磁気式角度センサ

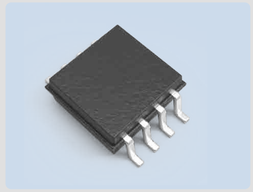
配置自由度が高く、角度と直動の検出を高精度に行える小型センサ。

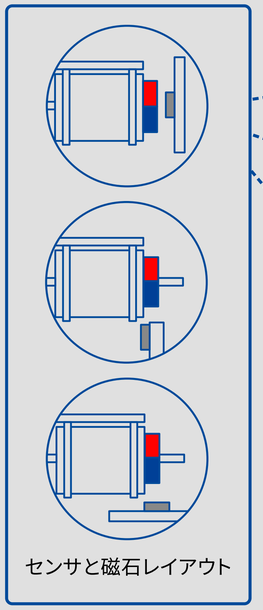
FEATURES

01 小型高精度で絶対角検出

02 幅広い条件に対応するラインナップ

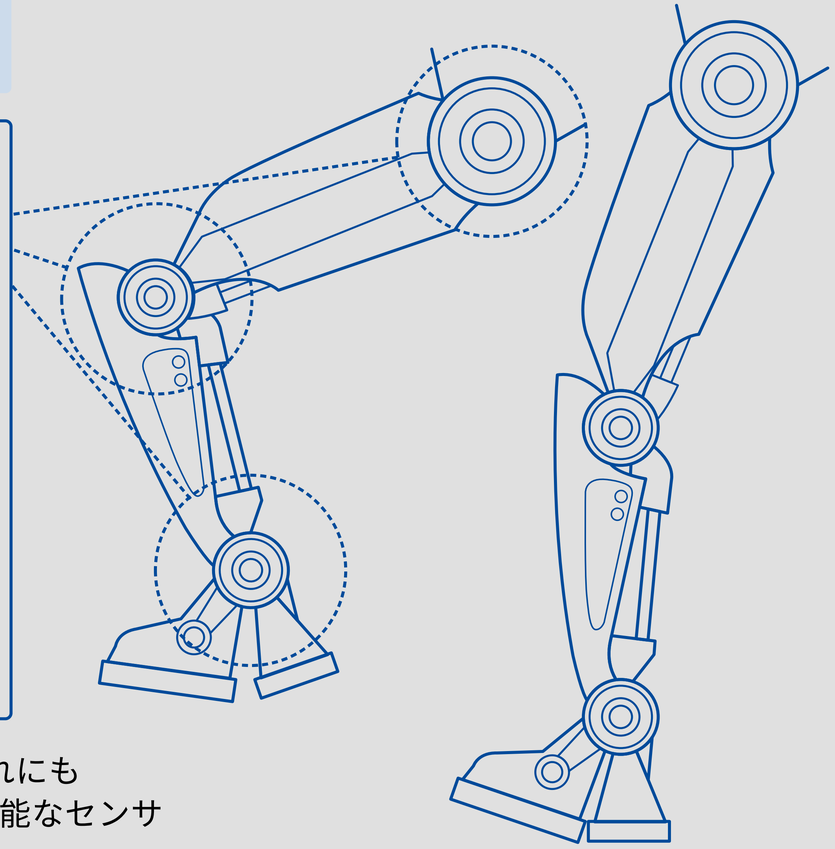
03 回転軸に対し、正面と側面いずれも配置可能
直動の移動量も検知可能





軸端、軸側いずれにも
レイアウトが可能なセンサ

角度／ストロークのいずれも検知でき、
多彩な用途に適応

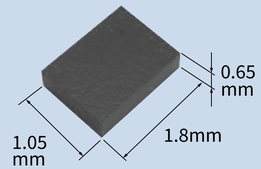


磁気式角度センサ

配置自由度が高く、角度と直動の検出を高精度に行える小型センサ。

小型高精度かつ幅広い条件に対応するラインナップ。

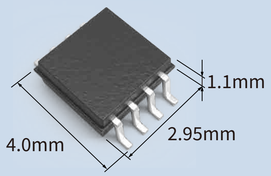
HGARシリーズ



HGARAM001A

- 小型・薄型（従来比1/3）
- 弱磁場から強磁場まで安定
- 強磁場環境に強い素子設計
- 後段補正・演算しやすい安定波形

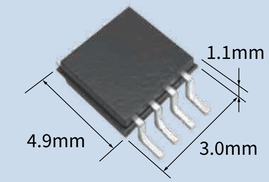
105°C／1出力



HGARAP001A

- アナログ2相出力＆2フルブリッジ
- 動作温度範囲105°C対応
- MSOP-8 package

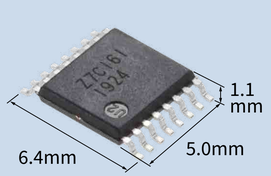
150°C／1出力



HGARPS011A

- アナログ2相出力＆2フルブリッジ
- 動作温度範囲150°C対応
- TSSOP-8
- Vout p-p＝6000mV（@5V. 25°C）

150°C／2出力（冗長性対応）



HGARPS001A

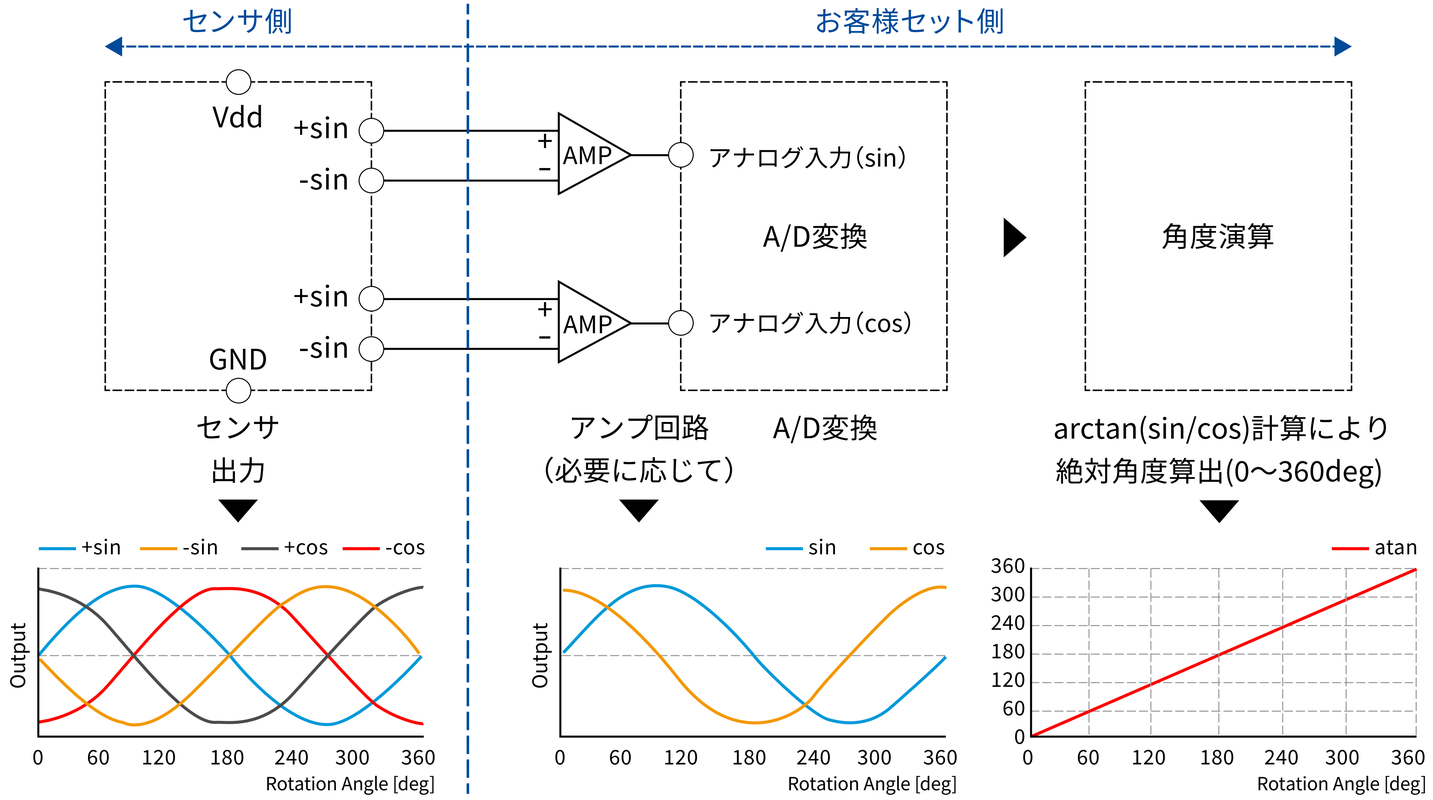
- 1パッケージに2回路搭載し、冗長性を確保
  アナログ2相×2出力＆4フルブリッジ
- 動作温度範囲150°C対応
- TSSOP-16 package
- Vout p-p＝6000mV（@5V. 25°C）

磁気式角度センサ

角度検出はもちろんペダルの踏み込みなども直動で検出可能。

弱磁場から強磁場まで安定した出力。

角度演算システム例



- センサから出力される+sin, -sin, +cos, -cosの４信号を、お客様のセット側で必要に応じて増幅頂きます
- sin/cos演算により信号は磁場角度のみに依存し磁場強度には影響を受けません。arctan(sin/cos)計算を行って絶対角度を算出可能です

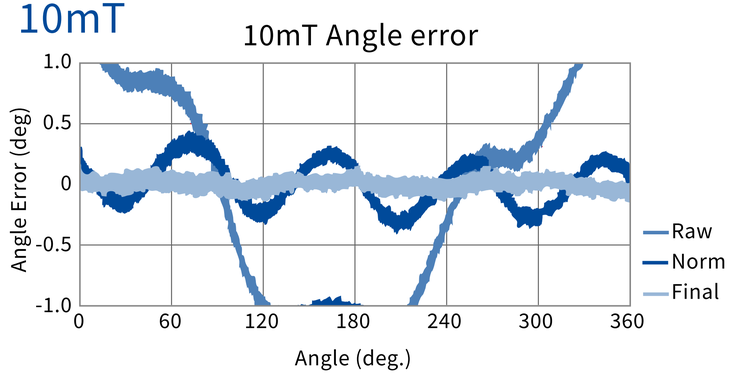
磁気式角度センサ

配置自由度が高く、角度と直動の検出を高精度に行える小型センサ。

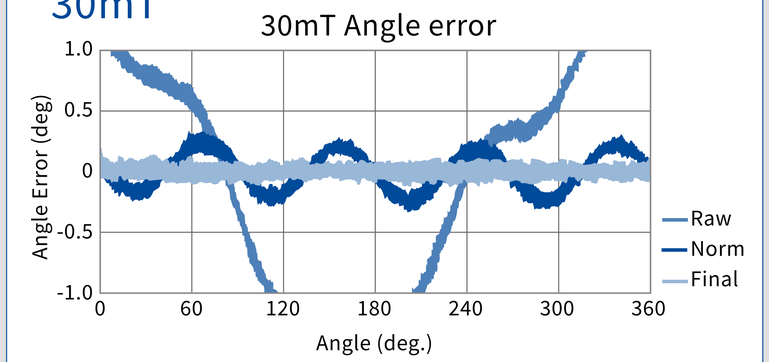
弱磁場から強磁場まで安定した出力。

弱磁場から強磁場まで安定し、角度補正も容易

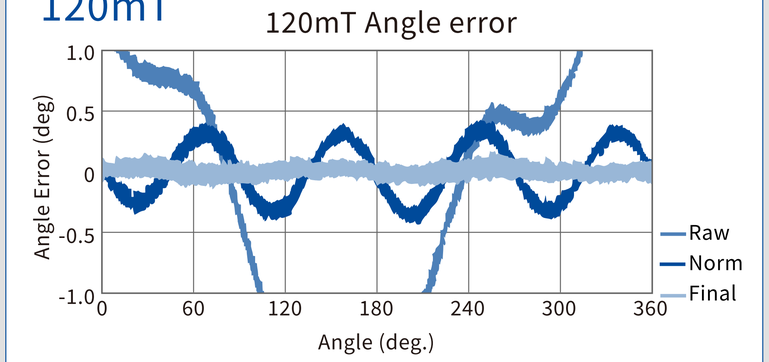
10mT



30mT



120mT



- 10mTから120mTまで、それぞれの磁場影響下において
  角度補正を行い安定した出力値（Final）を実現しています

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

磁気式角度センサ

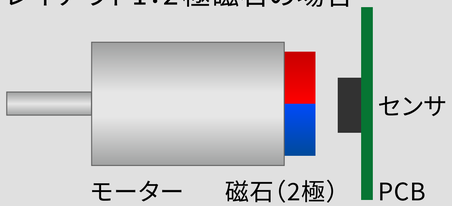
配置自由度が高く、角度と直動の検出を高精度に行える小型センサ。

回転軸に対し、正面と側面いずれも配置可能。直動の移動量も検知可能。

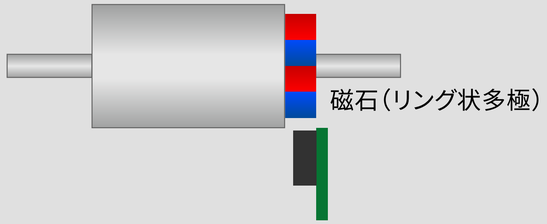
当社の磁気式角度センサはレイアウトの柔軟性が高く、設計の自由度向上に貢献します
複数個配置するのも容易で、万一ひとつのセンサが機能しない際の冗長性を確保できます

センサレイアウトの例

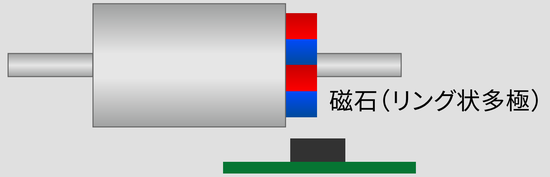
レイアウト1：2極磁石の場合

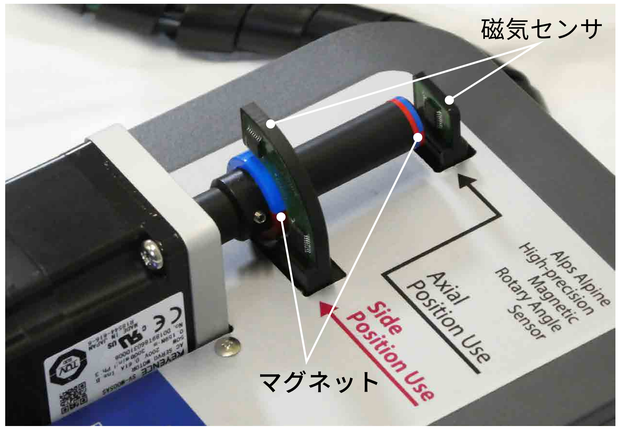


レイアウト2：多極磁石の場合

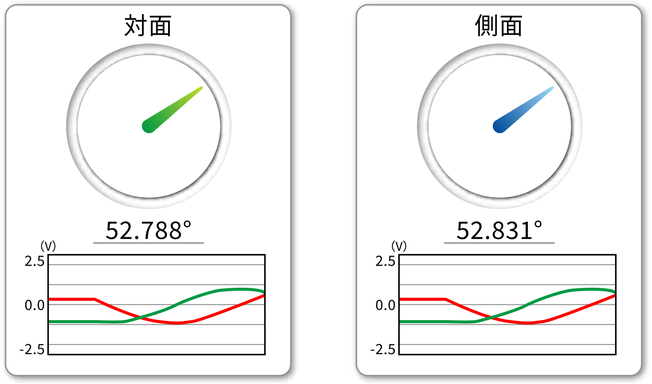


レイアウト3：多極磁石の場合





配置位置が違っても、同様の角度検知が可能



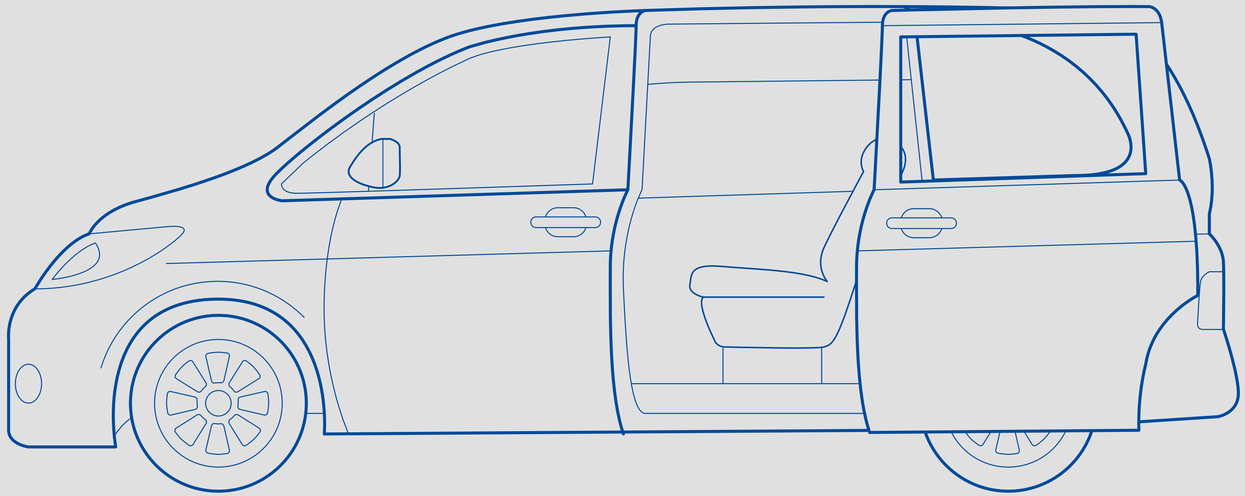
故障検知ラッチセンサ

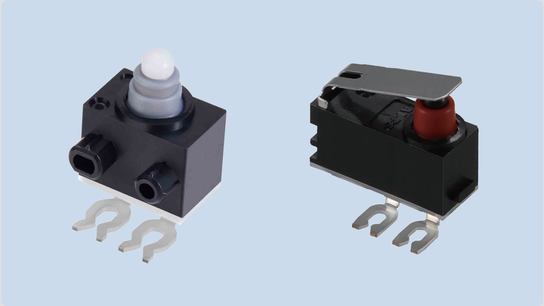
ラッチ開閉検出＋故障検知機能でアイドリングストップ時の乗降防止・
ボンネット開閉作業防止・盗難防止などを実現。

FEATURES

01 スイッチ本体に抵抗内蔵することにより
業界最小サイズでの異常検知が可能

02 両面しゅう動接点の高い接触信頼性と
耐久性を実現

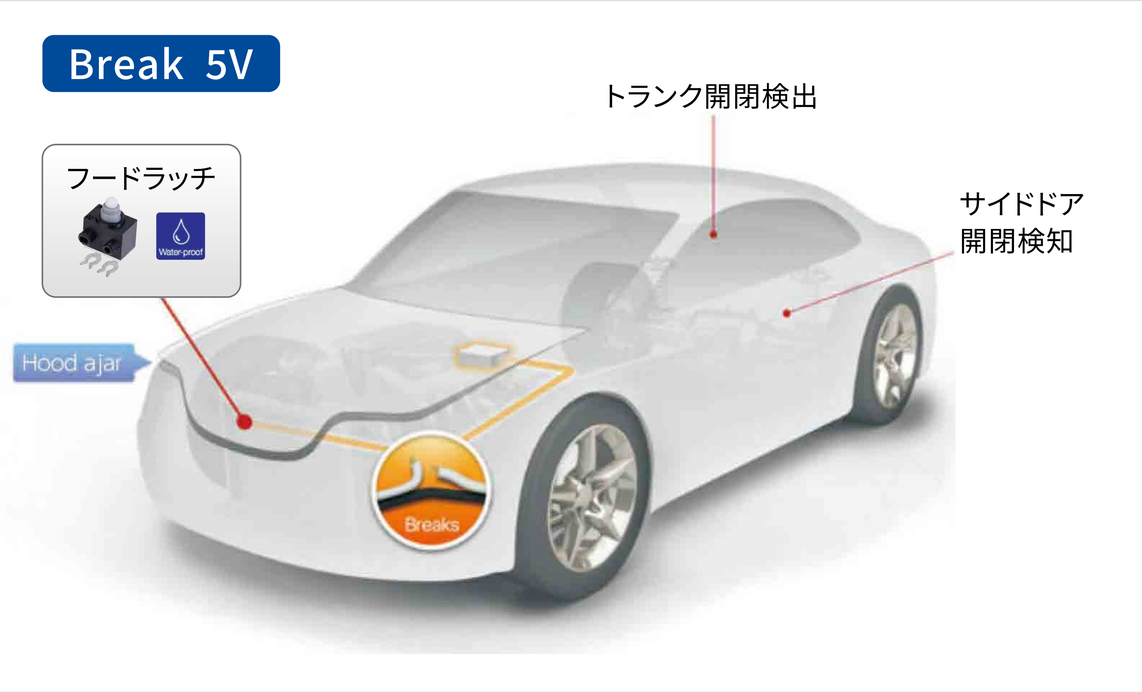




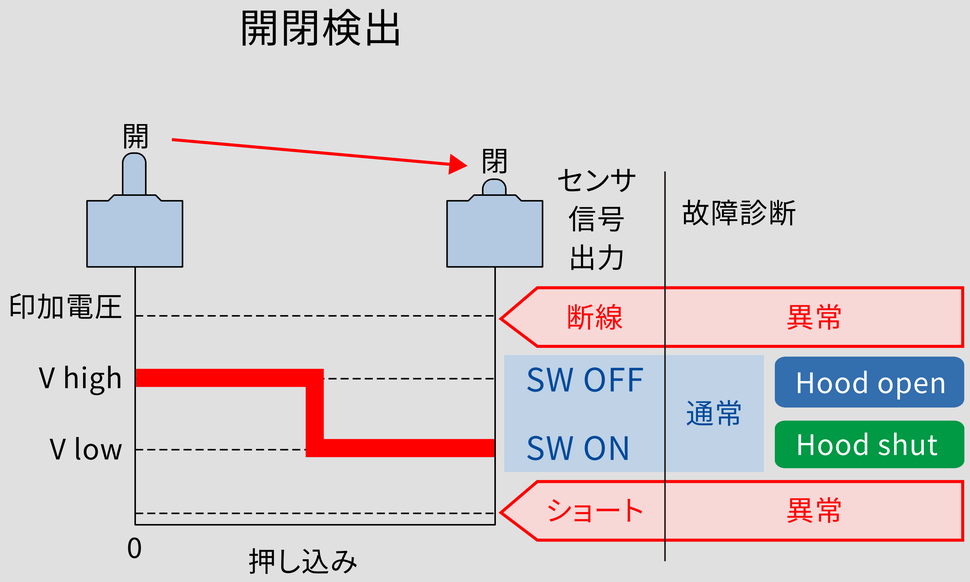
故障検知ラッチセンサ

ラッチ開閉検出＋故障検知機能でアイドリングストップ時の乗降防止・ボンネット開閉作業防止・盗難防止などを実現。

スイッチ本体に抵抗内蔵することにより業界最小サイズでの異常検知が可能。



「顧客機器の省スペース化」に貢献し、ワイヤの断線ショートの故障検知が可能



故障検知ラッチセンサ

ラッチ開閉検出＋故障検知機能でアイドリングストップ時の乗降防止・ボンネット開閉作業防止・盗難防止などを実現。

両面しゅう動接点の高い接触信頼性と耐久性を実現。

1回路1接点タイプ
（内蔵抵抗最大2個）

仕様

外形サイズ	5.3×8.3×6.5mm
電気出力回路	個別対応
作動力	1.5N Max
動作寿命	30万回
ストローク	2.2mm
チップ抵抗最大ワット	0.33W

1回路2接点タイプ
（内蔵抵抗最大2個）

仕様

外形サイズ	5.3×13.3×6.5mm
電気出力回路	個別対応
作動力	3N Max
動作寿命	30万回
ストローク	3.2mm
チップ抵抗最大ワット	0.33W

Magnetic Angle Sensors

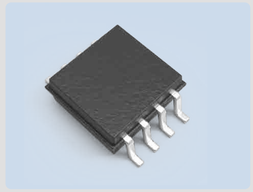
Compact sensors with layout flexibility for high-precision angle and linear motion sensing

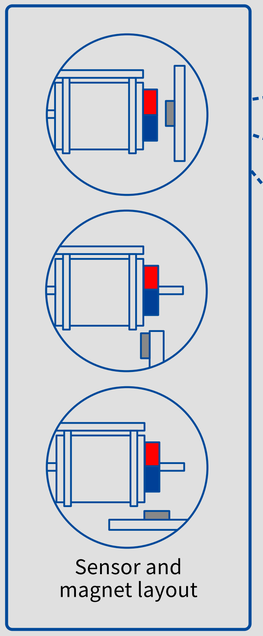
FEATURES

01 Compact and accurate absolute angle sensing

02 Product lineup covering a broad range of conditions

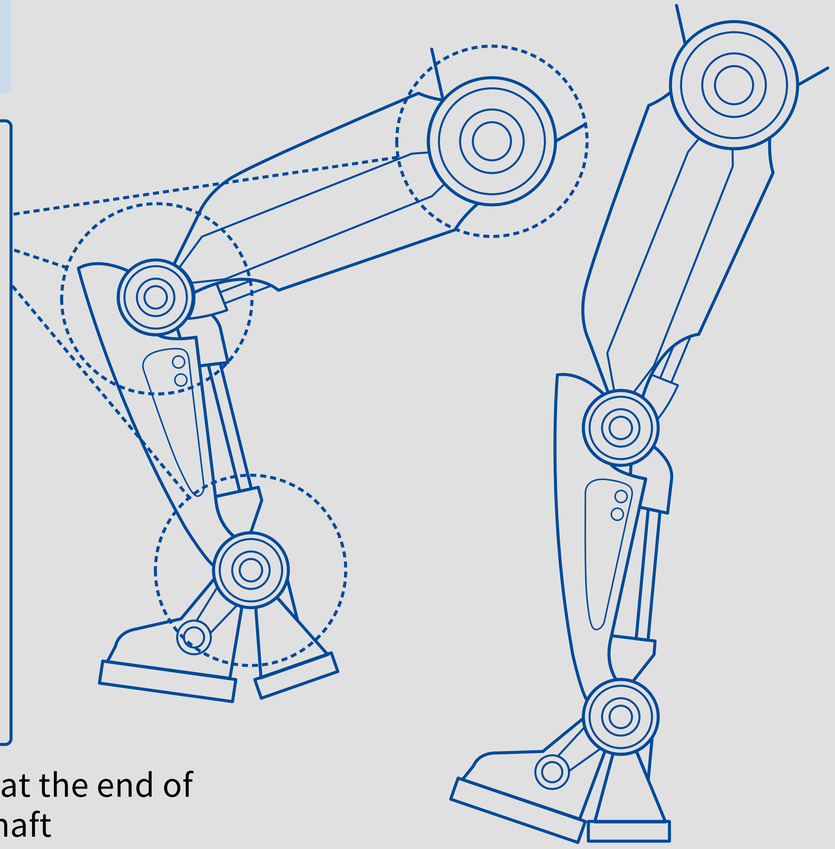
03 Position either facing the end or to the side of a rotating shaft; Also detect linear travel





Position either at the end of or beside the shaft

Suited to diverse applications involving angle or stroke detection

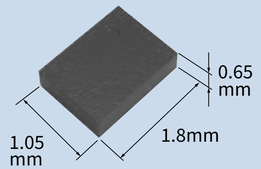


Magnetic Angle Sensors

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

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

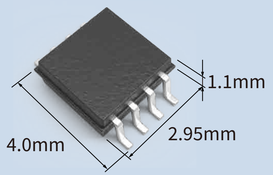
HGAR Series



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

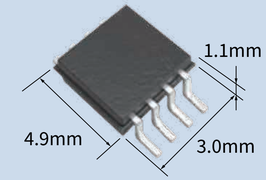
105°C, Single Output



HGARAP001A

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

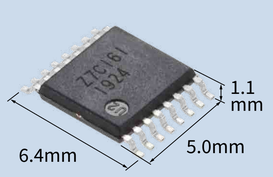
150°C, Single Output



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

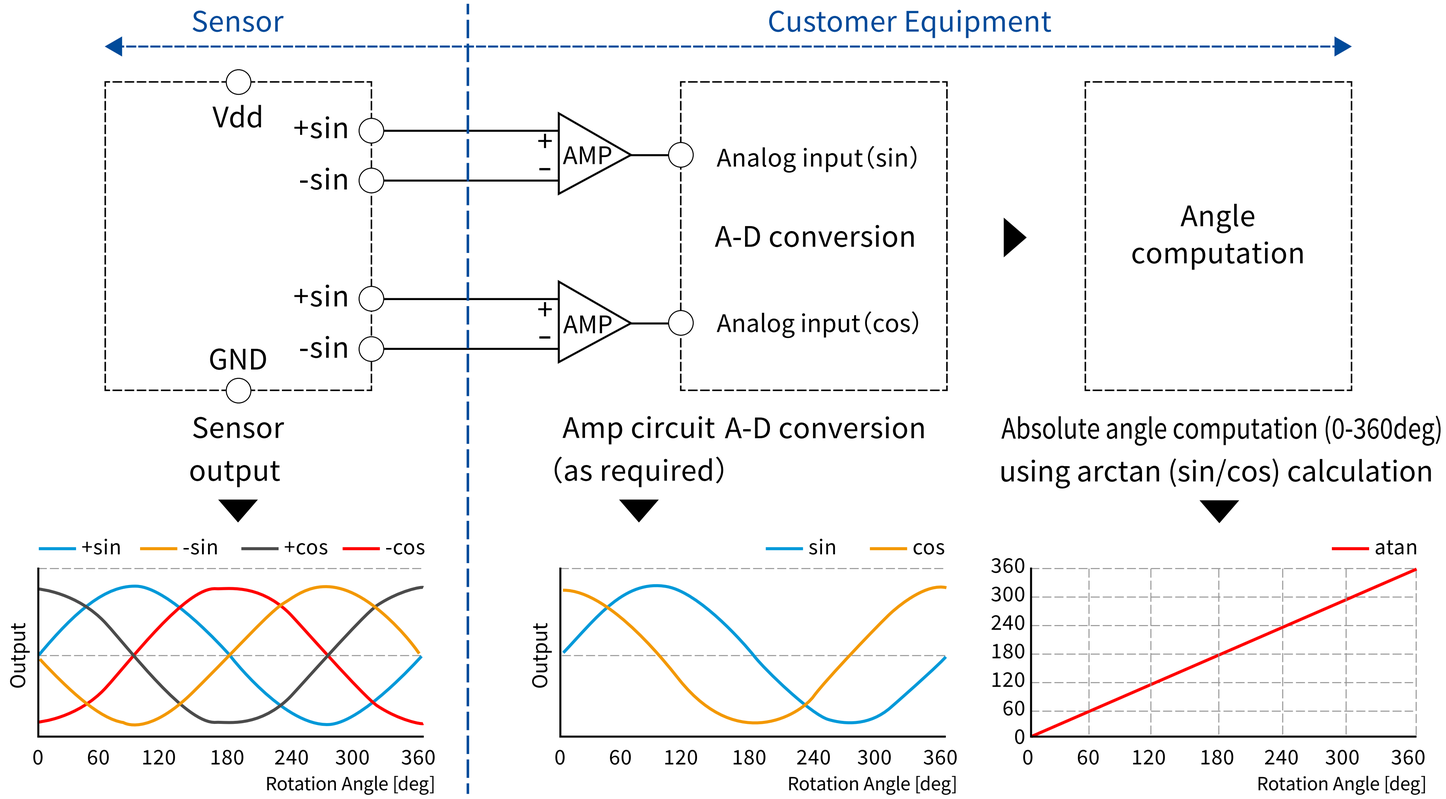
- Two circuits in one package for redundancy; two-phase dual analog output and four full bridges
- Operating temperature range up to 150°C
- TSSOP-16 package
- Vout p-p = 6000mV (@5V, 25°C)

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



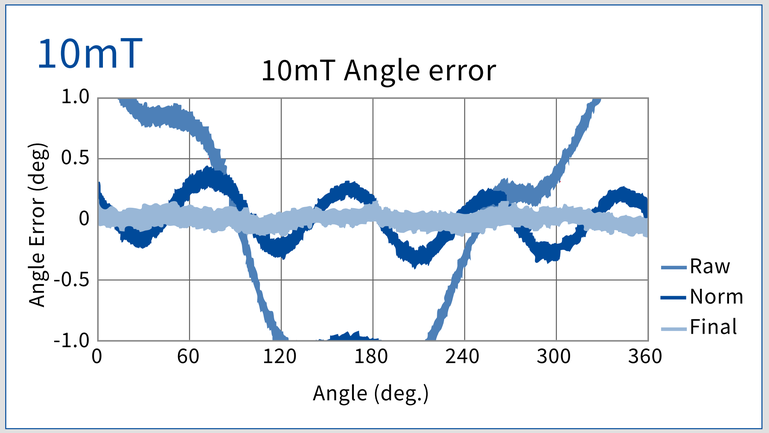
- The four signals delivered as output by the sensor above (+sin, -sin, +cos and -cos) are amplified as required by the equipment it is incorporated into
- Use of sin/cos computations means signals are dependent only on the angle of the magnetic field and are not affected by the strength of the magnetic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

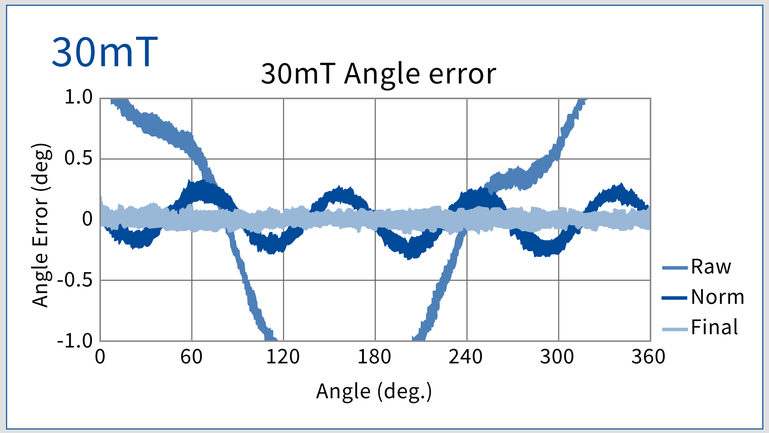
Magnetic Angle Sensors

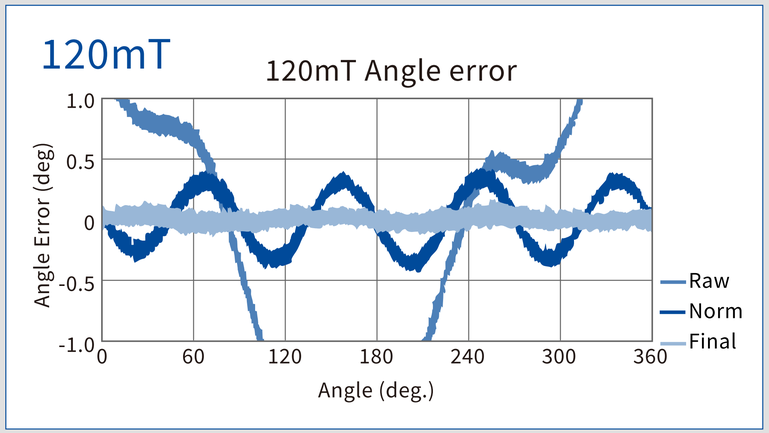
Compact sensors with layout flexibility for high-precision angle and linear motion sensing

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

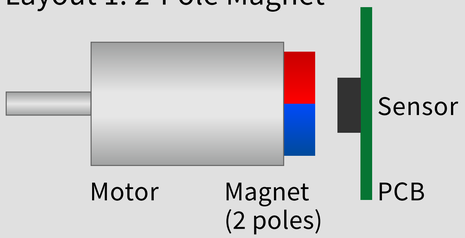
Compact sensors with layout flexibility for high-precision angle and linear motion sensing

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

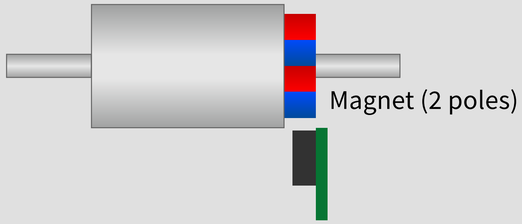
Alps Alpine magnetic angle sensor layout is highly flexible, contributing to greater design freedom
It is also easy to include multiple sensors, ensuring redundancy in the case one sensor happens to stop working

Sensor Layout Examples

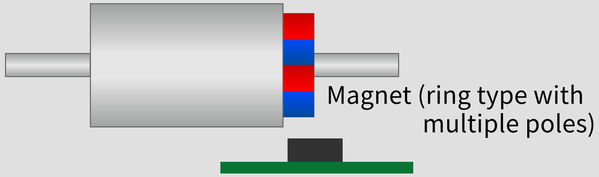
Layout 1: 2-Pole Magnet

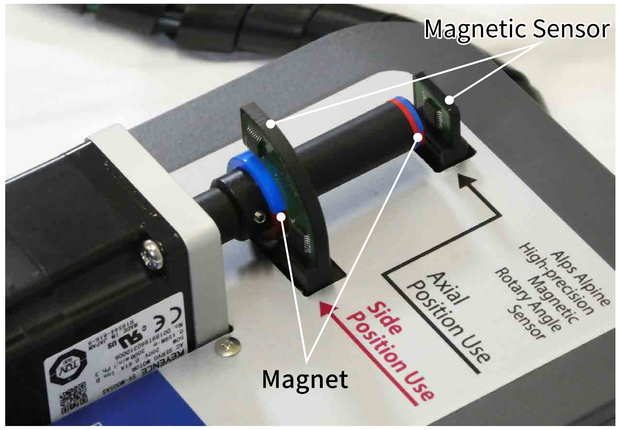


Layout 2: Multi-Pole Magnet

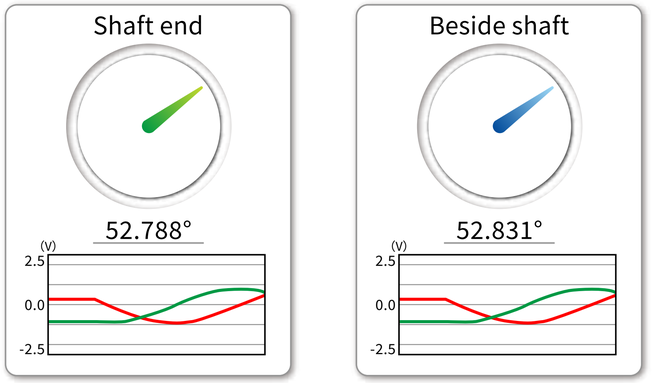


Layout 3: Multi-Pole Magnet





The same level of angle sensing in either position



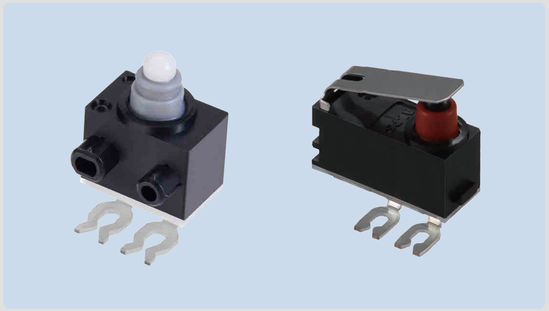
Latch Sensors with Failure Detection

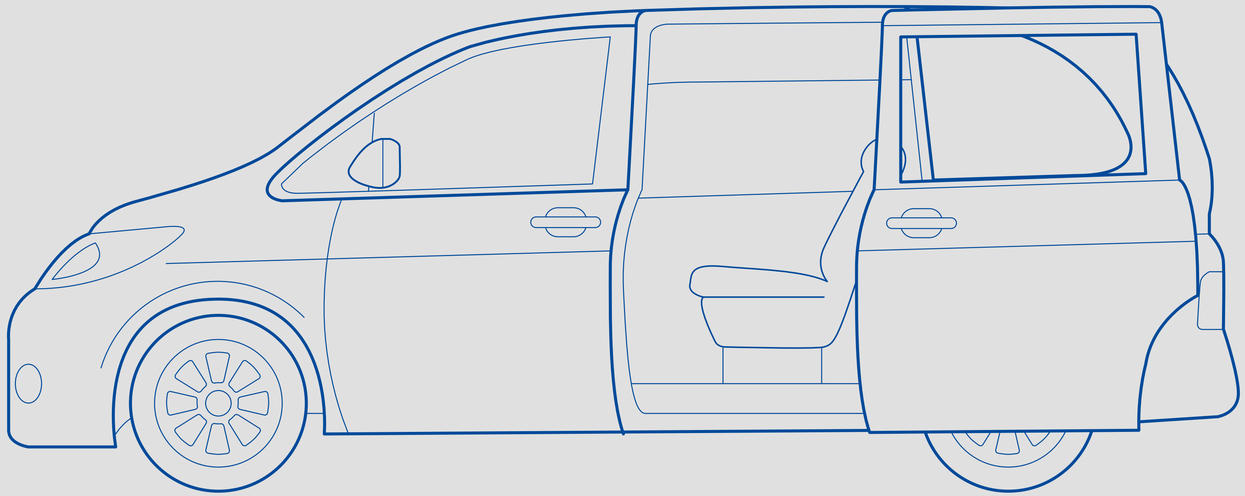
Combine latch open/shut sensing and failure detection to enable prevention of boarding or alighting, hood opening/closing and theft while idle stop is activated

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

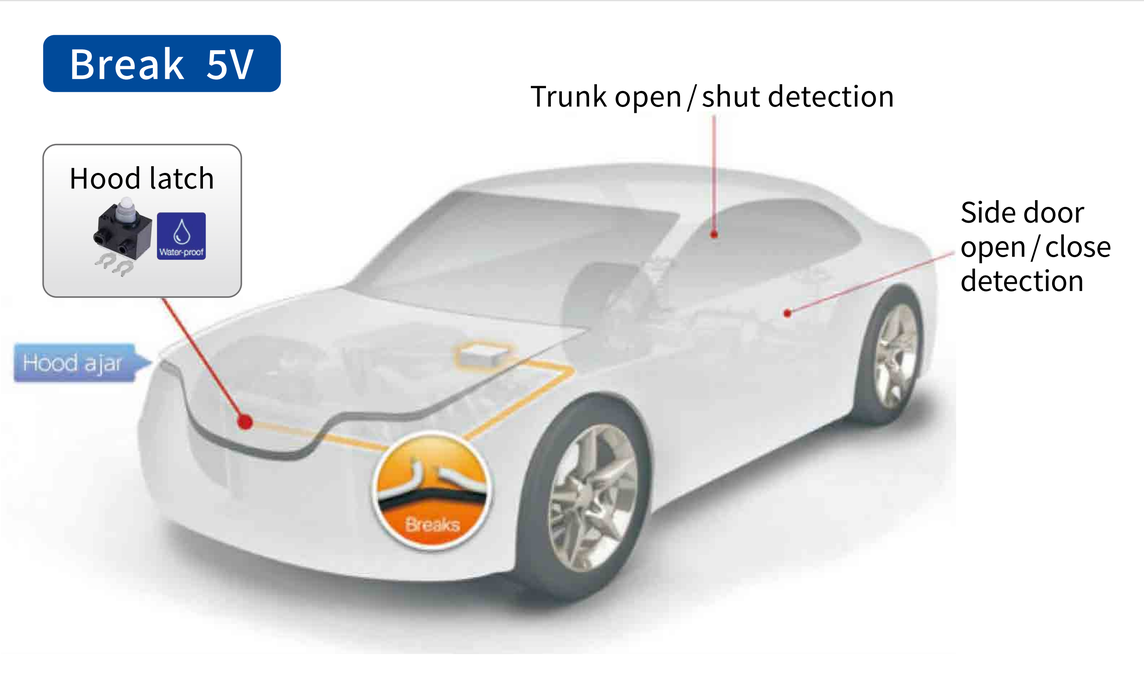




Latch Sensors with Failure Detection

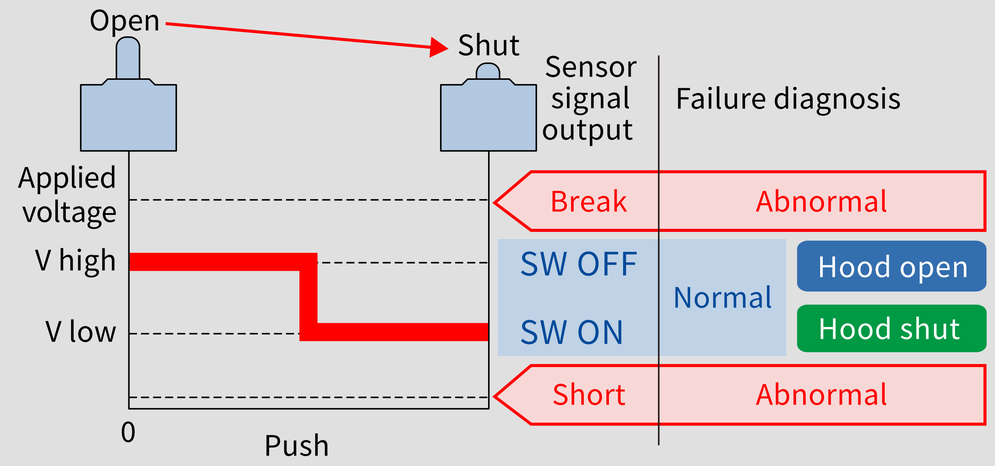
Combine latch open/shut sensing and failure detection to enable prevention of boarding or alighting, hood opening/closing and theft while idle stop is activated

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