

# IPS2200 INDUCTIVE POSITION SENSORS

A New Era in Motor Commutation



Renesas' magnet-free IPS2200 inductive position sensor features high accuracy and speed, total stray field immunity, and efficient motor integration in a thin and lightweight form factor. The IPS2200 is ideal for use as an absolute position sensor in a wide range of industrial, medical, and robot applications. The sensor allows engineers to cost effectively tailor sensor design for their applications and maximize the performance of the sensor's mechanical accuracy.

The IPS2200 is designed around the motor, allowing customers to match the number of sectors to pole pairs of the motor to maximize accuracy, accommodating both off-axis (through shaft and side shaft) and on-axis positioning. The magnet-free IPS2200 is up to 10x thinner and up to 100x lighter compared with traditional resolvers. The sensor's thin and light form factor and total stray field immunity enables easier motor integration and provides the standard materials required for customers to manufacture their own resolvers – reducing bill of materials costs. Four-wire operation provides up to 250krpm electrical rotational speeds and very low latency compared with resolver- or magnetic based solutions.

## Key features

- Industrial qualified, with stable operation in harsh environments and -40° to 125° C ambient temperatures
- Interface: Sin/cos single ended or differential
- Voltage Supply: 3.3V ±10% or 5.0V ±10%

- Rotational Speed: Up to 250.000 rpm (electrical)
- Propagation delay: Programmable, <math><10\mu\text{s}</math>
- Sin/cos gain mismatch and offset compensation on chip
- Overvoltage, reverse polarity, short-circuit protected
- Digital programming interface: I<sup>2</sup>C or SPI

## Benefits

- Flexible design around the motor, on-axis and off-axis capabilities
- Supports higher speed
- Better accuracy
- Cost effective
- Stray field immunity
- No tight mechanical tolerances needed
- Lower weight, smaller size

## Applications

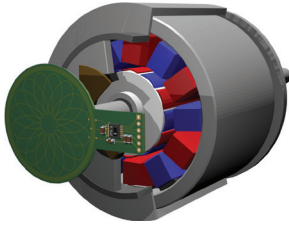
The IPS2200 is ideal for motor commutation applications, such as:

- Robots
- Industrial Equipment
- Medical Devices
- Small E-vehicles
- Power Tools
- Automatic Machines

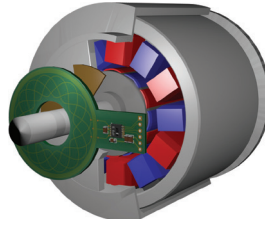
# RENESAS INDUCTIVE POSITION SENSORS

The flexibility of the IPS2200 inductive position sensor technology allows engineers to design the sensor around the motor. It is capable of supporting both off-shaft and any number of pole pairs.

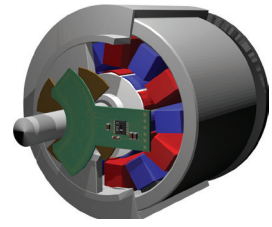
End-of-Shaft



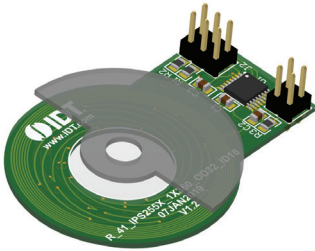
Through-Shaft



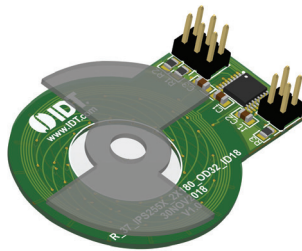
Side-Shaft



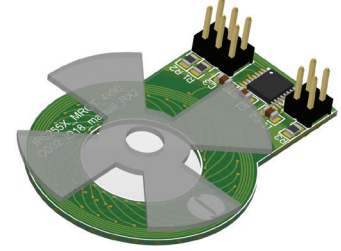
1 Pole-Pair



2 Pole-Pairs

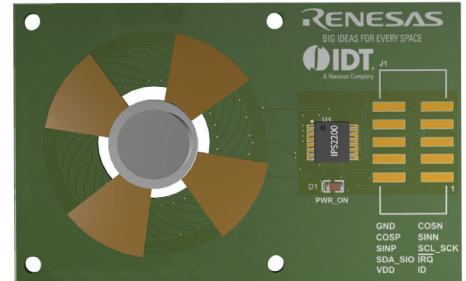


N Pole-Pairs



## IPS2200 Products

Part Number	Description
IPS2200B1R	High-Speed Inductive Position Sensor with Sine/Cosine Output for Motor Commutation
IPS2200B1W	High-Speed Inductive Position Sensor with Sine/Cosine Output for Motor Commutation
IPS2200STKIT	Evaluation Kit for IPS2200 Position Sensor



For more details, please visit [idt.com/position](http://idt.com/position)



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