

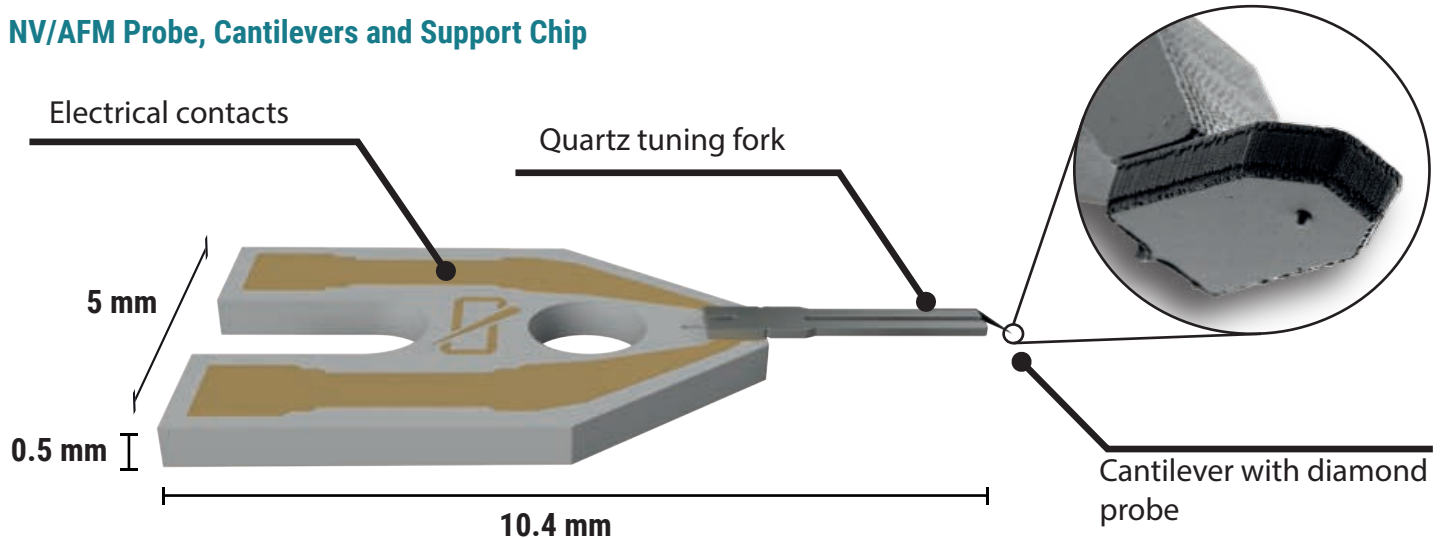


Making magnetic fields visible at the nm scale

QST - Quantum Sensor Tip

Key Specifications

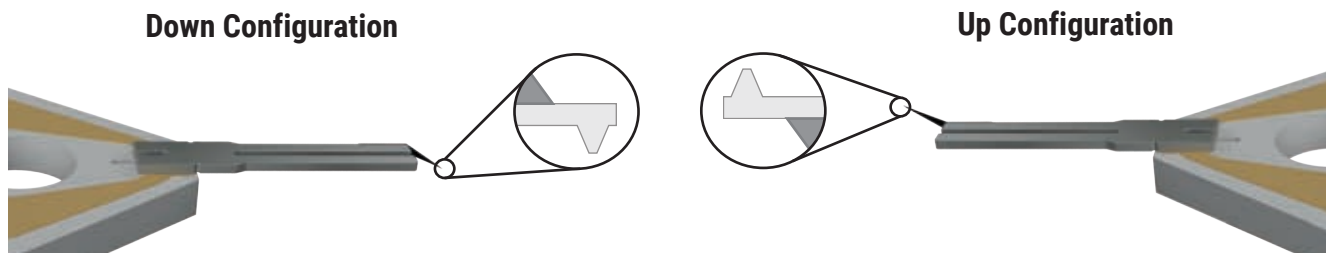
NV/AFM Probe, Cantilevers and Support Chip



The Quantum Sensor Tips contain a high-quality diamond tip with a single embedded NV center mounted on a robust ceramic carrier plate. An integrated force-feedback sensor based on a quartz tuning fork provides safe distance control. Our quality control team ensures that only the top performing probes are selected for our customers.

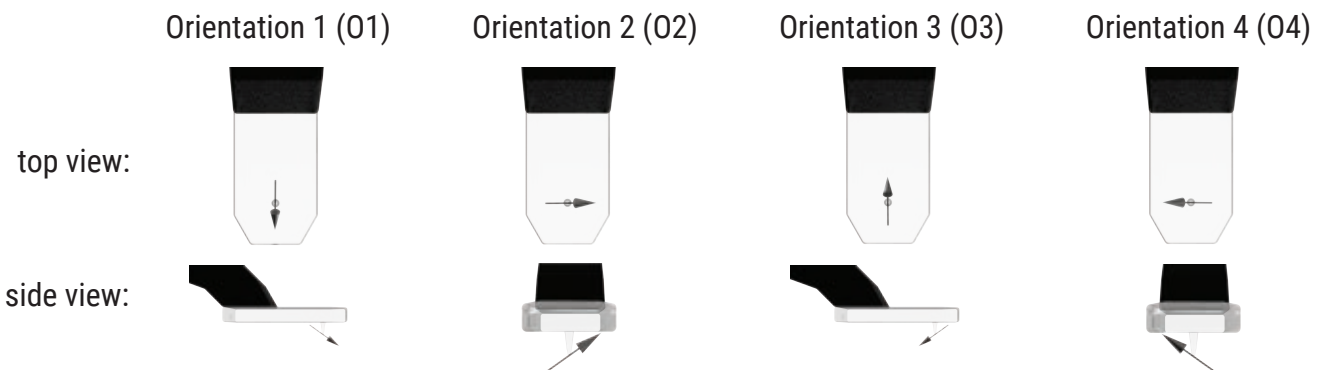
Tip configurations

In the **Down** (**Up**) configuration, cantilever and tip are facing down (up) with respect to the contacts on the carrier chip.



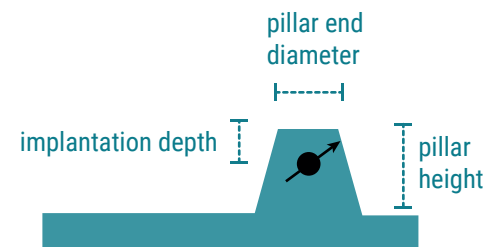
NV Orientation

The QST is available with the NV pointing in four different directions as described by the following pictures. In-plane orientation is available on request.



NV/AFM diamond tip

Pillar end diameter	250-300 nm
Pillar height	1 - 3 μm
Pillar tilt	0° +/- (0.5)



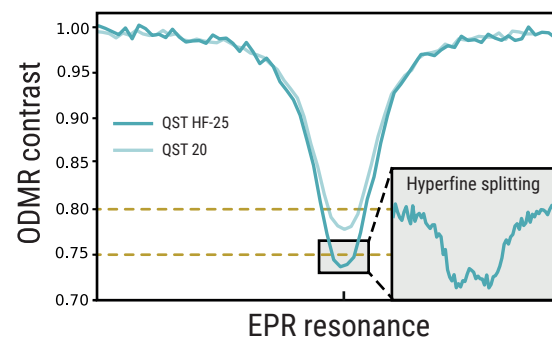
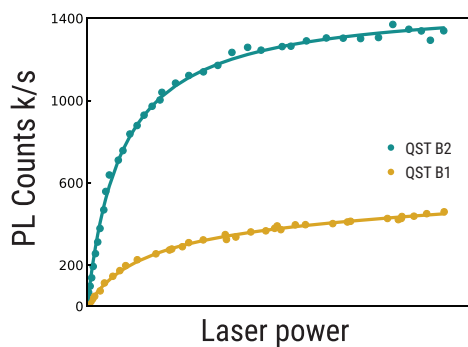
NV center

DC magnetic sensitivity*	<1.8 $\mu\text{T}/\text{Hz}^{1/2}$ for HF25B2, <3.5 $\mu\text{T}/\text{Hz}^{1/2}$ for HF20B1.
AC magnetic sensitivity	<1 $\mu\text{T}/\text{Hz}^{1/2}$.
Number of NV centers	Standard: single emitter. Multiple emitters available on request.
Saturation count rate	Typical 1Mcts/s. Available in the range 0.5 - 1.6 Mcts/s.
Brightness**	150 - 700 kcts/s. The specified value is measured at maximum ODMR contrast.
$g_2(0)$ value	<0.5 measured for single emitters.
ODMR contrast	Available with >20% and >25% contrast.
Linewidth	<10 MHz at maximum contrast and count rate.
Implantation depth	Nominal value: 10 nm.
NV orientation	<111> (100-cut diamond) - Inplane (110-cut diamond) available on request.

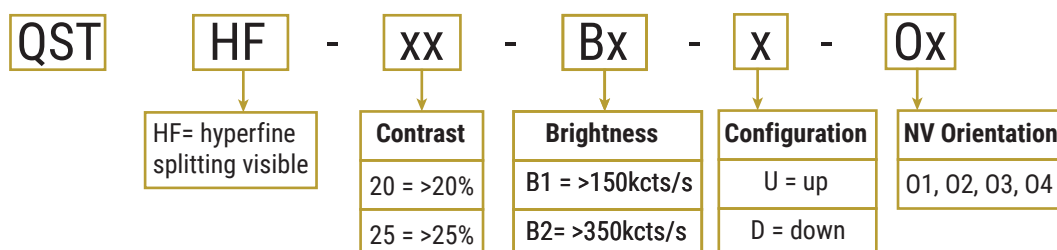
Dimensions and contact feedlines on the ceramic chip carrier are compatible with the Akiyama probe footprint. A quartz based tuning fork is used as force-feedback sensor with resonance frequency 32(2) kHz. The entire sensor chip is vacuum- and cryo-compatible with attoAFM/CFM microscopes. Are you building your

Brightness and contrast

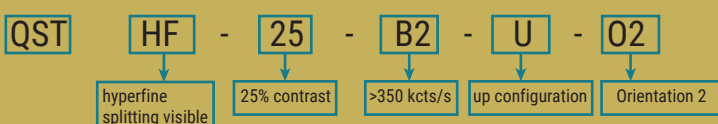
The QST is available in two different brightnesses (B1, B2) and two different ODMR contrasts (20%, 25%). The brightness is specified at the maximum ODMR contrast value. Exemplary data are shown below.



Product Number Label



Example:



* Measured at shot noise limit on CW ODMR

** Measured on an 0.75 NA optical setup