APPLICATION NOTE

F Series Mountable Hall Probes Mounting Information

Mountable probe purpose

Lake Shore mountable Hall probe handles provide mounting features to facilitate precise and repeatable probe mounting to customer fixtures. Benefits include:

- Reduced design effort for fixtures: Lake Shore provides CAD drawing files which can serve as the starting point for mounting fixtures that repeatably position the Hall probe active area relative to mounting fixture features.
- Known nominal position of Hall probe active area relative to the mounting fixture features. Note that manufacturing tolerances will result in active area position variation between different probes.
- Ease of re-installation: a probe may need to be removed and re-installed in a fixture for calibration or use with other systems. The mounting features allow fast and repeatable probe re-installation.

Applications such as field mapping are an excellent fit for the mountable probe handle. For such devices, the customer mounting fixture may be similar to the setup shown in Figure 1.

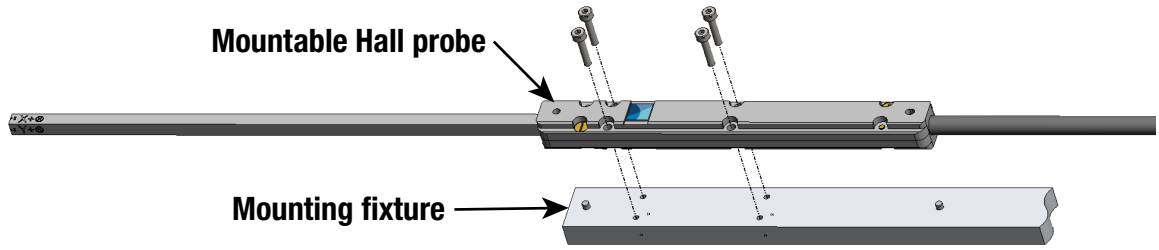


Figure 1. Example implementation of mountable Hall probe handle on customer mounting fixture

Mounting features

Mounting features on the probe handle are provided to securely and repeatedly locate the Hall probe. Figure 2 identifies the mounting features on the probe. Figure 3 (third angle projection) indicates the features that are suggested for the probe mounting fixture. M2 socket head cap screws are recommended for the threaded holes.

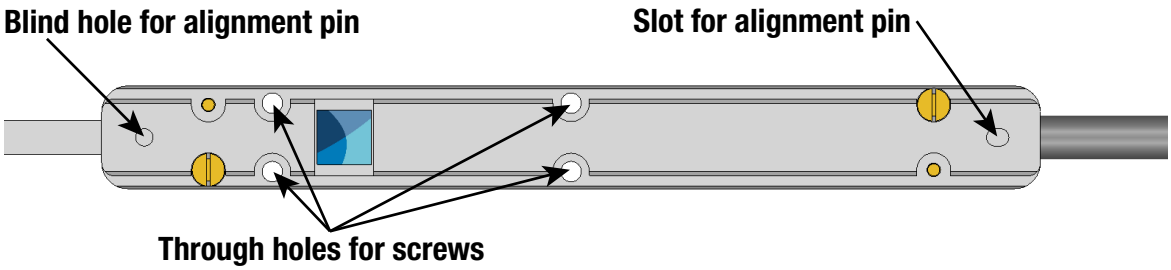


Figure 2. Mounting provisions on the mountable Hall probe handle

Lake Shore CRYOTRONICS
a DwyerOmega brand

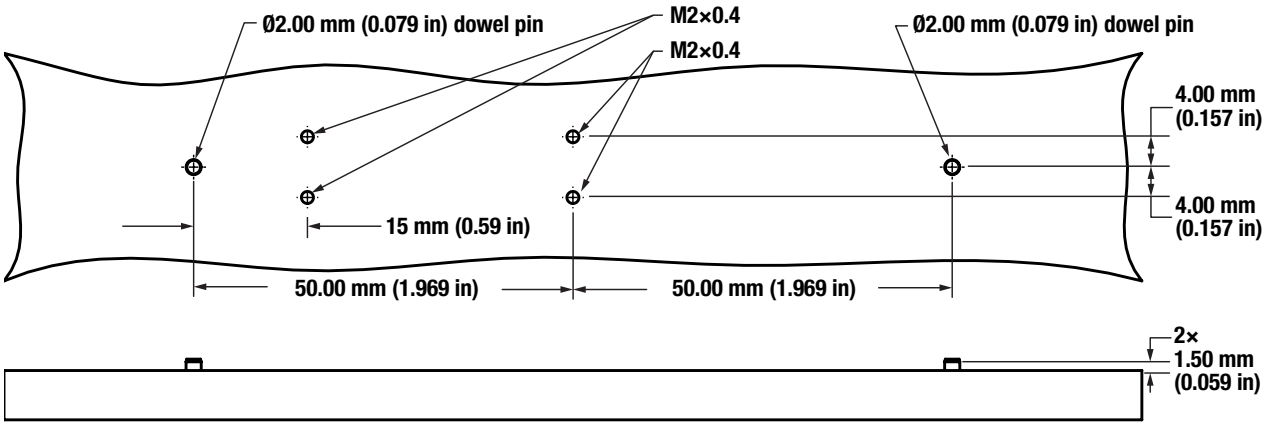


Figure 3. Mountable probe suggested mounting interface

Suggested mounting hardware

As shown in Figure 4, a combination of 2 mm diameter dowel pins and M2 socket head cap screws are suggested for mounting the Hall probe. Dowel pins should be a press fit into the Hall probe mount, leaving 1.5 mm of the pin length exposed. After setting the Hall probe over the Hall probe mount dowel pins, secure the probe in place with the M2 socket head cap screws. Once assembled, the probe will appear as shown in Figure 5.

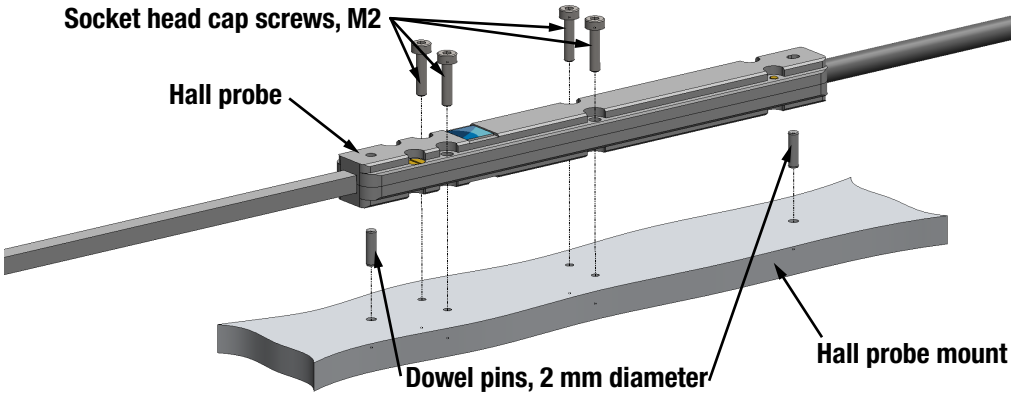


Figure 4. Exploded view of suggested mounting hardware

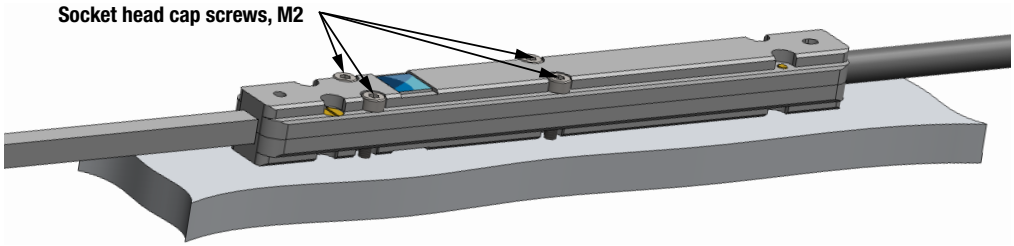


Figure 5. Probe handle mounted with suggested hardware

Imperial mounting hardware

For mounting with imperial hardware, the M2 socket head cap screws may be replaced with #2 socket head cap screws, and the 2 mm diameter dowel pins may be replaced by 5/64-inch diameter dowel pins.

Mounting rationale

The combination of screws and dowel pins position the probe securely and precisely. The dowel pin hole near the probe stem prevents the probe from translating across the mounting surface. The dowel pin slot near the probe cable works in conjunction with the dowel pin hole to prevent the probe from rotating on the mounting surface. Tight dowel pin and dowel pin hole tolerances ensure a precise fit with minimal probe movement possible relative to the mount. Socket head caps screws secure the probe to the mounting surface, preventing the probe from separating from the mount, and ensuring that the dowel pins remain engaged with the dowel pin holes. When using the pins, only two fasteners are needed. If omitting the pins, all four fasteners are recommended.