

DESCRIPTION:

Hall Probe S for H3A Magnetic Transducers is a very robust, hybrid 1-, 2-, or 3-axis Hall-Probe, with Hall sensors arranged along x-axis.

The chip is glued onto a reference ceramic plate suitable for an appropriate fixing of the probe.

The Hall Probe S for H3A Magnetic Transducers integrates three high-resolution Hall sensors with a good angular accuracy (orthogonality error $< 2^\circ$) of the three measurement axes of the probe; and a temperature sensor.

The probe chip is embedded in the probe package and connected to the CaH cable, which makes this probe both mechanically and electrically very robust.

The output of the Hall Probe are high-level analog voltages proportional with each of the measured components of a magnetic flux density and a voltage proportional with the probe temperature.

KEY FEATURES:

- **Very robust Hall Probe. The chip is glued onto a reference ceramic plate suitable for an appropriate fixing of the probe**
- **Hybrid 1-, 2-, 3-axis (Bx, By, Bz) Hall Probe, of which one, two, or three channels are used**
- **Ultra-low noise & offset fluctuation magnetic transducer, allowing very high resolution measurements**
- **The overall Magnetic Field Sensitive Volume MFSV depends on the Hall sensor arrangements on the Hall Probe (along x-, along z-axis, etc.)**
- **Very high linearity**
- **Magnetic transducer based on much improved offset and noise reduction technique**
- **Very low planar Hall voltage**
- **A temperature sensor on the probe for temperature compensation**
- **The Hall Probe S for H3A Magnetic Transducers is consisting part (Module H) of the H3A Magnetic Field Transducer and Digital Teslameter**
- **Suitable for as 3-axis (03, XYZ), 2-axis (XY, XZ, YZ) and as 1-axis (0X, 0Y, 0Z) Hall Probe**

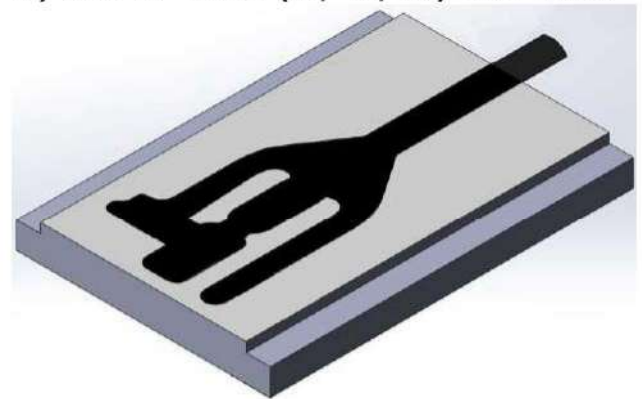
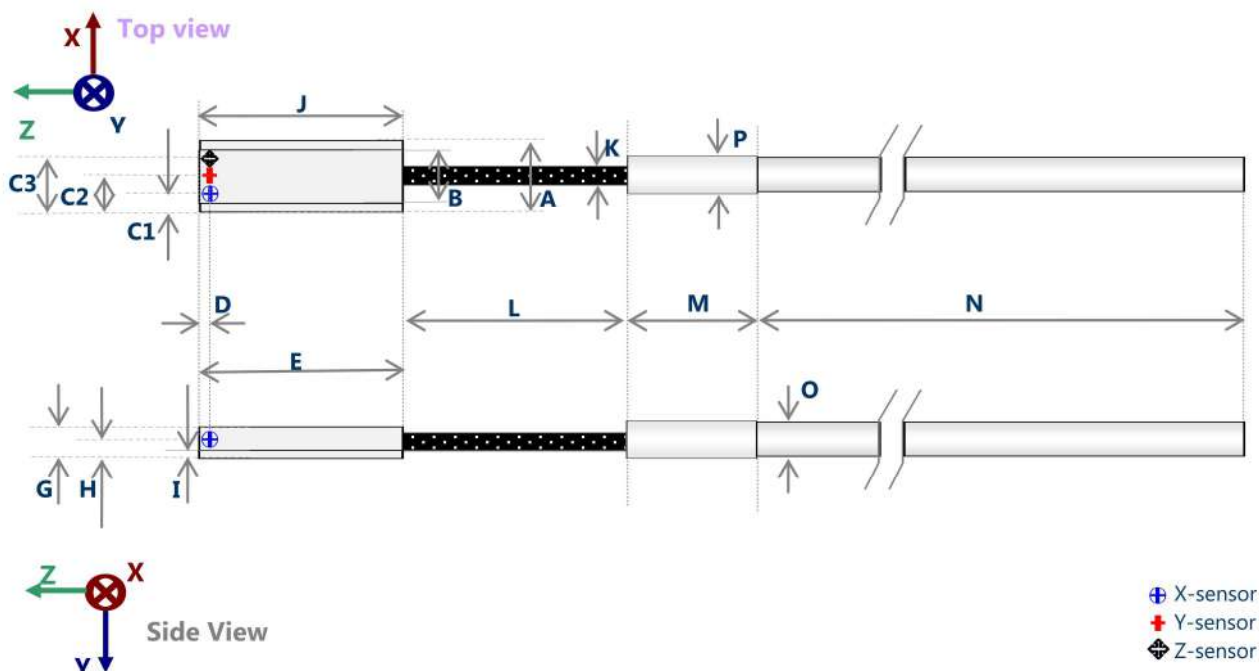


Figure 1. **S type Hall probe**

PROBE DIMENSIONS AND CHARACTERISTICS:

Depending on design, the probe itself can be as short as 15 mm and placed into a suitable probe holder 30 mm or longer. The sensor positions (mutual and with respect to the probe's head) remain the same in both configurations.



| Probe Dimensions [mm] | | | | Cable Dimensions [mm] | |
|-----------------------|------------|----------|-------------|-----------------------|---------|
| A | 10 ± 0.05 | E | 10 ± 0.05 | K | 1 ± 0.1 |
| B | 9.0 ± 0.05 | F | | L | 200 ± 5 |
| C1 | 3.0 ± 0.05 | G | 1.4 ± 0.05 | M | 20 ± 1 |
| C2 | 5.0 ± 0.05 | H | 0.7 ± 0.05 | N | 10 000 |
| C3 | 7.0 ± 0.05 | I | 0.38 ± 0.05 | O | 2.09 |
| D | 2.0 ± 0.05 | J | 10 ± 0.05 | P | 2.76 |

Figure 2. **Dimensions of the SENIS 03SxxL Hall probe (all measures are displayed in mm). The red cross denotes Y-sensor, the blue circled-cross denotes the X-sensor, and the grey beveled cross denotes Z-sensor.**

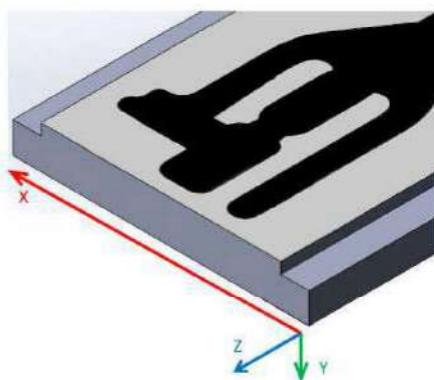


Figure 3. **Reference Cartesian coordinate system of the SENIS 03SxxL Hall probe**

| Parameter | X(mm) | Y(mm) | Z(mm) |
|--|---|-----------------|-----------------|
| Dimensions | | | |
| ▪ Magnetic field sensitive volume (MFSV) | 150 · 150 · 1µm | 150 · 150 · 1µm | 150 · 150 · 1µm |
| ▪ Position of the MFSV centre of Z-sensor | 7.0 ± 0.05 | -0.70 ± 0.05 | -2.0 ± 0.05 |
| ▪ Position of the MFSV centre of Y-sensor | 5.0 ± 0.05 | -0.70 ± 0.05 | -2.0 ± 0.05 |
| ▪ Position of the MFSV centre of X-sensor | 3.0 ± 0.05 | -0.70 ± 0.05 | -2.0 ± 0.05 |
| ▪ Total probe external dimensions | 10 ± 0.05 | 1.4 ± 0.05 | 10 ± 0.05 |
| Accuracy of positioning | | | |
| ▪ Mutual angular accuracy of axes | Better than 2°(mutual orthogonality) | | |
| ▪ Angular accuracy of axes with respect to the reference surface | ±2°, Determined during calibration | | |
| General properties | | | |
| ▪ Cable | Shielded, with a flexible thin part near the probe (see Fig. 2) | | |

INSTALLATION MANUAL FOR S HALL PROBE

Although the S probe is very robust with respect to its size, it should be handled with special care. Considering that we deal with a high-precision device of very small dimensions, following precautions should help to avoid damage to the probe during installation and handling, and ensure that the device's accurate calibration remains preserved.

The mounting of the probe should be carried out by application of very low pressure to its head and thin wires. If the probe head is clamped, the user needs to make sure that the environment surface in contact with the reference plane of the probe is flat and covers as much of the probe reference surface as possible (see Fig. 4). Do not apply more force than required to hold the probe in its mounting.

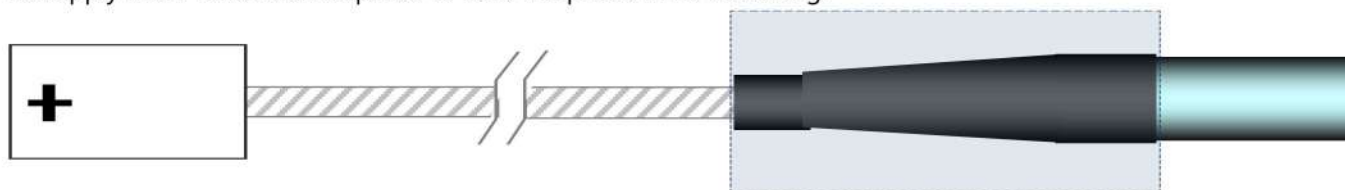


Figure 4. **Safe fixing area of the S Probe head**

In order to prevent rupture of the thin wires from the probe head, the user should fix and secure the probe cable in the proximity of the head. The thin wires of the flexible section of the probe need to be folded with care; repeated strong bending should be avoided.

Also, avoid any high pressure and bending of the transient section between the thin and the thick cables.