

NanoOne is c-sense's integrated self-sensing cantilever starter system, designed to enable the fastest possible entry into self-sensing cantilever experiments.

NanoOne follows a system-level approach: it combines a high-performance pre-amplifier with application-ready silicon self-sensing cantilevers (Si-CL) that can be selected according to the intended use case.

NanoOne allows researchers and developers to start meaningful experiments immediately, without lengthy sensor integration or custom electronics development.

At the heart of NanoOne is a low-noise, high-bandwidth pre-amplifier optimized for Wheatstone bridge-based self-sensing cantilevers.

The pre-amplifier:

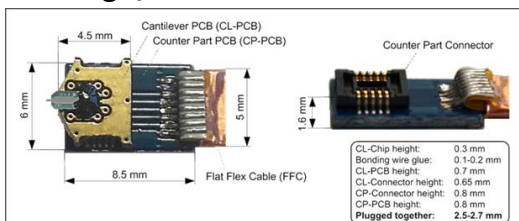
- Supplies a stable, ultra-low-noise reference voltage to the cantilever bridge
- Amplifies small sensor signals with high signal integrity
- Interfaces directly with common readout devices such as lock-in amplifiers or AFM controllers

This electronic backbone is combined with ready-to-use silicon self-sensing cantilevers, turning NanoOne into a true experimental starter system.

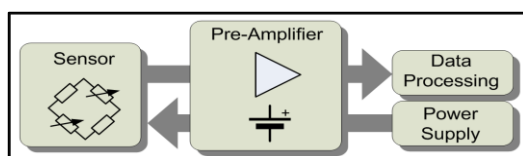
### Specifications

Dimensions (l x w x h)	
Pre-amp PCB	48 x 28 x 1.6 mm
Pre-amp PCB incl. connectors	52 x 28 x 7 mm
Enclosure	80 x 45 x 25 mm
Electrical Specifications	
Operation voltage $V_s$	+/-5... +/-15 V
Gain, voltage amplification	100x
Bandwidth	$f_{3dB} = 2,5 \text{ MHz @ } 2mV_{pp} \text{ sine input signal}$
Power consumption	340 mW @ $V_s = +/-10V$ ( $I_{bias} = +/-17 \text{ mA}$ ) 160 mW @ $V_s = +/-5V$ ( $I_{bias} = +/-16 \text{ mA}$ )
Total offset adjustment range	( $V_s$ -) +1.4 V to ( $V_s$ +) -1.0 V
Manual onboard offset range	+/-5V
Output impedance	50 Ohm
Input impedance	3 GΩ    6 pF
Wheatstone bridge supply voltage (external input possible)	2,048 V (voltage reference)
Slewrate output stage	27 V/μs
Connectors and cables	
Input connector (cantilever side)	FFC 8 Pin
Output connector	Header Connector 8 Pin
Input FFC cable	FFC, 8 pol, length=152mm
Output cable	shielded flexible cable, l=1m, open ends

### Drawings / mechanical dimensions

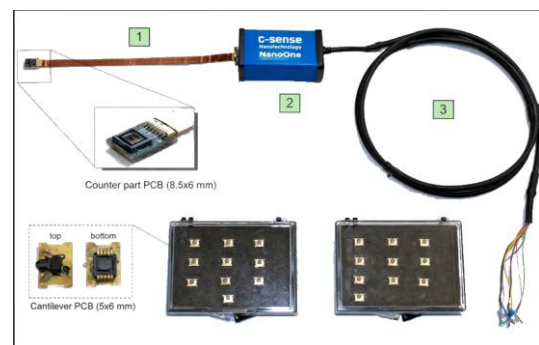


Dimensions of the counter-part PCB and cantilever PCB



Block diagram

### NanoOne kit content



A self-sensing starter kit includes:

- a counterpart PCB with flat flex cable,
- a pre-amplifier with output cable, and
- a choice of 20 cantilevers from our portfolio or 10 diamond-tip cantilevers.

