

iC-MP 8-BIT HALL ENCODER



The iC-MP is a magnetic encoder device sensing the angular position of a diametral magnet centered on top of the package. It uses an integrated Hall sensor array for sensing the magnetic field and extracting its sine and cosine components from which the angular position of the magnet is derived. The internal signal control maintains signal integrity. In case of insufficient magnetic field, the NERR output is activated.

The angular value is either accessible as digital 8-bit data via the serial interface or as reconverted analog output voltage at pin LAO.

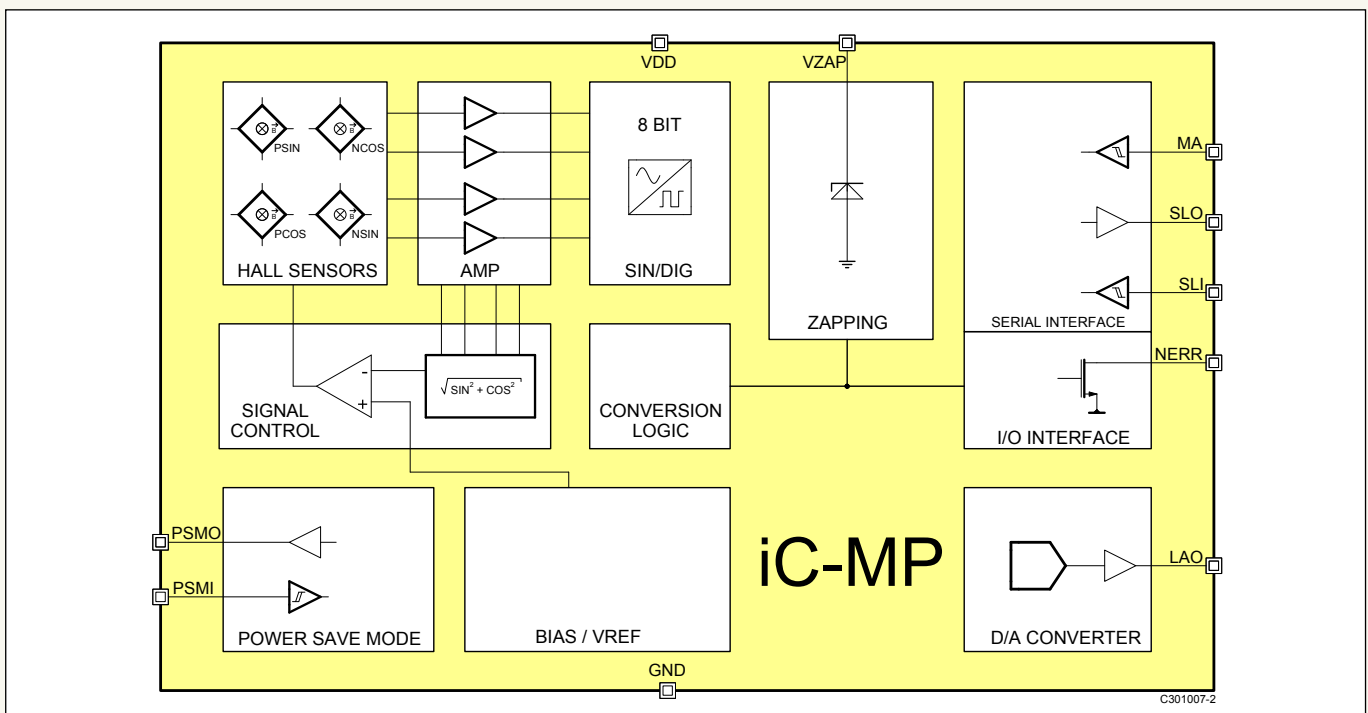
With the LAO output, the device acts as a ratiometric potentiometer with programmable angular zero position and angular ranges of 90°, 180°, 270° or 360° (full scale). Within this angular ranges, the LAO output voltage increases or decreases linear with rotation angle, depending on the programmed rotation direction (CW or CCW). The LAO output voltage is either rail to rail limited (0..VDD) or within 10% to 90% of the supply range.

Features

- Integrated differential Hall sensors with signal conditioning
- Interpolation with 256 angular steps per turn
- Real-time system for rotational speeds up to 12 000 rpm
- Linear analog output with adjustable angular range
- Programmable angular zero position
- Serial interface for data and setup
- Error output for faulty signals (loss of magnet)
- Easy cascading for multi-sensor applications

Applications

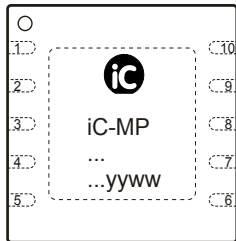
- Digital sensor 0..360°
- Absolute angular encoder
- Potentiometer with ratiometric output
- Multiturn encoders



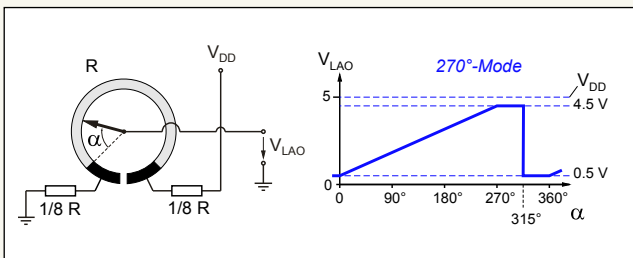
iC-MP 8-BIT HALL ENCODER

For scanning multiple axes, iC-MP can be easily cascaded. In the fast scanning mode all devices of a chain are active. To reduce total supply current of a chain, the slow scanning mode can be used with one device of a chain active at a time.

Pin Configuration DFN10 4x4 mm²



Potentiometer Replacement



Pin Functions

No.	Name	Function
1	PSMI	Power Save Mode Input
2	GND	Ground
3	PSMO	Power Save Mode Output
4	LAO	Linear Analog Output
5	MA	Serial Clock Input
6	SLO	Serial Data Output
7	SLI	Serial Data Input
8	VZAP	Zapping Voltage Input
9	VDD	+5 V Supply Voltage
10	NERR	Error Output, low active

Key Specifications

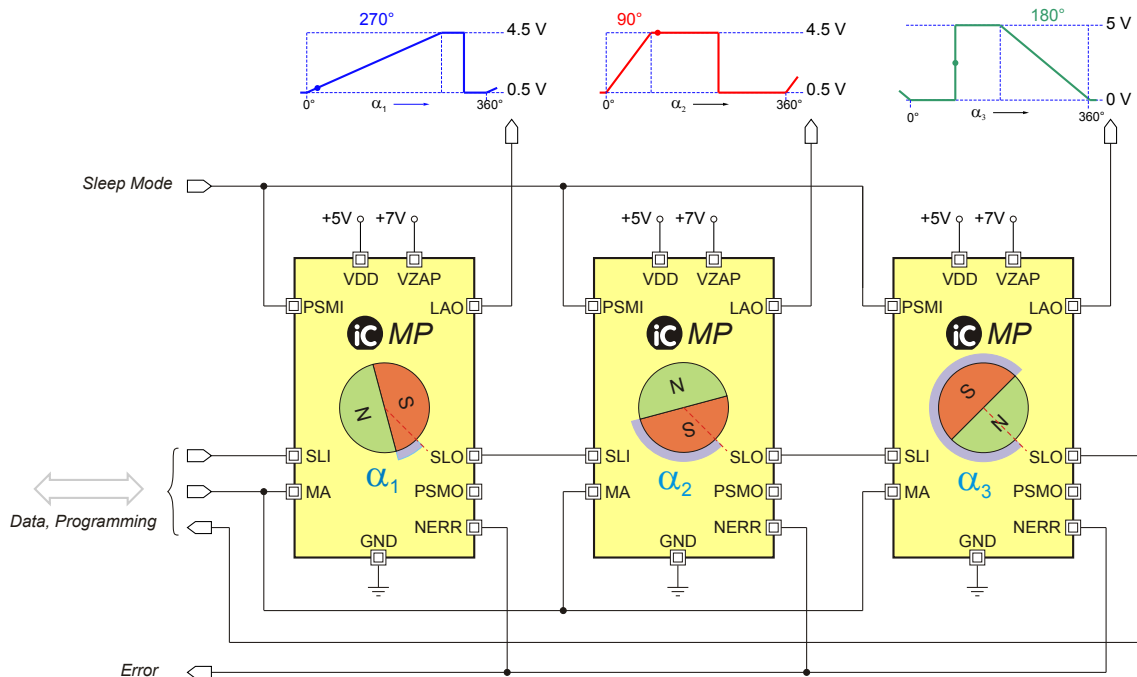
General

Supply Voltage	4.5 to 5.5 V
Supply Current (no load)	12 mA max.
Operational Temperature Range	-40 to +125 °C
ESD Susceptibility	2 kV (HBM 100 pF, 1.5 kΩ)

Linear Analog Output

Output Voltage Range	0 to 5 V (100 % of V_{DD}) 0.5 to 4.5 V (80 % of V_{DD})
Resolution	8 bit (1.4°) versus 360°
Angular Output Mode	90°, 180°, 270°, 360°
Permissible Output Load	to 1 mA

Chain Configuration Example (Fast Scanning Mode)



C101207-2

This tentative information shall not be considered as a guarantee of characteristics. Rights to technical changes reserved.