TI introduces world's first configurable NDIR gas sensing and pH sensing AFEs

Texas Instruments introduced two configurable analog front ends (AFE) that provide an easy-to-use, modular solution for bridging the gap between the microprocessor and sensor. Design engineers can dramatically reduce their development time by using a single AFE across multiple nondispersive infrared (NDIR) gas sensor and pH sensor platforms instead of designing several complex discrete solutions. The AFEs team with TI's WEBENCH Sensor AFE Designer software and bench-top development system. These tools allow engineers to select a sensor, design and configure the solution and download configuration data to the sensor AFE for immediate prototyping. For more information and to order samples, visit www.ti.com/sensorafe-pr [1].

The highly-integrated LMP91050 NDIR gas sensing AFE supports multiple thermopile sensors for NDIR sensing, indoor CO2 monitoring, demand control ventilation, HVAC, alcohol breath analysis, greenhouse gas monitoring and Freon detection.

Key features and benefits of the LMP91050 NDIR Gas Sensing AFE
• Complete gas sensing solution: AFE integrates a programmable gain amplifier (PGA), "dark phase" offset cancellation circuitry, adjustable common-mode generator, and SPI interface to simplify system design.
• Programmable gain amplifier: Features low gain range and high gain range, allowing the use of thermopiles with different sensitivities.
• Well-specified performance: Low gain drift of 100 ppm/degrees C (maximum), output offset drift of 1.2 mV/degrees C, phase delay variation of 500 ns, low noise at 0.1 uV rms (0.1 to 10 Hz), and operation between -40 degrees C to 105 degrees C provide optimized system performance.
• Small form factor: Integration shrinks package to 3 mm x 4.9 mm, enabling

smaller end products.

The highly-integrated LMP91200 pH sensing AFE supports two electrode pH sensors used in analyzer platforms for emissions monitoring, steam and water quality monitoring, chemical/petrochemical plants, food processing and more.

Key features and benefits of the LMP91200 pH Sensing AFE
• Complete pH sensing solution: AFE integrates a PGA, ultra-low input-bias pH buffer, signal guarding, temperature and measurement calibration, and common-mode generation and diagnostics circuitry, allowing use of a single chip to interface to most of today's pH sensors.
• Higher reliability and system accuracy: On-board sensor test ensures proper connection and functionality, and ultra-low bias current of 0.4 pA (maximum) boosts system reliability and accuracy while also protecting the pH electrodes during no supply situations.
• Wide operating range: Operation from 1.8 V to 5.5 V and -40 degrees C to 125 degrees C, with a guaranteed low pH buffer input bias current across the operating range, provides maximum flexibility.
• Small form factor: Integration shrinks package to 5 mm x 6.4 mm, enabling smaller end products.

TI offers the entire signal chain for sensing applications, enabling engineers to combine components from the following families: Sensor AFE, MSP430 ultra low power 16-bit microcontroller, and 4 to 20mA transmitters such as the DAC161P997 and XTR117.

Availability, packaging and pricing
Available today in volume, the LMP91050 gas sensing AFE is offered in a 10-pin MSOP package, and the LMP91200 pH sensing AFE is supplied in a 16-pin TSSOP package. The suggested retail price for the LMP91050 is $1.32 and the LMP91200 is $3.90, both in 1,000-unit quantities.

Growing Sensor AFE portfolio
The LMP91050 and LMP91200 join TI's growing family of sensor AFEs:
• LMP91000 low-power gas and chemical sensor AFE that provides adjustable bias (sensor drive), sensitivity and wide dynamic range for electrochemical-based toxic gas monitoring applications.
• LMP90100, LMP90099, LMP90098, LMP90097 are 24-bit multi-channel sensor AFEs with true continuous background calibration for temperature, pressure, load and voltage measurement applications. Each AFE offers a different choice of channel configurations and current sources.
• LMP90080, LMP90079, LMP90078, LMP90077 are 16-bit multi-channel sensor AFEs with true continuous background calibration for temperature, pressure, load and voltage measurement applications. Each AFE offers a different choice of channel configurations and current sources.

Learn more about Tl's Sensor AFEs by visiting the links below:
• Order LMP91050 samples and evaluation modules: www.ti.com/lmp91050-pr [2].
• Order LMP91200 samples and evaluation modules: www.ti.com/lmp91200-pr [3].

• See an NDIR gas detection demonstration video: www.ti.com/lmp91050-v [4].
• See a pH sensing overview video: www.ti.com/lmp91200-v [5].
• Ask questions and help solve problems in the Precision Data Converter Forum in the TI E2E Community: http://www.ti.com/e2epdc-pr [6].

Source URL (retrieved on *03/02/2015 - 7:06pm*):
http://www.ecnmag.com/product-releases/2012/03/ti-introduces-world%E2%80%99s-first-configurable-ndir-gas-sensing-and-ph-sensing-afes

Links:
[1] http://www.ti.com/sensorafe-pr
[2] http://www.ti.com/lmp91050-pr
[3] http://www.ti.com/lmp91200-pr
[4] http://www.ti.com/lmp91050-v
[5] http://www.ti.com/lmp91200-v
[6] http://www.ti.com/e2epdc-pr