

iC-PI: Fastest Vector-Tracking Converter for Interpolation

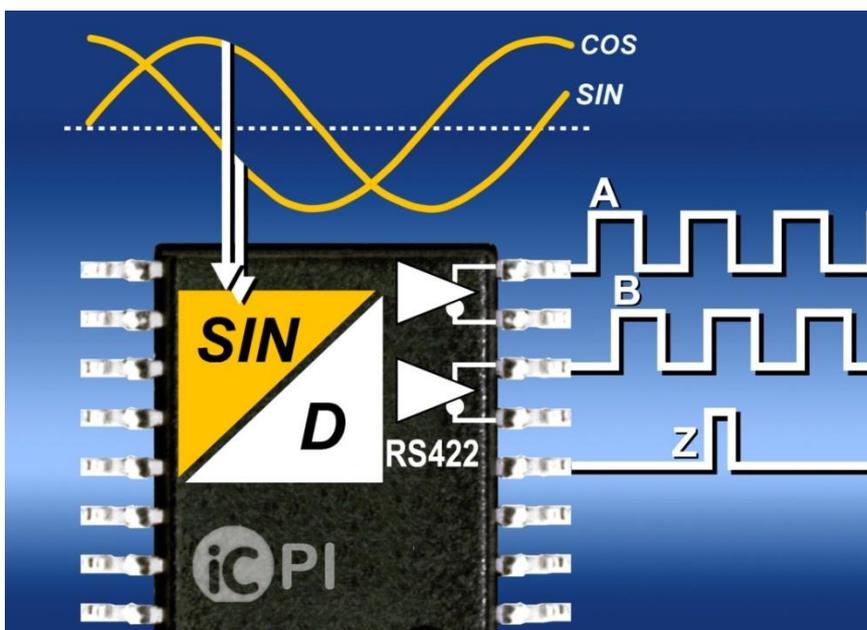
iC-PI: 12-Bit Sin/Cos-Interpolator with RS422 Driver Features Resolutions up to 4000 Increments per Revolution

Bodenheim, Germany, November 10, 2017: iC-Haus introduces at the SPS IPC Drives 2017 (Hall 3A, Booth 269) the new 12-Bit sin/cos interpolator iC-PI. The integrated device supports optical and magnetic length and angle gauges as well as sensor controlled brushless motor commutation.

As the fastest vector-tracking converter available on the market, iC-PI provides an A/D conversion without latency: with a tracking latency of less than 250 ns, it offers a sine resolution of up to 4000 edges per AB cycle (binary: 4096). Compared to well-known devices, it is four times faster and achieves an AB output frequency of up to 10 MHz and a minimum AB transition distance of 25 ns.

The transition distance can thereby be preselected, whereby the interference immunity of the position encoder can be effectively optimized.

Product photo of iC-PI with 20-pin TSSOP package



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The encoder signals are supplemented by a generated index signal whose position, width, and logic can be set as required. At the same time a patented signal conditioning unit provides glitch-free quadrature signals with hysteresis which always maintain a preset minimum transition distance. Thereby, even in case of high input frequency, both counting errors can be avoided and a higher signal disturbance tolerated.

Fault-tolerant driver and special functions

The fault-tolerant on-chip RS422 driver which outputs incremental signals (ABZ) and commutation signals (UVW) ensures a reliable data transfer. The dual-core design of the device allows to generate precise binary or decimal resolutions without systematic pitch errors.

The I2C interface allows for absolute angle measurements. After the sensor head has been attached to the scale, sensor errors can be corrected. For this purpose, embedded microcontrollers or calibration software can be used.

Especially for AMR angle sensors and optical polarization encoders whose sin/cos sensor signal repeats after 180 angular degrees, the iC-PI provides a special input function for cycle detection.

Monitoring and Diagnostic Analysis

All of the chip's major functions are monitored and can be configured for alarm indication. Typical sensor errors, such as loss of signal due to wire breakage, short circuits, dirt, or aging, are recognized. Further operating errors, such as exceeding the permissible operating temperature, exceeding the permissible input frequency due to fast movements, or a line count error of the scale are detected.

The mode of error handling is extensively configurable; an alarm can be displayed at the error output by an LED, set the output drivers to tristate, or be transmitted to the error memory for later diagnosis.

Backwards compatible

The iC-PI is pin and function compatible to existing interpolators. The 20-pin TSSOP housing takes up a board space of only approx. 6.5 x 6.4 mm. It is configured using the I2C multi-master interface either by a microcontroller or EEPROM.

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With a supply voltage of +5 V (max. 35 mA), the device functions within a wide operating temperature range of -40 to +100 °C. An integrated protection switch protects the connected sensors against reverse polarity.

For sampling, ready-to-use demo-boards with GUI (PC software) as well as DLL data can be provided by iC-Haus.

Further information is available at URL <http://www.ichaus.de/PI>

SPS IPC Drives 2017

November 28 – 30, 2017, Nuremberg

Hall 3A, Booth 269

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Introducing iC-Haus

iC-Haus GmbH is a leading, independent German manufacturer of standard iCs (ASSP) and customized ASiC semiconductor solutions with worldwide representation. The company has been active in the design, production, and sales of application-specific iCs for industrial, automotive, and medical applications for more than 30 years.

The iC-Haus cell libraries in CMOS, bipolar, and BCD technologies are specifically suited to realize the design of sensor, laser/opto, and actuator ASiCs, amongst others. The iCs are assembled in standard plastic packages or using the iC-Haus chip-on-board technology to manufacture complete microsystems, multichip modules, and optoBGA/QFN in conjunction with sensors.

Further information is available at <http://www.ichaus.com>.

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