

HAL 2810

Feb/2008



HAL[®] 2810 Linear Hall-Effect Sensor with LIN Bus

The HAL 2810 is a member of the Micronas family HAL 28xy of programmable linear Hall-effect sensors.

It features a Hall-plate with spinning current offset compensation technique and a precise temperature sensor which is used for temperature compensation of both the Hall-sensors sensitivity and offset.

The sensor provides a digital signal processing. This is of great benefit because analog offsets, temperature shifts, and mechanical stress do not degrade digital signals.

The HAL 2810 is designed as a LIN slave according to the LIN Specification Package Rev. 2.0. All communications (programming, diagnostics, and measurement signal transport) is realized by means of LIN frames.

Major characteristics like magnetic field range, sensitivity, offset and the temperature coefficients of sensitivity and offset can easily be adjusted to the magnetic circuit by programming the non-volatile memory.

The HAL 2810 is available in the very small leaded package TO-92UT.

Features

- ◆ High precision linear Hall-effect sensor
- ◆ Spinning-current offset compensation
- ◆ Built-in temperature sensor
- ◆ Operating junction temperature range: $-40\text{ }^{\circ}\text{C} \dots 140\text{ }^{\circ}\text{C}$
- ◆ Customer-programmable temperature compensation of Hall-sensitivity (2nd order) and Hall-offset (1st order)
- ◆ Overvoltage and reverse voltage protection at all pins.
- ◆ Magnetic characteristics extremely robust against mechanical stress
- ◆ Digital signal processing
- ◆ High-precision low-pass filter with constant gain at the pass band and a high attenuation at the stop band. Sample frequency adjustable to 27 Hz and 54 Hz.
- ◆ 12 bit resolution
- ◆ Non-volatile EEPROM with redundancy and lock function
- ◆ LIN slave according to LIN Specification Package Rev. 2.0
- ◆ Supported LIN baud rates: 10.4 kbps and 20 kbps
- ◆ Integrated LIN physical layering

Major Applications

Due to the sensor's versatile programming characteristics and low drifts, the HAL 2810 is the optimal system solution for applications such as:

- ◆ Contactless potentiometers
- ◆ Angular measurements (e.g. for fuel-level sensing)
- ◆ Linear movement (e.g. Seat track position)
- ◆ Linear force or torque measurements

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Development Tools

As all communication is done by means of LIN frames, any available LIN tool chain can be used for configuration and programming of the HAL 28xy.

For engineering purposes, Micronas offers an easy-to-use application kit:

- ◆ Micronas programmer board (HAL-APB V 1.3)
- ◆ LabVIEW™ programming software for Windows® 9x/2000/XP/Vista
- ◆ LabVIEW™ VIs

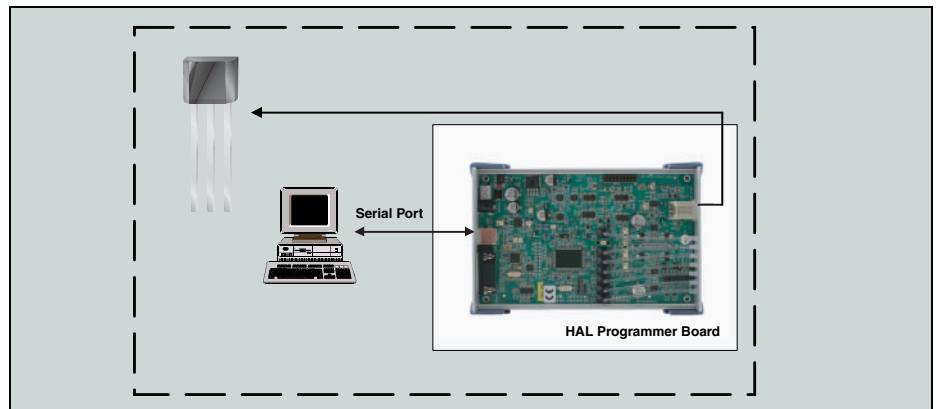


Fig. 1: Development tool setup

System Architecture

The HAL 2810 sensors are produced in a proven automotive submicron CMOS technology.

The HAL 2810 features a temperature-compensated Hall plate with spinning-current offset compensation, an A/D converter for the Hall-plate, an A/D converter for the temperature sensor, digital signal processing, a fully integrated LIN interface including the physical layer, an EEPROM memory with redundancy and lock function for the calibration data and the LIN configuration, and protection devices on all pins.

The HAL 2810 is programmable by means of LIN frames. No additional programming pin is needed.

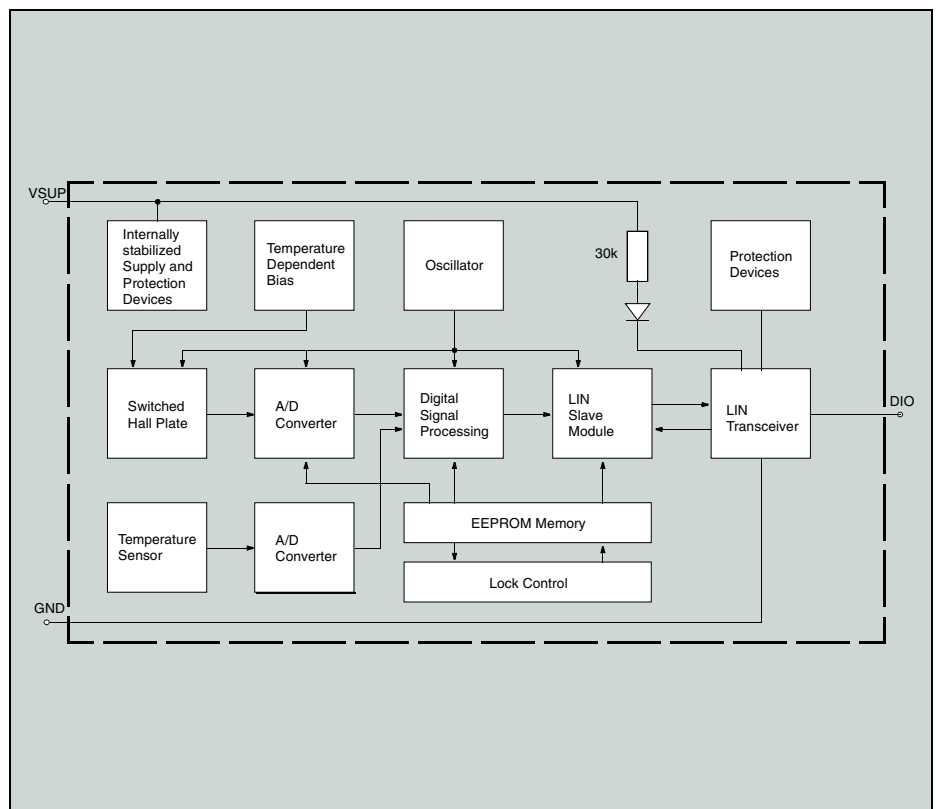


Fig. 2: Block diagram of the HAL 2810

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Edition Feb. 8, 2008; Order No. PI000117-002EN