

# PRS-L70-F900-Si-PCB/CHP

Silicon piezo-resistive sensing cantilevers



## General description

Piezo-Resistive Sensing (PRS) probes are silicon cantilevers with an integrated piezo-resistor for self-sensing scanning probe microscopy applications. The piezo-resistors are integrated into a matched Wheatstone bridge to raise the sensitivity and compensate environmental thermal drift. By using the self-sensing readout no laser adjustment is necessary in comparison to conventional optical readout AFM systems. This saves time during a cantilever change. The free space above the cantilever enables new applications and combination of AFM with various instruments. The cantilever chip is bonded to a small printed circuit board (PCB) with a small connector for a quick cantilever change. The counter part PCB for the cantilever PCB can be connected to a low-noise pre-amplifier with a flat flex cable.

## Specifications

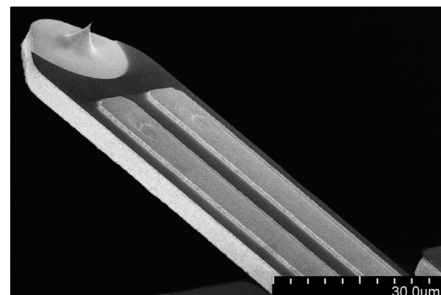
Parameter	PRS-L70-F900-Si-PCB PRS-L70-F900-Si-CHP
Tip radius (apex)	<15 nm
Tip height	4...7 µm
Tip material	silicon
Resonant frequency	500...1300 kHz
Spring constant	35...400 N/m
AFM mode	tapping
sensitivity*	3 µV/nm
Length, width	70...85 µm, 30 ±1 µm
Material	silicon cantilever, boron doped 1k Ohm piezo resistors, aluminium tracks
Deflection sensing	on chip piezo-resistive bridge
Actuator	external shaker
Electrical connections	bonded to small PCB with connector (counter part PCB available) or optional bonding pads on chip
Chip dimensions (h, w, l)	0.3 / 1 / 2.8 mm

\* not amplified, 2.048 V bridge supply

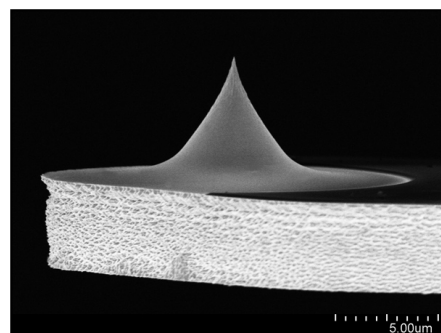
## Applications:

- Integration on a standard AFM scanner and high-speed AFM
- Force or deflection measurements within TEM, SEM, XPS, etc.

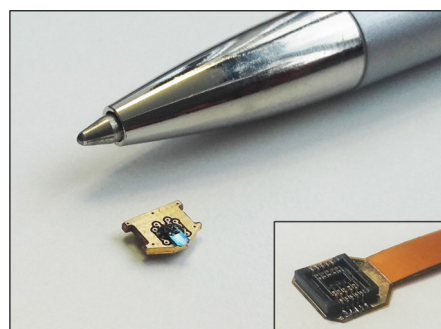
**What about your application? Contact us!**



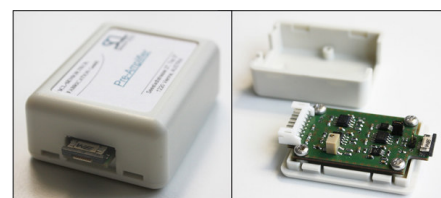
Tip side of a PRS-L70 cantilever with Al tracks for reading out the sensor signal



Side view of a PRS-L70-F900 cantilever



Cantilever is bonded to a 6 x 4.5 mm PCB (height with connector 1.6 mm, complete height connected to CP-PCB: 1.8 mm); right: counter part PCB



Hardware for amplified readout: Low-noise pre-amplifier (45x35 mm)

SCL-Sensor.Tech. Fabrication GmbH

Visit our website [www.sclsensortech.com](http://www.sclsensortech.com) and contact our sales experts!

Datasheet version: 2020-06-16