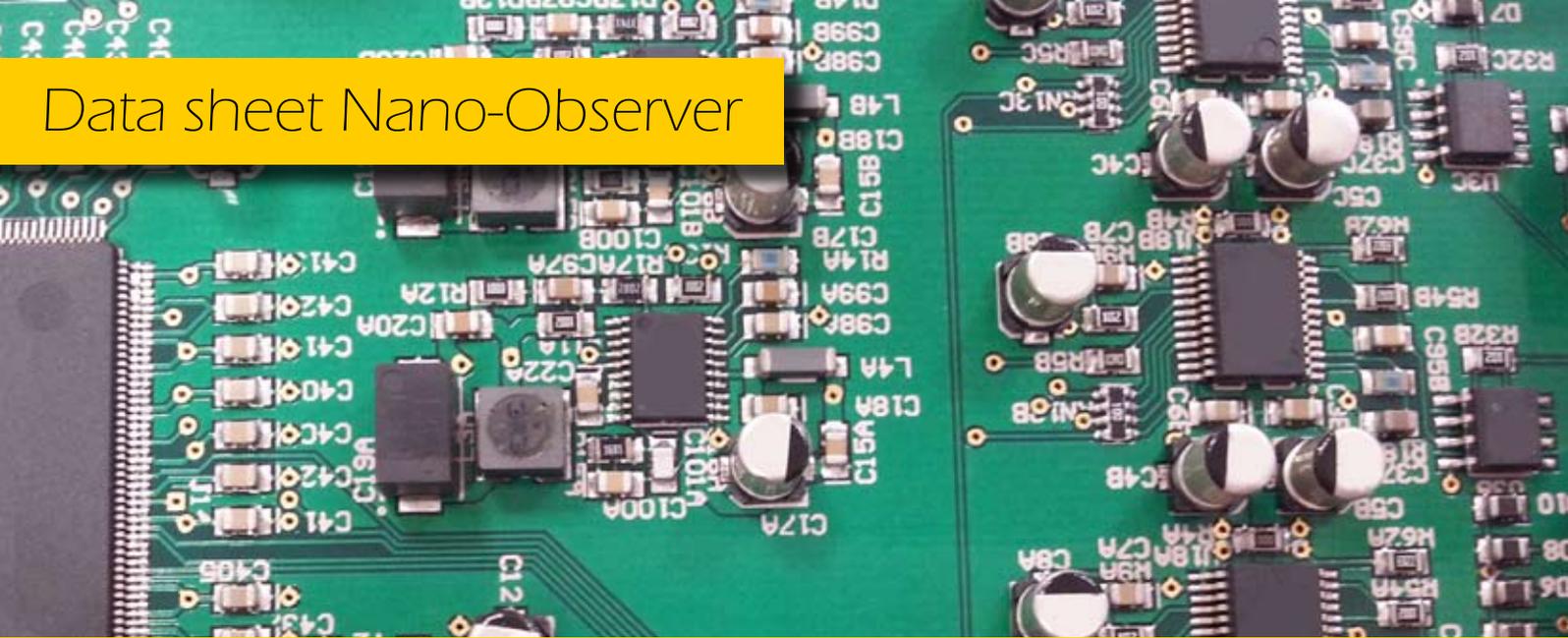# AFM controller

The Nano-Observer controller is a major part to make the Nano-Observer microscope flexible and powerful.

Designed with the ultimate technologies and components, it combines performance and ease of use. The USB controller offers a real integrated lock-in for better measurement capability (phase detection, field measurement...).A low-noise electronics and power supply coupled to a 24bit drive architecture provide high resolution on a compact and smart integration.

Its intuitive software simplifies all AFM settings to allow quick and safe AFM acquisitions. Many data channels and modes are then easily accessible by an auto-setting which only require the mode selection by software to get all the electronic addressed to the application required.

> " Designed with the ultimate technologies and components, it combines performance and ease of use.

» Controller specifications

XY drive resolution	24 bit control - 0.06 A
Z drive resolution	24 bit control – 0.006 A
Ultra low noise HV	Typ : <0.01 mV RMS
6 DAC Outputs	6 D/A Converters – 24 bit (XYZ drive, bias, aux...)
8 ADC Inputs	8 A/D Converters – 16 bit
Data points	Up to 4096
Integrated Lock-in	Up to 6MHz (software limited) 2nd 6MHz lock-in (optional)
Interface	USB 2.0
Controller Power	AC 100 – 240 V - 47-63 Hz
Operating System	Windows XP or Windows 7 or 8

CSI Concept Scientific Instruments »

» SPM Software, NanoSolution

An intuitive software drives the user by pre-configured modes to simplify the equipment setup . A large choice of data channels and modes are then easily accessible by an auto-setting which only require the mode selection by software to get all the electronic addressed to the application required. Associated to its USB controller to offer a real time control and data acquisition up to 4096*4096 pixels.

» Auto-setting

This Step window allows to select which operation mode will be used for imaging. As the mode is selected, the workflow steps are displayed so that the user must follow them from top to bottom. They are separated in two groups: Contact Modes and Oscillating Modes depending whether the cantilever is forced to vibrate to its first resonance flexural eigen mode or not.

Contact Modes
▶ Contact
▶ Conductive AFM
▶ ResiScope
▶ Piezo Response

Oscillating Modes
▶ Resonant Mode
▶ Electric - EFM
▶ Magnetic - MFM

» Step by Step

The workflow panel for imaging is separated in steps windows :

Step1-Mode Selector,
Step2-Alignment,
Step3-Approach,
Step4-Spectroscopy
(or Frequency Sweep for oscillating modes),
Step5-Imaging.

Step 1 - Mode Selector
Step 2 - Alignment
Step 3 - Frequency Sweep
Step 4 - Approach
Step 5 - Imaging

» AFM data windows
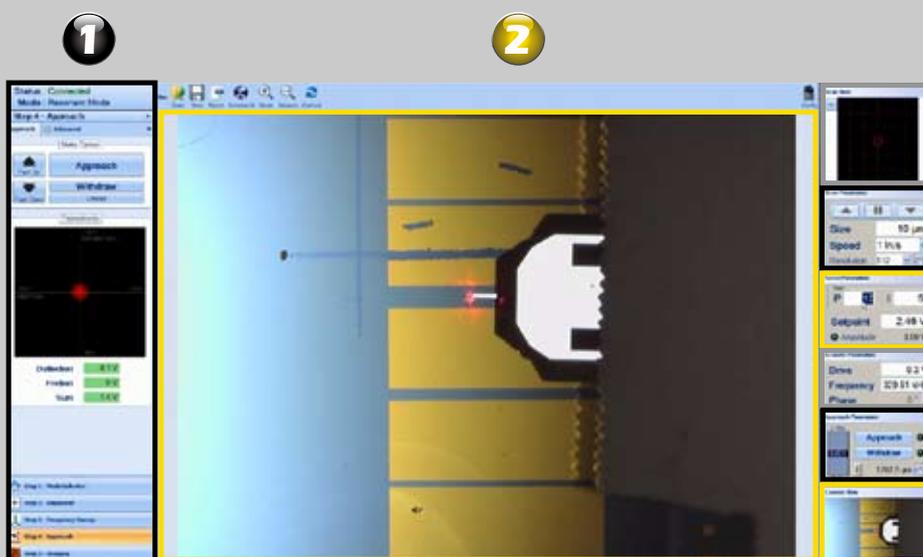
In this manner, the user may have visual access to all the relevant parameters needed to control the scanning imaging process in real time.

1 : Workflow panel
2 : Imaging window
3 : Scan window
4 : Scan parameters
5 : Servo parameters
6 : Accoustic parameters
7 : Approach parameters
8 : Camera view

Nano-Observer Software, NanoSolution