Checking Torque with high Precision
www.ams.com/PS09

PS09 – Soc for Weighing and Force Measurement

- 28-bit converter plus microcontroller integrated
- Perfectly suited for battery-driven applications
- Extreme low total system current (down to 15µA including strain gauge)
- Ultra-low self-heating of the sensor
- Digital gain and offset correction of the load cell

Sensing is life.

General Description

The PS09 is a system on chip for ultra low power and high resolution applications. It was designed especially for weight scales but fits also to any kind of force, pressure or torque measurements based on metal strain gauges. It takes full advantage of the digital measuring principle of PICOSTRAIN. Thus, it combines the performance of a 28-bit converter with a 24-bit microprocessor.

PS09 allows to build scales with up to 150,000 stable peak-peak divisions at 2 mV/V. On the other hand, sophisticated power management can reduce the total system current, e.g. 40 µA with 3 Hz and 14 bits at 2 mV/V. Special features like the capacitive inputs for buttons or sliders that need only 1 µA operating current round out the functionality.
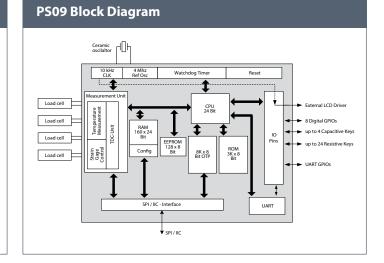
Features

- RMS noise 11nV SINC5, 5Hz
- Up to 80.000 peak-peak divisions (2mV/V strain)
- Scalable udapte rate from <1 to 10.000Hz
- Resolution: 28-bit ENOB (RMS)
- 24-bit internal microprocessor with 8kB OTP
- 4-wire serial SPI interface
- Current consumption of ~7µA in low current configuration
- Power supply voltage: 2.1V to 3.6V

Applications

- Force sensors
- Pressure sensors
- Scales
- Digital load cells
- Torque wrenches
- Legal for trade scales
- Counting scales

Benefits

- Small and compact solution for weighing applications
- Converter and microcontroller in one chip
- Perfectly suited for building digital load cells and consumer scales
- Extreme low total system current (down to 15µA including strain gages)
- Very low self heating of the sensor
- Gain and offset correction of the load cell

PS09 Block Diagram