

UFC23



Ultrasonic Flow Converter

- Very high resolution and offset stability
- Supporting R1000 designs and leakage detection
- Extended battery life thanks to ultra-low power consumption

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UFC23 is a frontend for ultrasonic flow measurements in water, heat and gas meters. It uses a high-performance front-end capable of driving two transducers and processing the received signal to extract the time of flight (TOF) information with high precision and offset stability.

A highly programmable amplifier—up to 60 dB (gas) and 20 dB (water)—allows for the handling of weak receive amplitudes. A fire burst generator generates bursts up to 4.4 MHz, based on a 20 MHz reference. A split-burst feature supports the correction of phase jumps.

Features

- 3.3V Single-ended or full-bridge driver for transducers
- Fire frequency generator up to 4.4 MHz, based on reference up to 20 MHz
- PGA with increased gain and increased bandwidth
- Low noise (E.g. 35 ps single shot with DN15) and excellent offset-stability (E.g. ± 7 ps with 100 samples average at 25°C)
- Combination full-bridge, higher gain, higher bandwidth and frequency
- adjustment make it suitable for gas meter applications
- Improved current management to reduce standby current (cycle timer off) $I_{sb} \sim 0.8 \mu A @ 25^\circ C$
- Increased RAM (160 words) for access to all time data but also for accumulation of up to 12 data bundles and reduced wake-up of external μC
- No CPU, no NVRAM for cost savings
- Open-source C-code platform
- QFN32 package

Benefits

- High precision
- Low power
- Proven technology
- System cost reduction

Besides the 3.3V single-ended drivers, the UFC23 offers full-bridge drivers for increased voltage across the transducer. The combination of a full-bridge, higher gain, higher bandwidth, and frequency adjustment makes it suitable for gas meter applications.

A 160-word RAM allows access to all time data, as well as the accumulation of data (batch mode) and reduced wake-up cycles for an external μC . With 1 μA standby current and low operating current, it is optimized for battery-operated systems.

Typical Applications

- Smart water & heat meters
- Smart gas meters
- Water heaters
- Pump control
- Smart faucets & showers

Properties

- Supply voltage: 2.5 to 3.6V
- Temperature range °C: -40°C to +85°C
- QFN32 package

