

Permanent magnet vibration testing systems

9 to 489 N (2 - 110 lbf)

V101/2, V201/3,
V406/8, V450/1
and V455/6 Shakers

PA Amplifiers



Typical system applications

- laboratory experiments
- modal studies
- electronic assemblies
- physiological research
- high speed actuators
- velocity transducers

A range of vibration testing systems designed to minimise operational costs whilst providing the maximum flexibility to the scientist or test engineer.

Featuring:-

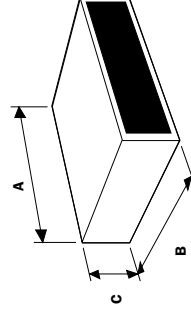
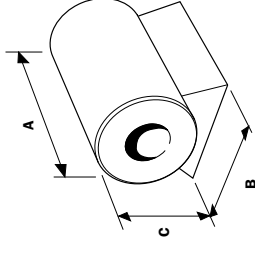
- Permanent magnet construction
- Low mass, high performance armature construction
- Wide frequency band operation - dc to 13 kHz
- Well proven armature suspension system
- Mounted on base or support trunnion
- Option of auxiliary suspension
- Ultra-compact energy efficient amplifiers

Total system solutions

With the addition of an LDS sine, random and shock controller we can provide total testing solutions. Alternatively our systems are designed to interface with any standard third party controller. Whichever route you choose, you have the assurance that all LDS products are supported by a world-wide sales and service organisation. From application engineering, installation and training through to maintenance, spares and repairs LDS offers a total service approach to keep your system operating efficiently and reliably.

V101/2, V201/3, V406/8, V450/1, V455/6

Shaker system configuration & performance parameters



| Model | V101/2 – PA 25E | V201/3 – PA 25E | V406/8 – PA 100E | V406/8 – PA 500L | V450/1 – PA 500L | V455/6 – PA 1000L |
|--|-----------------------|-----------------|--------------------------|-------------------------|-------------------------|-------------------------|
| Amplitude diameter | - | - | 38 mm | 38 mm | 63.5 mm | 63.5 mm |
| System sine force peak - naturally cooled | 8.9 N | 17.8 N | 98 N | 98 N | 178 N | 178 N |
| System sine force peak - forced air cooled | - | 17.8 N | 98 N | 196 N | 311 N | 489 N |
| Shaker sine force peak* - forced air cooled | - | 26.7 N | 38 N | 89 N | 214 N | 302 N |
| System random force rms (ISO5344) | - | - | 89 N | 89 N | 214 N | 334 N |
| Shaker max random force rms* | - | - | 9000 Hz | 9000 Hz | 6000 Hz | 6000 Hz |
| Armature resonance frequency | 12000 Hz | 13000 Hz | 59000 Hz | 59000 Hz | 57500 Hz | 57500 Hz |
| Useful frequency range | 5-12000 Hz | 5-13000 Hz | 5-9000 Hz | 5-9000 Hz | 5-7500 Hz | 5-7500 Hz |
| Effective mass of moving element | 0.0065 kg | 0.0143 lb | 0.200 kg | 0.200 kg | 0.426 kg | 0.426 kg |
| System velocity sine peak | 1.31 m/s | 51.6 in/s | 1.52 m/s | 1.78 m/s | 1.78 m/s | 2.5 m/s |
| Shaker velocity sine peak* | 1.31 m/s | 51.6 in/s | 1.78 m/s | 1.78 m/s | 2.0 m/s | 2.5 m/s |
| Max acceleration sine peak | 1373 m/s ² | 140 gn | 981 m/s ² | 981 m/s ² | 730 m/s ² | 1147 m/s ² |
| Amplifier rating | 0.048 kVA | 0.048 kVA | 0.147 kVA | 0.7 kVA | 0.7 kVA | 1.4 kVA |
| LDS amplifier | PA 25E | PA 25E | PA 100E | PA 500L | PA 500L | PA 1000L |
| Suspension axial stiffness | 3.15 N/mm | 18 lb/in | 12.3 N/mm | 12.3 N/mm | 17.5 N/mm | 17.5 N/mm |
| Aux. suspension axial stiffness | - | - | 8.76 N/mm | 22.8 N/mm | 22.8 N/mm | 100 lb/in |
| System displacement (continuous) pk-pk | 2.5 mm | 0.1 in | 5 mm | 17.6 mm | 19 mm | 19 mm |
| Shaker displacement (continuous) pk-pk* | 2.5 mm | 0.1 in | 5 mm | 17.6 mm | 19 mm | 19 mm |
| Vibrator mass-optional trunnion mounted | - | - | 3.17 kg | 22.7 kg | 82 kg | 82 kg |
| Cooling air flow rate | - | - | 0.0012 m ³ /s | 0.014 m ³ /s | 0.012 m ³ /s | 0.012 m ³ /s |
| Shaker mass base mounted | 0.91 kg | 2 lb | 1.81 kg | 14.1 kg | 64 kg | 64 kg |
| Max. working ambient temperature | 30°C | 86°F | 30°C | 30°C | 30°C | 30°C |
| Shaker: | 86°F | 95°F | 86°F | 86°F | 86°F | 86°F |
| Amplifier: | 95°F | 95°F | 95°F | 86°F | 86°F | 86°F |
| Heat rejected to air | - | - | 0.15 kW | 0.46 kW | 0.29 kW | 0.75 kW |
| Shaker cooling fan: | - | - | 0.067 kW | 0.40 kW | 0.37 kW | 0.87 kW |
| Amplifier: | 0.067 kW | 0.067 kW | 0.067 kW | 0.067 kW | 0.067 kW | 0.067 kW |
| Electrical requirement | 0.09 kVA | 0.09 kVA | 0.27 kVA | 1.5 kVA† | 1.4 kVA† | 2.9 kVA† |
| Acoustic noise at 2m** | - | - | 105 dBA | 105 dBA | 105 dBA | 105 dBA |
| Shaker: | silent | silent | silent | 105 dBA | 105 dBA | 105 dBA |
| Amplifier: | silent | silent | silent | 47 dBA | 47 dBA | 47 dBA |

* Shaker ratings are those which can be achieved with a larger amplifier than that supplied as standard

** Maximum noise level during operation at full thrust, measured at 2m distance

† Includes cooling fan

| Cooling blowers | | | |
|-----------------|-------|------|------|
| Blower | Wt kg | A mm | B mm |
| V406/8 50 Hz | 17 | 241 | 389 |
| V406/8 60 Hz | 15 | 241 | 365 |
| V450/1 50/60 Hz | 5.4 | 241 | 186 |
| V455/6 50/60 Hz | 5.4 | 241 | 186 |

| PA amplifiers | | | |
|---------------|-------|------|------|
| Amplifier | Wt kg | A mm | B mm |
| PA 25E | 9 | 488 | 337 |
| PA 100E | 15 | 488 | 337 |
| PA 500L | 20 | 448 | 412 |
| PA 1000L | 35 | 482 | 505 |

| Armature insert patterns | | | |
|--------------------------|--------|--------|--------|
| Shaker | V101/2 | V201/3 | V406/8 |
| Armature dia. mm | - | - | 38 |
| Centre insert | 1 | 1 | 1 |
| 25.4 mm | - | - | 6 |
| 50 mm | - | - | 5 |

PCD inserts equi-spaced

| Options | | | | | |
|---------------------------|--------|--------|--------|--------|--------|
| Shaker model | V101/2 | V201/3 | V406/8 | V450/1 | V455/6 |
| Alternative inserts: M4 | ● | ● | ● | - | - |
| 6/32" UNC | ● | - | - | - | - |
| 8/32" UNC | - | ● | ● | - | - |
| M5 | - | - | - | ● | ● |
| 10/32" UNF | - | - | ○ | ● | ● |
| Rubber isolation mounting | - | - | - | ○ | ○ |
| Base mounting | ● | ● | ● | ● | ● |
| Support trunnion | - | ○ | ○ | ○ | ○ |
| Auxilliary suspension | - | ○ | ○ | - | - |
| Cooling fan | - | - | ● | ● | ● |

KEY ● standard ○ standard option - not available

| PA series power amplifier characteristics | | | | |
|--|---------------------------|---------------------------|--------------------------|--------------------------|
| Amplifier model | PA 25E | PA 100E | PA 500L | PA 1000L |
| Rated sinusoidal power output (Matched resistive load) | 48 W (5R3) | 147 W (2R9) | 500 W | 1000 W |
| Maximum continuous sinusoidal VA output, 0.5pf | 48 VA | 147 VA | 700 VA | 1400 VA |
| Frequency range at rated power | 10Hz - 10 kHz | 10Hz - 10 kHz | 10Hz - 14 kHz | 10Hz - 14 kHz |
| Total harmonic distortion at rated output 20 Hz - 10 kHz | Typically 0.3 % | Typically 0.5 % | Typically 0.2 % | Typically 0.2 % |
| Maximum output voltage | 16V rms | 20V rms | 40V rms | 80V rms |
| Maximum no load voltage | 24V rms | 32V rms | 45V rms | 86V rms |
| Voltage regulation | 1% | 3% | 2% | 2% |
| Output current at rated VA | 2.7A rms | 7A rms | 18A rms | 18A rms |
| Maximum output current | 3A rms | 7A rms | 18A rms | 18A rms |
| Random output current | 5.9A pk | 14A pk | 54A pk | 54A pk |
| Overcurrent trip level | 4.2A rms | 10A rms | 20A rms | 20A rms |
| Input sensitivity for maximum output (400 Hz) | 1.0V rms | 1.0V rms | 1.0V rms | 1.0V rms |
| Signal to noise ratio | > 75 dB | > 75 dB | > 75 dB | > 80 dB |
| Amplifier efficiency | 59 % | 58 % | 59 % | 59 % |
| Protection | Fast acting current limit | Fast acting current limit | Output device protection | Output device protection |

Some of the features listed are available as standard, others as options.
Please contact LDS for advice on the optimum specification to meet your system needs.
Specifications are correct at time of going to print. LDS reserves the right to amend specifications without prior notice.



World leaders in vibration and environmental test systems

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All LDS equipment complies with current European and USA safety and EMC regulations



ISO 9001

Cert No. FM 26616