FDMA MARINE SURGE PROTECTIVE DEVICE

SEACHOICE PRODUCTS®

FRY YOUR FISH NOT YOUR ELECTRONICS!

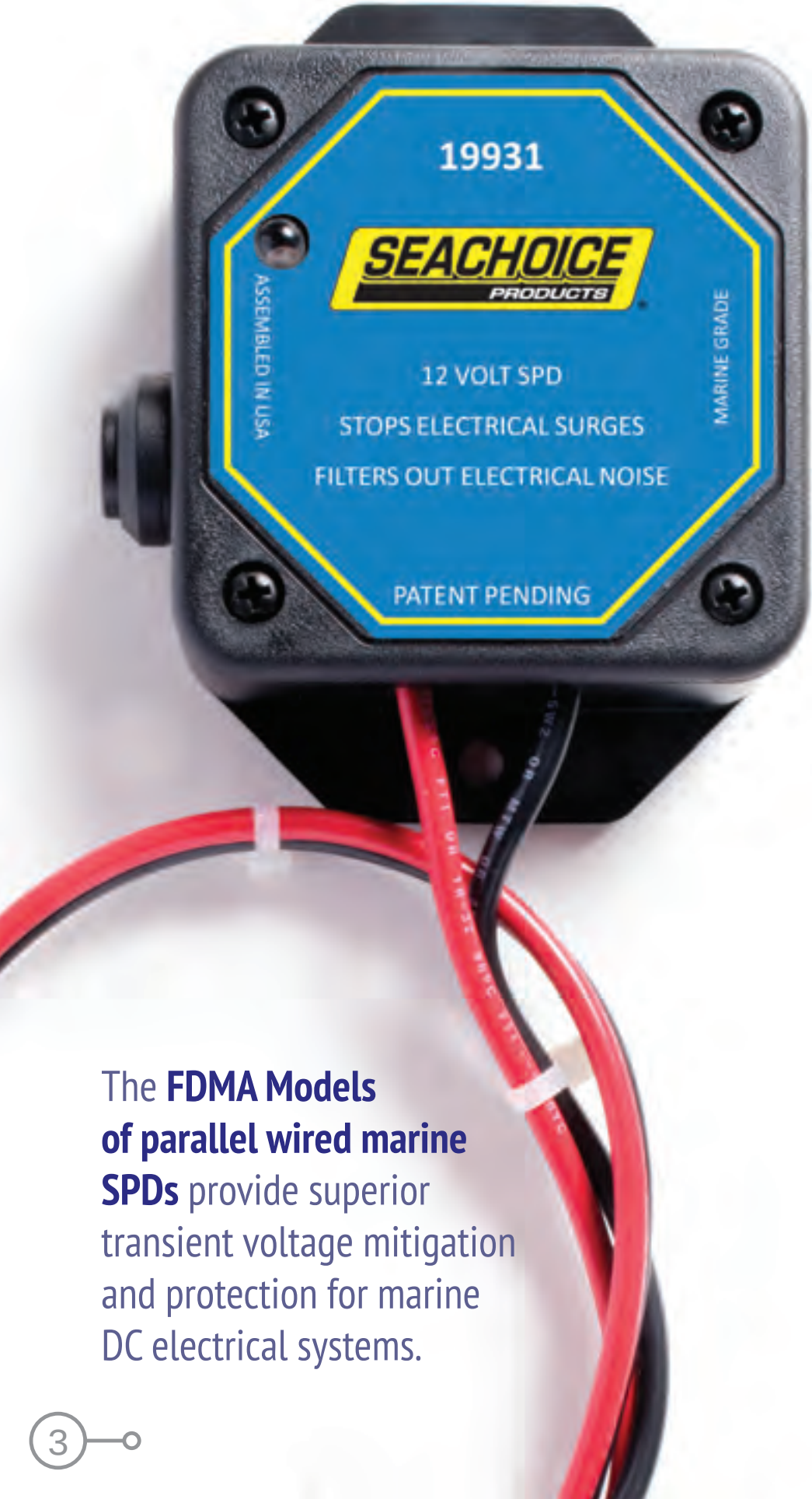
Protect your costly GPS, Depth Finder and Fish Finder

Introducing the **FDMA-212HW and FDMA-224HW,** our new first line of defense for protecting sensitive on-board marine electronics. Protect your investment with the most advanced Surge Protective Device available on the market today.

The hybrid design mitigates electrical surges and filters out ringing transients that can cause both immediate and long-term damage to your marine electronics.

Protect All Your On-Board Marine Electronics

- Available for both 12 volt (FDMA-212HW) and 24 volt (FDMA-224HW) electrical systems
- Parallel wired to protect your electrical panel, without draining your boat's batteries
- Robust 2 kA per mode Peak Surge Current Rating
- Voltage Responsive Circuitry™ protects your electrical system from impulse surges
- Frequency Responsive Circuitry™ filters out ringing transients, which disrupt and damage sensitive electronics
- All models are encapsulated for a superior watertight seal and vibration resistance
- Small, compact size can be installed virtually anywhere on your boat's electrical system

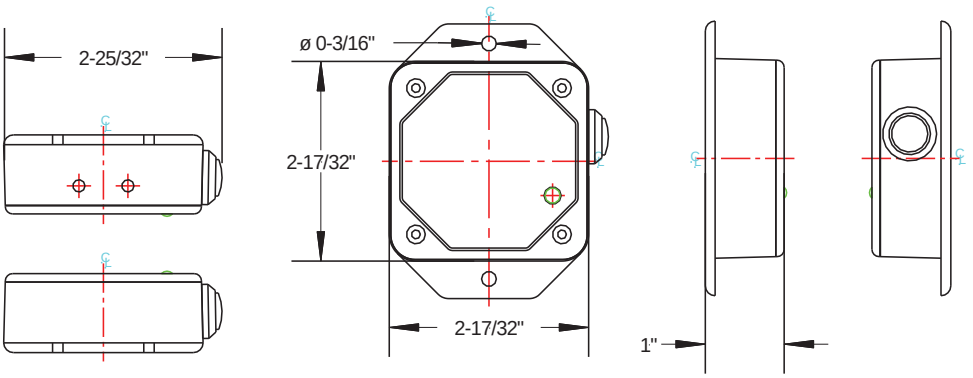


The **FDMA Models of parallel wired marine SPDs** provide superior transient voltage mitigation and protection for marine DC electrical systems.

Our **SPDs** are designed specifically to provide protection at locations feeding sensitive marine equipment and are designed to virtually eliminate ringing transients within the electrical system. **These models are exceptionally effective in limiting transients generated within the vessel.** All models have a robust 2 kA per mode peak surge current rating and component level thermal fusing.

The **Voltage Responsive Circuitry™ (VRC)** mitigates the adverse effects of impulse surges due to external sources. Further, our **Frequency Responsive Circuitry™ (FRC)** mitigates and virtually eliminates ring wave, oscillating and switching transients. All FDMA models feature encapsulation of all electrical components to provide a watertight seal and superior vibration resistance.

Providing effective and reliable surge suppression, these SPDs are compact in size which allows for versatile application and optimal installation, particularly in space constrained applications.



FDMA-212HW & FDMA-224HW MODELS

GENERAL

Typical Applications:	Marine Vessels
Warrenty:	**1 Year Defects, Materials, and Workmanship**
Certification:	ISO 9001 Certified Manufacturing Facility by NOA

MECHANICAL

Enclosure:	ABS Plastics, UL 94-5VA Flame Rating (UL's highest rating)
Mounting:	External Mounting Feet Standard, #10 Mounting Screw Size
Connection Method:	14 AWG Marine Grade Wire Connection on the SPD (=12 inches)
Shipping Weight:	< 2 lbs

ELECTRICAL

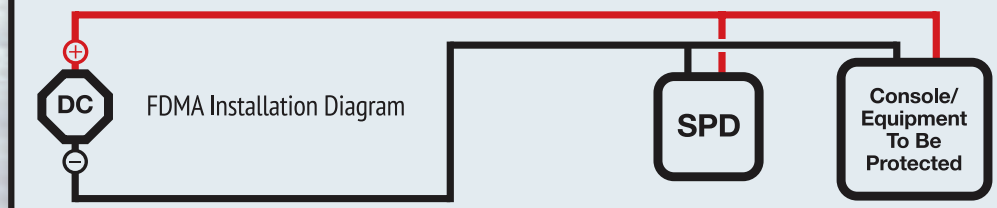
Protection Mode: Discrete Positive to Negative

Insertion Loss Data (P-N)

Frequency:	**10 kHz**	**100 kHz**	**1 MHz**	**Max Attenuation & Freq**
Attenuation:	15dB	39dB	23dB	53 dB @ 172 kHz

Peak Surge Current: 2kA per mode

Circuit Diagnostics: Green LED, push to test



FDMA-HW Marine Surge Protective Device

For use with 12 VDC Marine applications (Seachoice Part Number 19931)

All wiring on the vessel shall be performed by a **QUALIFIED MARINE ELECTRICIAN** and in accordance with the **"Fire Protection Standard for Motor Craft"**, NFPA No. 302. The Standards of the American Boat and Yacht Council, Inc, and the USCG Safety Standards for Boat Electrical Systems (33 CFR 183).

Installation Instructions*

CAUTION! Always disconnect the battery from the electrical system before attempting to install the FDMA-HW.

1. Locate FDMA SPD close to the equipment to be protected Trim the leads as needed to keep them as short and straight as possible.
2. If the FDMA SPD is to be mounted in an area subject to corrosion, it is recommended that a liquid electrical coating or an environmentally sealed connector such as Cool Seal® (P/N 50-63511) is applied to the lead connections. If using Cool Seal® strip the leads to 1/4", insert the wire through the sealing gel and into the splice. Crimp the connection with a correct crimp tool such as Seachoice P/N 50-61221.
3. Connect the **red wire** to **positive.**
4. Connect the **black wire** to **negative.**
5. Mounting screw size is #10 pan head or flat head. Stainless steel hardware is recommended. Do not over-tighten screws to prevent deforming the enclosure mounting feet.
6. After installation, reconnect the battery terminals and depress the **"Push to Test"** switch located on the enclosure to verify the LED illuminates Green while the switch is depressed. The push to test switch + LED allow the status of the SPD to be verified without the LED constantly draining the battery.

*See back cover for more installation options.

Surge Protective Device Measured Limiting Voltage Performance Testing

Reference ANSI/IEEE Standards C62.41™-2002, C62.41.2™-2002, C62.45™-2002, and C62.62™-2010

Model	Model Voltage	Mode	MCOV (V_{DC})	30 Ω 100 kHz Ring Wave 2kV / 67 A	2 Ω Combination Wave 1kV / 500 A
19931	12	P-N	22	35	90

Measured Limiting Voltage (MLV) Test Parameters: Positive polarity, Tests are static, Voltages are peak (±10%). Measured Limiting Voltages are measured from zero to the peak of the surge for powered tests (Individual mode or shot results may vary by more than 10%. *Scope Settings: Time Base = 10 microseconds per division, Sampling Rate = 2.5 Gigasamples/sec, Bandwidth = 400 MHz, Probes: Tektronix P5100/P6015A. These settings help to assure MLV results are accurate.)*

Full-size installation instructions can be downloaded at www.seachoice.com or an instruction video can be viewed at www.seachoice.com/videos.

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