

ARC VOLTAGE CONTROLS



Product Introduction

Arc Voltage Control

AMET is pleased to provide the following product introduction on our standard models of arc voltage controls. These arc voltage controls are designed to maintain the height of GTAW (TIG) and PAW (plasma) welding arcs. They accomplish this task based on voltage feedback from the arc.

AMET has a distinct advantage over “conventional” arc voltage controls on the market. AMET uses DSP technology and digital signal processing is ideally suited for this application. AMET has formulated a special algorithm for arc voltage control, which allows us to digitally filter noise and spikes from the “real” arc voltage signal. We also have programmable “pulse delay” ability. This feature allows AMET to briefly avoid monitoring the arc as it changes from background to peak current. Digital signal processing also allows AMET to view AC welding through special software too. As a result, our arc voltage controls are stable yet very responsive, even when pulsing or performing AC and VP welding.

AMET’S Arc Voltage Controls are presented to the market in three series, the XVC, the QVC and XMS-AVC. The XVC is designed to mate with AMET XM series of controls. The QVC is designed to mate with AMET’s QII control. The XMS-AVC is our “Stand-Alone” version, which can be mounted on an existing system and operated independently.

Each series of AVC’s can be supplied with different slide configurations. The “standard” slide has a 7.25” (180 mm) stroke with a weight capacity of 30 lbs (13.5 kgs) out 6” (150 mm). This is a sealed slide, which is excellent for most welding applications. We can provide this slide in strokes from 1.5 to 19.0 inches. (30 to 480 mm) AMET also has a smaller, light duty version of a similar slide design with a stroke range from 0.8 to 6.7” (20 to 170 mm) with a weight capacity of 15 lbs (6.5 kg), out 4” (100 mm). If you need to go heavy-duty, AMET can meet this demand as well. We can supply a slide with strokes of 11.8” to 59” (300 to 1500 mm) with a weight capacity of 135 lbs (60 kgs), out 6” (150 mm).

All of our AVC slides are ball screw, driven by a Servo motor with encoder feedback, to insure accurate and precise response to the changes in the arc voltage.

AMET offers our AVC’s in different versions in order to meet your exact application requirements.

Purpose:

The principle of the AVC system is based on Ohm’s Law, where $V=IR$. When the weld current is constant, and the external welding conditions are stable, then the arc voltage is directly proportional to the arc height (which is the air gap

resistance). When the weld current is pulsed, AMET typically monitors the arc voltage during the peak current cycle, establishing this period to be the voltage reference. During AC or VP welding, special software allows AMET to only view the arc during straight cycle of welding, thereby eliminating the arc voltage seen during the cleaning cycle on the reverse cycle, which is typically very noisy and unstable.

Applications/Benefits:

The AVC is ideally suited for GTAW and PAW applications with the following situations:

- Various weld schedules requiring different arc heights. Eliminates risk of operator setting incorrect arc distance
- Able to maintain arc distance if part or tooling is not perfect
- Able to compensate for changes in arc distance on seam welders due to mandrel deflection, which can be as much as .080” (2.0 mm) or more depending on the mandrel size and clamping force
- Can automatically change arc height on multi-pass welds
- Reduced operator fatigue if operator is required to manually correct for arc height
- Ability to have two welding arcs or processes at the same time by using two AVC units, and each can be set for different arc voltages

These benefits greatly reduce the risk of using improper arc distance, which could ruin a part, or require costly rework. Rework time will be reduced and part scrap will be cut, while production rates are increased.



XVC Arc Voltage Control



XMS-AVC
Stand-Alone AVC

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Product Introduction

XVC

The XVC version uses DSP technology. A separate DSP is included in the XVC control module. The XVC is designed to be controlled and sequenced through XMC control.

The XVC includes the control module, Ethernet cable, slide assembly, interconnection cable between module and slide, and the power cord.

QVC

The QVC version also uses DSP technology. The DSP for this version is part of the QII control. The QVC is designed to be controlled and sequenced through the QII remote pendant and control cabinet.

The QVC includes the necessary hardware for QVC control cabinet, interconnection cables in this cabinet, interconnection cable between this cabinet and the slide, and the software added/loaded to the QII control.

XMS-AVC

AMET'S Stand-Alone Arc Voltage Controls use a single DSP in the control module to monitor and correct the arc voltage as required.

The XMS-AVC includes the operator remote control hand pendant. This pendant allows the operator to set up and control the AVC from a convenient location.

The XMS-AVC consists of an XM control module, loaded with AVC software, a slide assembly, an interconnection cable between control and slide, a hand pendant with cord and the power cord.

GENERAL SPECIFICATIONS:

Arc Voltage Range:	5 to 30 volts
Minimum Arc Voltage:	5 to 10 volts (adjust "arc in range" value to ignore pilot arc during PAW)
Arc Pulse Delay:	0 to 0.000 seconds
Arc Start Delay:	0 to 99 seconds
Arc Stop Delay:	0 to 99 seconds
Home Capability:	all models
Touch Retract:	0 to 1/2" (12.5 mm)
Touch Start:	Optional on XVC and QVC with Programmable starting current
Weld Process:	GTAW and PAW
Weld Polarity:	DC Straight, AC and VP
Sensitivity:	Adjustable (-95% to + 95%)
After-weld Retract:	0 to 2" (50 mm)
Closed-loop:	via encoder feedback

Control Dimensions & Mounting Specs:

XVC Module:	Please contact AMET for drawing
QVC Control:	Please contact AMET for drawing
XMS-AVC Control:	Please contact AMET for drawing on module and hand pendant

Slide Specifications:

Compact Version (PSK50):

Weight Capacity:	15 lbs (6.5 kg) out 4" (100 mm)
Max. Slide Speed:	100 IPM (2540 mm/min)
Strokes Available:	0.8", 2.75", 4.75" and 6.7" (20, 70, 120 and 170 mm)

Standard Version (PSK60)

Weight Capacity:	30 lbs (13.5 kg) out 6" (150 mm)
Max. Slide Speed:	150 IPM (3800 mm/min)
Strokes Available:	1.5", 3.35", 7.25", 11.2", 15" & 19" (35, 85, 180, 280, 380 & 480 mm)

Heavy-Duty Version (CKK-120)

Weight Capacity:	135 lbs (65 kg) out 6" (150 mm)
Max. Slide Speed:	100 IPM (2540 mm/min)
Strokes Available:	11.8", 15.75", 23.5", 31.5", 39.35", 47.25" & 59" (300, 400, 600, 800, 1000, 1200 & 1500 mm)

Please contact AMET for dimensional information on the above slides. Final dimensions will depend on the stroke you select for your application.

