# Attenuators, Coaxial

## Continuously Variable Miniature (CVA) models

ATM manufactures a wide variety of Continuously Variable, Level Set, and Low Frequency "CVA" Attenuators. While there exists some overlap in performance between different models, careful review of the mechanical outline drawings and the corresponding tables should reveal the right model. As always, please feel to call us and discuss your needs with one of our design engineers.

*Note:* Throughout this page "CVA" may be used to mean: Continuously Variable Attenuator.

See Also:
Coax Attenuators, Variable, Low-Freq.
Coax Attenuators, Variable, Med. High Power
Coax Attenuators, Variable, Motor Driven
Coax Attenuators, Fixed
Coax Attenuators, Step
W/G Attenuators, Fixed

## 06 Series Continuously Variable Attenuators

| Standard Model | Turns Counting Dial Option | Knob Control Option | Direct Reading in dB Option |
|---|---|---|---|
|  |  |  |  |

- **Standard Option:** Models utilize a 1/4" dia. multi-turn screwdriver-slotted shaft adjustment of the mechanical lead-screw drive. A split bearing and locknut arrangement provide for vibration and shock proof positioning of the attenuation control shaft. The standard option is mostly used in applications where dB value needs to be set within 0.025dB or better. The shaft is then locked to hold the setting until a readjustment is needed.
  Standard Model *Example P/N*: **AF064-10**

Other Options:

- **Turns Counting Dial Option:** Substitutes a 30 turn counting dial for the Standard Option configuration. The turns counting dial contains an integral lock, and is ideal for use directly attached to the attenuator, or for easy panel mounting. See outline drawing for panel mounting information. The Turns Counting Dial is NOT in dB, it is a reference dial only. These Dials are used in applications where dB values need to be reset. Calibration charts of dB vs. Dial setting can be supplied for an additional charge.
  *Important ordering note!* This option requires changing the P/N as follows:
  As an example, a Standard Option P/N **AV064-10** would be changed to: **AV864-10**, if ordering this unit with the Turns Counting Dial Option. ( In short, the section of P/N: AV0, is substituted with: AV8 )
- **Knob Control Option:** is quite similar to the Standard Option but with an extended, slotted shaft and knob. This configuration is very adaptable to panel mounting and hand control.
  *Important ordering note!* This option requires changing the P/N as follows:
  As an example, a Standard Option P/N **AV064-10** would be changed to: **AV964-10**, if ordering this unit with the Knob Control Option. ( In short, the section of P/N: AV0, is substituted with: AV9 )
- **Direct Reading in dB Option:** These models are tape-driven and read directly in dB. This option is best used on Frequency Flat Models "AF type" as the Dial accuracy will be determined by the attenuation vs. frequency spec.
  For single frequency or narrow bands the Level Adjust Models "AV type" can be used and the spot frequency added to the P/N (see below). Most direct reading attenuators have poor dial resolution due to single turn designs. ATM's direct reading attenuators utilize a unique anti-backlash drive sprocket and calibrated steel tape assembly result in a long calibrated tape passing thru a viewing window, allowing attenuation values of less than 0.2 dB to be set. Each attenuator is individually calibrated, providing excellent accuracy, readability, high resolution, reliability and stability.
  *Important ordering note!* This option requires changing the P/N as follows:
  As an example, a Standard Option P/N **AV064-10** would be changed to: **AV764-10**, if ordering this unit with the Direct Reading in dB Option. ( In short, the section of P/N: AV0, is substituted with: AV7 )
  *Specifying spot frequencies:*
  Frequency flat models are ordered as:
  *Example P/N*: **AF764-10** (Calibration for full band)
  Level Adjust models add the desired calibration frequency (in GHz) after the P/N as shown in the following example:
  *Example P/N*: **AV764-10/3.6** (Calibration at 3.6 GHz.)
- **Motor Drive** option available for remote applications.

## GENERAL SPECIFICATIONS
## 06 SERIES CVA

**Applicable Mil-Specs**
Designed to meet or exceed: MIL-DTL-24215

**Electrical**
**RF Power:** 7W average, 3kW peak
**RF Connectors:** SMA Standard to 26.5
-Type K [2.9mm] for models above 26.5 GHz
-Type-N: add "N/F" to part number.
**Insertion Loss:**
to 18 GHz: 0.5dB max.
to 26 GHz: 0.75dB max.
to 40 GHz: 1.50dB max.

**Mechanical**
**Dimensions:** (click for Outline drawing)
Standard Model | Turns Counting | Knob | Tape Drive | Motor Drive
**Body:** Aluminum
**Connectors:** Stainless Steel
**Finish:** Unique corrosion resistant 316 stainless steel
epoxy coating IAW MIL-F-14072 Color Dusty Grey
**Weight:** 2.0oz / 57 gm (standard model only)

**Environmental**
**Temp:** -55 / +110 °C
**Shock:** 15 G's, 11ms, 1/2 sine
**Vibration:** 3 G's overall
**Altitude:** 40,000ft. Survival 25,000ft Operating

### 06 Series CVA
### Frequency Flat Models, Narrow Band

| Freq (GHz) | Atten Range dB | VSWR Max | Flatness +/- dB | Model No. |
|---|---|---|---|---|
| 3.4 - 4.2 | 10 | 1.5 | 0.5 | AF065C3-10 |
| 3.4 - 4.2 | 20 | 1.5 | 1.0 | AF065C3-20 |
| 3.6 - 6.5 | 10 | 1.5 | 0.8 | AF065C-10 |
| 3.6 - 6.5 | 20 | 1.5 | 1.5 | AF065C-20 |
| 3.6 - 4.3 | 10 | 1.5 | 0.3 | AF065C1-10 |
| 3.6 - 4.3 | 20 | 1.5 | 0.5 | AF065C1-20 |
| 5.8 - 6.5 | 10 | 1.5 | 0.3 | AF065C2-10 |
| 5.8 - 6.5 | 20 | 1.5 | 0.5 | AF065C2-20 |
| 5.8 - 6.5 | 30 | 1.5 | 1.0 | AF065C2-30 |
| 7.2 - 8.4 | 10 | 1.5 | 0.5 | AF065X-10 |
| 7.2 - 8.4 | 20 | 1.5 | 1.0 | AF065X-20 |
| 7.2 - 8.4 | 30 | 1.5 | 1.5 | AF065K-30 |
| 7.2 - 7.8 | 10 | 1.5 | 0.25 | AF065X1-10 |
| 7.2 - 7.8 | 20 | 1.5 | 0.5 | AF065X1-20 |
| 7.2 - 7.8 | 30 | 1.5 | 0.75 | AF065X1-30 |
| 7.9 - 8.4 | 10 | 1.5 | 0.25 | AF065X2-10 |
| 7.9 - 8.4 | 20 | 1.5 | 0.5 | AF065X2-20 |
| 7.9 - 8.4 | 30 | 1.5 | 0.75 | AF065X2-30 |
| 10.7 - 12.7 | 10 | 1.5 | 0.5 | AF066X-10 |
| 10.7 - 12.7 | 20 | 1.5 | 0.8 | AF066X-20 |
| 10.7 - 12.7 | 30 | 1.5 | 1.2 | AF066X-30 |
| 10.7 - 14.5 | 10 | 1.5 | 1.0 | AF066K-10 |
| 10.7 - 14.5 | 20 | 1.5 | 1.5 | AF066K-20 |
| 10.7 - 14.5 | 30 | 1.5 | 1.75 | AF066K-30 |
| 12.4 - 18.0 | 10 | 1.5 | 1.0 | AF067-10 |
| 13.0 - 14.5 | 10 | 1.5 | 0.2 | AF067K-10 |
| 13.0 - 14.5 | 20 | 1.5 | 0.3 | AF067K-20 |
| 13.0 - 14.5 | 30 | 1.5 | 0.5 | AF067K-30 |
| 17.0 - 18.6 | 10 | 1.5 | 0.75 | AF067J-10 |
| 17.0 - 18.6 | 20 | 1.5 | 1.0 | AF067J-20 |
| 17.0 - 18.6 | 30 | 1.5 | 1.5 | AF067J-30 |
| 17.0 - 18.6 | 40 | 1.5 | 2.0 | AF067J-40 |

* Tri-band units, flatness spec is per band:
C (5.85-6.45GHz), X (7.9-8.4GHz), Ku (14-14.5GHz)

### 06 Series CVA
### Frequency Flat Models, Octave Band

| Freq (GHz) | Atten Range dB | VSWR Max | Flatness +/- dB | Model No. |
|---|---|---|---|---|
| 2.0 - 4.0 | 10 | 1.6 | 1.5 | AF064-10 |
| 4.0 - 8.0 | 10 | 1.5 | 2.0 | AF065-10 |
| 8.0 - 12.4 | 10 | 1.5 | 1.0 | AF066-10 |
| 12.4 - 18.0 | 10 | 1.5 | 1.0 | AF067-10 |

### 06 Series CVA
### Level Adjust Models, Octave Band Models

| Freq (GHz) | Atten Range dB | VSWR Max | Flatness +- dB | Model No. |
|---|---|---|---|---|
| 2.0 - 4.2 | 10 | 1.5 | N/A | AV064-10 |
| 3.7 - 8.0 | 10 | 1.5 | N/A | AV065-10 |
| 3.7 - 8.0 | 20 | 1.5 | N/A | AV065-20 |
| 7.9 - 12.7 | 10 | 1.5 | N/A | AV066-10 |
| 7.9 - 12.7 | 20 | 1.5 | N/A | AV066-20 |
| 7.9 - 12.7 | 30 | 1.5 | N/A | AV066-30 |
| 11.7 - 18.0 | 10 | 1.5 | N/A | AV067-10 |
| 11.7 - 18.0 | 20 | 1.5 | N/A | AV067-20 |
| 11.7 - 18.0 | 30 | 1.5 | N/A | AV067-30 |
| 11.7 - 18.0 | 40 | 1.5 | N/A | AV067-40 |
| 14.0 - 26.5 | 10 | 1.7 | N/A | AV068-10 |
| 14.0 - 26.5 | 20 | 1.7 | N/A | AV068-20 |
| 14.0 - 26.5 | 30 | 1.7 | N/A | AV068-30 |
| 14.0 - 26.5 | 40 | 1.7 | N/A | AV068-40 |
| 26.5 - 40.0 | 10 | 2.0 | N/A | AV069-10 |
| 26.5 - 40.0 | 20 | 2.0 | N/A | AV069-20 |
| 26.5 - 40.0 | 30 | 2.0 | N/A | AV069-30 |
| 26.5 - 40.0 | 40 | 2.0 | N/A | AV069-40 |

### 06 Series CVA
### Level Adjust Models, Wide Band Models

| Freq (GHz) | Atten Range dB | VSWR Max | Flatness +- dB | Model No. |
|---|---|---|---|---|
| 2.0 - 8.0 | 10 | 1.5 | N/A | AV064F-10 |
| 4.0 - 12.4 | 10 | 1.5 | N/A | AV065G-10 |
| 4.0 - 18.0 | 10 | 1.5 | N/A | AV065H-10 |
| 6.0 - 18.0 | 10 | 1.5 | N/A | AV066H-10 |
| 6.0 - 18.0 | 20 | 1.5 | N/A | AV066H-20 |
| 6.0 - 18.0 | 30 | 1.5 | N/A | AV066H-30 |
| 10.0 - 26.5 | 10 | 1.8 | N/A | AV066J-10 |
| 10.0 - 26.5 | 20 | 1.8 | N/A | AV066J-20 |
| 18.0 - 40.0 | 10 | 2.0 | N/A | AV068Q-10 |
| 18.0 - 40.0 | 20 | 2.0 | N/A | AV068Q-20 |