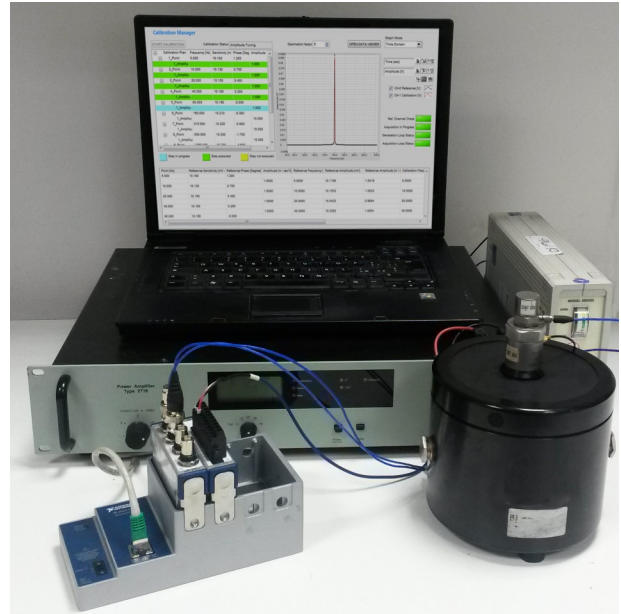
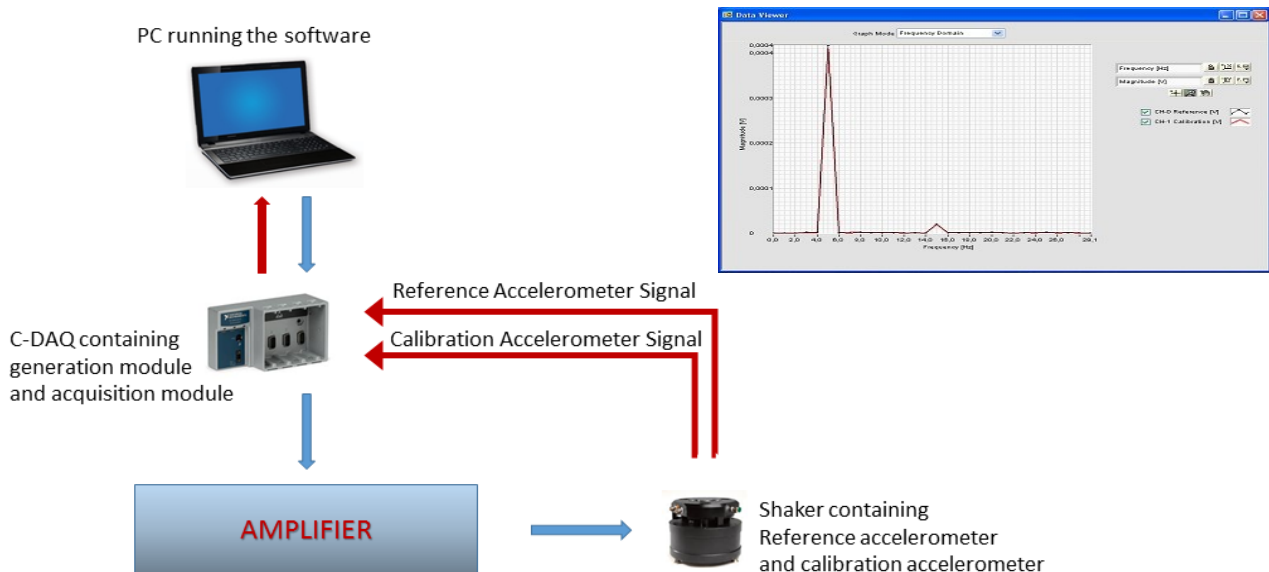


System Architecture

The calibration of vibration sensors (accelerometers and velocimeters) could be a time consuming procedure and its accuracy affects the vibration measures carried out with the sensor itself. For this reasons SINT Technology, a center of excellence in mechanical measures, developed an automatic calibration software able to carry out a calibration plan in few seconds, ensuring low measure uncertainty.



The system, through a closed loop control, drives a shaker, containing the sensor to be calibrated and the reference one, with a sinusoidal shaped acceleration of frequency and amplitude set by the user in the calibration plan. The signals coming from the two accelerometers are analyzed in the frequency domain in order to evaluate the sensibility and the phase shift of the sensor currently in calibration respect to the reference one. At the end of the calibration process the system compiles a detailed report containing the measures carried out during the steps of the calibration plan.

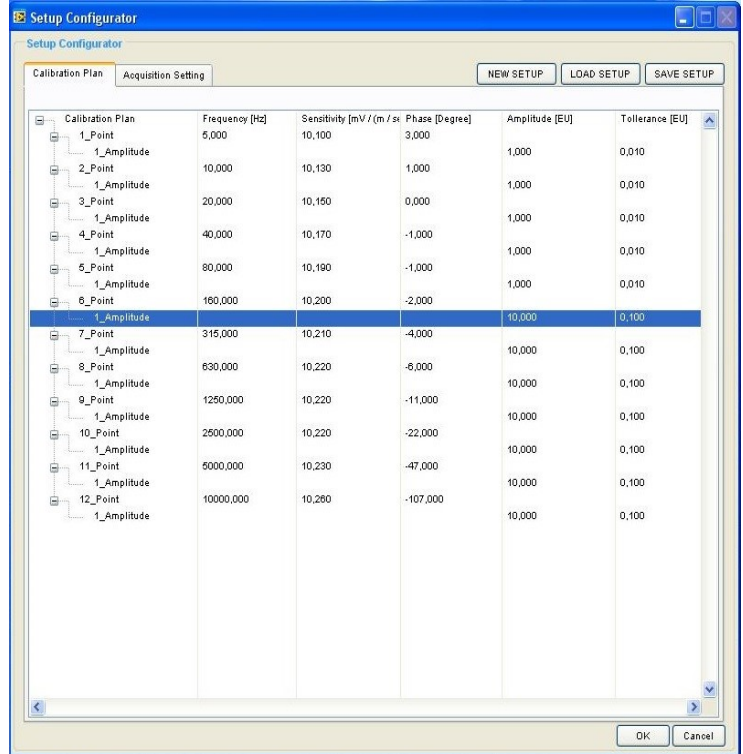


Customizable Calibration Plan

Through the software graphical interface the user is able to define the calibration plan composed of one or more steps. Each step is identified by:

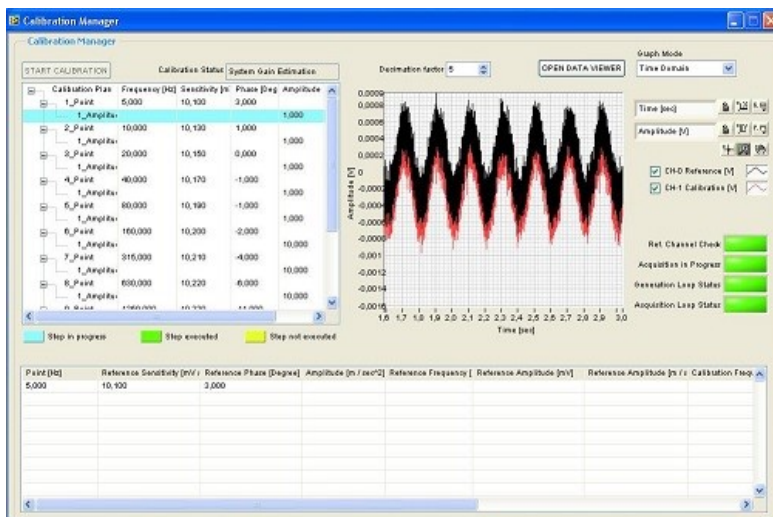
- Frequency of the signal driving the shaker
- Amplitude of the signal driving the shaker

The user is also able to set some elaboration parameters used during the analysis of the signals coming from the accelerometers (i.e. frequency transform window type).



Calibration Plan	Frequency [Hz]	Sensitivity [mV / (m / s ²)]	Phase [Degree]	Amplitude [EU]	Tolerance [EU]
1_Point	5,000	10,100	3,000		
1_Amplitude				1,000	0,010
2_Point	10,000	10,130	1,000		
1_Amplitude				1,000	0,010
3_Point	20,000	10,150	0,000		
1_Amplitude				1,000	0,010
4_Point	40,000	10,170	-1,000		
1_Amplitude				1,000	0,010
5_Point	80,000	10,190	-1,000		
1_Amplitude				1,000	0,010
6_Point	160,000	10,200	-2,000		
1_Amplitude				10,000	0,100
7_Point	315,000	10,210	-4,000		
1_Amplitude				10,000	0,100
8_Point	630,000	10,220	-8,000		
1_Amplitude				10,000	0,100
9_Point	1250,000	10,220	-11,000		
1_Amplitude				10,000	0,100
10_Point	2500,000	10,220	-22,000		
1_Amplitude				10,000	0,100
11_Point	5000,000	10,230	-47,000		
1_Amplitude				10,000	0,100
12_Point	10000,000	10,280	-107,000		
1_Amplitude				10,000	0,100

Real Time Monitoring Tools



The software provides real-time monitoring tools i.e.:

- Graph for time domain and frequency domain signals analysis
- Tables for measurements report
- System state LEDs

The system allows the calibration of more sensors at the same time.

Benefits:

- Productivity increase through a drastically reduction of time required by the calibration procedure.
- Different calibrations carried out under the same operative conditions.