

# HOME BASED WATER METER: OVERVIEW

Water resources on a global scale are limited and the consumption of fresh water needs to be monitored and charged on an individual basis in state-of-the-art homes and residential buildings.

The combination of the Renesas RX113 MCU and FS1012 flow sensor provides a solution for these applications. The FS1012 ensures accurate measurements while the RX113 provides a user interface with an LCD display control to allow customers to view consumption data.

## Key Features:

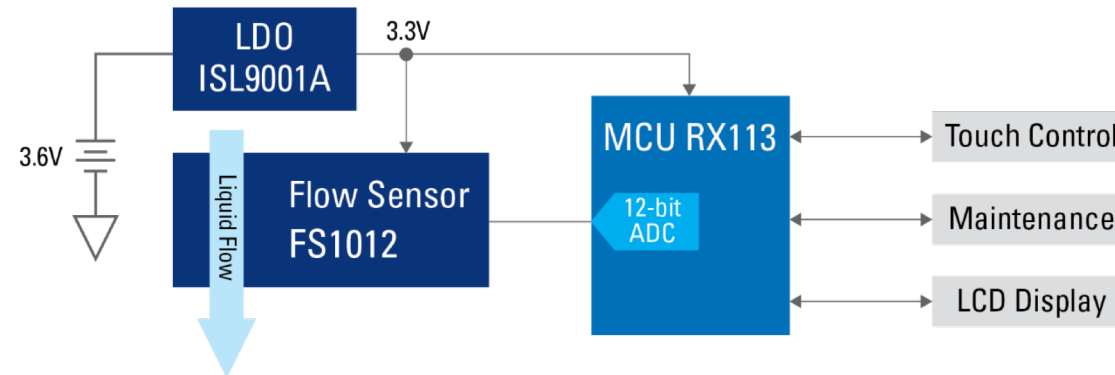
- Solution includes LCD control and touch interface
- Ease of use – the RX113 integrates several features such as RTC and USB for maintenance
- MEMS solid-state flow sensor provides accurate measurements

## Applications:

- Water meter

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# HOME BASED WATER METER: BLOCK DIAGRAM



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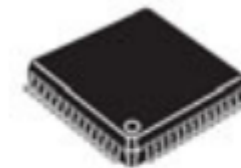
# RX113: SINGLE CHIP MCU SOLUTION FOR BIDIRECTIONAL HMI

*Low end MCU with enhanced capacitive touch key function*

Features	Benefits	Applications
<ul style="list-style-type: none"> <li>• 32-bit MCU @ 32MHz</li> <li>• Operation from a single 1.8 V to 3.6 V</li> <li>• Three low power mode                             <ul style="list-style-type: none"> <li>High Speed Mode : 110uA/MHz</li> <li>Software Standby Mode : 0.44uA</li> <li>Wakeup time from Standby Mode : 4.8uS</li> </ul> </li> <li>• High sensitive 12pin capacitive touch sensing unit.</li> <li>• Useful functions for IEC60730 compliance</li> <li>• Up to 512KB Flash and 64B RAM</li> <li>• 100pin LGA, 100pin, 64pin LQFP packages</li> </ul>	<p>The RX113 Group microcontrollers have built-in communications functions such as USB and IrDA, a capacitive touch sensor (CTS), a segment LCD, and a serial sound interface (SSI). They offer a single-chip solution for industrial and measuring devices that have low current supply capabilities, or for user interfaces for system control in home appliances, healthcare devices, and so on.</p> <ul style="list-style-type: none"> <li>• .</li> </ul>	<ul style="list-style-type: none"> <li>• Healthcare</li> <li>• Home Appliance</li> <li>• Human Machine Interface</li> <li>• Industrial Sensor</li> <li>• Capacitive Touch Control UI</li> <li>• Metering</li> </ul>

## Typical application and key performances

32 MHz 32-bit RX MCUs, 50 DMIPS, up to 512 Kbytes of flash memory, USB 2.0 full-speed host/function/OTG, up to 12 comms channels, serial sound interface, LCD controller/driver, capacitive touch sensing unit, 12-bit A/D, 12-bit D/A, RTC



PLQP0100KB-A 14 × 14 mm, 0.5 mm pitch  
 PLQP0064KB-A 10 × 10 mm, 0.5 mm pitch



PTLG0100JA-A 7 × 7 mm, 0.65 mm pitch

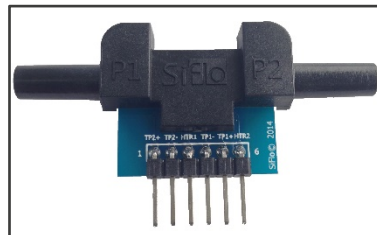
# FS2012/FS1012: GAS OR LIQUID FLOW SENSOR

## High Performance Solid-State MEMS Flow Sensor

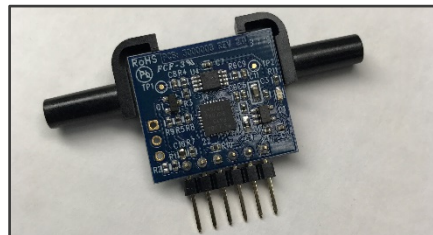
Features	Benefits	Applications
<ul style="list-style-type: none"> <li>MEMS Thermopile sensing</li> <li>Silicon-carbide coating over MEMS flow sensor</li> <li>Low Power, 3V to 5V supply</li> <li>Digital and Analog output (FS2012)</li> <li>High accuracy (FS2012), 2% of reading (typical)</li> <li>Flexible product versions:               <ul style="list-style-type: none"> <li>mV sensor voltage output</li> <li>Fully calibrated and compensated flow for air or liquid</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Gas or Liquid flow</li> <li>Robust solid isolation technology</li> <li>No cavity in MEMS element to cause clogging</li> <li>Resistant to vibration and pressure shock</li> <li>Food grade compatible version</li> <li>Fast response time</li> <li>High sensitivity</li> <li>Easy cleaning and sterilization</li> <li>.</li> </ul>	<ul style="list-style-type: none"> <li>Process controls and monitoring</li> <li>Oil and Gas leak detection</li> <li>HVAC and air control systems</li> <li>CPAP and respiratory devices</li> <li>Breathalyzer</li> <li>Automotive MAF</li> <li>Air speed and wind meter</li> <li>Liquid dispensing/metering systems</li> <li>Medical infusion pumps</li> </ul>

## Typical application and key performances

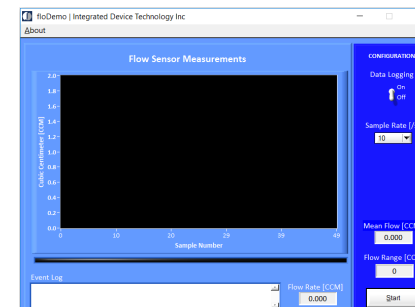
FS1012  
(mV Output)



FS2012  
(Calibrated)



FloDemo Software (FS2012)



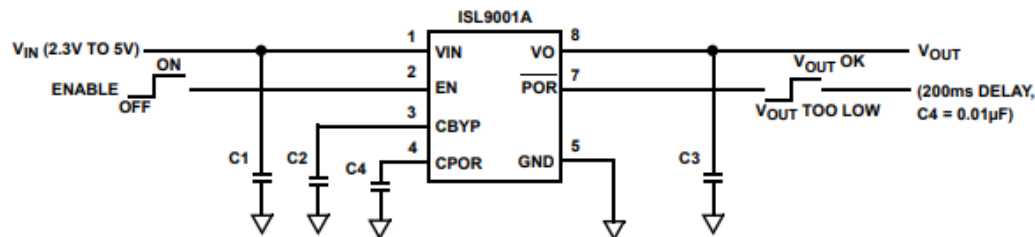
# ISL9001A: HIGH ACCURACY HIGH PSRR LDO IN TINY PACKAGE

*Low dropout regulator with low Iq and high PSRR*

Features	Benefits	Applications
<ul style="list-style-type: none"> <li>• Excellent transient response to large current steps</li> <li>• Excellent load regulation: &lt;0.1% voltage change across full range of load current</li> <li>• High PSRR: 90dB @ 1kHz</li> <li>• Extremely low quiescent current: 25µA</li> <li>• Low dropout voltage: typically 200mV @ 300mA</li> <li>• Low output noise: typically 30µVRMS @ 100µA (1.5V)</li> </ul>	<ul style="list-style-type: none"> <li>• When coupled with a no load quiescent current of 25µA (typical), and 0.1µA shutdown current, the ISL9001A is an ideal choice for low power consumption application.</li> </ul>	<ul style="list-style-type: none"> <li>• PDAs, cell phones and smart phones</li> <li>• Portable instruments, MP3 players</li> <li>• Handheld devices, including medical handhelds</li> </ul>

## Typical application and key performances

Typical application circuit



ISL9001A  
(8 LD DFN)  
TOP VIEW

