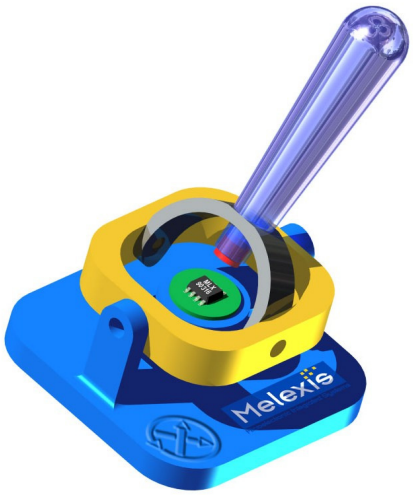
Product Information

MLX90333

Absolute Position Sensor IC

The MLX90333 is a monolithic sensor IC featuring the Triaxis™ Hall technology. Conventional planar Hall technology is only sensitive to the flux density applied orthogonally to the IC surface. The Triaxis™ Hall sensor is sensitive to the 3 components of the flux density (B_X, B_Y & B_Z) applied to the IC and it reports 2 output signals corresponding to the magnetic angles computed by the IC ($\alpha = \angle zx$ & $\beta = \angle zy$).
The MLX90333 senses the absolute position of a magnet moving above it. It enables the design of non-contact joystick (3D) and linear (1D) position sensors that are frequently required for both automotive and industrial applications.
The MLX90333 solves the sensing and signal problems so designers can concentrate on making the best joysticks or linear displacement sensors.



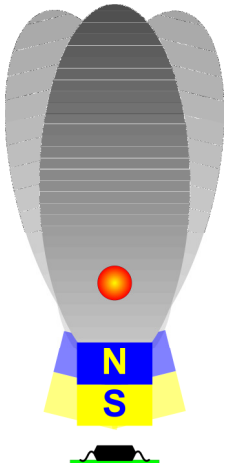
Applications

- Joystick—Joypad
- 4-Way Scroll Key
- Man-Machine Interface
- Linear Position Sensor (1D Displacement)

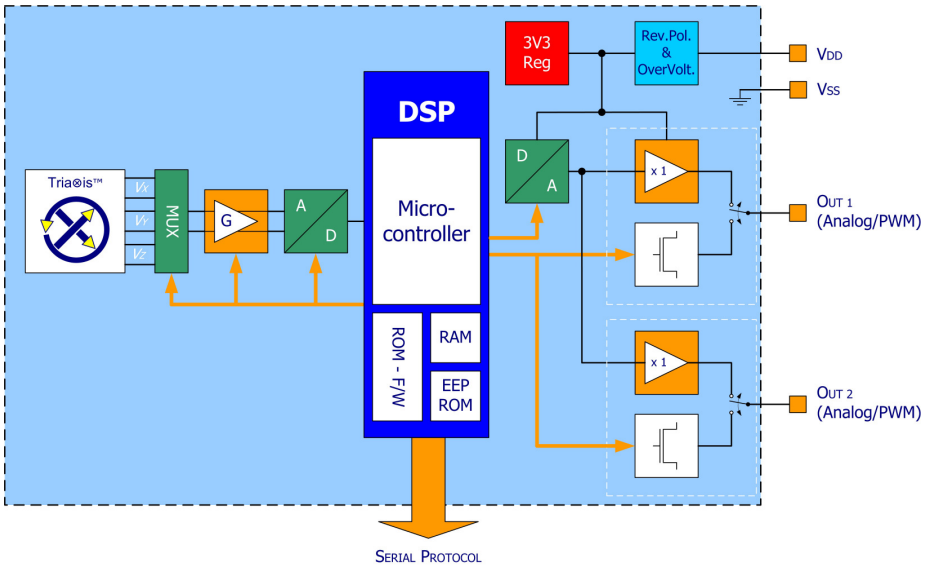
Features

- Absolute 3D Position Sensor IC—Dual Output
- Triaxis™ Hall Technology—Non Contact
- Programmable Formula for Magnetic Angles
  - $\alpha = ATAN\left(\frac{k_Z V_Z}{V_X}\right) \qquad \beta = ATAN\left(\frac{k_Z V_Z}{V_Y}\right)$
  - $\alpha = ATAN\left(\frac{\sqrt{(k_Z V_Z)^2 + (k_t V_Y)^2}}{V_X}\right) \quad \beta = ATAN\left(\frac{\sqrt{(k_Z V_Z)^2 + (k_t V_X)^2}}{V_Y}\right)$
- 12-bit Angular Resolution
- 10-bit Angular Accuracy
- Simple & Robust Magnetic Design
- 48-bit ID Number
- Programmable Linear Transfer Characteristics
- Selectable Analog (Ratiometric), PWM or Serial Protocol
- Single Die - SO8 Package RoHS Compliant
- Dual Die (Full Redundant) — TSSOP16 Package RoHS Compliant

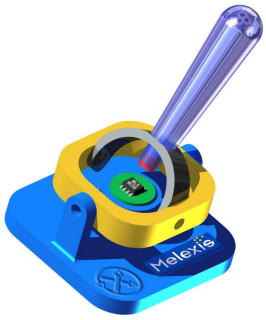
Triaxis®



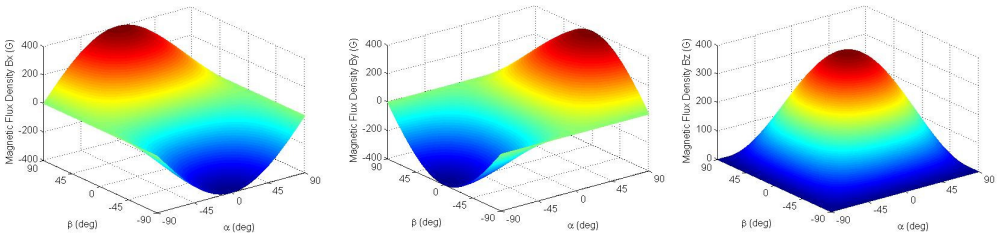
Functional Diagram



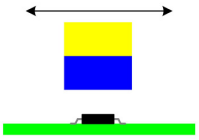
Typical Applications



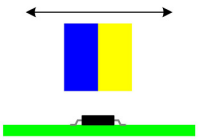
Joystick



Bx By Bz



Linear - Axial/Orthogonal



Linear - Axial/Parallel