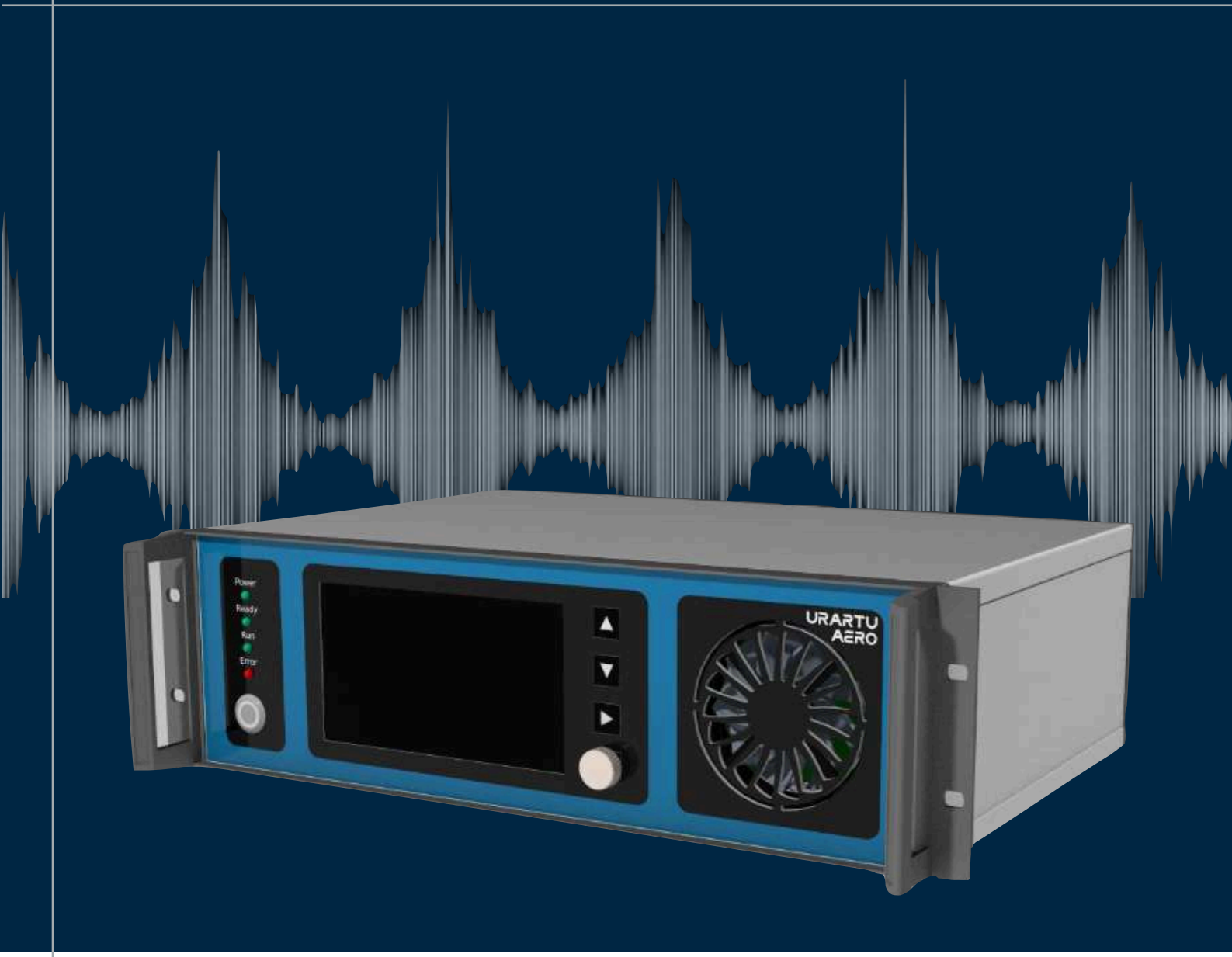
URARTU AERO



Vibration Controller

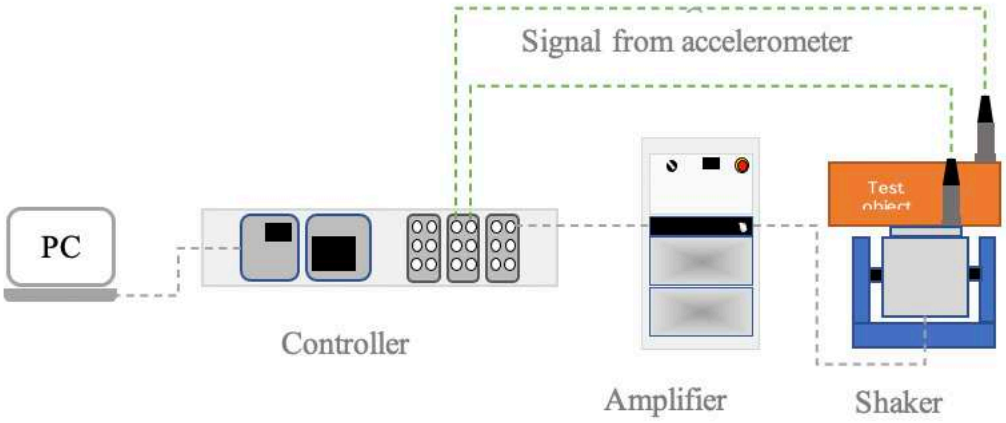
Product Overview

Objects undergo vibration effects during operation and transportation. To study these effects, it is necessary to perform vibration tests.

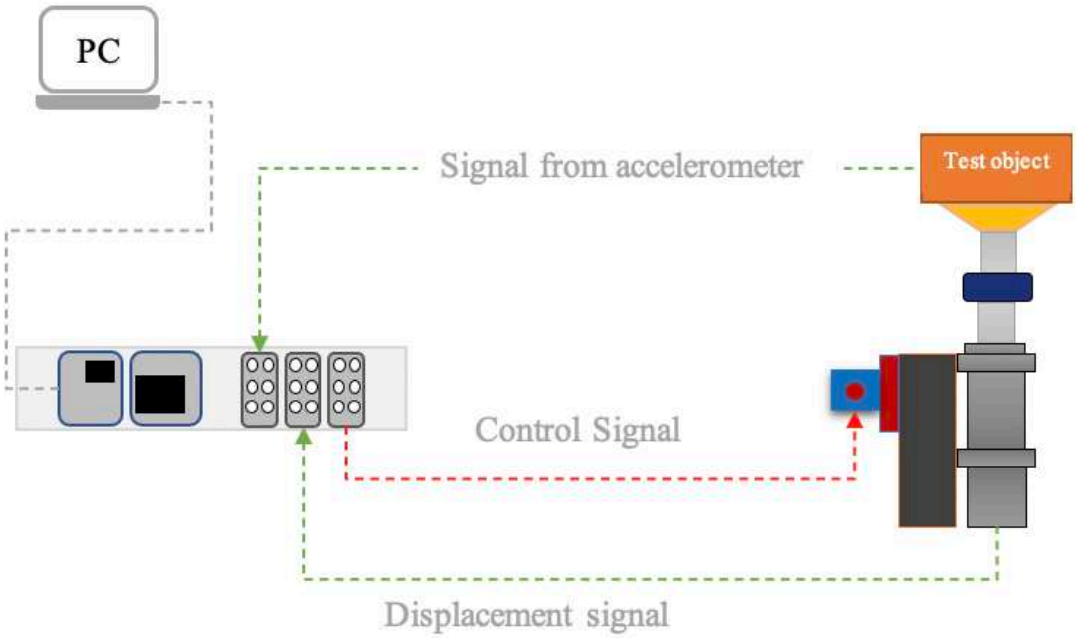
Vibration tests reproduce the vibrations experienced by the object in real life.

During the tests: data are collected from accelerometers; power spectral density, RMS value is determined; information about the reproduced vibration level and setpoint is stored.

Depending on the goals and objectives, electrodynamic and hydraulic shakers are used.



Electrodynamic Shakers



Hydraulic Shakers

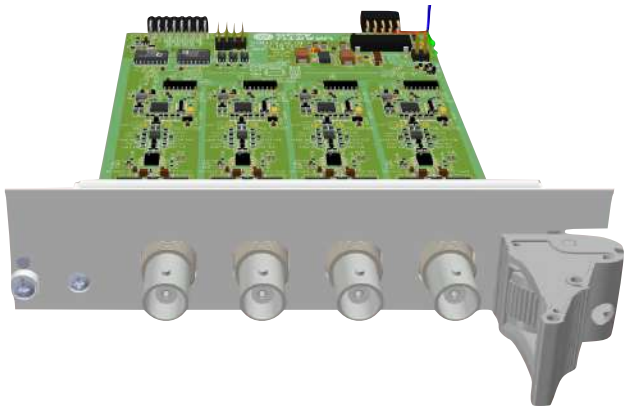
Urartu Systems offers RTC-Vibro controller with software for vibration and shock control. Fixed or mobile design.

Fixed design

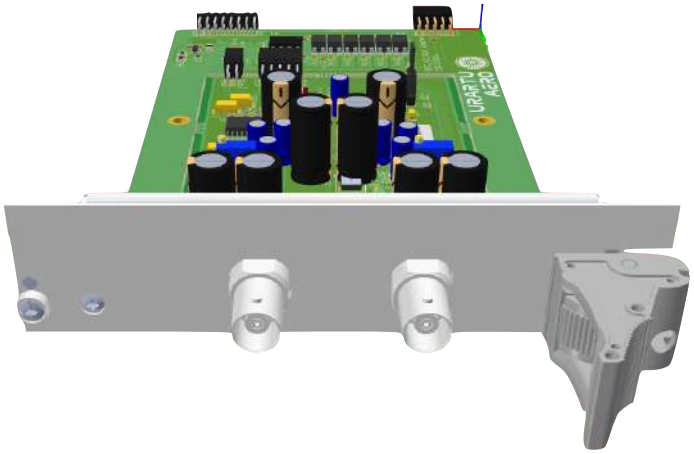
Mobile design

Features:

- control of electrodynamic and hydraulic shakers;
- scalability.
- user friendly interface displaying the structure of physical tests;
- reflects the structure and process of the test;
- built-in Pretest mode for Resonance search and inverse model of the shaker;
- "COLA" mode for connecting supplementary devices, for output signals;
- vibration control and analysis;
- wide range of operating frequency, up to 100 kHz;
- modes: pre-test, resonance search, Sine, Sine on Random, Classical Shock, Random, Waveform Replication.



Vibroacoustic (dynamic) input module



Vibroacoustic (dynamic) output module

Parameter	Value
Analog Input	4
Maximum range of input signals	±10V
Type of signals	AC/DC
ADC bit rate	24 bit
Maximum sampling frequency	100kHz
ADC type	Delta-Sigma
Software switch on IEPE	Yes
Maximum sensor supply current	20mA
Maximum sensor supply voltage	24V
Analog Output	2
Maximum range of output signals	±10V
Switching scheme	single-ended
ADC bit rate	24 bit
Maximum sampling frequency	96 kHZ
ADC type	Delta-Sigma

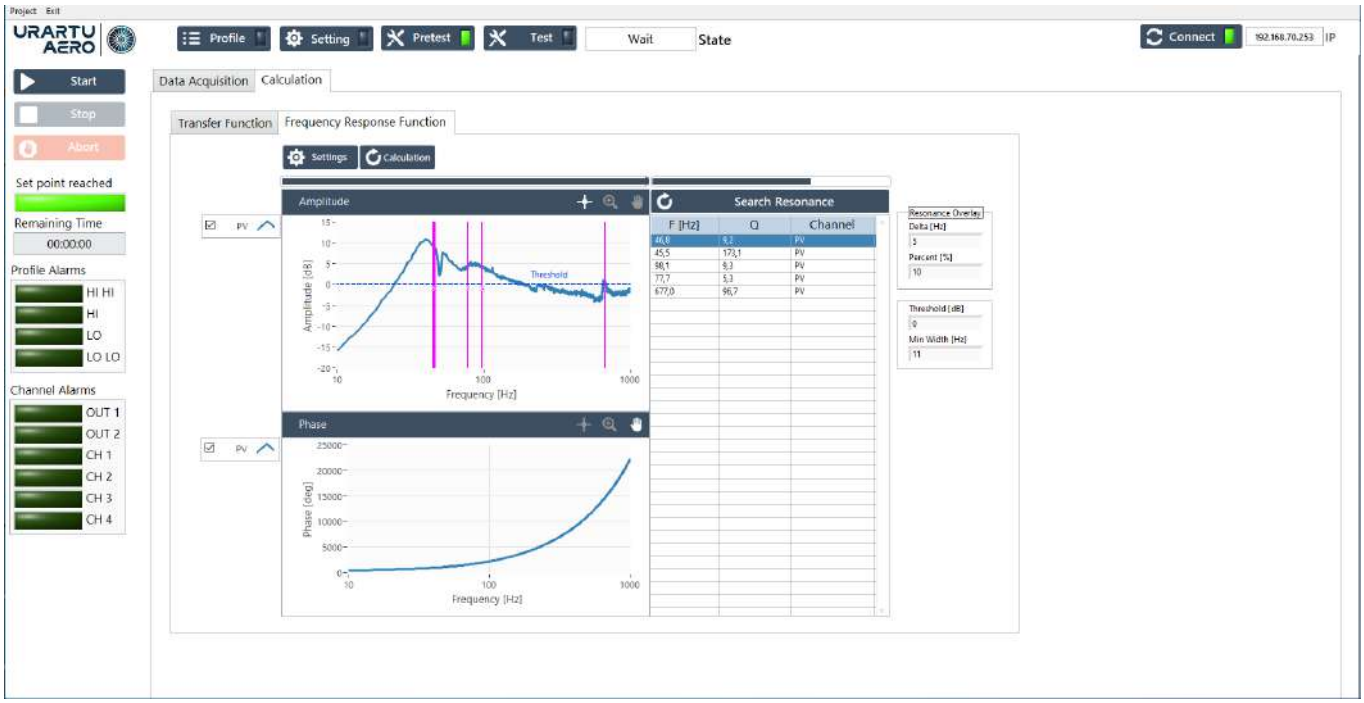
▸ Pre-Test

Before conducting the vibration tests it is necessary to make sure that the sensors and the shaker are connected correctly, the tested object is installed and fixed and the test parameters are set.

To control the level of input vibrations on the tested object, the testers use feedback sensors. However, the sensor can only control the vibration level, but is not able to change the resonance behaviour of the system.

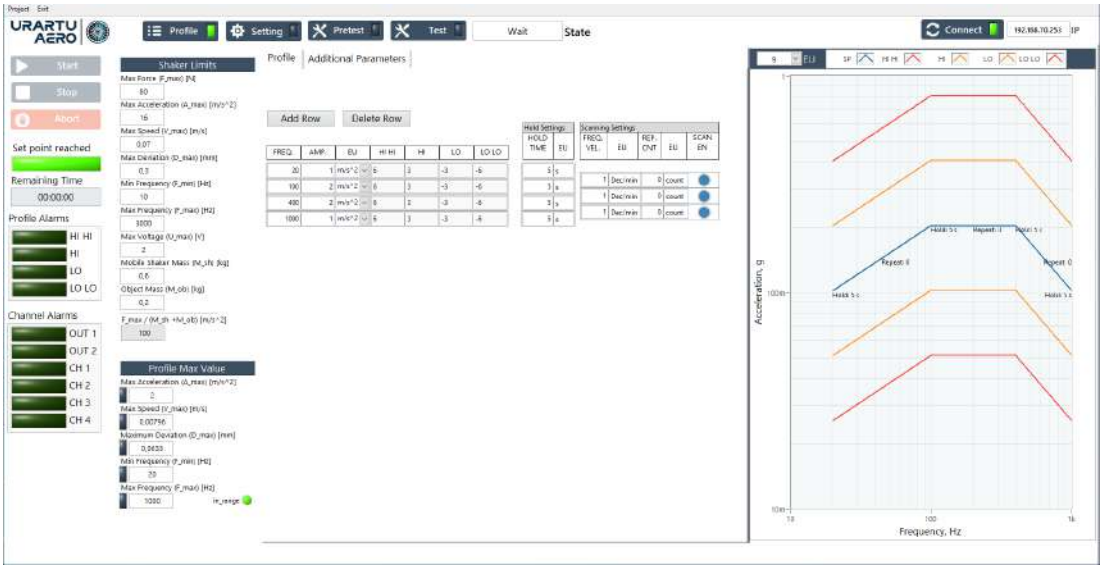
In order to improve the quality of tests and control the influence of resonance and antiresonance phenomena on their course, the control system has a pretest mode.

The controller gives a signal at different frequencies and determines the presence of resonances, after their detection it adjusts the transfer coefficients. The result is an inverse model, which is then used in testing.



▸ Resonance Search

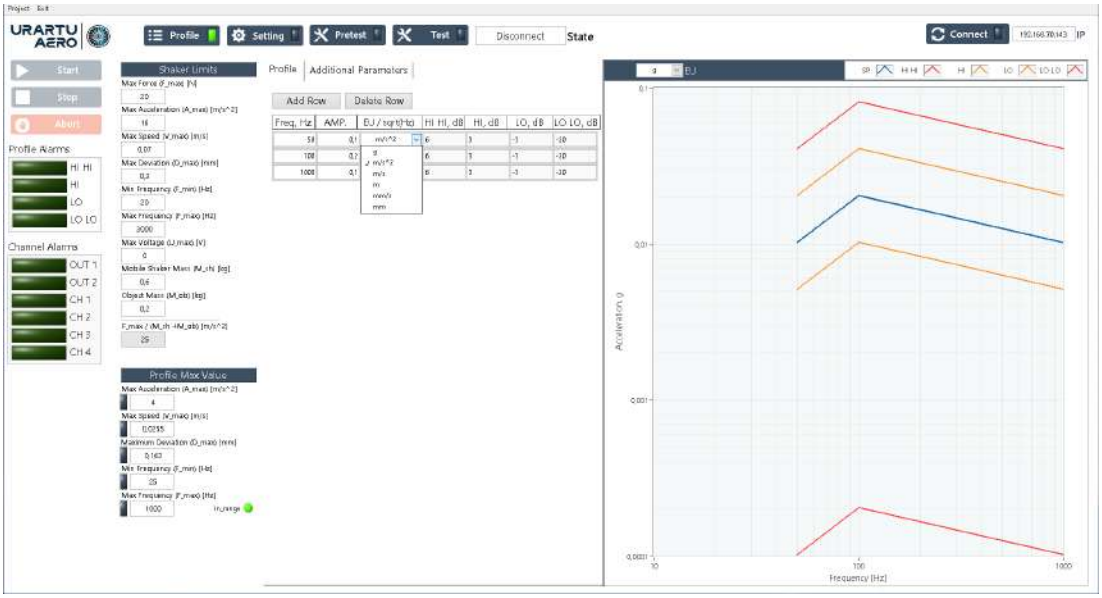
Resonance search, tracking and holding at resonance is used for fatigue and durability testing at resonance frequency, determination of dynamic properties of the test object.



▸ Random

Random vibration tests are applicable to elements and equipment that may be exposed to random vibrations under operating conditions. The purpose of the test is to identify possible mechanical damage or deterioration of the specified product characteristics.

- Frequency range: 3.2–5000 Hz
- Setting the amplitude in acceleration, speed, and displacement units
- Cycle duration 0.1 ms



▸ Sine on Random

In Sine mode, up to twelve sinusoidal tones can be generated simultaneously on the SOR. You can set individual parameters for each tone.

•Frequency range: 3.2–5000 Hz

•Setting the amplitude in acceleration, speed, and displacement units

•Cycle duration 0.1 ms

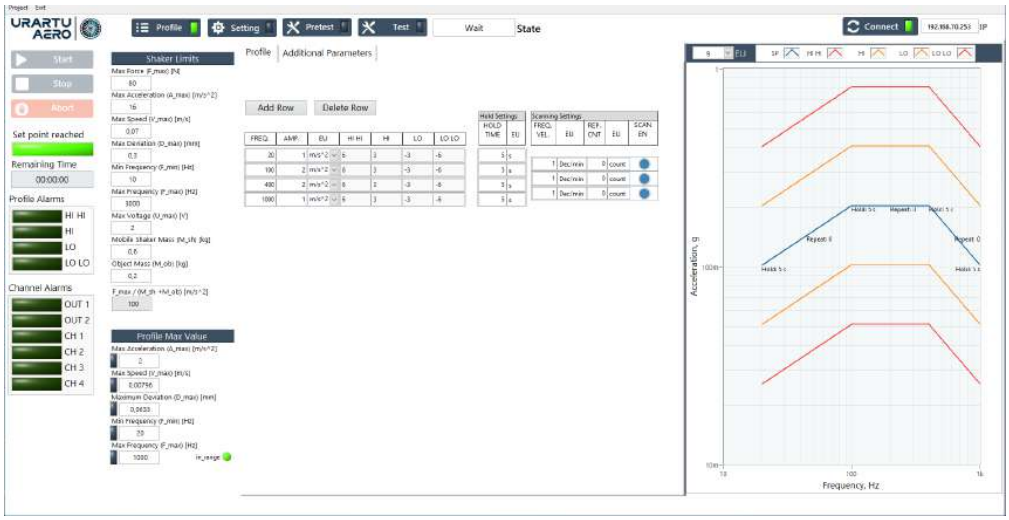
•Linear scan units: Hz/Min and Min/Sweep, Logarithmic–Oct/Min and Min/Sweep.

▸ Classical Shock

In Classical shock the signal of standard form is produced in the time domain. When forming a pulse, compensation methods with the transfer function are used. The compensated signal consists of five parts: pre-pulse, left pause, main pulse, right pause, and post pulse.

▸ Sine

This mode is intended for performing fatigue and resource tests at a frequency that varies in a certain band, as well as for determining the dynamic properties of the test object.



- Frequency range: 3.2–5000 Hz
- Setting the amplitude in acceleration, speed, and displacement units
- Setting the rate of frequency rise in linear and logarithmic units
- Cycle duration 0.1 ms

▸ Waveform Replication

Random mode is used for producing transport, seismic loadings by means of adaptive filters at 1 KHz. The control system generates signal in the rangy ща specified frequency and amplitude.

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