ALPSALPINE

Magnetic Angle Sensors

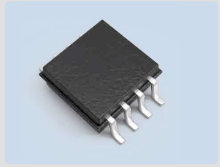
Compact sensors with layout flexibility for high-precision angle and linear motion sensing

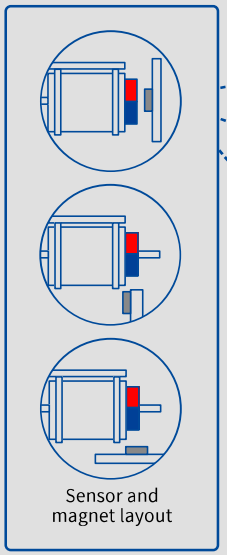
FEATURES

01 Compact and accurate absolute angle sensing

02 Product lineup covering a broad range of conditions

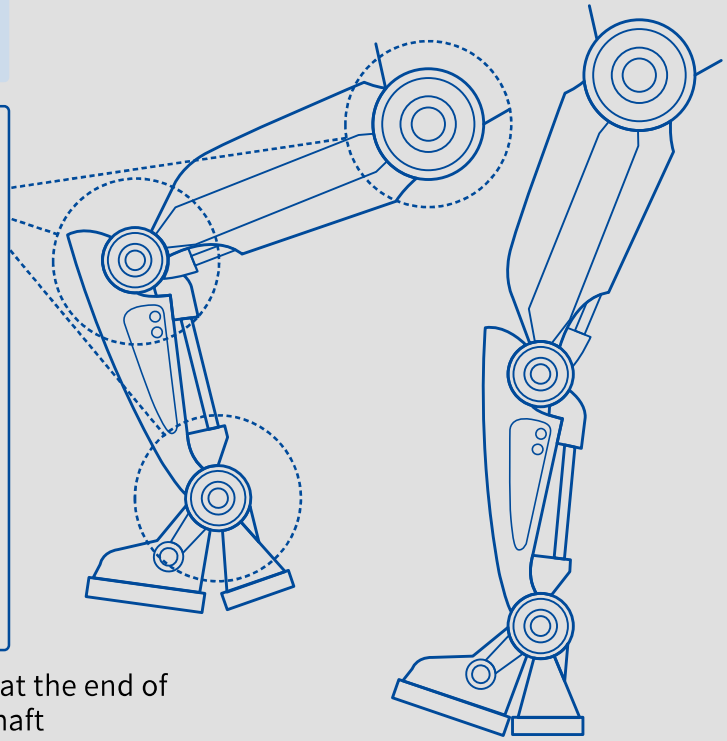
03 Position either facing the end or to the side of a rotating shaft; Also detect linear travel





Position either at the end of or beside the shaft

Suited to diverse applications involving angle or stroke detection



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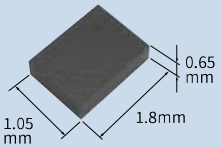
Magnetic Angle Sensors

Compact sensors with layout flexibility for high-precision angle and linear motion sensing

Lineup of compact, accurate sensors covering a broad range of conditions

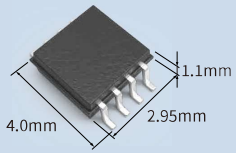
HGAR Series



HGARAM001A

- Compact with low profile (1/3 size of earlier models)
- Stability with weak to strong magnetic fields
- Sensor device design resilient around strong magnetic fields
- Stable waveform facilitating later-stage correction/calculation

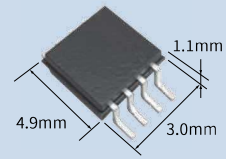
105°C, Single Output



HGARAP001A

- Two-phase analog output and two full bridges
- Operating temperature range up to 105°C
- MSOP-8 package

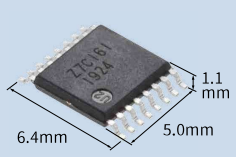
150°C, Single Output



HGARPS011A

- Two-phase analog output and two full bridges
- Operating temperature range up to 150°C
- TSSOP-8 package
- Vout p-p = 6000mV (@5V, 25°C)

150°C, Dual Output (with Redundancy)



HGARPS001A

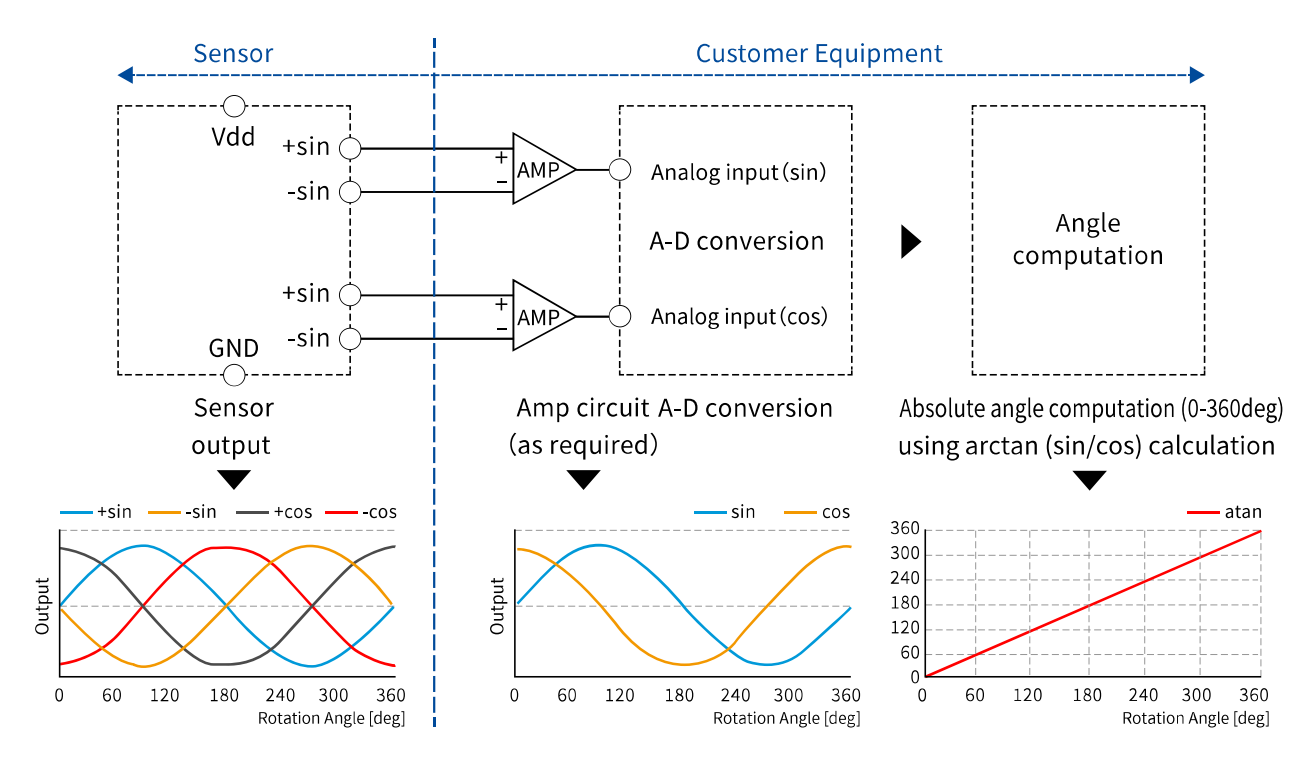
- Two circuits in one package for redundancy; two-phase dual analog output and four full bridges
- Operating temperature range up to 150°C
- TSSOP-16 package
- Vout p-p = 6000mV (@5V, 25°C)

Magnetic Angle Sensors

Compact sensors with layout flexibility for high-precision angle and linear motion sensing

Stable output with weak to strong magnetic fields

Example of an Angle Computation System



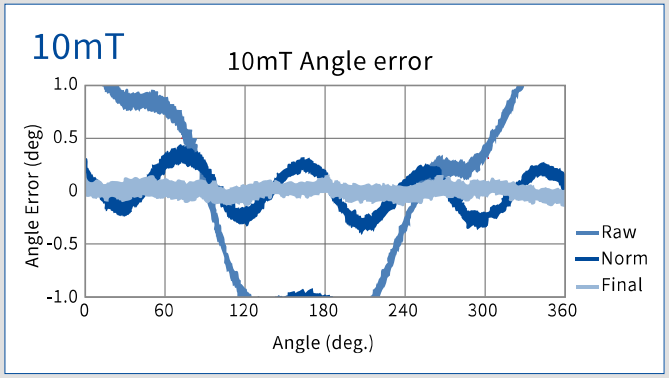
- The four signals delivered as output by the sensor above (+sin, -sin, +cos and -cos) are amplified as required by the equipment it is incorporated into
- Use of sin/cos computations means signals are dependent only on the angle of the magnetic field and are not affected by the strength of the magnetic field. Absolute angle is then computed using an arctan (sin/cos) calculation

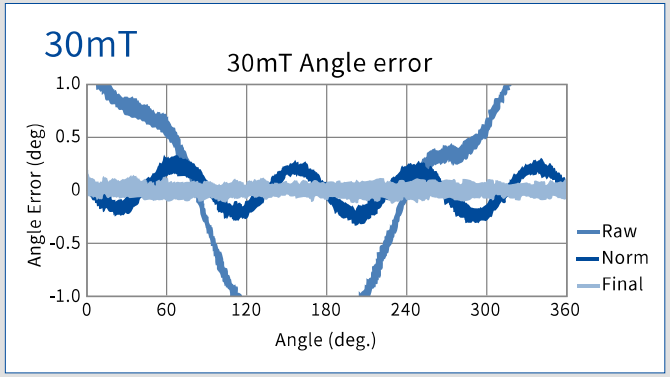
Magnetic Angle Sensors

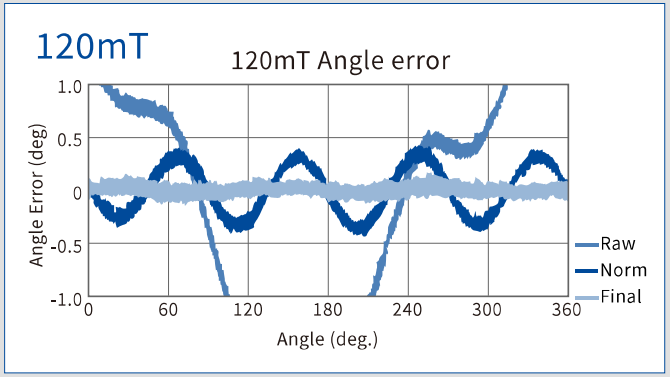
Compact sensors with layout flexibility for high-precision angle and linear motion sensing

Stable output with weak to strong magnetic fields

Stability with weak to strong magnetic fields facilitates angle correction







- Angle correction enables stable final output in the presence of magnetic fields from 10mT to 120mT

Raw : Raw data
Norm : Corrected data (Offset, Gain and Phase)
Final : Corrected data (Offset, Gain, Phase and Waveform)

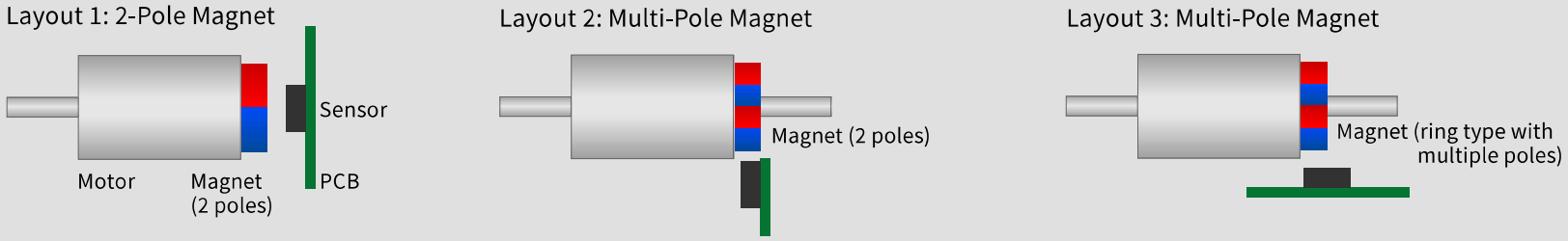
Magnetic Angle Sensors

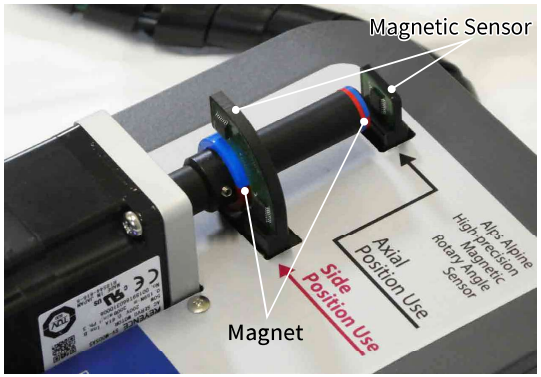
Compact sensors with layout flexibility for high-precision angle and linear motion sensing

Position either facing the end or to the side of a rotating shaft; Also detect linear travel

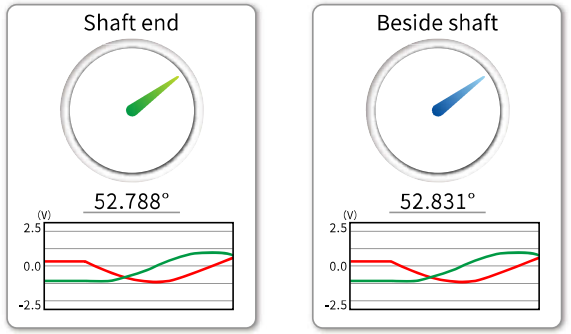
Alps Alpine magnetic angle sensor layout is highly flexible, contributing to greater design freedom
It is also easy to include multiple sensors, ensuring redundancy in the case one sensor happens to stop working

Sensor Layout Examples





The same level of angle sensing in either position



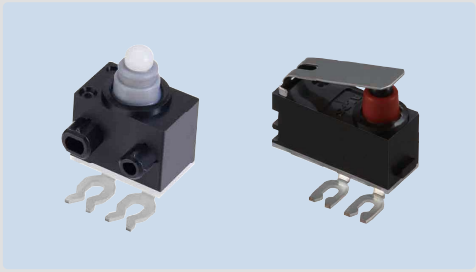
Latch Sensors with Failure Detection

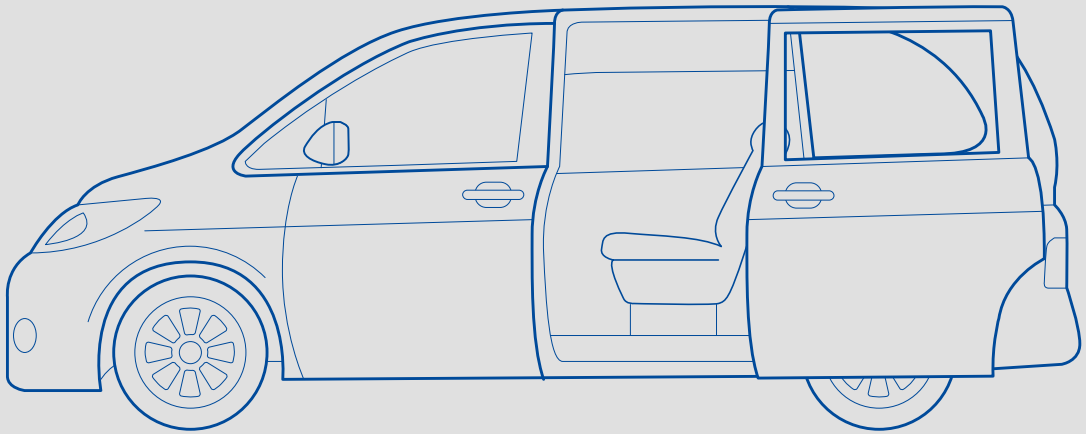
Combine latch open/shut sensing and failure detection to enable prevention of boarding or alighting, hood opening/closing and theft while idle stop is activated

FEATURES

01 Use of internal resistors allows fault detection with the industry's smallest dimensions

02 High contact reliability and durability of double-sided sliding contacts

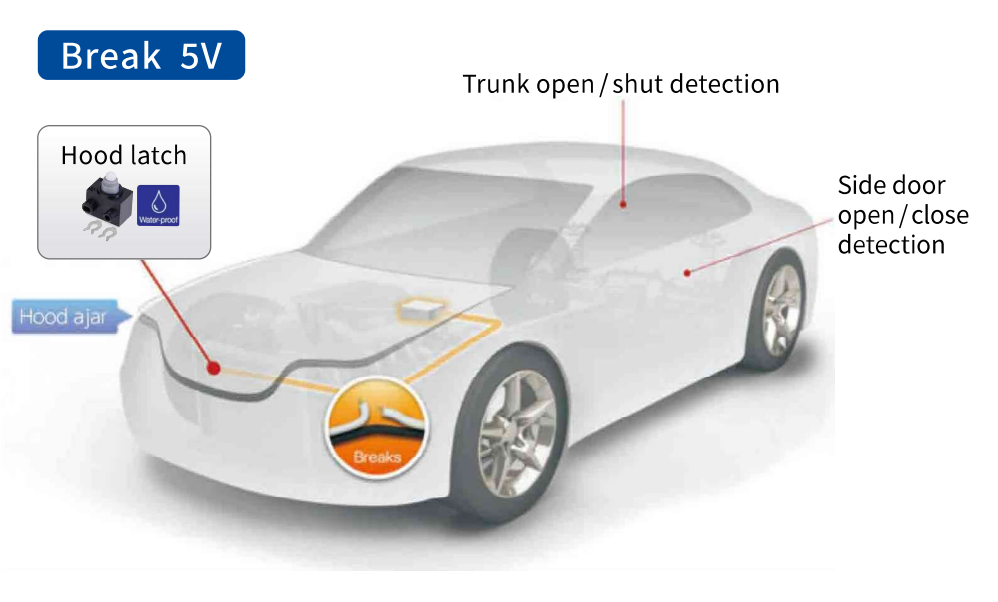




Latch Sensors with Failure Detection

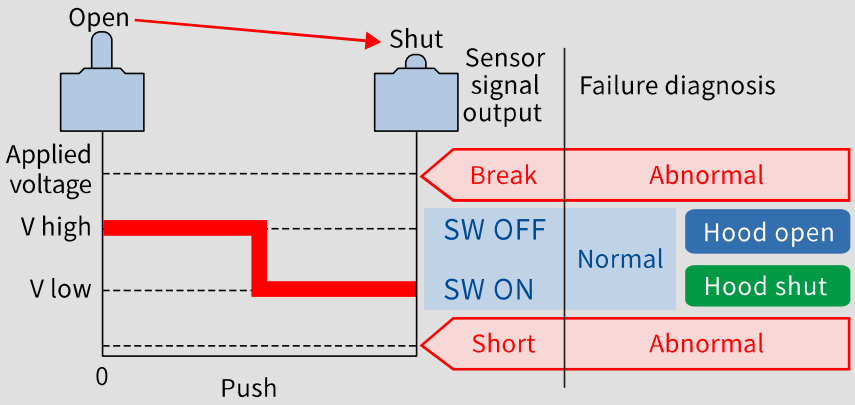
Combine latch open/shut sensing and failure detection to enable prevention of boarding or alighting, hood opening/closing and theft while idle stop is activated

Use of internal resistors allows fault detection with the industry's smallest dimensions



Contributes to space saving in customer electronics and allows break / short fault detection

Open/Shut Detection



Latch Sensors with Failure Detection

Combine latch open/shut sensing and failure detection to enable prevention of boarding or alighting, hood opening/closing and theft while idle stop is activated

High contact reliability and durability of double-sided sliding contacts

Single-Pole, Single-Throw Type
(Up to two internal resistors)

Specifications

Dimensions	5.3×8.3×6.5mm
Electrical output circuit	Arranged separately
Operating force	1.5N Max
Operating life	300,000 cycles
Travel	2.2mm
Chip resistor max. power	0.33W

Single-Pole, Double-Throw Type
(Up to two internal resistors)

仕様

Dimensions	5.3×13.3×6.5mm
Electrical output circuit	Arranged separately
Operating force	3N Max
Operating life	300,000 cycles
Travel	3.2mm
Chip resistor max. power	0.33W