SENSOR SIGNAL CONDITIONING ICS FOR INDUSTRIAL, MEDICAL, AND CONSUMER APPLICATIONS
EASY-TO-USE SENSOR SIGNAL CONDITIONER ICS

Designing sensor interfaces can be quite challenging and time consuming, and producing them in volume is often expensive due to long test cycles on costly production test equipment. Renesas Sensor Signal Conditioner (SSC) ICs facilitate both design and production of sensor interfaces by providing programmable, highly accurate, wide gain and quantization functions combined with powerful, high-order digital correction and linearization algorithms.

SENSOR SIGNAL CONDITIONING BASICS

SENSOR SIGNAL
- Physical measure
  - Pressure
  - Torque
  - Temperature
  - Force
  - Weight/load

SIGNAL CONDITIONING
- Signal transducing
- Signal amplification
- Signal conditioning
  (compensation of offset, non-linearity and temperature dependency)

CONDITIONED OUTPUT
- Linear analog ratiometric voltage, current loop
- Digital PWM, I²C, SPI and OWI output

TYPICAL SSC BLOCK DIAGRAM
Renesas’ Sensor Signal Conditioner ICs typically interface with following main sensor types: resistive bridges, thermopile and differential or absolute capacitors. For each sensor type, further specialization allows selecting the optimal balance between price and performance for the required operating voltage and temperature range, gain, resolution, input/output format, and qualification level.

Our SSC ICs offer digital compensation of sensor offset, sensitivity, temperature drift, and nonlinearity in wide operational temperature ranges: −50°C to +150°C (maximum range).

**SSC PRODUCT PORTFOLIO**

- Analog and One-Wire interface
- Digital I2C & SPI output
- Resistive and capacitive sensor interface
- High analog gain for sophisticated sensors
- Industrial and consumer applications
- Low-power and battery-powered applications
- Single-pass calibration
- High ADC resolution up to 24 bit
- Wafer and packaged delivery forms

Renesas’ SSCs provide an advantage to our customers’ sensor modules both in performance as well as in the test and calibration process.

**RENESES SSC ICS ENABLE EASY SENSOR PLATFORM DEVELOPMENT**

**RENESES SENSOR SIGNAL CONDITIONERS**

Renesas’ SSCs provide an advantage to our customers’ sensor modules both in performance as well as in the test and calibration process.
INDUSTRIAL AND CONSUMER SSC PORTFOLIO

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Type</th>
<th>Voltage</th>
<th>Output</th>
<th>ADC</th>
<th>Package</th>
<th>Typical Application/Features</th>
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<tr>
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<td>Resistive</td>
<td>2.7 to 30 V</td>
<td>Analog/Digital</td>
<td>14 bit</td>
<td>SOIC, Wafer</td>
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<td>16 bit</td>
<td>Wafer</td>
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SENSOR APPLICATION REFERENCE DESIGNS

- Oil pressure and temperature sensor
- Pressure sensing in consumer electronics
- Industrial pressure sensor
- Sensors for white goods

WHY CHOOSE RENESAS SSCS?

Renesas SSC ICs are all-in-one, energy-efficient products that are easy-to-use and are supported by advanced software and expert technical support staff.

- Decades of sensor design experience
- Excellent evaluation and support tools
- Unmatched technical support
- Continued investment
- Reduced time to market