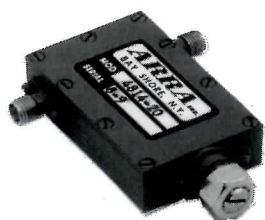
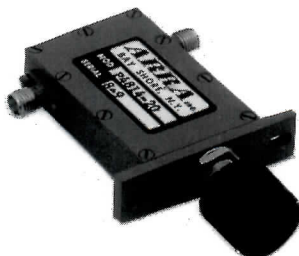


# CONTINUOUSLY VARIABLE ATTENUATORS

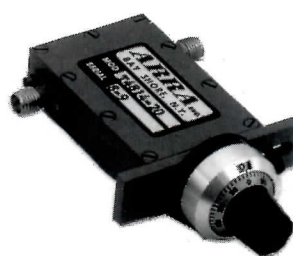
Miniature  
Models



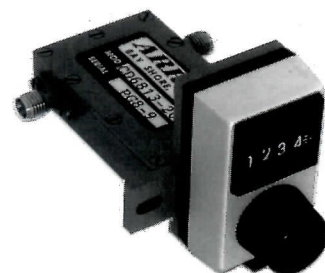
**Standard Form**  
**2191 & 3651**



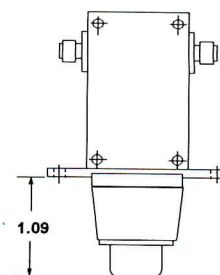
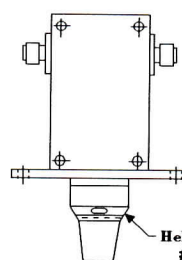
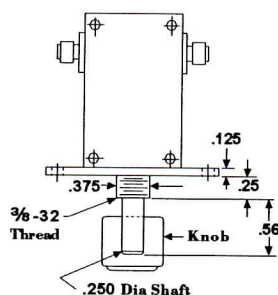
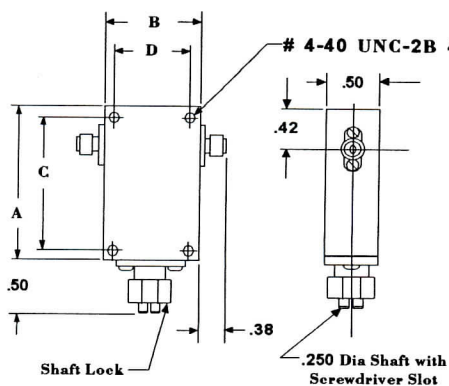
**P Option**  
**4321 & 4322**



**T Option**  
**4319 & 4320**

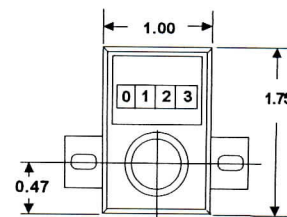
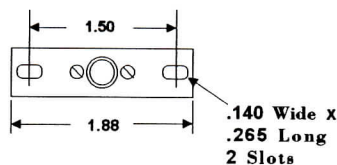


**D Option**  
**0-3345 & 0-3346**



**Dimensions - Inches**

| Form | A    | B    | C     | D     |
|------|------|------|-------|-------|
| 2191 | 1.75 | 1.00 | 1.594 | 0.844 |
| 3651 | 2.00 | 1.25 | 1.844 | 1.094 |



## OPTIONAL FEATURES

The standard attenuator packages, Forms 2191 and 3651, have non-translating 1/4" diameter shafts with lock nut. They achieve full attenuation in less than 20 turns. To maintain versatility this attenuator comes in 3 other packages. To specify these options, precede the model number with P for panel-mount version, T for turns-counting version, or D for digital-counter version.

When options are ordered, Standard Form 2191 changes to Form 4321 for panel-mount type, Form 4319 for turns-counting type or Form 0-3345 for digital-counter type. Standard Form 3651 becomes Form 4322 for panel-mount type, Form 4320 for turns-counting type or Form 0-3346 for digital counter type.

## APPLICATIONS

The standard forms are ideal for applications where attenuation can be set, then locked and left for long periods of time without movement. The panel-mount version is ideally suited for applications where front panel adjustment is required and monitored via output power. Turns-counting dials are ideally suited for panel mount applications where calibration or reference for resetting is required. The digital counter version performs the same task as the turns-counting dial but with greater resolution. Both T & D options can be calibrated by utilizing a calibration chart. Order CT or CD option.

# CONTINUOUSLY VARIABLE ATTENUATORS

**Miniature  
Models**

## GENERAL SPECIFICATIONS

RF Power . . . . . 5 Watts average  
                                     3 kW peak  
 Connectors . . . . . SMA Female standard  
 Temperature Range . . . -55°C to +85°C  
 Resettability . . . . . 0.1 dB or better  
 Material . . . . . Body - Aluminum  
                                     Conn - Stainless Steel  
 Finish . . . . . ARRA Blue per  
                                     MIL-C-22750  
 Mounting Provisions . . . All forms have tapped  
                                     or thru holes

These units represent the most complete line of miniature continuously variable attenuators.

Most models weigh 2 or 3 ounces and have been qualified for all types of military applications.

Since attenuation is achieved in a non-contacting manner, these units provide the utmost in wear-free performance and high reliability.



## LEVEL SET MODELS

| Frequency Range (GHz) | Atten Range (dB) | VSWR (Max) | Ins Loss (Max dB) | Standard Form Factor | Model No. |
|-----------------------|------------------|------------|-------------------|----------------------|-----------|
| 1.0-2.0               | 10               | 1.8        | 0.5               | 3651                 | 3814-10   |
| 1.5-2.0               | 15               | 1.7        | 0.5               | 3651                 | 3814-15   |
| 2.0-4.0               | 10               | 1.8        | 0.5               | 2191                 | 4804-10   |
|                       | 20               | 1.5        | 0.5               | 3651                 | 4814-20   |
| 2.5-4.0               | 10               | 1.5        | 0.5               | 2191                 | 4804-10x  |
| 3.6-4.3               | 10               | 1.5        | 0.5               | 2191                 | 4-5804-10 |
|                       | 20               | 1.5        | 0.5               | 2191                 | 4-5804-20 |
|                       | 30               | 1.5        | 0.5               | 3651                 | 4-5814-30 |
| 4.0-8.0               | 10               | 1.5        | 0.5               | 2191                 | 5804-10   |
|                       | 20               | 1.5        | 0.5               | 2191                 | 5804-20   |
|                       | 30               | 1.5        | 0.5               | 3651                 | 5814-30   |
| 6.0-11.0              | 10               | 1.5        | 0.5               | 2191                 | 5-6804-10 |
|                       | 20               | 1.5        | 0.5               | 2191                 | 5-6804-20 |
|                       | 30               | 1.5        | 0.5               | 2191                 | 5-6804-30 |
|                       | 40               | 1.5        | 0.5               | 3651                 | 5-6814-40 |
| 8.0-12.4              | 10               | 1.5 *      | 0.5               | 2191                 | 6804-10   |
|                       | 20               | 1.5 *      | 0.5               | 2191                 | 6804-20   |
|                       | 30               | 1.5 *      | 0.5               | 2191                 | 6804-30   |
|                       | 40               | 1.5 *      | 0.5               | 3651                 | 6814-40   |
| 8.0-18.0              | 10               | 1.5 *      | 1.0               | 2191                 | 9804-10   |
|                       | 20               | 1.5 *      | 1.0               | 2191                 | 9804-20   |
|                       | 30               | 1.5 *      | 1.0               | 2191                 | 9804-30   |
|                       | 40               | 1.5 *      | 1.0               | 3651                 | 9814-40   |
| 12.0-18.0             | 10               | 1.5        | 0.5               | 2191                 | 9804-10x  |
|                       | 20               | 1.5        | 0.5               | 2191                 | 9804-20x  |
|                       | 30               | 1.7        | 0.5               | 2191                 | 9804-30x  |
|                       | 40               | 1.7        | 0.5               | 2191                 | 9804-40x  |

## FLAT WITH FREQUENCY MODELS

| Frequency Range (GHz) | Atten Range (dB) | Atten vs Freq (± dB) | VSWR (Max) | Ins Loss (Max dB) | Standard Form Factor | Model No.  |
|-----------------------|------------------|----------------------|------------|-------------------|----------------------|------------|
| 2.5-3.0               | 20               | 1.0                  | 1.5        | 0.5               | 3651                 | 4813-20A   |
| 2.9-3.1               | 10               | 0.5                  | 1.5        | 0.5               | 3651                 | 4813-10A   |
|                       | 20               | 0.5                  | 1.5        | 0.5               | 3651                 | 4813-20B   |
| 3.0-4.0               | 15               | 1.0                  | 1.5        | 0.5               | 3651                 | 4813-15A   |
| 3.7-4.2               | 20               | 1.0                  | 1.5        | 0.5               | 3651                 | 4-5813-20  |
| 4.0-8.0               | 10               | 1.0                  | 1.5        | 0.5               | 3651                 | 5813-10    |
|                       | 20               | 1.5                  | 1.5        | 0.5               | 3651                 | 5813-20    |
| 5.4-5.0               | 20               | 0.5                  | 1.5        | 0.5               | 3651                 | 5813-20A   |
| 5.9-6.5               | 20               | 0.5                  | 1.5        | 0.5               | 3651                 | 5813-20B   |
| 7.2-7.8               | 30               | 0.5                  | 1.5        | 0.5               | 3651                 | 5813-30A   |
| 7.2-8.4               | 30               | 1.0                  | 1.5        | 0.5               | 3651                 | 5-6813-30A |
| 7.9-8.4               | 30               | 0.5                  | 1.5        | 0.5               | 3651                 | 6813-30A   |
| 8.0-12.4              | 10               | 0.5                  | 1.5 *      | 0.5               | 3651                 | 6813-10    |
|                       | 20               | 1.0                  | 1.5 *      | 0.5               | 3651                 | 6813-20    |
| 8.0-18.0              | 10               | 1.5                  | 1.5 *      | 1.0               | 2191                 | 9803-10    |
| 8.5-10.5              | 10               | 0.5                  | 1.5        | 0.5               | 2191                 | 6803-10A   |
|                       | 20               | 0.5                  | 1.5        | 0.5               | 2191                 | 6803-20A   |
| 10.0-12.0             | 30               | 0.5                  | 1.5        | 0.5               | 2191                 | 6803-30A   |
| 10.5-12.4             | 10               | 0.5                  | 1.6        | 0.5               | 2191                 | 6803-10B   |
|                       | 20               | 0.5                  | 1.6        | 0.5               | 2191                 | 6803-20B   |
| 12.0-18.0             | 10               | 1.0                  | 1.5        | 0.5               | 2191                 | 9803-10A   |

\* 1.7 VSWR above 11 GHz.