

# XMS-VC

## ARC VOLTAGE CONTROL

### Product Specification



## Arc Voltage Control

AMET is pleased to provide the following product introduction on our stand-alone model of arc voltage control. 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 engineered analog profiling software and hardware 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-VC. 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-VC is our “Stand-Alone” version, which can be mounted on an existing system and operated independently. At any time, the XMS-VC can be easily integrated with the XM series controller.

The XMS-VC 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 all arc welding applications. AMET 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 precision 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. Included as a **standard feature**, 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
- **Automatically detect pulse GTAW and PAW – no special interface with power source required**
- **Special DSP technology allows for “pulse delay” feature, where the AVC “ignores” pulse spikes and weld puddle flocculation when returning to peak current**

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.



**XMS-VC**  
**Stand-Alone AVC**

# XMS-VC

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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-VC includes the universal XMS-PNDT remote control hand pendant. This pendant allows the operator to set up, program, control and override the AVC from a convenient location.

The XMS-VC consists of an XM control module, loaded with AVC software, a slide assembly (fitted with servo motor, encoder and AVC interface board), an interconnection cable between control and slide, a hand pendant with retractable cord and the power cord to the module (90-240 VAC 50/60Hz).



#### REMOTE INTEGRATION:

Digital Outputs: 2 - 24VDC output signals for remote start signal (jumper selectable dry contact configuration).  
Digital Inputs: 2 - 24VDC input signals for remote start signal (jumper selectable dry contact configuration).

#### GENERAL SPECIFICATIONS:

Arc Voltage Range: 5 to 40 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

#### Slide Specifications:

Compact Version:

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

*Note: 2.75" slide is carried in stock*

Standard Version:

Weight Capacity: 30 lbs (13.5 kg) out 6" (150 mm)  
Max. Slide Speed: 150 IPM (3800 mm/min)  
Strokes Available: 3.3", 7.25", and 11.2" (85, 180, and 280 mm)

*Note: 7.25" slide is carried in stock*

Heavy-Duty Version:

Weight Capacity: 135 lbs (65 kg) out 6" (150 mm)  
Max. Slide Speed: 100 IPM (2540 mm/min)  
Strokes Available: 11.8" and 15.75" (300 and 400 mm)

*Note: 11.8" slide is carried in stock*

Please note – AMET can deliver slides in other strokes. Contact factory for details and pricing.

**Please contact AMET for dimensional information on the above slides and XMS-VC module and pendant.** Final dimensions will depend on the stroke you select for your application.

Cable Length – Slide to control – 10 ft. (3 M)  
Cable Length – Pendant to Control – retractable – 12 ft. (3.6 M)

#### OPTIONS

Extended cables – pendant to module and module to slide.

Rotary Torch tilt bracket

Manual Cross-seam adjustment slide (6" stroke)

Hand Pendant mounting block – side mount or face mount

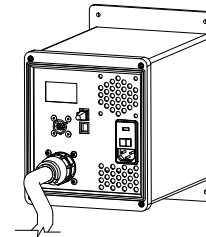
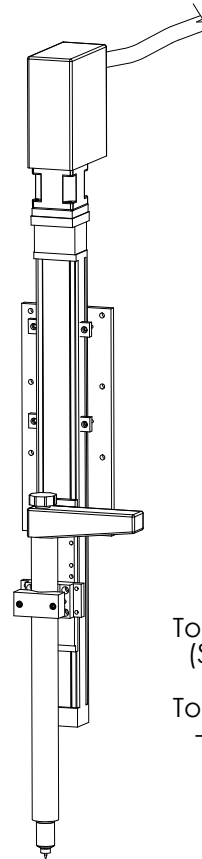
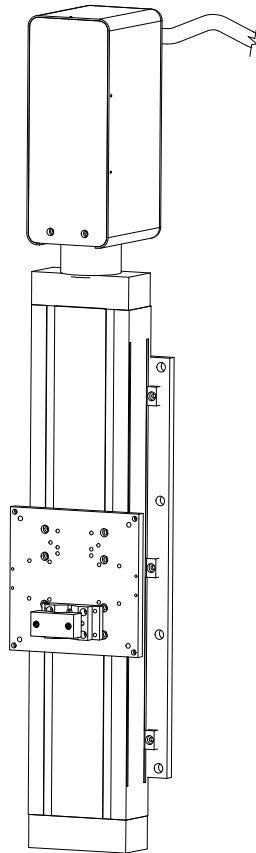
XVC STAND ALONE SYSTEM

Rev  
A

HEAVY DUTY

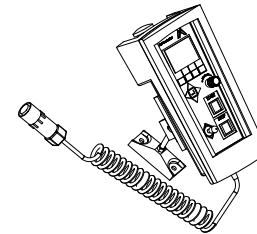
STANDARD

- Bearing System  
Linear Recirculating Bearings
- Fail Safe Brake  
Standard On XVC
- Cover  
Sliding Strip Seal
- Drive System  
Ball Screw, 5mm Pitch - Standard  
Ball Screw, 20mm Pitch - Heavy Duty
- Standard Load Capacity  
75 lbs @ 0" Off Carriage  
30 lbs @ 6" Off Carriage
- Heavy Duty Load Capacity  
800 lbs @ 0" Off Carriage  
6000 Inch-lbs Moment Load (Any Direction)  
Consult Manufactures Data For Combined  
Loading Conditions
- Travel Speed  
0.1 to 200 Inches Per Minute
- Motor Cable 15' Standard



XVC Module

- Programmable Arc Voltage Control
- Programmable Sensitivity
- Height - 10"
- Width - 7"
- Depth - 10"



XM Hand Held Controller  
W/Omni Ball Mount

- Convenient & Light Programmable Pendant
- Height - 8 5/8"
- Width - 4 3/4"
- Depth - 2 1/2"

Torch  
(Sold Separately)

Torch Bracket  
-  $\phi$  7/8" Thru 1 3/8 "  
Barrel

Sheet Size  
A

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES. DEFAULT TOLERANCES ARE:

FRACTIONS  $\pm 1/16$       X.X  $\pm 0.1$   
X.XXX  $\pm 0.010$       X  $\pm 0.5$   
X.XX  $\pm 0.03$       ANGLE  $\pm 5^\circ$

NO BURRS OR SHARP EDGES ALLOWED,  
BREAK EDGE 0.005 TO 0.030



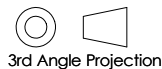
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Drawn By: JY

Checked By:

Orig. Date: 09/16/05

Rev Date: 02/09/06



Project: XM Systems

Sheet 1 of 2

Description: XVC Stand Alone

Dwg Num: XVC-SYS-100

STANDARD

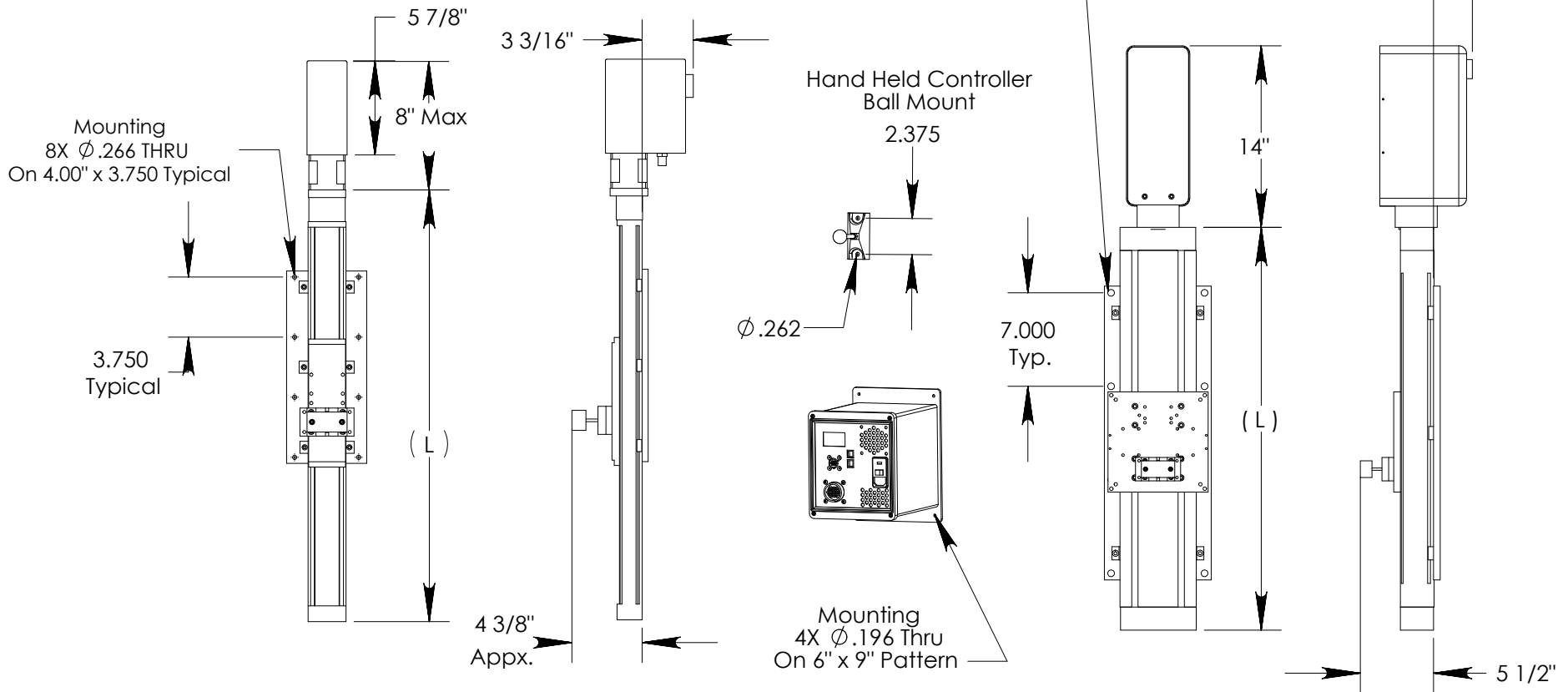
HEAVY DUTY

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Manf Length Code	Overall Length (L) In	Slide Stroke Inches
300	15.157	3.35
400	19.094	7.28
500	23.031	11.20

Manf Length Code	Length (L) In	Slide Stroke
590	26.732	11.811
690	30.669	15.748

Mounting 8X 1/2" - 13 UNC  
On 7.00" x 7" Typical



Sheet Size  
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FRACTIONS ± 1/16	X.X ± 0.1
X.XXX ± 0.010	X ± 0.5
X.XX ± 0.03	ANGLE ± 5°

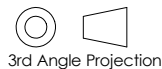
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