



Vibration Testing,
Measurement and Calibration



Electro-dynamic
Vibration Testing
System



Servo-hydraulic
Vibration Testing
System

Econ Technologies
www.econ-group.com

CATALOG

Miniature Shaker.....	3
Electro-dynamic Shaker (Air Cooled).....	4
Electro-dynamic Shaker (Water Cooled).....	6
Power Amplifier	7
Slip Table	8
Head Expander	9
Multi-axis Shaker	10
Climate Chamber Combined Shaker	11
Vibration Controller	12
MIMO Vibration Controller	13
Hydraulic Shaker.....	14
Dynamic Signal Analyzer	15
High Channel Account Measurement.....	16
Shock Measurement Analyzer	17
Conditioning Amplifier	18
Middle Frequency Calibration	19
Portable Calibration	20
About Us	21
Contact	21

Miniature Shaker

A small electro-dynamic shaker is good choice to those tests where the units under test is very small, the needed force is limited, and a more flexible, easier movable and compact design is needed to match field use.

We are supplying customers such low force shakers with force range from 20N to 500N. This shaker is designed for long and trouble-free operation. Its structure is permanent Magnetic and its moving element is supported by an optimal and robust rectilinear guidance. Working with a dedicated linear and high-precision power amplifier, it will bring customers superb performances.

Features

- ✓ Force Range from 20N to 500N
- ✓ Permanent Magnetic Structure
- ✓ Compact Design, portable and easy in use
- ✓ Digital Power Amplifier with Precise Control
- ✓ Embedded-in Power Amplifier (optional)
- ✓ System MTBF >10,000 Hours
- ✓ Multi-axis Design Option Available
- ✓ In Accordance with ISO, MIL, IEC and ASTM, etc.



Ordering Information

Shaker Model	VE-5102	VE-5110	VE-5120	VE-5150
Rated Sine Force (N)	20	100	200	500
Usable Frequency Range (Hz)	2-10,000	2-7,000	2-7,000	5-5,000
Max. Acceleration (g)	20	40	80	34
Max. Displacement (mm, p-p)	5	13	13	10
Max. Payload (kg)	0.8	2	2	8
Armature Diameter (mm)	30	60	60	80
Effective Moving Elements Mass (kg)	0.1	0.25	0.25	1.5
Armature Fundamental Resonance (Hz)	>13k	>6.5k	>6.5k	>4k
Dimension (LxWxH, mm)	165x150x160	245x210x240	245x210x240	315x284x280
Weight (kg)	5	18	18	55
Cooling Mode	Natural Cooling	Air Cooling	Air Cooling	Air Cooling
Shaker Model with Slip Table	VE-5102ST	VE-5110ST	VE-5120ST	VE-5150ST
Slip Table Dimension (LxWxH, mm)	100x100	150x150	200x200	250x250
Slip Table Weight (kg)	0.4	1.6	2.3	4.9
Max. Displacement (mm, p-p)	5	10	10	10
Max. Payload (kg)	1	3	3	12
Power Amplifier Model	VSA-H40A	VSA-H181A	VSA-H751A	VSA-H102A
Max. Power Output (VA)	40	180	750	1000
Max. Output Voltage (Vrms)	12	12	50	50
Max. Output Current (Arms)	4	15	15	19
Max. Input Voltage (Vrms)	1	1.5	2.5	2.5
Weight (kg)	Embedded-in	14	16	16

VSA-L series Linear Power Amplifier

The VSA-L series power amplifier integrates cutting edge model MOSFET, latest technique of adaptive digital control, and dedicated multi-stage push pull amplification, presenting clients good performance in low noise, real-time monitoring, air cooling and reliability. It is excellent choice for various of small vibration shakers, modal exciters, and calibration shakers.

The VSA-L series power amplifier is working with VE series small electro-dynamic shakers.



Features

- ✓ Low noise and harmonic distortion
- ✓ Support AC/DC coupling
- ✓ Support working mode by constant voltage or current
- ✓ Phase mode 0°, 180°
- ✓ Designed with independent monitor channel
- ✓ Dedicated Interlocks Protection
- ✓ Comprehensive parameters display

Ordering Information

Power Amplifier Model	VSA-L180A	VSA-L500A	VSA-L1000A
Rated Power Output (VA)	180	500	1200
Working Mode	Voltage, Current		
Output Channel	1 NL4MPR		
Input Channel	1 AC, 1 DC, single end		
Monitor Channel	1 Voltage Channel (0.1V/V)		
Frequency Response	DC-10KHz ($\pm 0.5\text{dB}$) DC to 20kHz ($\pm 1.5\text{dB}$)		
Max. Output Voltage (Vrms)	27	45	72
Max. Output Current (Arms)	6.7	11.2	18
THD	<0.5%	<0.5%	<0.5%
SNR	>90dB	>90dB	>90dB
Amplitude Linearity	<0.1%	<0.1%	<0.1%
Phase	0°/180°	0°/180°	0°/180°
Interlocks Protection	over voltage, over current, over temperature, module failure, control failure, etc.		

Electro-dynamic Shaker (Air Cooled)

Electro-dynamic shakers play an important role in environmental testing. It provides a testing platform for product vibration testing in cases of design and type test, packing and transportation, reliability mission profile, fatigue test and more real-world environmental simulation. These tests are widely needed among most of industries, from automotive to IT, from household electrical appliances to satellite, from civil to defense labs.

ECON presents customers EDM series electro-dynamic shaker with years' experiences and optimized design, which is a better choice for customers to conduct vibration tests.



Features

- ✓ Sine force range from 3kN to 50kN
- ✓ Rugged suspension system and linear motion guidance
- ✓ Double magnetic circuit design
- ✓ Auto-centering control integrated
- ✓ High reliability with mean time between failures(MTBF)> 10,000 hours
- ✓ Optional foundation-free design available
- ✓ Optional Multi-shaker and Multi-axis design available
- ✓ Optional climate chamber combined shaker design available

Ordering Information

Shaker Model	EDS-300	EDS-600	EDM-1000	EDM-2000	EDM-2200	EDM-3200	EDM-3200LT	EDM-3200LS	EDM-4000	EDM-5000	EDM-5000LS
Rated Sine Force (kN)	3	6	10	20	22	32	32	30	40	50	50
Shock Force (kN)	6	12	20	40	44	64	64	60	80	100	10
Usable Frequency Range (Hz)	1-4,000	1-3,500	1-3,000	1-3,000	1-3,000	1-2,500	1-2,500	1-2,500	1-2,500	1-2,500	1-2,500
Max. Acceleration (m/s ²)	981	981	981	981	981	981	981	750	981	981	800
Max. Velocity (m/s)	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
Max. Displacement (mm, p-p)	25.4	51	51	51	51	51	51	100	51	51	100
Max. Static Payload (kg)	120	300	300	300	300	500	500	500	800	1000	800
Armature Diameter (mm)	150	200	240	320	320	320	370	350	445	445	445
Effective Moving Elements Mass (kg)	3	6	10	20	20	32	32	40	50	50	63
Power Amplifier Model	VSA-D402A	VSA-D802A	VSA-H123A	VSA-H243A	VSA-H243A	VSA-H323A	VSA-H323A	VSA-H323B	VSA-H483A	VSA-H563A	VSA-H563B
Amplifier Type	Switching	Switching	Switching	Switching	Switching	Switching	Switching	Switching	Switching	Switching	Switching
Rated Power Output (kVA)	4	8	12	24	24	32	32	32	48	56	56
Power Supply Requirement (kVA)	7	16	26	40	40	65	65	65	90	90	90
Air Blower Model	PBL-W03	PBL-W06	PBL-W10	PBL-W20	PBL-W20	PBL-W30	PBL-W30	PBL-W30	PBL-W40	PBL-W50	PBL-W50
Blower Power (kW)	0.75	4	4	7.5	7.5	7.5	7.5	7.5	22	22	22
Air Flow (m ³ /s)	0.2	0.3	0.356	0.66	0.66	0.66	0.66	0.66	1.36	1.36	1.36
Air Pressure (kgf/cm ²)	0.015	0.048	0.058	0.075	0.075	0.075	0.075	0.075	0.08	0.08	0.08
Hose Diameter (mm)	120	120	120	200	200	200	200	200	200	200	200

Electro-dynamic Shaker (Water Cooled)

ECON presents customers EDL series water cooled shakers which provide a superb testing platform for vibration testing on larger or heavier specimen, widely used for products of aerospace, aviation and defense, automotive and transportation. These shakers have unique multi-cycles water cooling technique on armature coil, and improved short-circuit protection design. This features EDL series with better cooling efficiency and higher reliability. And its armature has intensity strengthened design for higher reliability and long life service.



Features

- ✓ Unique multi-cycles water cooling on armature coil
- ✓ Intensity strengthened armature with reinforced material
- ✓ Rugged suspension system and linear motion guidance
- ✓ Double magnetic circuit design
- ✓ IGBT Power Module with Digital Control and higher power convert efficiency
- ✓ High reliability with system MTBF> 10,000 hours
- ✓ Auto-centering control integrated
- ✓ Optional foundation-free design available
- ✓ Optional Multi-shaker and Multi-axis design available
- ✓ Optional climate chamber combined design available

Ordering Information

Shaker Model	EDL-6000	EDL-7000	EDL-8000	EDL-10000
Rated Sine Force (kN)	60	70	80	100
Shock Force (kN)	120	140	160	200
Usable Frequency Range (Hz)	5-2,500	5-2,500	5-2,500	5-2,500
Max. Acceleration (m/s ²)	981	981	981	981
Max. Velocity (m/s)	1.8	1.8	1.8	1.8
Max. Displacement (mm, p-p)	51	51	51	75
Max. Static Payload (kg)	800	800	800	1000
Armature Diameter (mm)	445	445	480	480
Effective Moving Elements Mass (kg)	60	60	80	85
Power Amplifier Model	VSA-H643A	VSA-H803A	VSA-H963A	VSA-H124A
Amplifier Type	Switching	Switching	Switching	Switching
Rated Power Output (kVA)	64	80	96	120
Power Supply Requirement (kVA)	100	120	140	200
Cooling Unit Model	PCU-W60	PCU-W70	PCU-W80	PCU-W100
Internal Circle Water Flow/Pressure	40/1	40/1	50/1	50/1
External Circle Water Flow/Pressure	100/0.25-0.4	100/0.25-0.4	160/0.25-0.4	300/0.25-0.4
Distilled Water Requirement	Hardness 30ppm, PH 7-8, Conductivity 1Us/cm			
Power Consumption (kW)	6	6	12	12

Power Amplifier

VSA-H series Switching Power Amplifier

VSA-H series switching power amplifier is designed with latest IGBT technique and MCU+DSP+FPGA framework to ensure high power availability and high safety. The single power module is designed as standard 8kVA output with large peak power margin. This feature allows VSA-H series power amplifier to be qualified in working with most kinds of electro-dynamic shakers. Different numbers of module can be combined as per requirement of actual power capacity, without replacing the rack.

VSA-H series power amplifier is also designed based on integrated logical unit, power unit and control unit, with obvious advantages of reliability, flexible configuration, energy saving, and easier maintenance.



Features

- ✓ Standard 8kVA module, modulated and adaptive
- ✓ Latest IGBT technique, with high withstand voltage and power
- ✓ Sophisticated MCU+DSP+FPGA framework
- ✓ High efficiency D class power switching, 3-sigma peak current
- ✓ Advanced digital loop control algorithms
- ✓ Switching frequency up to 150kHz
- ✓ Signal-to-noise ratio >65dB
- ✓ Parallel operation current imbalance <1%
- ✓ Energy efficiency ratio >93%
- ✓ Dedicated and considerable Interlocks protections

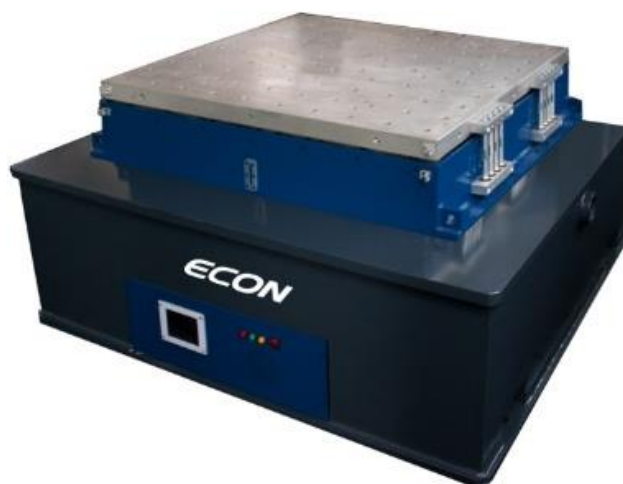
Ordering Information

Amplifier Model	VSA-H402A	VSA-H802A	VSA-H123A	VSA-H243A	VSA-H323A	VSA-H483A	VSA-H563A
Max. Output Power (kVA)	4	8	12	24	32	48	56
Number of Power Modules	1	1	2	3	4	6	7
Rated Output Voltage (Vrms)	120	120	120	120	120	120	120
Switching Frequency (Hz)	150k	150k	150k	150k	150k	150k	150k
Harmonic Distortion (5-5000Hz)	≤0.8%	≤0.8%	≤0.8%	≤0.8%	≤0.8%	≤0.8%	≤0.8%
Signal Noise Ratio (dB)	>65	>65	>65	>65	>65	>65	>65
Frequency response (5-5000Hz)	±1.5dB	±1.5dB	±1.5dB	±1.5dB	±1.5dB	±1.5dB	±1.5dB
Input Impedance(KΩ)	>10	>10	>10	>10	>10	>10	>10
Amplifier Efficiency	>93%	>93%	>93%	>93%	>93%	>93%	>93%
Interlocks Protection	Input over/less voltage, Output over current/voltage, over travel/temperature, Oil pressure, Logic/module/cooling failure, etc.						

Slip Table

Slip table is a test platform combined with shaker for horizontal testing to extend vibration in X/Y direction, if we regard vertical vibration as in Z direction. Slip table is used widely among all kinds of vibration testing.

We are using standardly general purpose V-Groove bearings on our slip table with high cost efficiency and versatile use in X/Y horizontal vibration. We are also supplying slip table with optional T-Groove Hydrostatic bearings for the cases where heavier product is under test or product has a high center gravity, and a high over-turning moment is needed.



Features

- ✓ Light weight magnesium slip plate
- ✓ Optional Aluminum plate
- ✓ optional T-Groove hydrostatic bearings
- ✓ Self-Contained oil reservoir with Filter
- ✓ Customized grid of pattern holes

Ordering Information

Shaker Model	Slip Table Model	Dimension (mm)	Thickness (mm)	Effective Mass (kg, Magnesium)	Max. Payload (kg)	Usable Frequency (Hz)
EDS-300	ST-300M	300x300		8.5	100	
	ST-400M	400x400	25	11.5	150	2000
	ST-500M	500x500		17	150	
EDS-600	ST-400M	400x400	25	14	150	
	ST-500M	500x500		26.5	300	2000
	ST-600M	600x600	40	35	300	
EDM-1000	ST-400M	400x400	25	15	150	
	ST-500M	500x500		28	300	2000
	ST-600M	600x600	40	38	300	
	ST-800M	800x800		57	400	
EDM-2000 EDM-2200	ST-500M	500x500	40	29	300	
	ST-600M	600x600		38	300	2000
	ST-800M	800x800		72	400	
	ST-1000M	1000x1000	50	107	500	
EDM-3200 EDM-3200LT EDM-3200LS	ST-500M	500x500	40	29	300	
	ST-600M	600x600		38	300	2000
	ST-800M	800x800		72	400	
	ST-1000M	1000x1000	50	107	500	
EDM-4000	ST-500M	500x500	40	38	300	
	ST-600M	600x600		46	300	2000
	ST-800M	800x800		85	400	
	ST-1000M	1000x1000	50	120	500	
EDM-5000 EDM-5000LS	ST-500M	500x500	40	38	300	
	ST-600M	600x600		46	300	2000
	ST-800M	800x800		85	400	
	ST-1000M	1000x1000	50	120	500	
	ST-1200M	1200x1200		167	500	

Head Expander

Head expander is rather useful in cases that shaker armature square is not enough to mount large dimension specimen, or more specimens need to be tested at once to save test time.

ECON is supplying customer series of head expanders made by lightweight Magnesium alloy with higher strength-to-weight ratio, and by aluminum alloy with higher cost efficiency. These head expanders have excellent dynamic performances after test of FEA (Finite Element Analysis) and EMA (Experimental Modal Analysis).

Features

- ✓ Assured dynamic performances by FEA and EMA test
- ✓ Optional Magnesium or Aluminum alloy
- ✓ Optional shape of round, square or others
- ✓ Customized pattern holes available
- ✓ Completed design with load support guidance

Ordering Information

Shaker Model	Head Expander Model (Square)	Dimension (mm)	Mass(kg) Al/Mg	Frequency (Hz) Al/Mg	Head Expander Model (Round)	Dimension (mm)	Mass(kg) Al/Mg	Frequency (Hz) Al/Mg
EDS-300	HE-300SA(M)	300x300	7/4.5	2000/1800	HE-300RA(M)	φ300	5/3.2	2000/1800
	HE-400SA(M)	400x400	12/7.7	2000/1800	HE-400RA(M)	φ400	10/6.5	2000/1800
	HE-500SA(M)	500x500	16/10.3	1700/1530	HE-500RA(M)	φ500	20/12.9	2000/1800
EDS-600	HE-300SA(M)	300x300	10/6.5	2000/1800	HE-300RA(M)	φ300	7/4.5	2000/1800
	HE-400SA(M)	400x400	9月14日	2000/1800	HE-400RA(M)	φ400	9月14日	2000/1800
	HE-500SA(M)	500x500	25/16.1	1700/1530	HE-500RA(M)	φ500	20/12.9	2000/1800
	HE-600SA(M)	600x600	35/22.6	1500/1350	HE-600RA(M)	φ600	32/20.6	1800/1620
EDM-1000	HE-400SA(M)	400x400	20/12.9	2000/1800	HE-400RA(M)	φ400	18/11.6	2000/1800
	HE-500SA(M)	500x500	30/19.4	2000/1800	HE-500RA(M)	φ500	20/12.9	2000/1800
	HE-600SA(M)	600x600	30/19.4	1500/1350	HE-600RA(M)	φ600	24/15.5	1300/1170
	HE-800SA(M)	800x800	80/51.6	800/720				
EDM-2000 EDM-2200	HE-500SA(M)	500x500	32/20.6	1800/1620	HE-500RA(M)	φ500	25/16.1	1500/1350
	HE-600SA(M)	600x600	37/23.9	1600/1440	HE-600RA(M)	φ600	30/19.4	1000/900
	HE-700SA(M)	700x700	55/35.5	1500/1350	HE-700RA(M)	φ700	40/25.8	800/720
	HE-800SA(M)	800x800	70/45.2	1200/1080	HE-800RA(M)	φ800	55/35.5	700/630
EDM-3200 EDM-3200LT EDM-3200LS	HE-500SA(M)	500x500	35/22.6	2000/1800	HE-500RA(M)	φ500	32/20.6	2000/1800
	HE-600SA(M)	600x600	45/29	2000/1800	HE-600RA(M)	φ600	38/24.5	2000/1800
	HE-700SA(M)	700x700	70/45.2	2000/1800	HE-700RA(M)	φ700	70/45.2	1800/1620
	HE-800SA(M)	800x800	80/51.6	1300/1170	HE-800RA(M)	φ800	70/45.2	1200/1080
EDM-4000	HE-600SA(M)	600x600	60/38.7	2000/1800	HE-600RA(M)	φ600	50/32.3	2000/1800
	HE-700SA(M)	700x700	80/51.6	2000/1800	HE-700RA(M)	φ700	60/38.7	1700/1530
	HE-800SA(M)	800x800	100/64.5	1300/1170	HE-800RA(M)	φ800	70/45.2	1500/1350
	HE-1000SA(M)	1000x1000	160/103.2	1000/900	HE-1000RA(M)	φ1,000	140/90.3	1000/900
EDM-5000 EDM-5000LS	HE-600SA(M)	600x600	60/38.7	2000/1800	HE-600RA(M)	φ600	50/32.3	2000/1800
	HE-700SA(M)	700x700	80/51.6	2000/1800	HE-700RA(M)	φ700	60/38.7	1700/1530
	HE-800SA(M)	800x800	100/64.5	1300/1170	HE-800RA(M)	φ800	70/45.2	1500/1350
	HE-1000SA(M)	1000x1000	160/103.2	1000/900	HE-1000RA(M)	φ1,000	140/90.3	1000/900
	HE-1200SA(M)	1200x1200	250/161.3	500/450	HE-1200RA(M)	φ1,200	250/161.3	500/450



Multi-axis Shaker

Once customers want to test those products which are working under more complicated vibration excitations, like from multiple points, or different axes simultaneously, they will face problems if they have single shaker only. These problems often happen to road simulation and flying simulation where the testing result will be unreliable since it contains limited information from single excitation, or the funds will be wasted to purchase a very high force shaker which brings over test damage to weak components in the specimen.



Features

- ✓ Dedicated and Sophisticated bi-axial/tri-axial Design
- ✓ Low Friction and Hydro-static Linear Bearings
- ✓ Usable Frequency Range ~1,000Hz (sine) and ~2,000Hz (Random)
- ✓ Vibration could be Synchronized or Separately
- ✓ IGBT Power Module with Digital Control
- ✓ Higher Power Transfer Efficiency
- ✓ Dedicated System Interlocks
- ✓ Advanced MIMO Vibration Controller with Accurate System Identification,
- ✓ Highly Adaptive Matrix Control, and Max.16 drive outputs

Ordering Information

Shaker Model	EDS-50-3AX200	EDS-300-3AX300	EDS-600-3AX400	EDM-1000-3AX400	EDM-2000-3AX500	EDM-3200-3AX600	EDM-5000-3AX800
Rated Sine (kN)	0.5	3	6	10	20	32	50
Usable Frequency Range Sine (Hz)	1000	800	800	800	800	600	500
Random (Hz)	2000	2000	1,500	1,500	1,200	1,200	1000
Max. Displacement (mm)	10	18	38	38	38	38	38
Max. Velocity (m/s)	0.5	1	1	1	1	1	1
Max. Acceleration (g, bare table)	10	8.5	13	20	30	32	30
Max. Payload (kg)	2	50	200	200	200	400	800
Table Dimension (mm)	200x200	300x300	400x400	400x400	500x500	600x600	800x800
Effective Moving Elements Mass (kg)	5	35	46	50	65	100	165
Power Amplifier Model	VSA-H102A	VSA-H402A	VSA-H802A	VSA-H123A	VSA-H243A	VSA-H323A	VSA-H563A
Amplifier Type	Switching	Switching	Switching	Switching	Switching	Switching	Switching
Rated Output Power (kVA)	1	4	8	12	24	32	56
Power Supply Requirement (kVA)	1.8	7	16	26	40	65	90
Air Blower Model	PBL-W01	PBL-W03	PBL-W06	PBL-W10	PBL-W20	PBL-W30	PBL-W50
Blower Power (kW)	0.22	0.75	4	4	7.5	7.5	22

Climate Chamber Combined Shaker

ECON climate chamber combined shaker is designed for the comprehensive environmental test on the product which is exposed to the temperature, humidity and vibration at same time, especially for the products of aerospace, aviation, electrics and transportation. This kind of tests cover reliability test, identification test and stressing test, to search product fatigue or estimate its reliability more rapidly and more effectively than under single testing condition.

Our electric-dynamic shakers are capable to be combined with all kinds of climate chambers, running comprehensively or separately. We supply turn-key solution to customers with dedicated combination design to save time, energy and funds for them.



Features

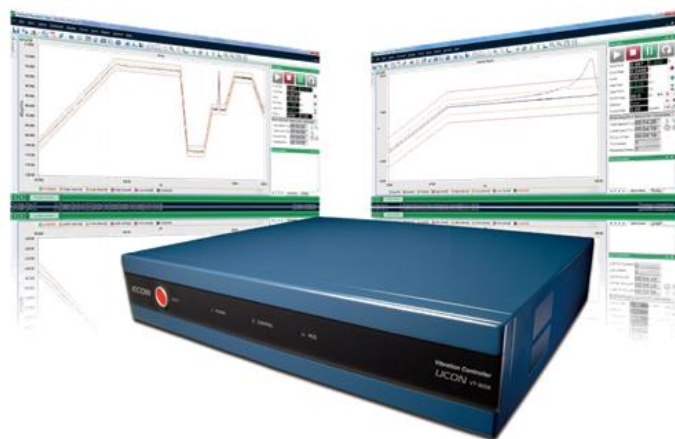
- ✓ Integrated combination design with chamber
- ✓ Sophisticated water proof and thermal insulation design
- ✓ Flexible working mode in vertical, horizontal or both
- ✓ Optional hydraulic lift and movable rail
- ✓ "One station" control of testing running of vibration, temperature and humidity



Vibration Controller

ECON is famous to design and supply vibration controller since its foundation in 2002. With more than 20 years experiences, ECON is always dedicating to understand what customer will need in vibration control, and supply them better choice of vibration controller with high performances and cost efficiency.

We are presenting customers the prestigious and classical VT-9 series vibration controller, which combines the latest DSP technology, low noise hardware design, advanced adaptive vibration control algorithms and full range of control software. It is one of the most reliable vibration controller in the world, covering all types of vibration test, and making vibration test easier and trustable in control.



Features

- ✓ PC independent by DSP technique
- ✓ Real-time Loop-control
- ✓ Safety first control strategy
- ✓ 24-bit ADC/DAC and 32-bit DSP for all models
- ✓ Control Dynamic Range higher than 95dB
- ✓ 0.01 to 10,000Hz range in Sine Control
- ✓ DC to 20,000Hz in Random Control
- ✓ Full range of control software for all types vibration testing
- ✓ Versatile for all kinds of shakers/vibrators
- ✓ User friendly software, easy in operation

Ordering Information

Hardware	VT-9002	VT-9004	VT-9008
Input	2	4	8
Drive	1	1	1
COLA	N/A	1	1
Digital I/O	N/A	1 DB-37	2 DB-37
Sensors Compatible	Voltage/IEPE/Charge/TEDS	Voltage/IEPE/TEDS	Voltage/IEPE/Charge/TEDS
Software	VT-9002	VT-9004	VT-9008
Sine	✓	✓	✓
Step Sine, RSTD, THD Detection	✓	✓	✓
Multi-sine			✓
Sine Notching		✓	✓
Sine 0.01 to 10,000Hz			✓
Random	✓	✓	✓
SoR, RoR, SRoR		✓	✓
Kurtosis Control			✓
Random Notching		✓	✓
Random DC to 20,000Hz			✓
Classical Shock	✓	✓	✓
Shock Response Spectrum		✓	✓
F.D.R-TTH (Transient Time History)		✓	✓
Damping Sine		✓	✓
Earthquake Simulation		✓	✓
F.D.R-LTH (Long Time History)		✓	✓
Road Simulation		✓	✓
Waveform Generator		✓	✓
Vibro-shock			✓
Shaker Verification			✓
Digital I/O Communication		✓	✓
FFT Analysis	✓	✓	✓
Data Record and Offline Review	✓	✓	✓
Test Report	✓	✓	✓
Multi-user Control	✓	✓	✓
Self-calibration	✓	✓	✓

MIMO Vibration Controller

ECON is the first Chinese manufacturer to design and provide MIMO vibration controller since 2007, also the only manufacturer in China who is producing a real MIMO vibration controller. We are honored presenting customers our unique MI-8 series MIMO vibration controller, helping them to solve problems in MIMO vibration tests.

MI-8 series has been successfully put into many actual MIMO vibration test cases, such as 2 or 4 posts vehicle test, transportation and road simulation, flying objects aerodynamic test, etc. MI-8 series also could be used for single shaker vibration control, high channel account measurement, and structural modal analysis.



Features

- ✓ PXI based structure
- ✓ Self-contained controller with Real-time QNX O/S
- ✓ Expandable and modularized input and output modules
- ✓ High synchronization precision in all modules
- ✓ All chassis chainable to higher channel account up to 1,024 inputs
- ✓ Supporting 1 to 16 drives
- ✓ 1000Mbps adaptive LAN connectivity
- ✓ On board 24-bit ADC/DAC and 32-bit DSP for all modules
- ✓ Versatile for MIMO vibration control of Sine, Random, Shock, Mixed Random Field Data Replication

Ordering Information

Hardware	MI-8008	MI-8018
Slots	8	18
Input Channels	Up to 24	Up to 64
Drive Channels	1-16	
Digital I/O	1 DB-37	
Sensor Compatible	Voltage, IEPE, TEDS, TACHO, Acoustics, etc	
PC Connectivity	1000Mbps adaptive LAN	
Software	MI-8008	MI-8018
Single Shaker Vibration Control (MISO)	Sine, Random, Mixed mode random, Kurtosis, RSTD, Classical Shock, SRS, FDR-TTH, FFR-LTH, Notching, Vibro-shock, Multi Sine	
Multi-axis Vibration Control (MIMO)	MIMO Random, MIMO Sine, MIMO Classical Shock, MIMO Mixed Random, MIMO F.D.R-TTH and LTH	

Hydraulic Shaker

HVS series servo-hydraulic vibration testing system is composing of highly reliable hydraulic actuator, robust HPU, high precision servo-vibration controller, and customized table.

The adopted hydraulic actuator is built by hydrostatic technique, which features the actuator very low friction and makes actuator be maintenance-free in its life time. Meanwhile, a LVDT mode displacement sensor is built inside of the actuator to provide accurate and instant displacement signal.

The HVS series has compact and turn-key design in shaker structure. Working with ECON unique VT-6 series servo-vibration controller, HVS can deliver customers excellent performances in vibration testing.

Feature

- ✓ ISO, ISTA, ASTM, GR63 testing standard compliant
- ✓ Force range from 10kN to 300kN
- ✓ Frequency range from 0.1Hz to 300Hz and customized
- ✓ Stroke range up to ± 250 mm and customized
- ✓ Lower friction and maintenance-free hydraulic actuator
- ✓ Various Multi-axial/Multi-DOF design
- ✓ Double loop control by acceleration and displacement
- ✓ Frequency and time domain testing supported
- ✓ MTBF > 10,000 hours
- ✓ Optional foundation-free available
- ✓ Optional explosion-proof available
- ✓ Optional table sizes available



Ordering Information

System Model	HVS-10	HVS-25	HVS-50	HVS-100	HVS-150	HVS-200
Rated Force (kN)	10	25	50	100	150	200
Frequency Range(Hz)	0.1-160	0.1-160	0.1-160	0.1-120	0.1-120	0.1-80
Max. Displacement (mm, p-p)	200mm	200mm	200mm	200mm	200mm	200mm
Max. Velocity (m/s)	0.5	0.5	0.5	1	1	0.5
Max. Acceleration (g, with max. load)	4	4	4	5	5	5
Max. Payload (kg)	200	500	1000	1500	2500	3500
Table Dimension (mm)	600x600	800x800	1000x1000	1200x1200	1200x1200	1500x1500
Eccentric Movement (Nm)	500	1000	2000	3000	4000	4000
HPU Model	HPU-40	HPU-100	HPU-160	HPU-400	HPU-400G	HPU-300G
Rated Pressure(MPa)	21	21	21	21	31.5	31.5
Rated Flow (L/min)	30	100	160	400	400	300
Power Consumption	15	45	70	175	260	200

Note: all models can be customized in design with as per customer requirement

Dynamic Signal Analyzer

ECON MI-7 series Dynamic Signal Analyzer is an all-in-one solution dedicated for laboratory to field application of DAQ and recording, measurement and analysis. MI-7 series is working independent of PC with multiple kinds of measurement and analysis software modules for vibration and noise, model test, order tracking and MVHM, acoustic analysis, shock and impulses. Also MI-7 series could work as an independent data recorder with software of post analysis.

Besides, the MI-7108 model is handheld and considerably designed for field use with touch screen, instant analysis result and built-in battery.



Features

- ✓ 24-bit Σ - Δ ADC, 32-bit floating DSP
- ✓ Real-time DAQ, analysis and report
- ✓ high precision with low noise
- ✓ Sampling rate up to 204.8kHz in each channel
- ✓ All in one solution for multiple tasks
- ✓ Independent working from PC
- ✓ With waveform generator output
- ✓ Multiple and dedicated software modules
- ✓ Optional built-in battery available

Ordering Information

Hardware Model	MI-7004	MI-7008	MI-7016	MI-7108
Input Channels	4	8	16	8
TACHO Input	1	3	3	1
Output Channels	1	2	4	2
Resolution	24-bit Σ - Δ ADC			
Computation	32-bit floating DSP			
Dynamic Range	120dB			
Sensor Compatible	Voltage (AC/DC single end, difference), IEPE (built-in constant power supply), TEDS, TACHO			
Frequency Accuracy	0.00001			
Amplitude Accuracy	0.2% FS (1V input, <10 kHz)			
Touch Screen Operation				✓
Rechargeable battery		✓	✓	✓
Software Module	MI-7004	MI-7008	MI-7016	MI-7108
Data Recorder, Playback Analysis	✓	✓	✓	✓
FFT based general purpose analysis	✓	✓	✓	✓
Waveform Generator	✓	✓	✓	✓
Vibration and Noise Analysis	✓	✓	✓	✓
Acoustics Analysis	✓	✓	✓	
Order Tracking and MVHM	✓	✓	✓	✓
Modal Analysis	✓	✓	✓	✓
Shock and impulses	✓	✓	✓	
Shaker Performance Verification		✓	✓	

High Channel Account Measurement

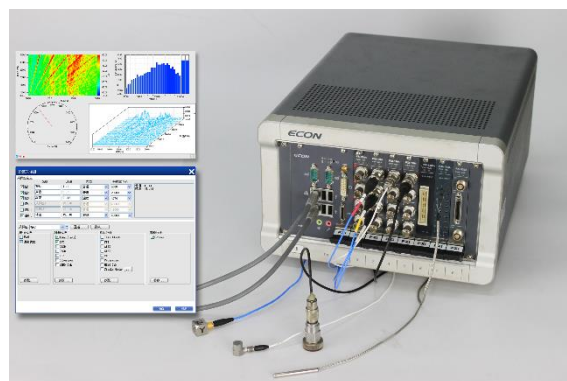
ECON MI-8 series is a typical high channel account measurement and analysis system, which is often used for vibration measurement and analysis, Machine Vibration Health Monitoring (MVHM), structural test, where a large number of input channels is requested. Sometimes the input number will be requested as decades, hundreds or more, and the precision of synchronization is concerned.

It is designed based on PXI bus and self-contained controller, supporting independent running without PC. Its inputs and outputs are modular and expandable with high synchronization precision assured by PXI bus. MI-8 series support multiple software modules in synchronized data acquisition and measurement.



Features

- ✓ PXI based structure
- ✓ Self-contained controller with Real-time QNX O/S
- ✓ Expandable and modularized input and output modules
- ✓ High synchronization precision in all modules
- ✓ Chainable to higher channel account up to 1,024 inputs
- ✓ Supporting 1 to 16 waveform generators
- ✓ 1000Mbps adaptive LAN connectivity
- ✓ On board 24-bit ADC/DAC and 32-bit DSP for all modules
- ✓ Sampling rate up to 204.8kHz in each channel
- ✓ Versatile for high channel account DAQ, measurement, structural modal analysis and HUMS.



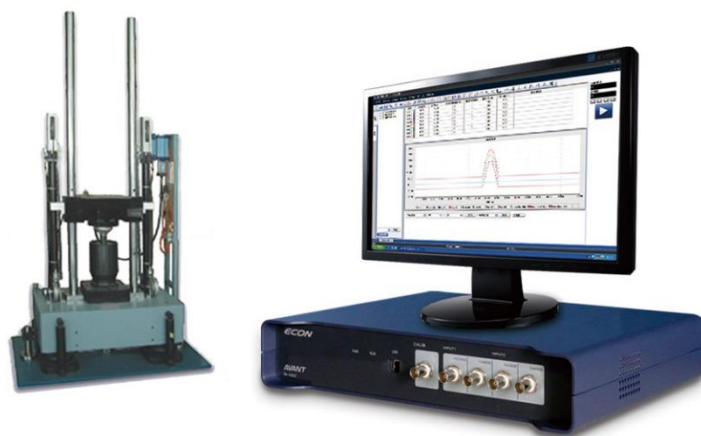
Ordering Information

Hardware	MI-8008	MI-8018
Slots	8	18
Input Channels	Up to 24	Up to 64
Output Channels (waveform generators)	1-16	
Digital I/O	1 DB-37 Connector, Available and Optional	
Sensor Compatible	Voltage (AC/DC single end, difference), IEPE (built-in constant power supply), TEDS, TACHO	
PC Connectivity	1000Mbps adaptive LAN	
Software	MI-8008	MI-8018
Data Recorder, Playback Analysis	✓	✓
FFT based general purpose analysis	✓	✓
Waveform Generator	✓	✓
Vibration and Noise Analysis	✓	✓
Order Tracking and MVHM	✓	✓
Modal Analysis	✓	✓
Shock and impulses	✓	✓

Shock Measurement Analyzer

ECON MI-5 series shock measurement analyzer is a powerful and tailored instrument for transient data capture and analysis in shock, drop and impact events. The impulse data could be generated by shock, drop or impact machine, also could be from unknown events. MI-5 series can meet rigorous criterions related to these events.

MI-5 series is available for two different models: MI-51 and MI-52. MI-52 is used for common application with 2 acquisition channels and MI-51 is used for high-g level shock events measuring and analysis. MI-5 series provide four software modules based on different test standards: Shock Measuring and Analysis, SRS, Pulse Analysis and Damage Boundary test.



Features

- ✓ Compatible with ISO, IEC, ISTA, MIL-STD and User defined criterion
- ✓ Max. sampling rate up to 1MHz in each channel
- ✓ Acceleration range up to 100,000gn
- ✓ Independent working from PC
- ✓ Multiple and dedicated software modules
- ✓ All in one solution for shock data capture and measurement

Ordering Information

Hardware Model	MI-5202	MI-5204	MI-5104
Input Channels	2	8	16
Output Channels	1	1	1
ADC Resolution	24-bit	24-bit	16-bit
Computation	32-bit floating DSP		
Dynamic Range	120 dB		
Sensor Compatible	Voltage, IEPE, Charge, TEDS	Voltage, IEPE, TEDS	Voltage, IEPE, TEDS
Max. Sampling Rate	192 kHz	204.8 kHz	1 MHz
Acceleration Range	10,000g	10,000g	100,000g
Software Module	MI-5202	MI-5204	MI-5104
Shock Measuring and Analysis	√	√	√
Pulse Analysis	√	√	√
Shock Response Spectrum	√	√	√
Damage Boundary Analysis	√	√	√

Conditioning Amplifier

Condition amplifier, also called charge amplifier, is working as an important device in measurement application, especially needed by PE sensors with charge signal output.

ECON MI-2004 is a powerful and precise amplifier for charge conversion to voltage, helping to improve the performance and reliability of measurement systems by quality signal conditioning. It integrates filtering, integral and differential analysis functions. Customer can monitor the setting parameters, running status thru front screen, or thru software installed on PC via RS232 connectivity. And MI-2004 can be combined together for higher channel account use, say 8, 16, 32, 64 or more.



Features

- ✓ High precision circuits with digital control
- ✓ Multi-stage low-pass, high-pass filter
- ✓ 4 conditioning channels per chassis and support higher channel account synchronization
- ✓ Digital parameter setting, intuitive and easy to operate
- ✓ Support Charge, IEPE, and TEDS sensors with 4-20 mA constant power supply
- ✓ Support PC software operation
- ✓ Compact and solid design with built-in battery

Ordering Information

Hardware Model	MI-2004-1	MI-2004-2	MI-2004-4
Input Channels	1	2	4
Parameter Setup	By metal dome with display screen, or software on PC		
Expandability	Multiple of 4		
Applications	Charge Sensor Amplifying, IEPE constant power supply, high and low pass filtering, integral and double integral function		
Sensors Compatible	Charge, IEPE, and TEDS sensors		
Max. Charge Input	10 ⁶ pC		
Gain	10uV/Unit, 31.6uV/Unit, 100uV/Unit, 316uV/Unit, 1mV/Unit ... 3.16V/Unit, 10V/Unit (Unit = pC , -40dB to 80dB, in 10dBsteps, set 1mV/Unit as 0dB)		
Max. Voltage Input	± 10V (peak)		
Gain	100uV/Unit, 316uV/Unit, 1mV/Unit...316mV/Unit, 1V/Unit (Unit: pC, -20dB to 60dB in 10dB steps, set 1mV/Unit as 0dB)		
Frequency Range	Acceleration: 0.1 Hz to 100 kHz Velocity: 1 Hz to 10 kHz Displacement: 1 Hz to 1 kHz		
Filter	High-pass Filter (-3dB): 0.1Hz, 1Hz, 3Hz and 10Hz Low-pass Filter (-3dB): 100Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz and 100 kHz		

Middle Frequency Calibration

ECS-1815 is for laboratory use to calibrate vibration transducers which are working during middle frequency range. It is composing of a standard shaker, a reference accelerometer, programmable calibrator with calibration software, and an optional conditioning amplifier.

ECS-1815 is working under secondary calibration method (back to back), to measure the sensitivity of the sensor-under-test (SUT) by point to point, swept sine or random vibration over standard or user-defined frequency and acceleration ranges. The process is simple in calibration. Customer only need to mount the SUT on standard shaker and start the automatic calibration procedure.



Features

- ✓ ISO 16063-21 standard compliant
- ✓ Calibration frequency range is 10-5,000Hz
- ✓ Support to calibrate all kinds of vibration accelerometers, velocity and displacement sensors (voltage, PE, IEPE, Piezo-resistive, Capacitive) , etc.
- ✓ Multiple vibration excitation mode of point to point, swept sine and random
- ✓ Loop control calibration, and optional open loop calibration available
- ✓ Support point-by-point, swept sine, and random excitation;
- ✓ Automatic procedure, quick and accurate calibration for instant results
- ✓ Support calibration raw data export
- ✓ Customized calibration report generation

Ordering Information

System Model	ECS-1815
Max. Excitation Force	250 N
Calibration Frequency Range	10-5,000 Hz
Frequency range	5-10,000Hz
Max. acceleration	25 g
Max. Displacement (p-p)	10 mm
Max. Velocity	1 m/s
Max. Load	2 kg
System Uncertainty	<1% (160Hz, 100 m/s ²)
Calibration Method	secondary (back to back)
Calibration Software	sensitivity, frequency response (amplitude and phase), amplitude linearity, and transverse sensitivity
Calibration Procedure	point to point, swept sine and random excitation

Portable Calibration

ECS-1028 is suitable for field calibration of monitoring purposes in production lines, and instant calibration in outdoor field. Commons in such cases, customers only need to know the sensitivity of the sensor-under-test (SUT).

This procedure of ECS-1028 is simple, and processing time will be very short since quantities of SUT is large or the outdoor environment is not that comfortable as in indoors. After a quick and instant calibration, a sensitivity result will be generated and the calibration data will be ready for export.



Features

- ✓ ISO 16063-21 standard compliant
- ✓ Calibration frequency range is 20-2,000Hz
- ✓ Compact design with light weight
- ✓ Portable and instant calibration
- ✓ Support to calibrate all kinds of vibration accelerometers, velocity and displacement sensors (voltage, PE, IEPE, Piezo-resistive, Capacitive) , etc.
- ✓ Support calibration data export by USB
- ✓ 6 hours battery life
- ✓ Loop control calibration with automatic procedure
- ✓ Customized calibration report generation

Ordering Information

System Model	ECS-1028
Max. Excitation Force	100 N
Calibration Frequency Range	20-2,000 Hz
Max. acceleration	10 g
Max. Displacement (p-p)	1.8 mm
Max. Velocity	0.2 m/s
Max. Load	0.8 kg
System Uncertainty	<3% (160Hz, 100 m/s ²)
Calibration Method	secondary (back to back)
Calibration Function	sensitivity
Calibration Procedure	point to point

About Us

ECON is a world-wide one station manufacturer and supplier for equipment and solution of vibration testing, measurement and calibration.

Founded in 2002, ECON have been dedicated in developing better quality and higher cost-efficiency equipment and solutions to help customers to meet market crucial demand on their products quality and reliability. More than 20 years experiences and innovative ambition support us to fulfill this vision into reality.

Today ECON is well-known and taking leading role in China to produce and supply Electro-dynamic Shaker, Servo-hydraulic Shaker, Vibration Controller, Measurement Instrument and Transducer Calibration system.



- Headquarter
- R&D Center
- Sales and Market Center
- CNAS and CMA qualified Testing lab
- 5,000 sqm Facility



- Factory
- Product Center
- Logistics Center
- 20,000 sqm Facility

Qualification & Certification

China Certificate of High & New Technological Enterprise

ISO 9001:2015 Qualified

Testing lab qualified by CNAS (China National Accreditation Service for Conformity Assessment) and CMA (China Inspection Body and Laboratory Mandatory Approval)

CE Compliance with all main products

Contact

ECON Technologies Co., Ltd.

Building 4, 1418-41 Moganshan Rd. Hangzhou 310015, China

Tel/Fax: +86-571-88174609

For business cooperation, product enquiry, quotation, please contact: salesintl@econ-group.com

For order processing and logistics, please contact: coordinator@econ-group.com

For technical support, after sales service, please contact: support@econ-group.com

WhatsApp



WeChat

