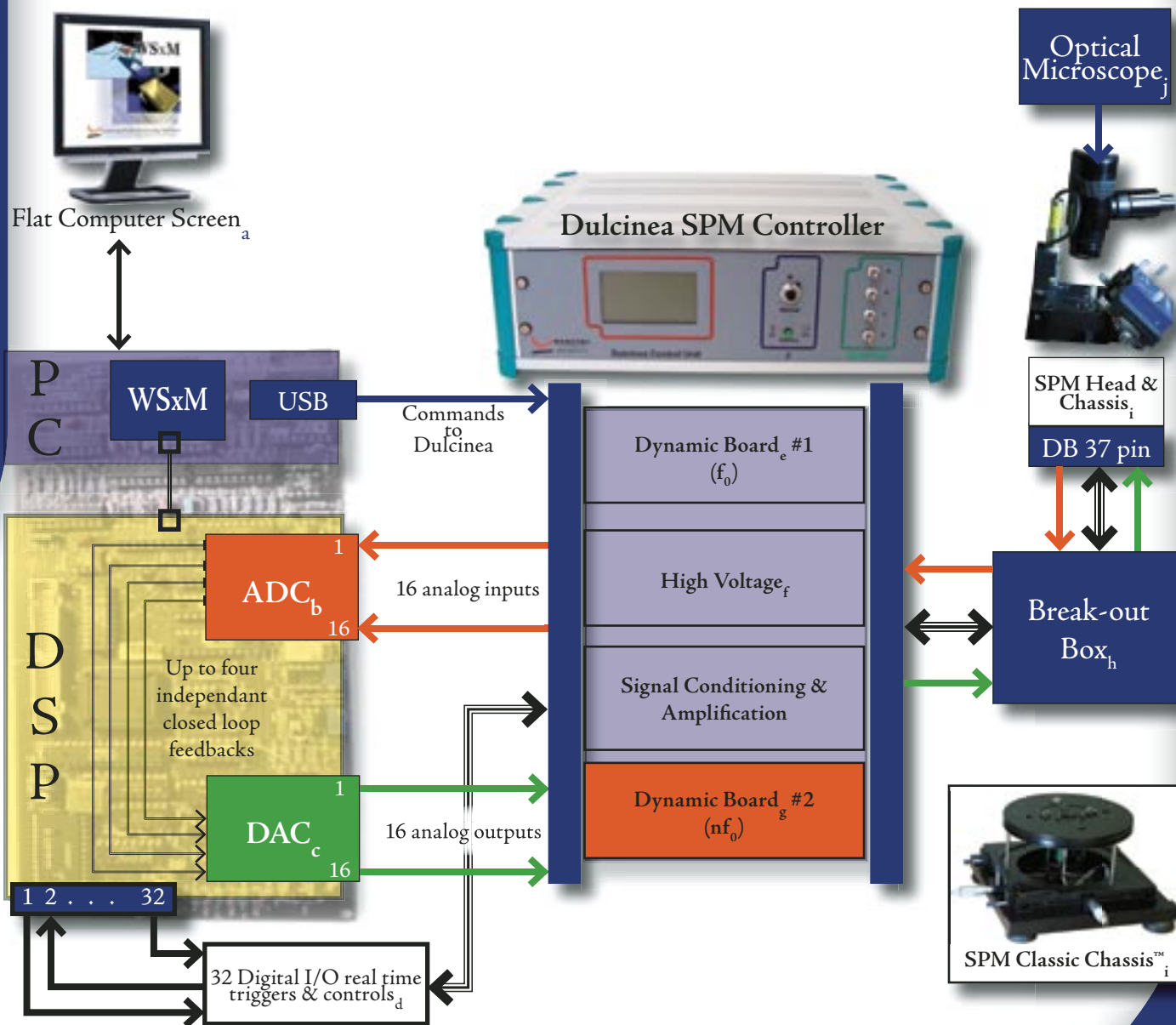


# WSxM BASED SPM SYSTEM FLOWCHART



- a: Graphs up to 16 channels of ADC inputs and/or calculated quantities like topography, lateral force, phase, adhesion maps, stiffness maps, CITS, conductivity maps, etc.
- b: ADCs have 16 bit precision, 17 KHz refresh rate; the first 8 have software programmable gains and offsets.
- c: DACs have 16 bit precision, 17 kHz refresh rate.
- d: 32 Digital In/Out lines are organized as follows: 16 Digital Outs for internal use only; in addition, 8 input & 8 output are software programmable and available to the user.
- e: Dynamic Board is a two channel lock-in detector (1 KHz-1 MHz) plus a phase-locked-loop (PLL) with minimum frequency shift  $Df = 10$  mHz to permit constant frequency scans.
- f: Maximum voltage to the X,Y,Z piezos is  $\pm 150$  V, 8kHz bandwidth; peak to peak ripple  $< 2$  mV (rms). High voltage unit has six available gains (0.06, 0.3, 1, 5, 10, 15) plus a stable programmable offset.

- g: Optional second Dynamic Board to acquire images at integer harmonics of the piezo dither signal (January 2006).
- h: Break-out box for full access to all signals from the SPM head is available for advanced users.
- i: SPM head can be chosen from a number of available options including ambient STM, UHV STM, contact AFM, Dynamic AFM, & MFM. A specially designed cell permits scanning under liquids. Chassis is available in three unique configurations.
- j: Top view optical microscope with CCD camera and axial illumination is available for viewing tip placement.