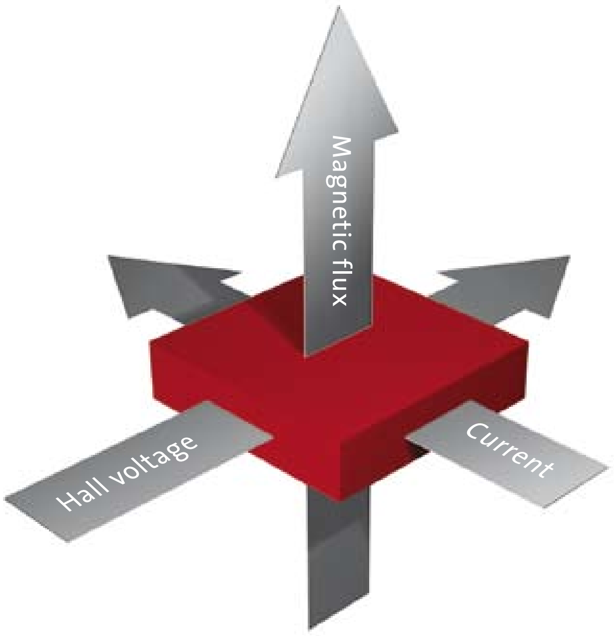
A Hall sensor works via the Hall effect. In a conductor, when current is flowing and a magnetic field is perpendicular to the current, a Hall effect voltage difference is generated perpendicular to both.

Hall sensors may be unipolar, sensing only a north pole or only a south pole, or bipolar, sensing either.



The figures illustrate some functional interactions between Hall sensors and magnets. The graphs represent the behaviour of the flux density at the sensor position.

We also offer you the opportunity on our website, www.ms-schramberg.de, to calculate automatically the flux density of disc, ring, and rectangular magnets.

Fig. 1,2, and 3: Disc or rectangular magnets with different directions of magnetisation and motion.

Fig. 1:

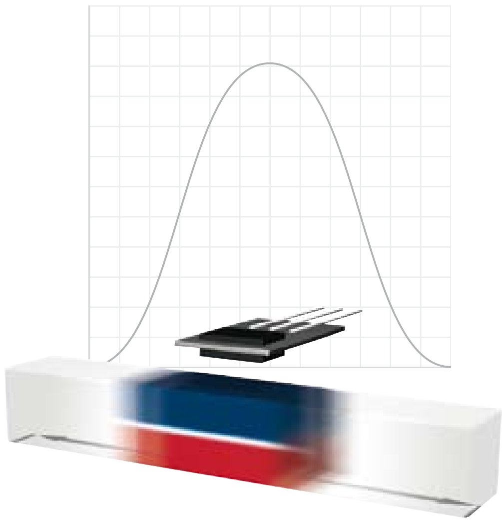


Fig. 2:

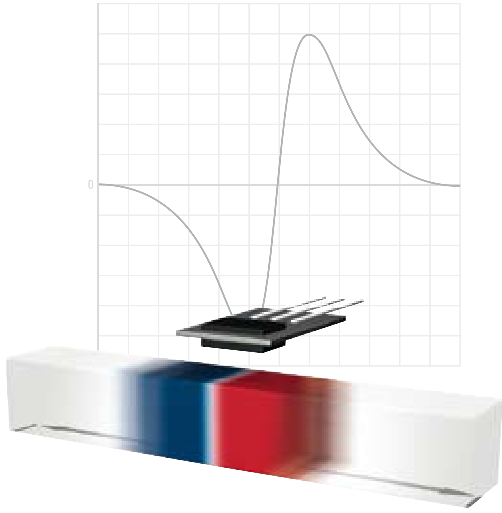


Fig. 3:

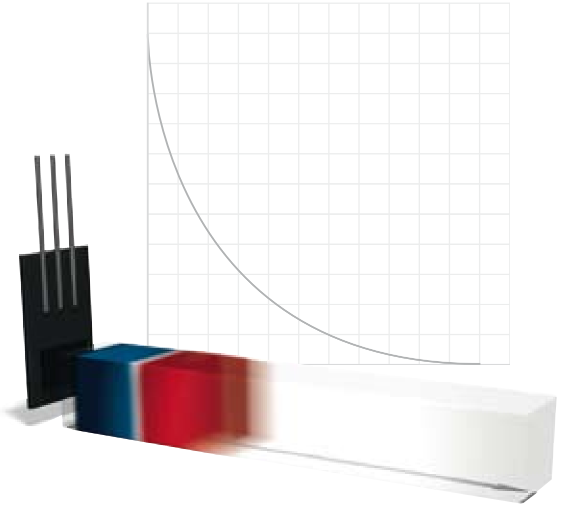


Fig. 4:

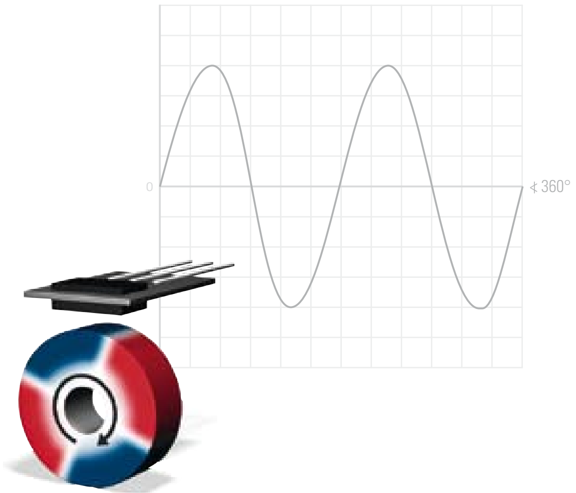


Fig. 5:

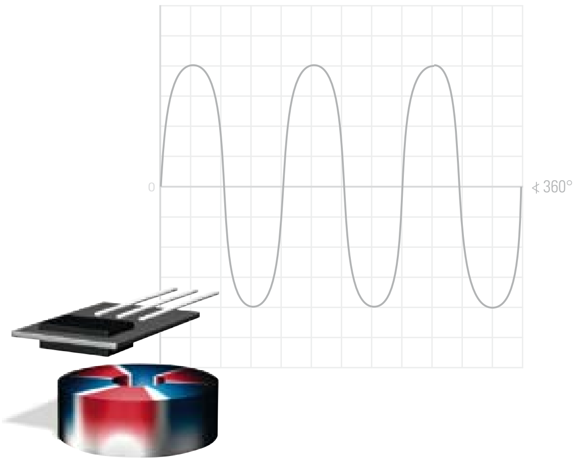


Fig. 6:

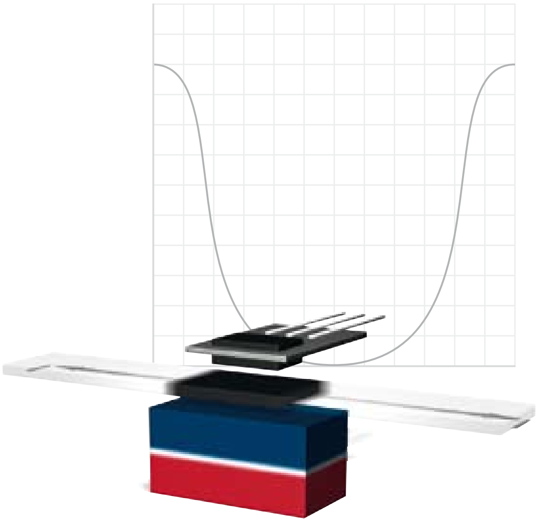


Fig. 7:

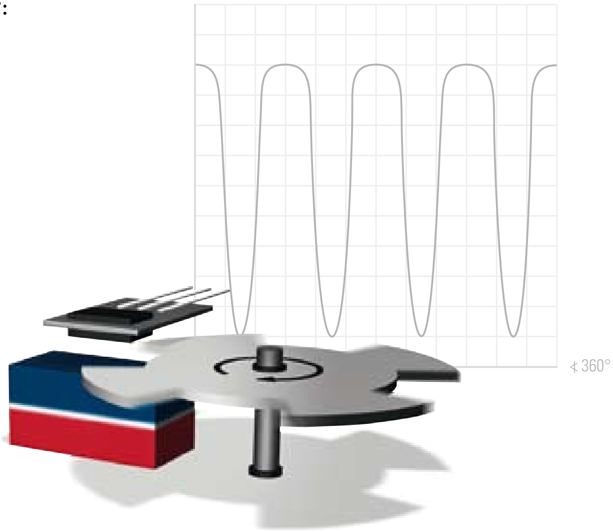


Fig. 8:

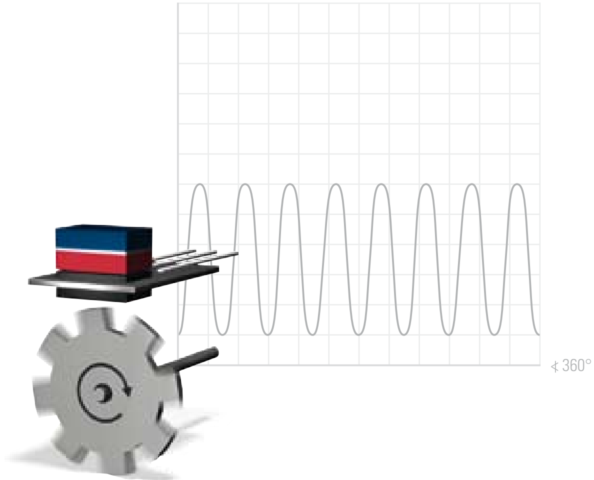


Fig. 4: Ring magnet with multi-pole magnetisation on circumference.

Fig. 5: Ring magnet, magnetised on the surface in sectors on one side, or magnetised through the thickness in sectors.

Fig. 6 and 7: If a Hall sensor and magnet are mounted in place, the flux density changes are caused by moving an iron plate between the Hall sensor and magnet. The iron plate shields the magnetic flux.

Fig. 8: A Hall sensor with a magnet affixed is called a pretensioned Hall sensor. Here, when the gearwheel dynamically diverts the field lines, a modulation of the flux density is generated.