

SAVER™ 3D15

The SAVER™ 3D15 is a self-powered field instrument equipped with a MEMS tri-axial accelerometer, offering DC response (excellent low frequency response) for a wide variety of applications.

The 3D15 continuously measures up to fifteen days of shock (impact/drop), vibration, temperature, and humidity conditions. It also works seamlessly with various Lansmont supplied GPS hardware options.



SAVER™ 3D15 field applications:

- Rail impact recording.
- Rollercoaster measurements.
- Aerospace dynamic analysis.
- Crash recording.
- Brake testing.
- Seismic measurements.

Measurement and analysis applications:

- Define product's in-use environmental characteristics.
- Capture time history and frequency data to replicate in a laboratory.
- Verify existing and create new test standards based on actual measurements.
- Define a packaged product's transportation hazards and characteristics.
- Improve package performance.
- Maximize risk management procedures.
- Define "normal" and "abnormal" shipping conditions.
- Audit transit environments to identify carrier handling practices.
- Assess transport liability.



PHYSICAL

Envelope Size:	3.74 x 2.90 x 1.70 in (95 x 74 x 43 mm).
Volume:	18.4 in³ (302 cm³).
Case Material:	6061-T6 aluminum.
Weight:	16.7 ounces (473 grams).
Mounting:	Four holes for #6 screws. Mounting bars recommended.
Environmental:	Weather-resistant.
Power:	Two lithium or alkaline 9V batteries.

DATA RECORDING

A/D Resolution:	16 bits.
Instrument Noise Floor:	0.03 Grms typical at 500 Hz bandwidth.
Dynamic Range:	80 dB typical.
Sample Rates:	50 to 5000 samples per second per channel.
Triggering:	Signal threshold and/or timer based recording.
Continuous Record Time:	Up to 15 days using lithium batteries. Up to 7.5 days using alkaline batteries.

MEMORY

Memory Size:	128 MB.
Memory Type:	FLASH.
Data Retention:	Retains data even when batteries are exhausted.

COMMUNICATIONS

Interface:	USB 1.1 and 2.0 compatible.
Data Rate:	400 KB per second typical.

TEMPERATURE

Measurement Range:	-40 to +60°C (-40 to +140°F).
Measurement Accuracy:	±0.5°C from +5 to +40°C. ±1.5°C from -40 to +60°C.
Communication Temperature Range	0 to +60°C.
Operating Temperature:	Using lithium batteries: -40 to +60°C (-40 to +140°F) Using alkaline batteries: -20 to +54°C (-4 to +130°F)

HUMIDITY

Measurement Range:	5% to 95% RH, non-condensing.
Measurement Accuracy:	±2% from 10% to 90% RH at 25°C. ±3% from 5% to 95% RH at 25°C.

CONTROLS AND INDICATORS

Controls:	Run / Stop button.
LED Indicators:	Green: Run. Red: Alarm condition. Yellow: Stop. Green: USB cable attached.

INTERNAL CHANNELS

Accelerometer Type:	Tri-axial MEMS.
Acceleration Ranges:	5, 10, 20, 50 g full scale.
Channel Filter Type:	4-pole, low-pass.
Filter Frequencies:	10, 20, 25, 50, 100, 200, 250 and 500 Hz.
3 dB Frequency Response:	0.0 Hz to filter maximum.
Measurement Accuracy:	±5% with nominal variations in temperature and frequency.



SAVER™ 3M30

The SAVER™ 3M30 and 3M30 PLUS instruments represent the most affordable performance monitoring devices on the market. Each instrument is equipped with an internal triaxial accelerometer, capable of recording threshold triggered full-waveform events. Both instruments utilize internal rechargeable batteries, providing up to 30 days of continuous measurement, while only storing the most significant events safely and securely in non volatile memory.



SAVER™ 3M30 PLUS

The 3M30 PLUS allows the ability to internally record temperature, humidity, and atmospheric pressure (altitude) during both threshold and timer triggered sampling. The 3M30 PLUS also allows user defined sampling rate and filter frequency acquisition settings, while increasing the storage capacity for significant events.

These instruments utilize Lansmont's powerful SaverXware application software for all programming, analysis, reporting and archiving of instrument activities.

SAVER™ 3M30 highlights:

- USB connectivity for communication, battery charge, and instrument power for continuous, non-interrupted installations.
- Individual LED Alarm indicators for Shock, Temperature, Humidity, and Pressure (see instrument specifications).
- Program, analyze, and report using Lansmont SaverXware application.
- Identify most severe events and assess liability.
- Use externally captured GPS data to identify location of event occurrence.
- Audit transport carriers and monitor their performance.
- Small footprint and envelope allows embedding as part of product and/or package.



SAVER™ 3M30 PLUS

3M30**3M30 PLUS****PHYSICAL**

Envelope Size:	3.10 x 2.90 x 1.30 in (79 x 74 x 33 mm).	3.10 x 2.90 x 1.30 in (79 x 74 x 33 mm).
Volume:	11.7 in ³ (193 cm ³).	11.7 in ³ (193 cm ³).
Case Material:	6061-T6 aluminum.	6061-T6 aluminum.
Weight:	12.5 oz (354 g).	14 oz (397 g).
Mounting:	Four holes for #6 screws. Mounting bars recommended.	Four holes for #6 screws. Mounting bars recommended.
Environmental:	Weather-resistant.	Weather-resistant.
Power:	Rechargeable lithium ion battery.	Rechargeable lithium ion battery.

DATA RECORDING

A/D Resolution:	12 bits.	12 bits.
Sample Rates:	100 to 2,500 samples per second per channel.	100 to 2,500 samples per second per channel.
Shock Triggering:	Signal threshold.	Signal threshold.
Temperature, Humidity, and Pressure Triggering:	NA	Shock signal and 10 minute interval based recording.
Continuous Record Time:	Up to 30 days.	Up to 30 days.

MEMORY

Memory Size:	20 events.	100 events.
Memory Type:	FLASH.	FLASH.
Data Retention:	Retains data even when batteries are exhausted.	Retains data even when batteries are exhausted.

COMMUNICATIONS

Interface:	USB 1.1 and 2.0 compatible.	USB 1.1 and 2.0 compatible.
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TEMPERATURE

Measurement Range:	N/A	-20 to +60°C (-4 to +140°F).
Measurement Accuracy:	N/A	±1.0°C from +5 to +40°C. ±2.0°C from -20 to 60°C.
Operating Temperature:	-20 to +60°C (-4 to +140°F).	-20 to +60°C (-4 to +140°F).
Battery Charging Temperature:	0 to 45° C (+32° to +113° F).	0 to 45° C (+32° to +113° F).

HUMIDITY

Measurement Range:	N/A	5% to 95% RH, non-condensing.
Measurement Accuracy:	N/A	±3% from 20% to 80% RH at 25°C. ±5% from 5% to 95% RH at 25°C.

ATMOSPHERIC PRESSURE

Measurement Range:	N/A	10 to 1100 mbar.
Measurement Accuracy:	N/A	±4 mbar from 750 to 1100 mbar at 25°C.

CONTROLS AND INDICATORS

Controls:	Run / Stop button.	Run / Stop button.
LED Indicators:	Green / Yellow: Run/Stop Yellow: Battery Red: Shock Alarm	Green / Yellow: Run/Stop Yellow: Battery Red: Pressure Alarm Red: Shock Alarm Red: Humidity Alarm Red: Temperature Alarm

INTERNAL CHANNELS

Accelerometer Type:	Tri-axial piezoelectric.	Tri-axial piezoelectric.
Acceleration Range:	100 g full scale.	100 g full scale.
Channel Filter Type:	3-pole, low-pass.	3-pole, low-pass.
Filter Frequencies:	10, 20, 50, 100, and 250Hz.	10, 20, 50, 100, and 250 Hz.
3 dB Frequency Response:	0.5 Hz to filter maximum.	0.5 Hz to filter maximum.
Measurement Accuracy:	±5% with nominal variations in temperature and frequency.	±5% with nominal variations in temperature and frequency.

SAVER™ 3X90

The SAVER™ 3X90 is a state-of-the-art, self-powered field instrument equipped with an on-board tri-axial piezoelectric accelerometer, as well as an internal temperature and humidity sensor.

The 3X90 continuously measures up to ninety days of shock (impact/drop), vibration, temperature, and humidity conditions. It also works seamlessly with various Lansmont supplied GPS hardware options.



SAVER™ 3X90 measurement and analysis applications:

- Define product's in-use environmental characteristics.
- Capture time history and frequency data to replicate in a laboratory.
- Verify existing and create new test standards based on actual measurements.
- Define a packaged product's transportation hazards and characteristics.
- Improve package performance.
- Maximize risk management procedures.
- Define "normal" and "abnormal" shipping conditions.
- Audit transit environments to identify carrier handling practices.
- Assess transport liability.



PHYSICAL

Envelope Size:	3.74 x 2.90 x 1.70 in (95 x 74 x 43 mm).
Volume:	18.4 in³ (302 cm³).
Case Material:	6061-T6 aluminum.
Weight:	16.7 oz (473 g)
Mounting:	Four holes for #6 screws. Mounting bars recommended.
Environmental:	Weather-resistant.
Power:	Two lithium or alkaline 9V batteries.

DATA RECORDING

A/D Resolution:	16 bits.
Instrument Noise Floor:	0.02 Grms typical at 500 Hz bandwidth.
Dynamic Range:	80 dB typical.
Sample Rates:	50 to 5000 samples per second per channel.
Triggering:	Signal threshold and/or timer based recording.
Continuous Record Time:	Up to 90 days using lithium batteries. Up to 45 days using alkaline batteries.

MEMORY

Memory Size:	128 MB.
Memory Type:	FLASH.
Data Retention:	Retains data even when batteries are exhausted.

COMMUNICATIONS

Interface:	USB 1.1 and 2.0 compatible.
Data Rate:	400 KB per second typical.

TEMPERATURE

Measurement Range:	-40 to +60°C (-40 to +140°F).
Measurement Accuracy:	±0.5°C from +5 to +40°C. ±1.5°C from -40 to +60°C.
Communication Temperature Range	0 to +60°C.
Operating Temperature:	Using lithium batteries: -40 to +60°C (-40 to +140°F) Using alkaline batteries: -20 to +54°C (-4 to +130°F)

HUMIDITY

Measurement Range:	5% to 95% RH, non-condensing.
Measurement Accuracy:	±2% from 10% to 90% RH at 25°C. ±3% from 5% to 95% RH at 25°C.

CONTROLS AND INDICATORS

Controls:	Run / Stop button.
LED Indicators:	Green: Run. Red: Alarm condition. Yellow: Stop. Green: USB cable attached.

INTERNAL CHANNELS

Accelerometer Type:	Tri-axial piezoelectric.
Acceleration Ranges:	5, 10, 20, 50, 100, and 200 g full scale.
Channel Filter Type:	4-pole, low-pass.
Filter Frequencies:	10, 20, 25, 50, 100, 200, 250 and 500 Hz.
3 dB Frequency Response:	0.4 Hz to filter maximum.
Measurement Accuracy:	±5% with nominal variations in temperature and frequency.



SAVER™ 9X30

The SAVER 9X30 is Lansmont's most powerful environmental recorder. The added performance and capability of this compact, self-powered data recorder has never been matched. The range of comprehensive data collection provides the unique ability to characterize and visualize targeted environments. The 9X30 assures the best resolution for those tasked with defining, characterizing, and clearly understanding their respective transport, distribution, and in-use environments.

This instrument provides the ability to capture up to nine dynamic channels of data (3 internal and 6 external), while also recording temperature, humidity and atmospheric pressure (altitude).

The 9X30 continuously measures up to thirty days of shock (impact/drop), vibration, temperature, humidity, and atmospheric pressure conditions. Optional embedded GPS hardware allows for the capture of location information every time an event is recorded. SaverXware displays mapped summary data, user selected by amplitude, date, time, and even instrument speed. The data can also be exported to Google Earth, providing powerful spatial awareness of recorded events including event amplitude, represented by proportionally sized (altitude) event ID tags.

SAVER 9X30; unrivaled performance and unlimited potential from such a small, self-powered portable measurement device.

SAVER™ 9X30 applications:

- Define product's in-use environmental characteristics.
- Capture time history and frequency data to replicate in a laboratory.
- Verify existing and create new test standards based on actual measurements.
- Define a packaged product's transportation hazards and characteristics.
- Improve package performance.
- Maximize risk management procedures.
- Define "normal" and "abnormal" shipping conditions.
- Audit transit environments to identify carrier handling practices.
- Assess transport liability.
- Optional embedded GPS hardware pinpoints all event locations.



PHYSICAL

Envelope Size:	4.99 x 4.90 x 1.69 in (127 x 124 x 43 mm).
Volume:	41.2 in3 (675 cm3).
Case Material:	6061-T6 aluminum.
Weight:	2.04 lbs (1 kg).
Mounting:	Four holes for #6 screws. Mounting bars recommended.
Environmental:	Weather-resistant.
Power:	Two lithium or alkaline 9V batteries.

DATA RECORDING

A/D Resolution:	16 bits.
Instrument Noise Floor:	0.02 Grms typical at 500 Hz bandwidth.
Dynamic Range:	80 dB typical.
Sample Rates:	50 to 10,000 samples per second per channel.
Triggering:	Signal threshold and/or timer based recording.
Continuous Record Time:	Up to 30 days using lithium batteries. Up to 15 days using alkaline batteries.

MEMORY

Memory Size:	128 MB.
Memory Type:	FLASH.
Data Retention:	Retains data even when batteries are exhausted.

COMMUNICATIONS

Interface:	USB 1.1 and 2.0 compatible.
Data Rate:	400 KB per second typical

TEMPERATURE

Measurement Range:	-40 to +60°C (-40 to +140°F).
Measurement Accuracy:	±0.5°C from +5 to +40°C. ±1.5°C from -40 to +60°C.
Communication Temperature Range:	0 to +60°C.
Operating Temperature:	Using lithium batteries: -40 to +60°C (-40 to +140°F) Using alkaline batteries: -20 to +54°C (-4 to +130°F)

HUMIDITY

Measurement Range:	5% to 95% RH, non-condensing.
Measurement Accuracy:	±2% from 10% to 90% RH at 25°C. ±3% from 5% to 95% RH at 25°C.

ATMOSPHERIC PRESSURE

Measurement Range:	10 to 1100 mbar.
Measurement Accuracy:	±4 mbar from 750 to 1100 mbar at 25°C.

CONTROLS AND INDICATORS

Controls:	Run / Stop button.
LED Indicators:	Green: Run. Red: Alarm condition. Yellow: Stop. Green: USB cable attached.

INTERNAL CHANNELS

Accelerometer Type:	Tri-axial piezoelectric.
Acceleration Ranges:	5, 10, 20, 50, 100, and 200 g full scale.
Channel Filter Type:	4-pole, low-pass.
Filter Frequencies:	10, 20, 25, 50, 100, 200, 250 and 500 Hz.
3 dB Frequency Response:	0.4 Hz to filter maximum.
Measurement Accuracy:	±5% with nominal variations in temperature and frequency.

EXTERNAL CHANNELS

EXTENSIVE CHANNELS		
Number of Channels:		6.
Input Modes:		Charge (Acceleration). Voltage.
Channel Filter Type:		4-pole, low-pass.
Filter Frequencies:		10, 20, 25, 50, 100, 200, 250, 500, 1000, 2000, and 2500 Hz.
Charge Mode	Accelerometer Type:	Piezoelectric.
	Input Sensitivity:	0.3 to 30.0 pC/g.
	Acceleration Ranges:	5, 10, 20, 50, 100, and 200 g full scale.
	3 dB Response:	0.4 Hz to filter maximum.
	Measurement Accuracy:	±5% with nominal variations in temperature and frequency.
Voltage Mode	Input Range:	±5 volts.
	Input Coupling:	AC or DC.
	3 dB AC Response:	0.4 Hz to filter maximum.
	3 dB DC Response:	DC to filter maximum.
	Measurement Accuracy:	±1% with nominal variations in temperature and frequency.

OPTIONAL EMBEDDED GPS

Antenna:	External with SMA connector and magnetic mount.
Data Acquisition:	GPS position recorded with every event.
Run Time:	100 hours of vehicle movement on lithium batteries. 50 hours of vehicle movement on alkaline batteries. GPS turns off when instrument is not moving.