**The HEIDENHAIN LIP 6000: Accurate, Compact, and Reliable**

The new LIP 6000 exposed linear encoder from HEIDENHAIN, featuring interferential scanning, enables exceptionally accurate position measurement as well as permanently reliable signals, all within in a compact design. With a very small interpolation error of only ±3 nm, a low noise level of just 1 nm RMS, and a baseline error of less than ±0.175 µm at a 5 mm interval, this encoder is predestined for applications requiring constant speed control or high positioning stability at standstill.

The LIP 6000 owes its exceptional characteristics in part to the new HEIDENHAIN signal processing ASIC HSP 1.0, which ensures consistently high-quality scanning signals throughout the entire service life of the encoder. To this end, it continuously monitors the scanning signal: if the signal amplitude decreases, then the HSP 1.0 readjusts it by increasing the LED current. The resulting increase in LED light intensity has only a minimal worsening effect on the noise component in the scanning signals, even during heavy signal-stabilizing intervention. This stands in stark contrast to systems that perform amplification within the signal path. At the same time, the HSP 1.0 also ensures that the original, ideal signal shape is maintained despite contamination.

Additional special features of the LIP 6000 include its integrated homing and limit functions. The homing function enables position detection and thus faster system homing—a clear advantage, especially for long axes with sizable traverse ranges. The integrated limit function allows for the detection of limit positions without the need for additional measures. For this purpose, limit plates are easily positioned as desired during mounting. In conjunction with the information from the homing function, the limit function makes it possible to differentiate between whether the right or the left end position has been traversed by the scanning head.

The compact design of the LIP 6000 derives from the high integration density of its scanning and signal-processing components. This integration density allows for a scanning head that is a mere 26 mm long, 12.7 mm wide, and 6.8 mm high and that features a very low mass of only 5 g. It is also available in two versions, with a choice between having the cable outlet on the right or the left side, depending on the mounting situation. Linear scales are available in lengths of up to 3,040 mm.

Because the scanning head and linear scale of the LIP 6000 are an unpaired system, any combination between them is possible. The nominal distance between the scanning head and the linear scale is 0.75 mm, with a permissible variation of ±0.2 mm. An offset of ±0.2 mm is permitted for lateral movements. For rolling and pitching motion, the scanning head tolerates ±5 mrad of rotation about both the crossfeed axis and the longitudinal axis. Yawing movements of ±2 mrad about the vertical axis are also permitted. These generous mounting tolerances facilitate assembly and make it possible to use the LIP 6000 in mounting areas with mechanically simple layouts.

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*The HEIDENHAIN LIP 6000 – permanently high accuracy thanks to the new signal processing ASIC HSP 1.0*

*For more information, visit:* [*www.heidenhain.de*](http://www.heidenhain.de)

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