

# HAL 2810

Feb/2008



## HAL<sup>®</sup> 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 °C ... 140 °C
- ◆ Customer-programmable temperature compensation of Hall-sensitivity (2<sup>nd</sup> order) and Hall-offset (1<sup>st</sup> 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

# HAL 2810

Feb/2008

## 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

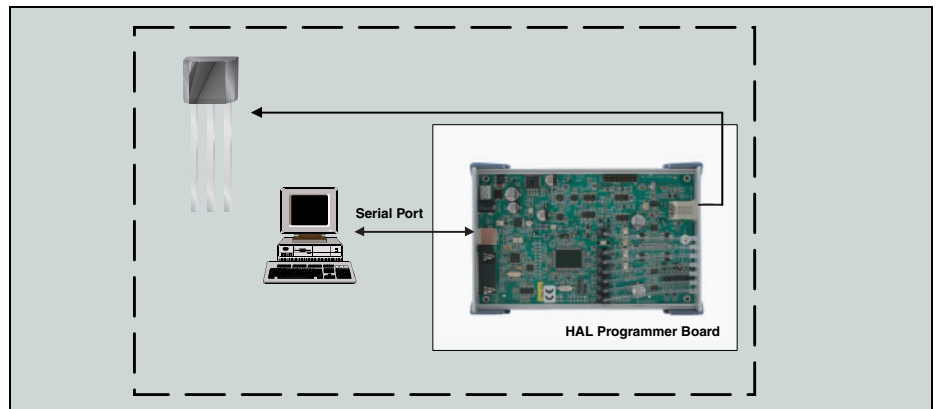


Fig. 1: Development tool setup

## 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.

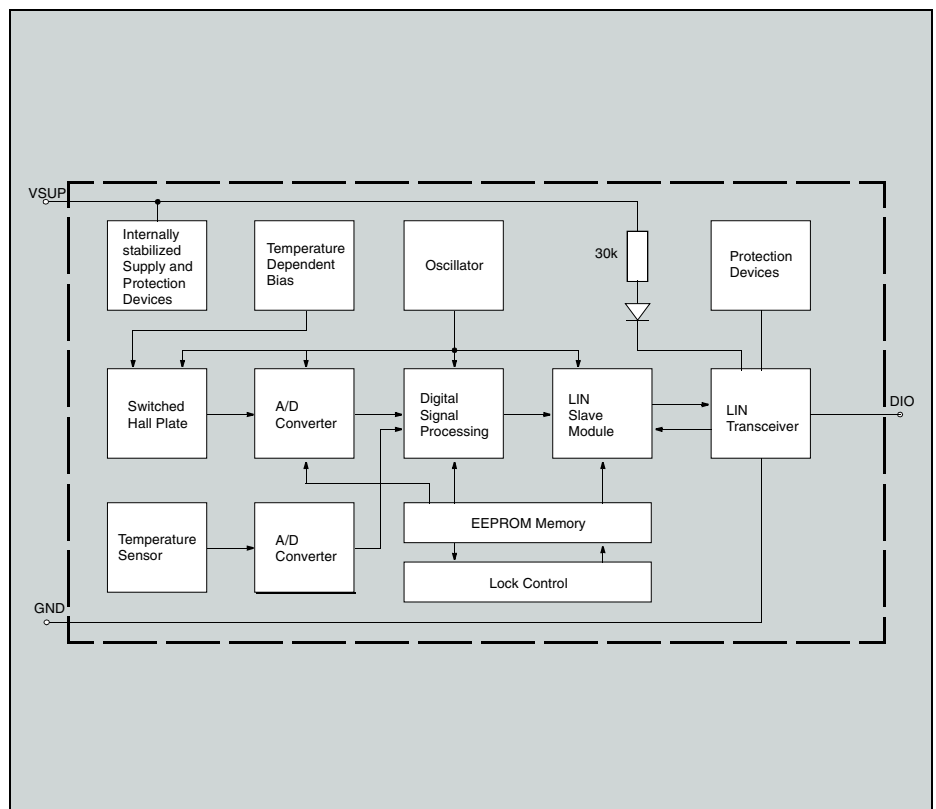


Fig. 2: Block diagram of the HAL 2810

All information and data contained in this product information are without any commitment, are not to be considered as an offer for conclusion of a contract, nor shall they be construed as to create any liability. Product or development sample availability and delivery are exclusively subject to our respective order confirmation form. By this publication, Micronas GmbH does not assume responsibility for patent infringements or other rights of third parties which may result from its use.

No part of this publication may be reproduced, photocopied, stored on a retrieval system, or transmitted without the express written consent of Micronas GmbH.

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