

# Specification for Combined Vibration and Temperature and Humidity Test Chamber



(The photo is only for reference, specification is subject to the physical chamber)

**Model: KMVH-1000S-C5**

**Company: KOME G Technology Ind. CO., Ltd**

**Compiling Dep.: Technology Department**

**I . Performance**

**(Water cooled, Water temperature +25 °C, no load )**

**1. Temperature**

1. Temperature range	-70°C ~ +150°C
2. Temperature deviation	≤ ±2.0°C
3. Temperature fluctuation	±0.5°C
4. Temperature uniformity	≤ 2.0°C
5. Temperature change rate	Heating rate: -70°C to +150°C nonlinear 5°C/min no load Cooling rate: +150°C to - 70°C nonlinear 2°C/min no load

**2. Humidity**

1. Humidity range	20%R.H~98%R.H
2. Humidity range	
3. Humidity deviation	±3.0%RH (>75%RH) ±5.0%RH (≤75%RH)
4. Humidity fluctuation	±2.0%RH

Temperature and humidity performance test is in accordance with the relevant provisions of the IEC60068 -3 standard measurement; sensor placed in the unit outlet.


**II . Chamber Structure**

1. Chamber size	Workspace volume: W 1000 × H 1000 × D 1000 mm Exterior size: W 1200 × H Pending × D 2650 mm (about)
2. Insulation box	※ wall material: high-quality carbon steel with static color spray

	<p>✘ inner wall material: SUS304 # matte stainless steel plate</p> <p>✘ Insulation materials: rigid polyurethane foam insulation layer + glass fiber.</p>
3. Heater	High-quality nickel-chromium alloy wire electric heater, non-contact control (SRR).
4. Supply air circulation system	<p>A. Special stainless steel lengthened axis of the motor 1</p> <p>B. SIROCCO FAN</p> <p>C. Adjustable shutter outlet</p>
5. Door	<p>Single door, single window, left open, handle on right hand side</p> <p>A. Window W460 * H560mm with energy-saving lamps 1 only</p> <p>B. Explosion-proof handle</p> <p>C. Button: SUS # 304</p>
6. Temperature measuring body	High precision DIN A class, dry bulb SUS # 304 PT 100Ω 1 Pcs
7. Cable port	Φ50mm*1 located on both sides(each*1) with rubber stopper and plastic cover
8. Sample holder	Two layers of stainless steel sample holder, load capacity 30kg/layer

**III. Refrigeration system**

1. Compressor	BOCK Semi-hermetic compressors
2. Refrigerant	R404A/R23 ( Ozone damage index is 0 ) environmental friendly
3. Condenser	Air cooling fin condenser.
4. Evaporator	Copper aluminum finned evaporator.
5. Other accessories	High-precision expansion valve, oil separator, desiccant, etc. components are imported using internationally renowned brands
6. Refrigerant flow control	Automatic adjustment of energy consumption output of the refrigeration system.
7. Refrigeration Technology	<p>✘ Nitrogen welding, two-stage rotary vane vacuum pump, ensure that the internal cooling system clean and reliable.</p> <p>✘ water tray located at the bottom of the compressor to ensure condensate water drain through pipe freely at the</p>

	rear of the chamber.
<b>IV. Control System</b>	
Sensor	high precision DIN A class, dry bulbφ4.8mm SUS #304 PT 100Ω
Controller	<p>KOMEGB brand KM-5166 LCD Touch screen controller with PID control</p> 
3. Display Function	<p>Temperature settings (SV) Actual (PV) value can be displayed directly,            Execution of the program can display numbers, Paragraphs, remaining time and cycles, running time display,            Program editing and graphic curve display,            Fixed or program operation status display,            Resolution: 800 * 480, 7-inch TFT display screen.</p>
4. Display Resolution	Temperature: + 0.01°C; Humidity: + 0.1%; time: 1min.
5. Setting Range	<p>Temperature conditions: -100~200 °C            Temperature can be adjusted based on the working temp. range of the equipment (the upper limit: +5°C, the lower limit : -5°C)            Humidity conditions:0~100 %RH</p>
6. Operation Mode	Programmable running, constant running and booking boot
7. Setting mode	Touch mode input
8. Interface	<p>Data collection and curve display when connected with a computer            Can be used as monitoring and remote control system            Multi machines synchronization control available</p>
9. U Disk Memory Card	<p>1G-8G available for downloading historical curve, data, pluggable            Data can be converted to curves, such as Excel file format report.</p>

10. Data collection	RAM with battery protection settings, data can be saved, maximum historical data memory storage is 90 days (when the sampling time is 1min)
11. Power Off Memory Function	Power recovery mode can be set as hot start, cold start and stop
12. Pre-set Function	Boot time can be set freely and machine runs automatically when turning on power
13. Software environment	Windows2000 or Windows XP
14. Network Connection	Can be connected to Ethernet via professional software, remote control & assistance function and data collection can be achieved through network, multiple machine can be controlled simultaneously
15. Fault handling	Fault alarm and causes handling prompts, power protection, the lower limit temperature protection, timer function (automatic start and automatic stop running), self-diagnostic function.

## **V. Control Panel**

- a. Emergency stop switch
- b. Power switch
- c. Over temperature protection device
- d. RS-485 or RS-232 Interface

## **VI. Safety protection device**

- A. Heater dry combustion protection switch
- B. Humidifier empty burn prevent protection switch
- C. Heater overcurrent circuit breaker
- D. Humidifier over-current circuit breaker
- E. circulation fan over current overload protection
- F. Compressor high pressure protection switch
- G. compressor over temperature protection switch
- H. compressor overcurrent protection switch
- I. Overvoltage open phase, reverse protection switch
- J. Circuit breaker
- K. No fuse switch
- L. Low humidifier protection
- M. Water tank low water level warning
- N. Controller noise isolation protection
- O. Zero-crossing gate fluid power controller

3. Alarm indication: When the above protection, the device stops running, and sound and light alarm, At the same time in the controller display fault location and its causes and solutions.

**VII. Others**




1.Enclosure backplane	The bottom of the box designed can be replaced, according to the vibration direction (horizontal or vertical) for backplane replacement, the machine with a vertical vibration backplane, horizontal vibration backplane and blind backplane each 1 pcs
2. Box lifting device	The machine can automatically lift, can adjust height according to the height of the vibration platform.
3. Horizontal mobile device	The machine body adopts the electric left and right translation design. When do horizontal vibration test, vibration platform can be moved to the horizontal relative position; When do vertical vibration test, vibration platform can be moved to the vertical relative position.

















**VIII. Installation environment**

1. Power Supply	AC 3ψ4W 380V 50Hz (R.S.T.N ground wire)( voltage fluctuation ≤ ±10 % )
2.Surrounding environment	Ensure operating environmental temperature range: 5 ~ 35°C
3.Ground protection	ground resistance ≤ 4 Ω

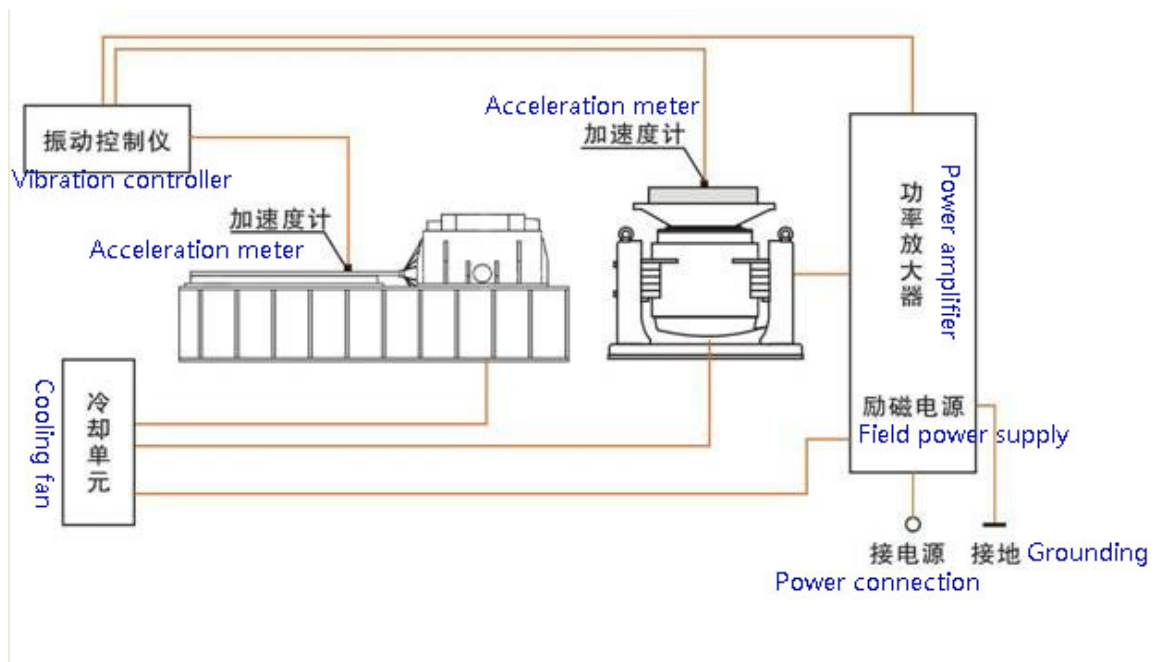
P.S. 1. Please equip the above power demanded to the terminal box of the machine control; user must prepare an exclusively no-fuse switch for the machine.  
2. Please confirm whether it can enter the door or access elevators.  
3.This offer is for the price of the machine only and does not include the cost of the power cord, water tower and piping costs

**Main parts list**

Parts	Brand	Remarks
Compressor	Bock compressor	
Oil separator	Emerson	
Plate heat exchanger	Germany GEA	

	Press switch	DANFOSS	
	Condenser	Yongqiang	
	Evaporator	Yongqiang	
	Dryer	Denmark DANFOSS	
	Capillary	KOMEGB	
	Expansion valve	Denmark DANFOS / HONEYWELL	
	Expansion valve	HONEYWELL	
	Magnetic valve	Japan SAGLNOMLYA or Nickideu	
	Magnetic valve	Denmark DANFOS	
	Controller	KOMEGB	
	Residual current circuit breaker	Taiwan SHIHLIN	
	No-fuse switch	French Schneider	
	AC contactor	French Schneider	
	Thermorelay	French Schneider	
	Phase sequence relay	Carlo Gavazzi	
	Solid-state relay	Carlo Gavazzi	

# Technical Specifications for Three - Axis Electric Vibration Test System



Equipment: Three axial electric vibration test system

Model: DC-3200/KA-32/TB-0808/SC-0808/VENZO 820

Company: KOMEGB Technology Ind Co., Limited



**The main configuration parameters:**

Item	Model	Quantity
1. Electric vibration test machine	DC-3200-32/TB-0808/SC-0808	A whole set
Vibration generator	DC-32	1 set
Digital switching power amplifier (including field power supply)	KA-32	1 set
Low noise cooling fan	FJ-3200	1 set
Horizontal sliding table	SC-0808	1 set
Vertical expansion table (With auxiliary bearings)	TB-0808	1 set
2. Multi - function vibration control instrument	VENZO 820	1 A whole set
Hardware	2 channel	1 set
Computer	DELL	1 set
Printer	HP	1 set
Function	Sine, random, shock, resonant search and resonance resident	1 set
Piezoelectric acceleration sensor (including low noise cable)	BZ24100	1 set

**I . Product Overview (DC-3200)**

1. Double magnetic circuit structure to make the magnetic field strength, magnetic leakage is small; special demagnetization structure can reduce the magnetic field to 1mT below.
  2. The dynamic optimization design of non-skeleton moving coil to reduce the quality of moving parts at the same time improve the first-order resonant frequency, widen the upper limit of the electric vibration frequency.
  3. Built-in support air spring bearing, good bearing capacity, low frequency characteristics.
  4. Trunnion with air spring vibration isolation, linear bearing orientation; the vibration body movement is smooth when do large load work,; in the vertical vibration can be exempted from the special foundation.
  5. System with vibration body overheating, overload, over current, over voltage, over displacement and other protection. Power grid overvoltage, undervoltage, lack of phase protection. Drive power protection, current limiting protection, soft start setting, temperature protection, excitation open circuit, short circuit protection, module fault protection and other protection functions.
  6. With the United States SUPER digital vibration control instrument can be achieved with sinusoidal, random, classic impact, shock response spectrum, random + sinusoidal vibration, random + random vibration and other environmental adaptability test.
  7. The system has low voltage fluctuation requirement ( $\leq \pm 10\%$ ).
  8. The system has low grounding resistance requirements ( $\leq 4\Omega$ ).
  9. System has high reliability, especially suitable for long-running working environment.
- Dynamic production:
1. Dynamic structure with no skeleton moving coil: due to save the dynamic ring skeleton, the activity system is light weight, no-load acceleration big, moving coil first-order resonant frequency is high, so that the whole band waveform distortion is small, moving coil heat is good.
  2. Driving coil with imported high-strength epoxy bonding, and the use of hard-mold stereotypes, new process of the vacuum curing, greatly enhanced the strength of the moving coil, increased the reliability and service life of the moving coil, improve the moving coil first order axial resonance frequency.
  3. The winding system of moving coil adopts the water structure which is beneficial to the cooling of the winding and improves the cooling effect.
  4. Vibration body with vibration isolation system: Trunnion vibration isolation, use of eight groups of imported air bag, vibration isolation effect is good, easy to adjust. The vertical position of about 3Hz, horizontal position about 2Hz.

<b>II . Specifications</b>	
Sine force	32KN

Random force	32KN
Shock force	64KN
Frequency Range	DC~3200Hz
Maximum displacement	51mm
Maximum speed	2m/s
Maximum acceleration	1000m/s <sup>2</sup>
Moving coil diameter	Φ320mm
The equivalent mass of moving parts	32kg
Maximum static load	500kg
First resonant frequency	2100Hz±5%
Load connection point	17 points
Table –board screw size (standard)	M10
Axial isolation frequency	<3Hz
Magnetic flux leakage	≤1mT
Size (no packaging)	L 1380mm × W 990mm × H 1090mm
Vibration test machine weight	2400kg

### **I . Product Overview (KA-32)**

The system uses sinusoidal pulse width modulation technology of digital power amplifier. Its working principle is: the use of MOSFET FET high-frequency switching capability, the controller input low-voltage signal through the digital circuit to enlarge and restore the original signal, and then output it to the vibrating platform moving coil, to promote the vibration table Countertop movement. The main components of the digital power amplifier: pre-control, power amplifier module, protection circuit, power supply and electrical cabinet. The system through the modular design of small force, middle force and large force series of vibration table. The output range of the power amplifier is 1kVA ~ 320kVA. System specifications are fully applicable to existing or new air-cooled or water-cooled electric vibration test machine.

### **II . Features**

1. Absorbing Japan and Europe and the United States advanced technology, combined with its own high-frequency switching power supply control technology advantages, the secondary development technology more advanced, more reliable performance, and comprehensive modular, export to Europe and the United States and other countries.
2. The pre-control details the system's various data and operating status and fault judgments.
3. Modular design, easy combination, simple assembly, reliable, easy maintenance.
4. High signal to noise ratio, low total harmonic distortion.
5. Power amplifier module N + 1 redundant combination, automatic current sharing to improve reliability.
6. High conversion efficiency (greater than 90%), modulation conversion frequency is high.
7. Protection is complete, The entire power amplifier has: power grid overvoltage, power grid undervoltage, power failure lack of phase, logical failure, power module protection, power module temperature, output over-current, output over-voltage, drive power, body displacement, body temperature , external chain protection circuit, any failure occurs, turn off the output, while sound and light alarm.
8. Strong versatility.



**III. Specifications**

Amplifier output	32kVA
Signal to Noise Ratio	> 65dB
Rated output voltage	120Vrms
Power amplifier efficiency	> 90%

System protection	The entire power amplifier has: power grid overvoltage, power grid undervoltage, power failure lack of phase, logical failure, power module protection, power module temperature, output over-current, output over-voltage, drive power, body displacement, body temperature , external chain protection circuit, any failure occurs, turn off the output, while sound and light alarm. In addition to the above protection, it also has RMS value of ultra-poor protection, emergency shutdown devices and so on the perfect operation of the protection.
Size (no packaging)	L 550mm ×W 800mm × H 2070mm
Weight (no packaging)	810kg

**I . Product Overview (TB-0808)**

The extension table provides a larger installation table for the vertical test than the moving coil. The extended table is made of a lighter quality magnesium alloy material with a high strength to weight ratio. Expanding the table can simultaneously test multiple projects and reduce test time. The expansion table with load support can reliably install and test large size specimens, reduce the risk of damaging the shaking table suspension system, and increase the load capacity of the table. Expansion tables with auxiliary support can be used to test large and heavy equipment, and can be tested with equipment that adds additional limits and loads to more demanding test conditions.

**II . Features**

Table size	800mm×800mm
Equivalent quality	About 65kg
Upper limit frequency	1000Hz
Table material	Magnesium alloy
Load connection point	Available as required

**I . Product Overview (SC-0808)**

1.SC series horizontal slide table design with high overturning moment and lateral limit. While maintaining the guiding film damping characteristics. Horizontal sliding table composed by the skateboard, connector, natural granite plate, horizontal slide base.

2. High-pressure oil through the damper to become low-pressure oil, in the bottom of the table and the granite plate between the formation of a layer of oil film, the oil film mainly play a role in lubrication, reduce the slide table on the granite plate movement friction, So that the level of the table can be free on the granite plate free movement. High-pressure oil source and horizontal slide through the high-pressure tubing connected together, making the horizontal slide system structure is simple, easy operation and maintenance, reliable.

**II . Features**

Table size	800mm×800mm
Thickness	50mm
Usage frequency	2000Hz
Effective mass of the moving element	About 65kg
Oil pump	provide
Table material	Magnesium alloy
Load connection point	Available as required

**I . Product Overview (VENZO 820)**

VENZO 820 series vibration control device is a very good controller; It has extremely high cost performance. Can provide from 2-channel to multi-channel vibration control solution. The instrument uses the most advanced DSP framework and control algorithm, 32-bit floating point 450MHz DSP processor, high-performance 24-bit ADC, up to 132dB dynamic range, to ensure a reliable quality control. Each input channel has a parallel sampling rate of 102.4kHz, can achieve the perfect transient and long-term waveform reproduction and other functions. Equipment and computer host through high-speed network connection and advanced floating design, greatly reducing the system noise and a variety of interference to ensure the accuracy of control. All software modules are Chinese/English user interface, simple operation, easy to use. VENZO 800 allows you to select the required hardware modules and software modules as needed, and you can also make soft and hard upgrades as needed.

**Highly integrated advanced design**

The VENZO 820 Series Vibration Controllers combines all signal input conditioning

modules, AD conversion and DSP modules, integrated in a compact chassis with no external interface boxes and more connections while supporting voltage, charge, IEPE Sensor signal input, to achieve a highly integrated hardware system. The instrument uses a high-speed network to connect with the PC, greatly reducing the system noise and a variety of interference, the user does not need to worry about the ground, no need to install the controller on the computer driver, advanced design will be cumbersome operation greatly simplified. The main chassis is equipped with two drive channels, open a drive channel can be used to control a single vibration table, open two drive channels can be achieved on the dual vibration test stand control, a simple small chassis can achieve dual vibration table Control, There are very few products that can be implemented in this field.

#### **Full function software module**

The VENZO 820 Series Vibration Controllers provide you with the most comprehensive vibration control software modules, including: random, sine, classic shock and resonance search and presence, SRS analysis, sinusoidal random, random plus random, sine plus sine, sinusoidal Random plus random, transient shock and long-term waveform reproduction and other functional modules. Each function module provides basic functionality and optional special features that allow you to customize the required system as needed. Sine low frequency expansion function can be completed 0.01Hz test control, sine high frequency expansion function can be completed 12.8kHz test control, random to complete the 20kHz test control. Random up to 6400 lines, sine up to 4096 lines. Shock can run the highest sampling frequency 102.4kHz up to 16384 points (expandable). In addition to ordinary vibration control software function module, can provide kurtosis control, force limit control, sine plus sine and other special control function module. In addition, VENZO 800 series vibration control instrument with perfect analysis and reporting capabilities.

#### **Fast, precise and flexible control**

VENZO 820 series vibration control instrument is characterized by significant control speed. The system uses the most advanced DSP framework and control algorithm, greatly reducing the sine and random control loop feedback time for the system to provide a faster response capability. Reducing the feedback loop time can improve the performance of resonant search and dwell, and can make the structure under high Q value for vibration control. The system can be up to hundreds of channels, up to 20kHz control bandwidth for real-time control. The system is highly flexible, with the addition of industrial standards for vibration and impact testing, non-standard test specifications and accurate reproduction of the target reference spectrum. At the same time, acceleration, speed, displacement and other signals can be used as control signals.

#### **Perfect security features**

VENZO 820 series vibration control instrument attaches great importance to the safety of

test equipment and devices, this instrument provides a powerful security features. In the process of parameter setting, the system realizes the maximum displacement, maximum speed and maximum acceleration in the target spectrum in real time to ensure the safety of the test system. After the parameter is correct, before the test is carried out, Pre-test to measure the system background noise, verify the loop closed loop, check the signal-to-noise ratio per channel, estimate the system transfer function, estimate the system gain, and report inappropriate test conditions. During the test, the control signal will be continuously connected with the alarm and the interrupt limit parameter. If the control signal is abnormal due to the acceleration of the accelerometer or the cable is disconnected, the system will immediately stop the test and ensure the safety of the equipment. The emergency stop switch ensures that the test is quickly interrupted in any case.

Simple operation, rich control functions, easy to upgrade the hardware and software systems, and high reliability and high quality, making VENZO 800 series vibration control system is extremely cost-effective.

## II. Features

### Input

A / D conversion	24 bits
Coupling method	AC differential, AC single-ended, DC differential, DC single-ended, IEPE, charge
Anti-aliasing filter	160dB protection in all bands
Dynamic Range	130 dB
Signal to Noise Ratio	Better than 100dB
Input Range	0.1, 1.0, 10V
Input resistance	220kΩ
Maximum input voltage	36V
Amplitude accuracy	-0.005 dB
Phase accuracy	0.05deg
Channel harass	<-90dB
Distortion	<-100dB@1kHz
Maximum sampling frequency	102.4 kHz



Input interface	BNC Interface
TEDS	Support TEDS
Enter the signal type	Charge, IEPE, voltage-type sensor signal direct access, highly integrated
<b>Output</b>	
Dynamic Range	Greater than 108 dB
Output voltage range	10V F.S
Output the maximum current	20mA Min
Harmonic distortion	<-100dB@1kHz
Anti-aliasing filtering	160dB/Oct Analog and digital anti-aliasing filter
<b>The main chassis</b>	
Size	290 × 210 × 60
Weight	2.6kg
Operating temperature	-30 ° C to 70 ° C
Relative humidity	95%
Power	Less than 25W
Power supply	100~240VAC (50~60Hz)
Waterproof level	IP43
Refrigeration method	Conduction fanless cooling
Main chassis interface	High-speed standard Ethernet computer interface
Anti - vibration performance	10-60 Hz @ 0.15 mm peak; 60-150 Hz @ 2 gn,, Meet the IEC-60068-2-6 standard
Impact resistance	10 gn for 16 ms, Meet the IEC-60068-2-27 standard
Meet the electromagnetic compatibility standards	EN61326-1:2006, EN61000-3-2:2006+A1:2009+A2:2009, EN 61000-3-3:2008
Safety standard	N 61010-1:2001 Through CE certification

<b>III. Software features</b>	
<b>Random control</b>	
Frequency Range	DC~5000Hz, Can be extended to 40000Hz
Sampling frequency	51.2KHz, Can be extended to 102.4kHz
Number of spectral line	6400 lines, the highest optional 25600 lines
Dynamic Range	100dB
Drive cut	1~100sigma
Control precision	±1dB@120DOP
Kurtosis	3~100sigma
Control Strategy	Weighted average, minimum, maximum
Degrees of freedom	4~12736
Stop rate	Defines the rate at which the driving signal is reduced to zero
Loop compensation gain	Defines the update rate of the transfer function
Frequency response rate	Defines the maximum rate of change for the frequency response function
Start mode	Optional for online measurement or last experiment
Open loop check rating	Standard, strict, loose three grades optional
Channel maximum noise	Set the maximum noise allowed to pass
Maximum system impedance	Check the maximum impedance of the system when the test is balanced or running
<b>Sine control</b>	
Frequency Range	1Hz~5000Hz, High frequency can be extended to 51200Hz, low frequency can be extended to 0.01Hz
Number of spectral line	512~8192
Dynamic Range	150dB
Closed loop time	Typical values are 5ms

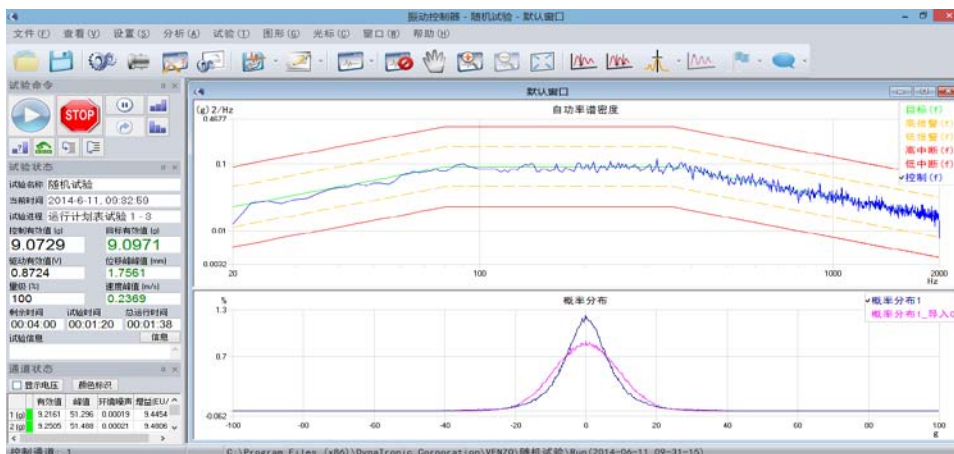
Frequency accuracy	0.000001Hz
Control precision	± 1dB @ with 1Oct / Min sweep frequency through the Q value of 50 resonance point
Dwell	User-defined resident frequency and time, time can be defined as the number of cycles or the length of time
Harmonic Distortion	Automatically calculate the total harmonic distortion in the analysis band, select the order of the harmonics
Control Strategy	Weighted average, minimum, maximum
Digital tracking filter	The proportional bandwidth can be selected from 1% to 100% of the output frequency, or 1 Hz to 1,000 Hz
Minimum response time	0.25 to 50 cycles
Start mode	Fast, smooth two modes are available
Sweep type and sweep rate	Linear sweep from 0 ~ 6000Hz / min, logarithmic sweep from 0 ~ 100 Oct / min
Compression factor	1~1000
<b>Classic impact</b>	
Number of sampling points	256 ~ 16384 points, can be extended to 65,536 points
Sampling frequency	20kHz ~ 51.2kHz , High frequency can be extended to 204.8kHz
Loop transfer function	Online balance or call an existing FRF from disk
Filter	Select low pass filtering and set cutoff frequency
Pulse interval	Defines the time interval between successive pulses
Waveform type	Semi-sine, bell-shaped wave, front spike, rear spike, triangular wave, rectangular wave, trapezoidal wave
Negative pulse	Can define the opposite polarity of the pulse
Average	The pulse can be averaged for control
Waveform duration	From 0.05ms to 100,000ms
Compensation waveform	Rectangular harmonic, rectangular wave, half sine wave
Compensation type	Before and after the compensation, only before the compensation, only after the compensation

Testing standard	ISO, MIL-STD 810F, Or user-defined test standards
limit	Automatically calculate the maximum acceleration, the maximum speed and the maximum displacement, and contrast with the shaking table limit parameters
<b>Transient capture</b>	
Sampling frequency	Up to 204.8kHz
Acceleration range	Up to 100000gn
Capture time	1ms~10000ms
Trigger slope	Rising edge, falling edge and double edge
Analysis function	Force deformation analysis, impact response analysis, SRS analysis
High frequency impact	The impact frequency range can be extended from 20kHz to 80kHz

**IV. Auxiliary function**

**Kurtosis control**

In the conventional random control test experiment, Output is to meet the normal distribution of random signals, and the kurtosis value of the signal is 3. Due to the normal distribution, the signal peak of more than 3 SIGMA occupies little time in the signal. The purpose of kurtosis control is to adjust the magnitude of the random signal amplitude distribution, increase the signal peak in the random signal in the probability of occurrence, but does not change the test power spectral density level. The kurtosis test increases the probability of occurrence of high peaks in the control signal, and in some cases makes the test closer to the real environment.



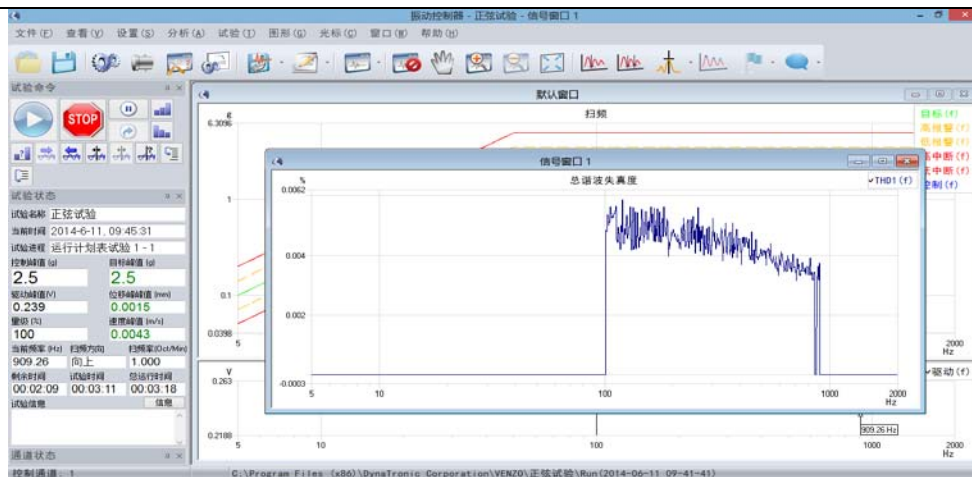
**Limit / dull control**

The use of measurement channel limit / dull control, can help users in the test process to effectively protect the specimen. During the test, some points on the specimen may cause great vibration due to resonance, and the limit / dull control sets the auxiliary reference spectrum for the magnitude of the vibration of any measurement channel to maximize the protection of the specimen.

**Multivariable control**

Multivariable control is a composite control strategy using high frequency acceleration control axis low frequency displacement control. This way can broaden the frequency control range, VENZO vibration control can achieve continuous sinusoidal sweep test from 0.01Hz ~ 51.2kHz, control the dynamic range up to 150dB. Especially for the hydraulic shaking table, adding displacement control channel can greatly improve the low-frequency control accuracy.

**Total harmonic distortion**



The total harmonic distortion of the vibration test system can be detected

**Signal editor**

Allows the user to import and edit the time domain signal waveform. This function corresponds to the long-term waveform reproduction function

**Experiment report**

Click the report generation button to generate WORD / PDF report, report settings can be customized according to user requirements

**Email report**

The Email reporting feature allows you to receive a trial report at the end of the trial, wherever you are

**Offline browsing**

Applies to all software features

<b>Analysis function</b>				
FFT analysis (random, sine), FRF analysis (random, sine), import stored signal, signal calculation, waterfall analysis, experimental playback, data logging, signal caching. In addition, impact response spectrum analysis can be performed in classical shock and transient impact functions.				
<b>Hardware calibration</b>				
The system calibration function is used to automate the hardware calibration and produce a complete calibration report. (Need calibrate accessory package, including: BNC cable and conversion device.)				
<b>V. Installation conditions</b>				
<ol style="list-style-type: none"> <li>1. System powered three-phase power supply               <ol style="list-style-type: none"> <li>① frequency: 50Hz</li> <li>② Voltage: 380V</li> <li>③ Voltage fluctuation range &lt; 10%</li> </ol> </li> <li>2. The user is equipped with a vibrating table system independent of the three-phase isolation power supply switch Amplifier maximum output total power approx 50kVA</li> </ol>				
<b>Use environmental conditions</b>				
<ol style="list-style-type: none"> <li>1. the temperature range: 5 °C ~ 35 °C;</li> <li>2. the humidity range: ≤ 80%;</li> <li>3. the installation site flat ground, no corrosive gas around, less dust, preferably with air conditioning.</li> </ol>				
<b>Ground line</b>				
The vibration test system must be equipped with a laboratory-specific ground wire. Ground grounding resistance is less than 4Ω.				
<b>VI. The main parts of the product list</b>				
SN	Key component name	Place of origin	Manufacturer	Remarks
I	<b>Vibration table</b>			
1	Air spring	Xi'an	Chenguang	
2	Airbag	Japan	Yokohama Rubber Company	
3	Epoxy resin	Japan	THREE BOND Company	

4	Stainless steel stencil	Japan	Nippon Metal Industry	
5	Nylon King Guide Board	Japan	Shield	
6	Dust cover	China	Chunhua	
<b>II</b>	<b>Power amplifier</b>			
1	Power MOSFET Module drive	United States	IR	
2	Power MOSFET Module	Germany	IXYS	
3	Programmable logic circuit	United States	LATTICE	
4	Thermal relay	China	DELIXI	
5	Fuse holder / core	France	Wohner	
6	Limit switch	Germany	Schmersal	
7	Air disconnecter	France	Schneider	
8	AC contactor	Germany	Siemens	
9	Current sensor	Switzerland	LEM	