

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Visit our website - *Click HERE*

Product Sheet 177

Model CA-4.

* **Acceleration 'g' meter, reading true r.m.s. for Sine or Random Operation.**
* **Four Channel Monitoring and overtest protection system.**

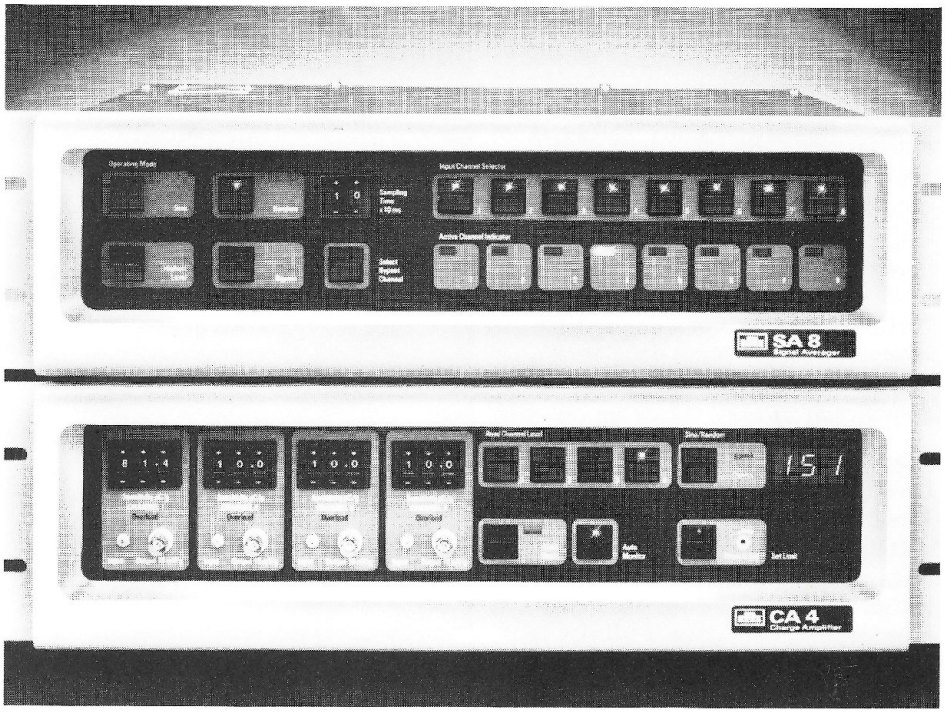
Model SA-8.

* **Four possible operating modes, Sine, Random, Highest Signal Level and Channel By-Pass.**

LDS Instrumentation

Models CA-4 and SA-8

Charge Amplifier and Signal Averager.

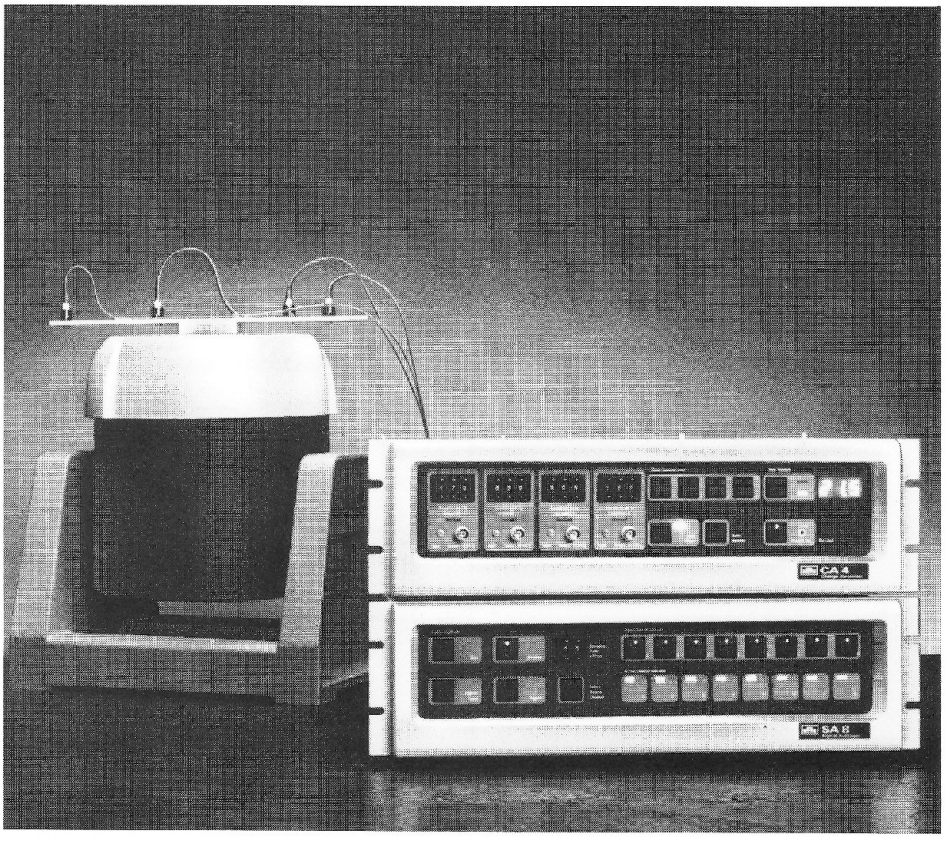


Designed specifically for use with piezo-electric transducers or other similar high impedance measuring devices the new CA-4 Charge Amplifier and SA-8 Signal Averager enable the vibration engineer to establish more accurately the acceleration levels a test package is experiencing.

The CA-4 combines four good quality charge amplifiers, an acceleration 'g' meter, channel monitor and an overtest protection system in one small and compact product which is divided into two sections. The first section contains four separate vibration charge amplifiers that are able to monitor individual acceleration signal levels on one test load or on four separate test loads. Each charge amplifier has a digi-switch which can be adjusted to suit the particular sensitivity of the accelerometer in order to provide a normalised output signal of 10 mV/g.

The second section performs a monitoring and protection function. A three digit, true RMS acceleration 'g' meter is incorporated to read the output level of any one of the four charge amplifier channels. Acceleration units either in 'g' peak for Sine vibration or 'g' rms for Random vibration may be selected. Within the monitoring and protection section, an acceleration limiting device will prevent a charge amplifier output exceeding a pre-determined limit. This can be monitored manually on a chosen channel or automatically on all channels in sequence.

All the circuit features of the model CA-4 are ideally suited to a wide range of vibration testing systems particularly for production testing applications where equipment may be left unattended.



The SA-8, eight channel Accelerometer Signal Averager accepts up to eight pre-normalised acceleration (vibration) signals. These signals which are normalised at 10 mV/g may be derived from an LDS Charge Amplifier model CA-4 or any other suitable charge amplifier.

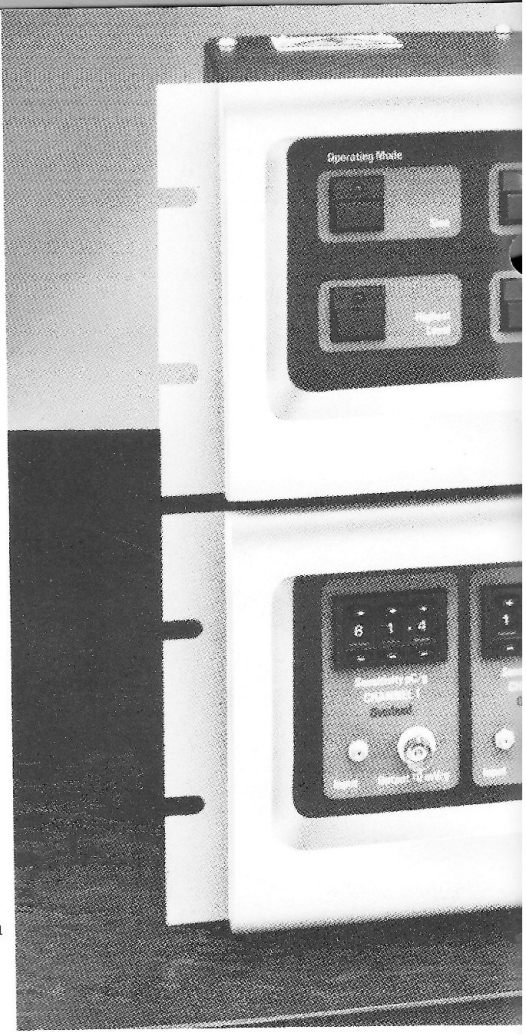
Model SA-8 processes the input acceleration signals in one of four possible modes.

1. *Sinusoidal,*
2. *Broad-band Random,*
3. *Highest Signal Input Level, or*
4. *Channel By-Pass.*

Signal averaging is intended for either testing one large test load such as a satellite or several similar test loads on one large fixture. In both these cases control from one single accelerometer would be inadequate resulting in either an under or over test of part of the test structure or one of the test loads.

Four Channel Charge Amplifier and Eight Channel Signal Averager

Models CA-4 and SA-8



Four Channel Charge Amplifiers—CA-4.

Each Charge Amplifier Channel is fitted with a micro-dot connector to receive a direct input signal from an accelerometer. Accelerometers with a sensitivity range between 1 and 99.9 pC/g can be accommodated by adjustment of an appropriate digi-switch to provide a normalised output signal of 10 mV/g. Duplicate Input and Output connections for each channel are provided on both front and rear panels of the unit.
An Overload Indicator is illuminated whenever the peak input signal level exceeds the capability of the charge amplifier circuit.

Read Channel Level Switches

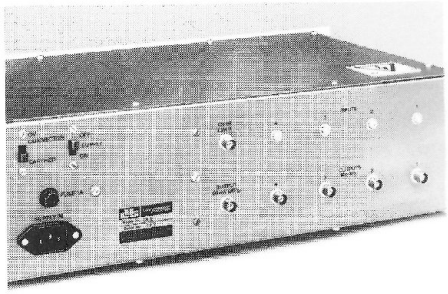
Four push-button switches select a particular charge amplifier output to the units monitoring circuits. LED lamps within each switch indicate the monitored channel.

Sine/Random Operation

A three digit, true rms sensing display, reading directly in 'g' acceleration units is incorporated to read the output level of any one of the four charge amplifier channels. The 'g' acceleration units can be selected to read either 'g' peak for Sine vibration or 'g' rms for Random vibration.

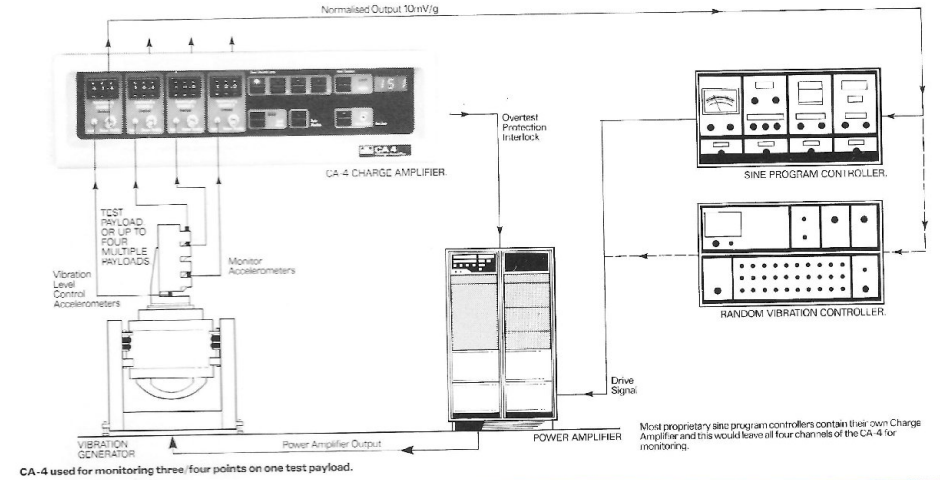
Set Limit

(Acceleration Limit).
An acceleration limiting device is incorporated within the display circuitry to provide additional protection. This acceleration limit is set by actuating the "Set Limit" switch and adjusting the front panel multi-turn control until the desired limit is displayed.

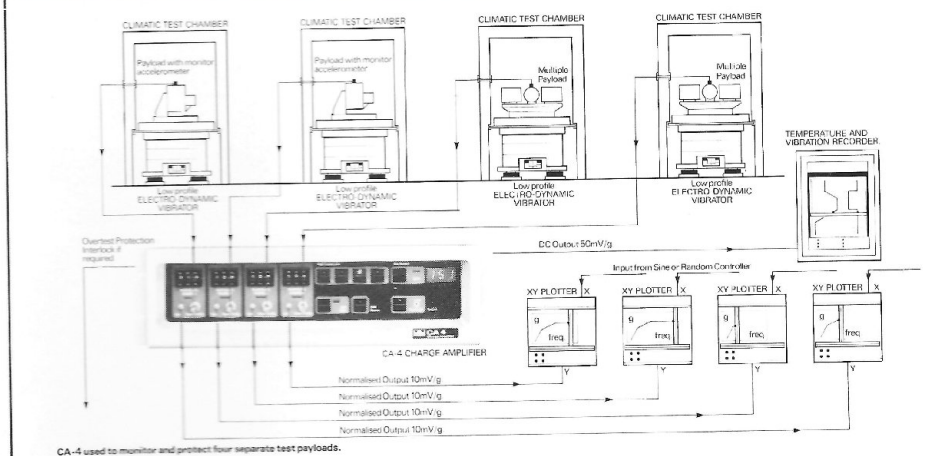


Auto Monitor.

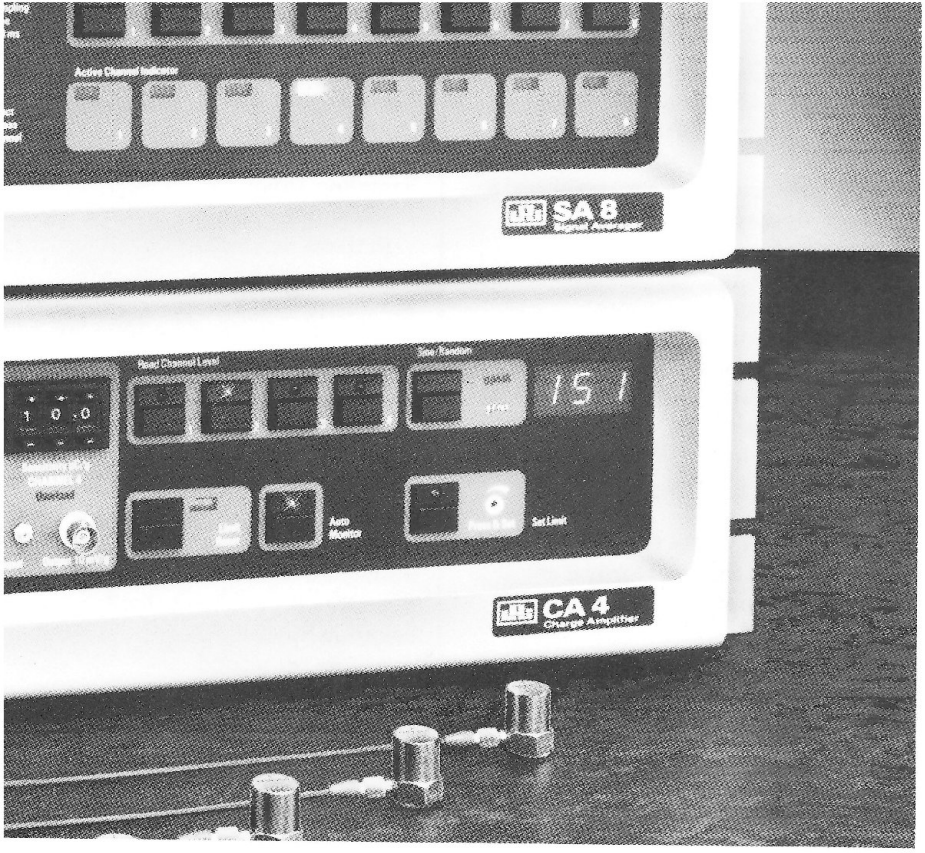
An automatic monitoring function can also be selected so that each charge amplifier output signal is monitored and displayed sequentially for approximately eight seconds. The LED lamps in the Read Channel Level switches indicate which channel is being displayed at any one time. If during a test programme a channel signal level exceeds a pre-set acceleration limit, internal potential free relay contacts will open or close to choice, and the automatic monitoring function will freeze at that channel. An additional flashing lamp will indicate the fault until the Limit Reset switch is pressed.
Rear Panel BNC connections are provided to switch off the vibration system when an over-limit condition occurs and to record the presence of vibration during a combined vibration/thermal test.



CA-4 used for monitoring three/four points on one test payload.



CA-4 used to monitor and protect four separate test payloads.



Eight Channel Accelerometer Signal Averager, SA-8.

The model SA-8 produces an output signal which is equivalent to the average of between 2 and 8 input signals for either Sine or Random Vibration.

Sine Mode

Selects any combination of input channels for averaging. The averaged output is not affected by the relative phase of the inputs.

Random Mode.

Selects any combination of input channels for averaging. An associated digi-switch sets the length of time for which each random input signal is sampled.

Highest Level

It can also compute the highest vibration signal input and switch that signal directly to the output socket ensuring that no part of a large payload is overtested. The highest signal level is then illuminated on the Active Channel Indicator.

By-Pass Mode.

Push button switch enables any one of up to eight input signals to be selected and then switches it directly to the output, effectively By-Passing the Signal Averager. This By-Pass mode is useful for plotting the response at various points on the structure with respect to another point which is controlled at a constant acceleration level.

Select By-Pass Channel

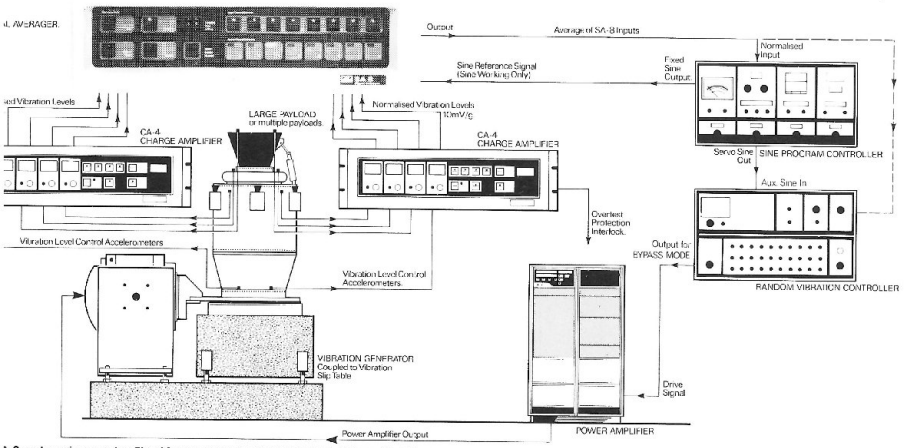
Selects which one of the eight input channels will be used as the By-Pass channel. Each time it is pressed the By-Pass channel is stepped on to the next selected channel.

Input Channel Selector

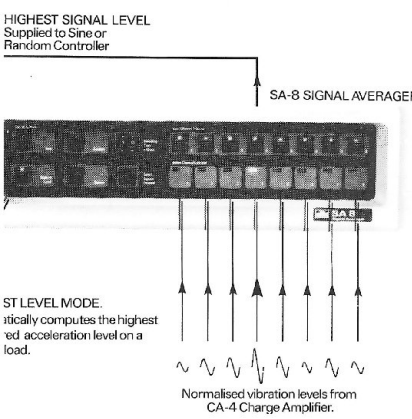
Push button switches select which combination of the eight input channels is to be used for averaging. LED lamps in the switches show which channels are selected.

Active Channel Indicator

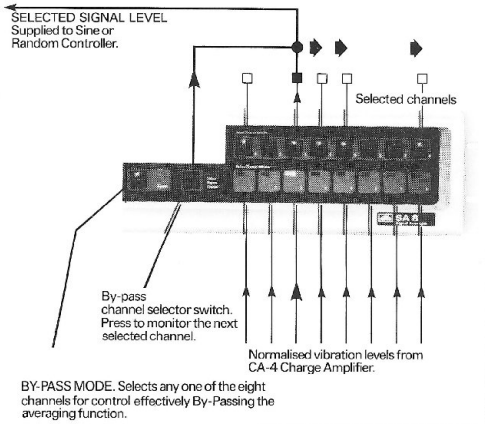
When operating in the Random, Highest Level or By-Pass modes, one of the indicator lamps will light to show which channel is instantaneously being used at that time.



A-8 used as a sine or random Signal Averager in conjunction with two CA-4 Charge Amplifiers.

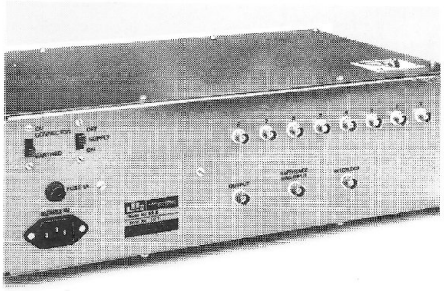


sed in Highest Level Mode.



BY-PASS MODE. Selects any one of the eight channels for control effectively By-Passing the averaging function.

SA-8 used in the By-Pass Mode.



Specification

CHARGE AMPLIFIER, CA-4.

There are four identical charge amplifiers in the unit.

Transducer Sensitivity:
1 to 99.9 pC/g Sensitivity selected by front panel mounted digi-switch.

Input Range:
1 to 10,000 pC. Overload indicator lights if the input signal exceeds the input range of the charge amplifier.

Accelerometer Input Connection:
Single ended microdot connector on both front and rear panels.
Duplicate microdot connector must be fitted with a screened cap when not in use.

Source Capacitance:
20,000 pF maximum.

Output Connector: (BNC)
10 mV/g. Maximum load 2 k ohm.

Frequency Response:
Less than 3% down at 1.5Hz and 10kHz.

Gain Accuracy:
Better than 2% at 400Hz.

Gain Stability:
1% change for a source capacitance change of 10nF.

Noise, Referred to the Input:
23μV, Bandwidth 1Hz to 10kHz input terminated with 1nF.

Cross Channel Interference:
–57dB at 10kHz between adjacent channels.

Monitor and Display
The signal from any one charge amplifier channel can be permanently or sequentially monitored and displayed.

Digital Display:
Full scale 99.9g or 999g selected automatically. The range changes automatically at approximately 90g. The detection circuit is true rms with push-button selectable peak reading for sinewave signals.

Display Accuracy:
±2% 3Hz to 10kHz.

R.M.S. Detector:
Signal crest factor of 7 produces an additional 1% detection error.

D.C. Output (Rear Panel BNC):
50 mV/g. Maximum load 2 k ohm.
200g full scale, Accuracy ±3%. 3Hz to 10kHz.

SIGNAL AVERAGER, SA-8.

Input Signal Channels:
Eight input channels which accept pre-normalised (10 mV/g) acceleration signals.
Any combination of between 1 and 8 channels may be used.

Input Impedance/Channel:
47 k ohm

Output Impedance/Channel:
Maximum load 2 k ohm.

Frequency Response:
Less than 3% down at 5Hz and 10kHz.

Operating Modes:
Sine, Random, Highest Input Level, By-Pass.

Interlock:
Potential free contacts rated at 200mA 50V DC open momentarily if any mode or channel select switch is pressed.

Noise:
Output noise level 60dB below full output at 400Hz.

SINE OPERATING MODE

Reference Sine Input:
A constant amplitude sinewave signal at the frequency of the input signals is required. Amplitude 1 to 5 volts rms. This is normally derived from most available sine programme controllers.

Frequency Range:
5Hz to 10kHz.

Velocity Range:
Up to 2 m/s.

Acceleration Range:
0.5g peak to 120g peak.

Detector Compression Rate:
1 dB/s/Hz up to 1,000 dB/s.
The compression rate is reset every 3.2 seconds giving a maximum sine sweep rate of 1 oct/min for the best averaging performance.

Maximum Signal Level:
120g peak at 10 mV/g.

Gain error at 400Hz:
±2.5% or 0.2g whichever is the greater.

RANDOM OPERATING MODE

The pre-normalised accelerometer input signals are sampled using a time division multiplex circuit.

Sampling Time:
10ms to 990ms per channel, selectable in 10 ms increments.
Accuracy ±10%.

Maximum Signal Level:
1,000g peak, typically 300g rms.

BY-PASS OPERATING MODE

Maximum Signal Level:
1,000g peak.

HIGHEST LEVEL OPERATING MODE

All the input channels are scanned and the highest channel signal is connected directly to the output socket.

Selection Rate:
4 times per second.

Selection Accuracy:
Channels not selected will not exceed the selected channel by more than 2% or 1g whichever is the greater.

Maximum Signal Level:
120g peak

GENERAL CA-4 AND SA-8.

Dimensions:
Width: 483mm (19 in)
Height: 133mm (5.25 in)
Depth: 300mm (11.8 in)
Sockets: Clearance 63mm
Weight: CA-4 7.5kg, unpacked.
SA-8 8kg, unpacked.
Rack mounting unit, standard.

Power Requirements:
110-120V, 220-240V A.C. ±10%, 15 VA. 50-60Hz.
3 pin I.E.C. plug.

Temperature Range:
0°C to +40°C, +70°C store.

Distributor

All specifications and illustrations in this brochure are based upon information valid at the date of publication.
We reserve the right to change specifications without notice, but when included by specific reference in any offer, specifications are valid for the period of that offer.

Ling Dynamic Systems Inc.
60 Church Street, YALESVILLE,
Connecticut 06492, USA.

TEL: (203) 265 7966
FAX: (203) 284 9399
TLX: 643372 VIBRATION YALE

LING DYNAMIC SYSTEMS

Ling Dynamic Systems Ltd.
Heath Works, Baldock Road,
ROYSTON, Herts. SG8 5BQ, ENGLAND.

TEL: UK (0763) 242424
International: +44 (763) 242424
FAX: UK (0763) 249715
TLX: 81174 LDSG

June 1988, Labute Ltd.

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP