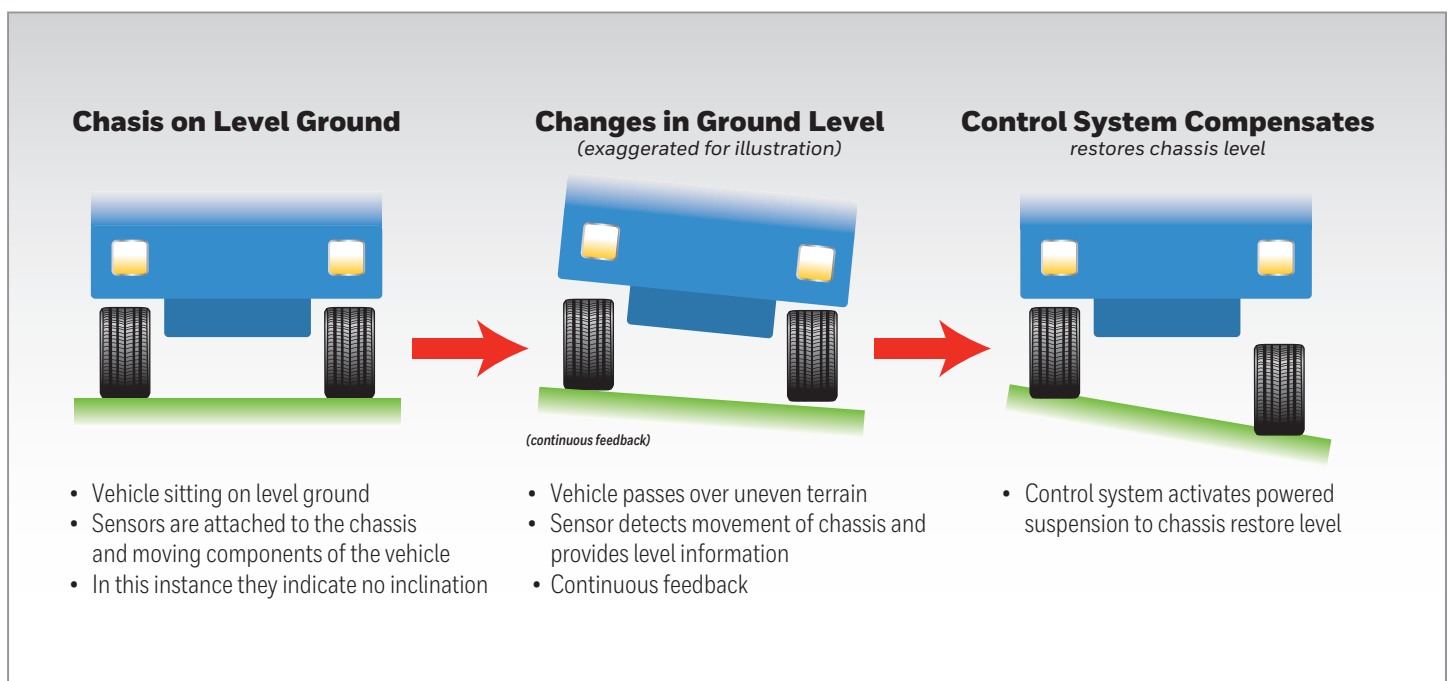
To overcome the issues of the equipment tilted related to the terrain, Honeywell offers the Hall-effect Based RTY Position Sensor. Sensors are attached to individual moving elements of the suspension to provide movement detection and also can be integrated into the equipment to provide real time feedback and compensate for the uneven or sloped terrain.

The Honeywell Hall-effect rotary position sensors provide data for demanding applications in industries such as heavy-duty, off-highway transportation.

Position sensors enable autonomous vehicle characteristics and enhance efficiency and productivity by reporting key data required to automate and monitor movements of vehicle systems and components, allowing movement data to be filtered for extraneous environment and vehicle movements.

In the figure below, the left diagram indicates the position sensor measures the equipment is on level ground, and input from the sensor indicates no change to the chassis inclination. In the middle diagram, feedback from the sensors starts to indicate that vehicle chassis/suspension is experiencing some movement as it rolls over uneven ground. In the last image, the vehicle ECU/controller has processed the output from the sensors and corrects for tilt by adjusting suspension to keep the equipment level.

This assistance will be found more often as the industry moves toward some fully autonomous systems. Honeywell RTY position sensors are a key piece as they provide and report key vehicle data.





RTY Series Features and Benefits

- ★ **35 M cycle product life** offers long life in the application
- **Solid-state Hall-effect technology** provides non-contact operation, long service life, low torque actuation and reduces worn-out mechanisms
- **Rugged IP67& IP69K sealed package** with integral connector allows for use in harsh environments
- Stable performance over temperature range
- Vibration immunity and diagnostic functions
- Automotive-grade EMI/EMC testing, integrated reverse polarity, and short circuit to deliver protection against installation errors and frequencies in the environment
- Industry-standard six position AMPSEAL-16 connector
- **Eight operating ranges up to 360°** offers flexibility in multiple applications, allowing OEMs the range of travel needed for the application
- Linearity: $\pm 1\%$
- Accuracy: $\pm 1.6\%$
- Sensor available with or without levers for easy installation

★ = Competitive differentiator



⚠ WARNING IMPROPER INSTALLATION

- Consult with local safety agencies and their requirements when designing a machine control link, interface and all control elements that affect safety.
- Strictly adhere to all installation instructions.

Failure to comply with these instructions could result in death or serious injury.

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