



Variable-Polarity Power Source

The AMET® VPC-450 power source represents a significant advancement in both TIG (GTAW) and Plasma (PAW) welding. It utilizes AMET's proven Digital Signal Processor (DSP) technology with Intelligent Power Module (IPM) technology to produce an extremely accurate and stable Variable-Polarity (VP) welding power source. AMET's VP power source provides accurate high speed VP switching rates as well as independent straight and reverse time control. This premium power source provides capabilities beyond common square wave machines, allowing the operator to control the process as never before to optimize penetration and the reverse cycle surface cleaning, which is effectively used on aluminum and other alloys in thicknesses up to ¾" (19mm).

With cutting edge DSP control technology, AMET® variable polarity power sources deliver precision, high-speed control of welder set parameters such as initial current, maximum current, slope-up rate, slope-down rate, pre-flow time, post-flow time, and DC pulse profile. The IPM devices form a rugged "Polarity Switch" with built-in protection against overcurrent, undervoltage, and overtemperature conditions.

AMET® VP power supplies have been used in the aerospace industry since 2004 for the production of a variety of mission critical components.



Benefits

- True VP** - The high rate polarity switching of the AMET® "IGBT" design delivers high restrike voltage and current for consistent, accurate variable polarity performance. This ensures a very stable arc, especially at lower currents, for improved weldability on aluminum. Continuous high frequency is unnecessary because of the advanced performance of this True VP switching processor.
- Independent Straight and Reverse Time Control** - Provides adjustable VP frequency and balance control for a focused arc resulting in better directional control, producing the desired arc/weld bead characteristics.
- Balance control** - Straight and reverse times are set in milliseconds (1ms min.) to provide optimum flexibility and accuracy of the VP cycle to ensure desired cleaning, prolonged tungsten / orifice life.
- Line voltage compensation** - Maintains desired power output regardless of fluctuations in input power.
- Overload Protection** - Automatic thermal shutdown protects the unit from damage due to overheating.
- Precise Control** - Integrates directly with AMET's advanced control systems allowing the operator/programmer to precisely control the VPC Power Supply control parameters.





Control

The VPC-450 is intended to be programmed and controlled via AMET's XM. or XPro Advanced Control System, making it part of a fully integrated welding system. AMET's latest generation of VP power supply represents over 2 decades of advances in the generation of stable and accurate variable polarity output. We have implemented the latest high current IGBT's with advanced real-time control software to ensure consistent reverse current restrike at high and low currents.

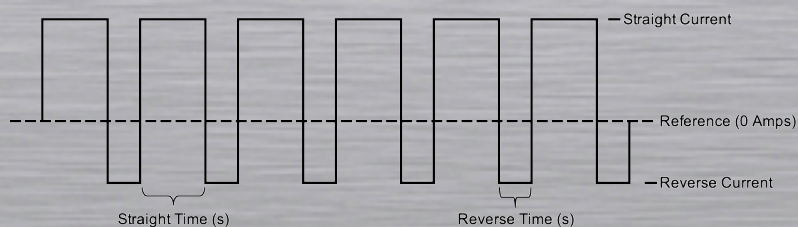
Modes

The VPC-450 provides four operating modes including: Straight Current (DC) Mode, Variable Polarity (VP) Mode, Variable Polarity (VP) Mixed Mode, and Variable Polarity (VP) Pulsed Mode.



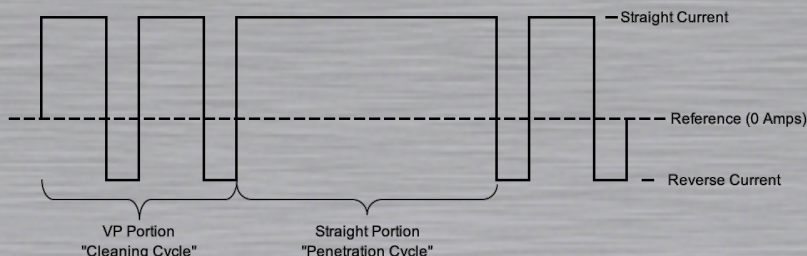
VP Mode Waveform

The Variable Polarity Mode is used to achieve a cleaner weld on certain metals, principally aluminum. The characteristics of the wave that can be programmed are straight current, reverse current



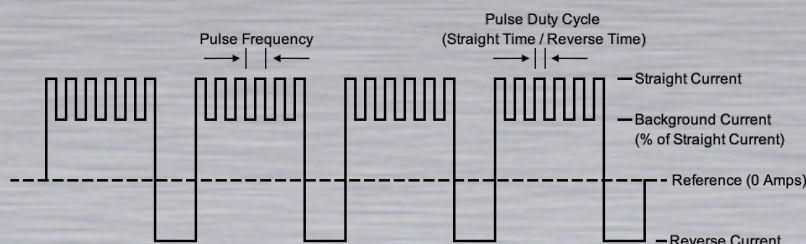
VP Mixed Mode Waveform

The VPC-450 can mix the modes of Variable Polarity and DC. In VP-Mixed Mode, the VPC-450 alternates between the VP Mode and DC Mode to provide a balance of weld penetration and cleaning cycles.



VP Pulsed Mode Waveform

In VP Pulsed Mode, the STRAIGHT current portion of the waveform can be pulsed. The pulse is enabled in the MAIN Segment only of the weld program for each of these modes. The Pulse Frequency, Duty Cycle, and Pulse Background % (minimum) values are programmed.



Specifications

Input Power	Straight Current Duty Cycle	Variable Polarity Duty Cycle	Max. Open-Circuit Voltage	Dimensions	Weight
480 V Three-Phase	500 A at 40 VDC, 100% duty cycle	450 A at 38 VDC, 100% duty cycle	75 VDV	H: 56 in. W: 23 in. D: 32 in.	565 lbs.
	600 A at 44 VDC, 60% duty cycle				

