

CONTINUOUSLY VARIABLE ATTENUATORS

DC-250 MHz
Miniature
Models



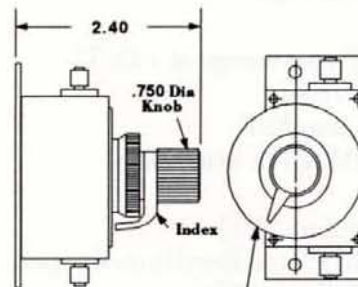
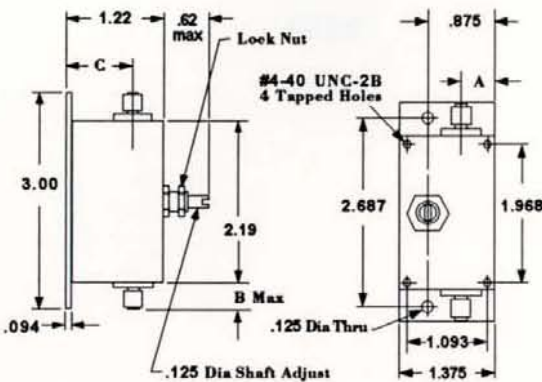
Form 4242



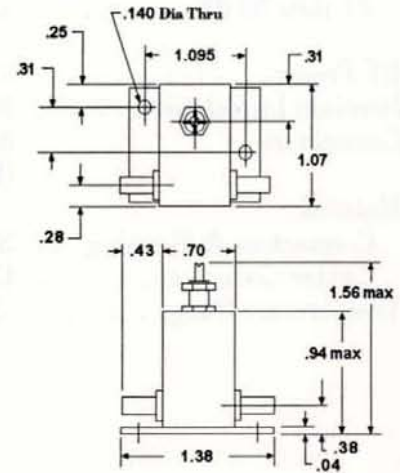
Form 4391



Form 5800



1.750 Dia Dial
Calibrated in
1 dB Steps



GENERAL SPECIFICATIONS

- Frequency Range DC-250 MHz
- RF Power 1 Watt average
- Nominal Impedance 50 Ohms *
- Temperature Range -55°C to +85°C
- Connectors SMA Female standard **
- Material Body - Aluminum
Brass on Form 5800
- Connectors - MIL-C-39012
- Finish ARRA Blue per MIL-C-22750

Dimensions - Inches

Connector	A	B	C
SMA Female	0.47	0.38	0.90
N Female	0.53	0.75	0.79
TNC Female	0.53	0.75	0.81
BNC Female	0.53	0.75	0.81

DIRECTLY CALIBRATED MODELS

Freq Range (MHz)	Atten Range (dB)	Atten vs Freq (±dB)	VSWR (Max)	Ins Loss (Max dB)	Form Factor	Model No.
DC - 100	15	0.3	1.3	0.5	4391	0682-15F
DC - 250	10	0.5	1.5	1.0	4391	0682-10F

UNCALIBRATED MODELS

Freq Range (MHz)	Atten Range (dB)	Atten vs Freq (±dB)	VSWR (Max)	Ins Loss (Max dB)	Form Factor	Model No.
DC - 100	20	0.6	1.3	0.5	4242	0682-20
DC - 100	20	1.5	1.3	0.6	5800	0683-20
DC - 250	15	1.5	1.5	1.0	4242	0682-15
DC - 250	15	4.0	1.5	1.2	5800	0683-15

* For 75 Ohms impedance, suffix model number with -75. Ex: TNC0682-15F-75

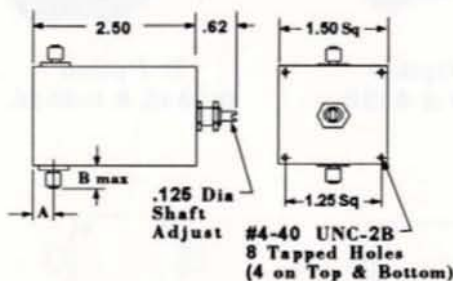
** Type N, BNC & TNC available. Precede model number with type desired. Ex: TNC0682-15F

CONTINUOUSLY VARIABLE ATTENUATORS

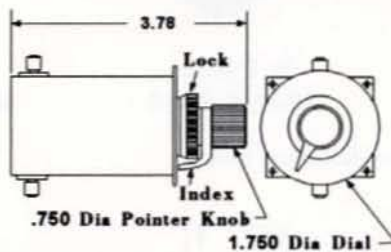
DC-500 MHz
Miniature
Models



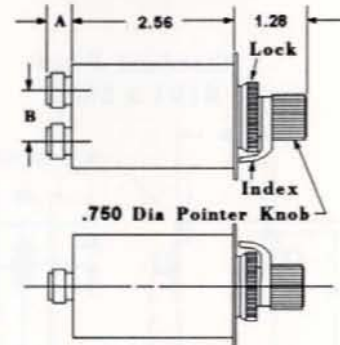
Form 4449



Form 4450



Form 4450-SS



**Dimensions - Inches
Standard Forms 4449 & 4450**

Connector	A	B
SMA Female	.38	.38
N Female	.40	.50
TNC Female	.38	.75
BNC Female	.38	.75

GENERAL SPECIFICATIONS

- Frequency Range DC-500 MHz
- RF Power 1 Watt average
- Nominal Impedance 50 Ohms *
- Temperature Range -55° C to +85° C
- Connectors SMA Female standard **
- Material Body - Aluminum
Connectors - MIL-C-39012
- Finish ARRA Blue per MIL-C-22750

Space Saver Option **
Forms 4449-SS & 4450-SS**

Connector	A	B
SMA Female	.38	.80
N Female	.50	.88
TNC Female	.75	.80
BNC Female	.75	.80

DIRECTLY CALIBRATED MODELS

Freq Range (MHz)	Atten Range (dB)	Atten vs Freq (± dB)	VSWR (Max)	Ins Loss (Max dB)	Form Factor	Model No.
DC - 60	40	1.00	1.5	0.5	4450	0682-40F
DC - 100	30	0.50	1.5	0.5	4450	0682-30F
DC - 500 ***	10	0.25	1.5	1.5	4450	0682-10G ***

UNCALIBRATED MODELS

Freq Range (MHz)	Atten Range (dB)	Atten vs Freq (± dB)	VSWR (Max)	Ins Loss (Max dB)	Form Factor	Model No.
DC - 60	40	1.00	1.5	0.5	4449	0682-40
DC - 100	30	0.50	1.5	0.5	4449	0682-30
DC - 200	25	2.00	1.5	1.0	4449	0682-25A
DC - 500 ***	10	0.25	1.5	1.5	4449	0682-10 ***

* For 75 Ohms impedance, suffix model number with -75. Ex: BNC0682-30F-75

** Type N, BNC & TNC available. Precede model number with type desired. Ex: BNC0682-30F

*** DC to 500 MHz with SMA connectors; DC to 300 MHz with BNC, Type N or TNC connectors; not available in 75 Ohms.

**** For space saver option, base model number changes to 0684. (Not available on DC-500 models)

CONTINUOUSLY VARIABLE ATTENUATORS

Miniature
Models

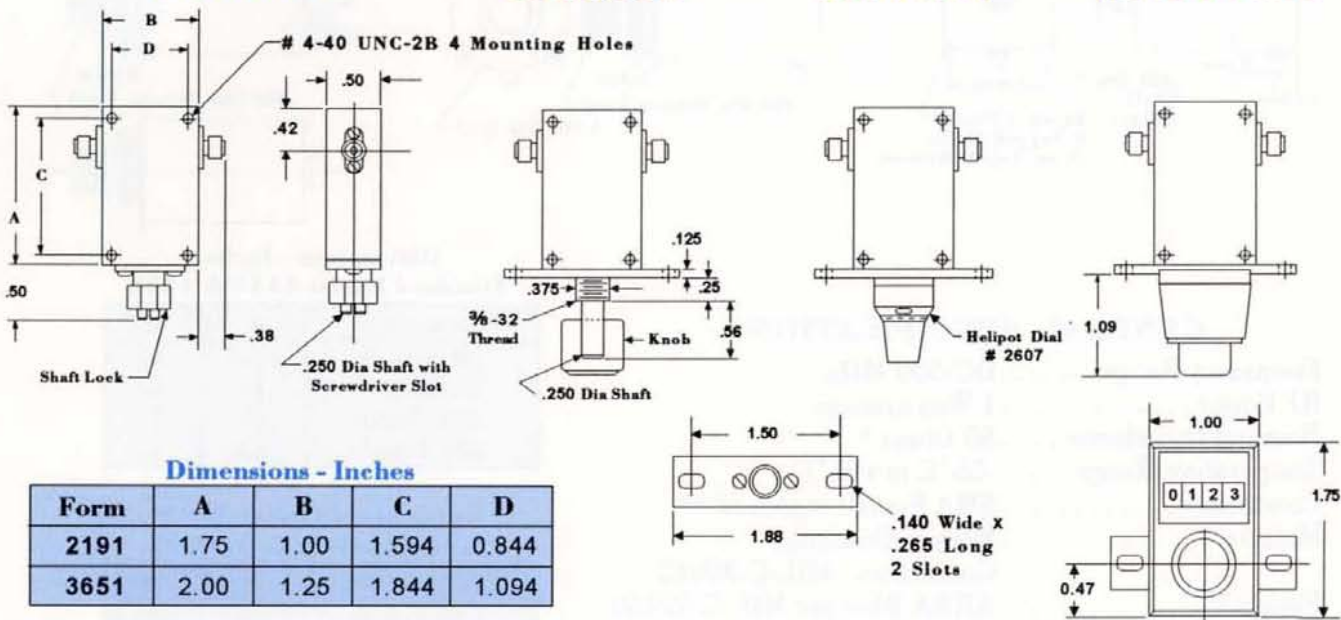


Standard Form
2191 & 3651

P Option
4321 & 4322

T Option
4319 & 4320

D Option
0-3345 & 0-3346



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.

CONTINUOUSLY VARIABLE ATTENUATORS

Mid-Size
Models

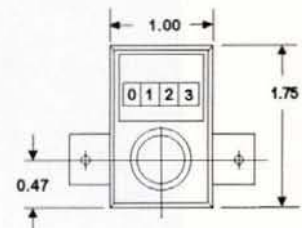
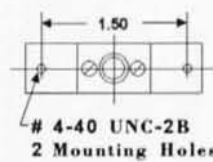
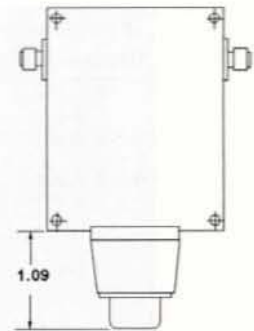
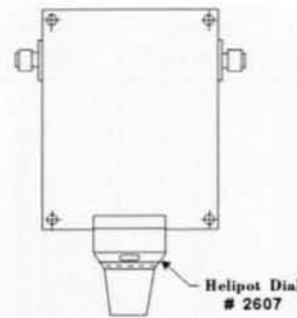
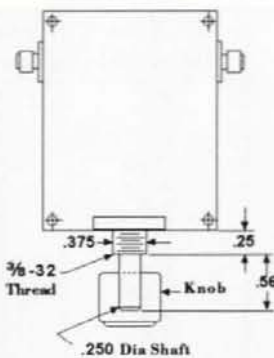
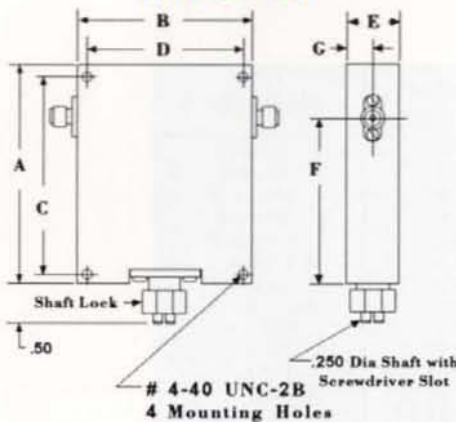


Standard Form
4061 & 6931

P Option
0-1654 & 6975

T Option
0-1524 & 6974

D Option
0-3347 & 0-3348



Dimensions - Inches

Form	A	B	C	D	E	F	G
4061	2.50	2.00	2.340	1.840	0.56	1.75	0.31
6931	3.00	2.90	2.500	2.500	0.71	2.06	0.34

OPTIONAL FEATURES

The standard attenuator packages, Forms 4061 and 6931, have non-translating 1/4" diameter shafts with lock nut. They achieve full attenuation in less than 30 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 4061 changes to Form 0-1654 for panel-mount type, Form 0-1524 for turns-counting type or Form 0-3347 for digital-counter type. Standard Form 6931 becomes Form 6975 for panel mount type, Form 6974 for turns-counting type or Form 0-3348 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

Mid-Size
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 holes

These units represent the most complete line of mid-size continuously variable attenuators.

Most models 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.

Units utilize ARRA's proprietary dissipative materials and operate over extremely wide temperature ranges with little change in attenuation characteristics.

LEVEL SET MODELS

Frequency Range (GHz)	Atten Range (dB)	Max VSWR	Max Ins Loss (dB)	Form Factor	Model No. *
0.5-1.0	10	1.80	0.50	6931	2854-10
0.75-1.5	10	1.50	0.50	6931	2-3854-10
	20	1.50	0.50	6931	2-3854-20
	30	1.50	0.50	6931	3854-30
1.0-2.0	15	1.50	0.50	4061	3844-15
	20	1.50	0.50	6931	3854-20
	30	1.50	0.50	6931	3854-30
1.5-2.0	20	1.50	0.50	4061	3844-20
	40	1.50	0.50	6931	3854-40
	60	1.50	0.50	6931	3854-60
0.8-2.5	10	1.50	0.50	6931	2-4854-10
	20	1.50	0.50	6931	2-4854-20
	30	1.50	0.50	6931	4844-30
2.0-4.0	10	1.50	0.50	4061	4844-10
	20	1.50	0.50	4061	4844-20
	30	1.50	0.50	4061	4844-30
4.0-8.0	10	1.50	0.50	4061	4854-40
	20	1.50	0.50	6931	5844-10
	30	1.50	0.50	4061	5844-20
5.4-11.0	10	1.50	0.50	4061	5844-30
	20	1.50	0.50	4061	5844-40
	30	1.50	0.50	4061	5844-60
7.0-11.0	10	1.35	0.25	4061	5-6844-10X
	20	1.35	0.25	4061	5-6844-20X
	30	1.35	0.25	4061	5-6844-30X
1.0-12.4	10	1.30	0.20	4061	6844-10X
	20	1.30	0.20	4061	6844-20X
	30	1.30	0.20	4061	6844-30X
2.0-12.4	10	1.50	0.50	4061	3-6844-10
	20	1.50	0.50	4061	4-6844-10
	30	1.50	0.50	4061	4-6844-20
4.0-12.4	10	1.50	0.50	4061	5-6844-10
	20	1.50	0.50	4061	5-6844-20
	30	1.50	0.50	4061	5-6844-30
8.0-12.4	10	1.50	0.50	4061	5-6844-30
	20	1.50	0.50	4061	6844-10
	30	1.50	0.50	4061	6844-20
12.4-18.0	10	1.50	0.50	4061	6844-30
	20	1.50	0.50	4061	6844-40
	30	1.50	0.50	4061	6844-60

FLAT WITH FREQUENCY MODELS

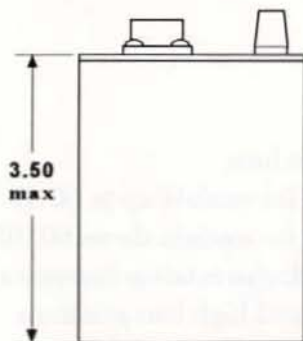
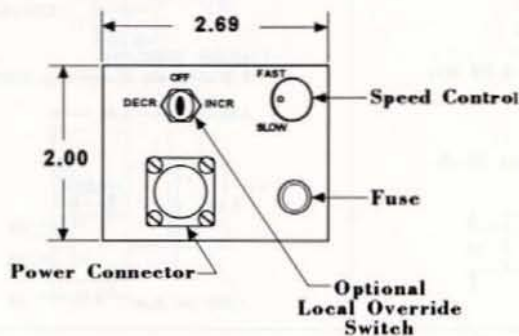
Frequency Range (GHz)	Atten Range (dB)	Atten vs Freq (± dB)	Max VSWR	Max Ins Loss (dB)	Form Factor	Model No. *
0.86-0.90	10	0.25	1.60	0.50	6931	2853-10A
	15	0.50	1.60	0.50	6931	2853-15A
	20	0.50	1.60	0.50	6931	2853-10B
0.82-0.98	10	0.50	1.60	0.50	6931	2853-10B
	15	0.75	1.60	0.50	6931	2853-15B
	20	0.75	1.60	0.50	6931	2853-10
0.80-1.0	10	0.75	1.50	0.50	6931	2853-10
	20	1.00	1.50	0.50	6931	2853-20
	30	1.00	1.50	0.50	6931	3843-20A
1.25-1.35	20	0.50	1.50	0.50	4061	3843-20A
	40	1.25	1.50	0.50	4061	3843-15A
	60	0.75	1.50	0.50	6931	3853-10
1.2-1.4	10	1.25	1.50	0.50	6931	3853-10
	20	1.25	1.50	0.50	6931	3853-20
	30	1.25	1.50	0.50	6931	3853-30
1.0-1.5	10	1.00	1.50	0.50	6931	3853-10A
	20	1.50	1.50	0.50	6931	3853-20A
	30	1.50	1.50	0.50	6931	3853-30A
1.5-2.0	10	0.75	1.50	0.50	6931	3853-10B
	20	1.00	1.50	0.50	6931	3853-20B
	30	1.00	1.50	0.50	6931	3853-30B
1.7-2.2	10	0.50	1.50	0.50	6931	3-4853-10
	20	0.75	1.50	0.50	6931	3-4853-20
	30	0.75	1.50	0.50	6931	3-4853-30
2.0-2.1	15	0.20	1.50	0.50	4061	4843-15A
	20	0.50	1.50	0.50	4061	4843-20A
	30	0.50	1.50	0.50	4061	4843-30A
2.0-2.2	20	0.50	1.50	0.50	4061	4843-10
	30	1.00	1.50	0.50	6931	4853-10
	40	0.50	1.50	0.50	6931	4853-10
2.0-4.0	10	0.50	1.50	0.50	6931	4853-10
	20	1.50	1.50	0.50	4061	4843-20
	30	1.00	1.50	0.50	6931	4853-20
3.7-4.2	10	1.75	1.50	0.50	6931	4853-30
	20	1.00	1.50	0.50	4061	4-5843-20
	30	1.00	1.50	0.50	6931	4-5843-10
2.9-4.3	10	0.25	1.50	0.50	6931	4-5853-10
	20	0.50	1.50	0.50	6931	4-5853-20
	30	1.00	1.50	0.50	6931	4-5853-30
4.0-8.0	10	0.50	1.50	0.50	4061	5843-10
	20	1.00	1.50	0.50	4061	5843-20
	30	1.00	1.50	0.50	4061	5843-30
6.2-7.0	15	0.25	1.50	0.50	4061	5843-15A
	20	1.00	1.50	0.50	4061	5-6843-30A
	30	1.00	1.50	0.50	4061	5-6843-10
7.2-8.4	30	0.50	1.50	0.50	4061	5-6843-30B
	40	0.50	1.50	0.50	4061	6843-10
	60	0.50	1.50	0.50	4061	6843-20
7.9-8.4	10	0.50	1.50	0.50	4061	6843-10
	20	1.00	1.50	0.50	4061	6843-20
	30	2.00	1.50	0.50	4061	6843-30
8.0-12.4	20	1.00	1.50	0.50	4061	6843-20
	30	2.00	1.50	0.50	4061	6843-30
	40	2.00	1.50	0.50	4061	6843-40
12.4-18.0	20	1.00	1.50	0.50	4061	9843-20
	30	2.00	1.50	0.50	4061	9843-30
	40	2.00	1.50	0.50	4061	9843-40

* To specify Type N Female connectors, precede model number with N. Ex: N3844-15

DC MOTORIZED VARIABLE ATTENUATORS

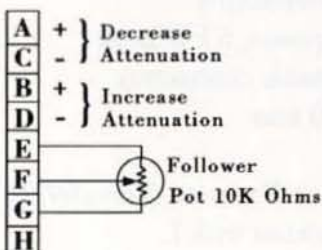


Form 0-1002

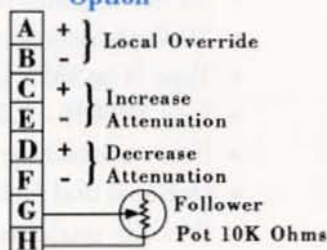


PIN CONFIGURATION

Standard



Local Override Option



GENERAL DESCRIPTION

ARRA offers a rugged line of DC motor-driven attenuators ideally suited for many remote tuning applications. The motors are integral gear head types directly coupled to the attenuator offering the ultimate in reliability and maintenance-free operation. Reversing is accomplished by the use of microswitches, and all models utilize a DC motor and feature fast stopping time and minimum back-lash.

All units are supplied with a mating power connector and a circuit diagram. These devices are controlled from a three position switch, and are set up for a jogging-type operation up and down scale and automatically stop at either end of the travel.

Units consist of an integrated motor head and single turn variable attenuator. Any of the models shown on pages 6, 7, 14, 15, 16, 17, 23, and 24 may be utilized in this package. An outline drawing of any complete package can be furnished.

Units are supplied with a follower potentiometer output and variable speed control.

Option: A local override control switch can be mounted directly to the motor head. For this feature, suffix model number with -L.

GENERAL SPECIFICATIONS

Motor Head Characteristics

DC Voltage.....	28V, 24V, 15V, 12V
Actuating Current.....	200 mA, typ 1 Amp max
Power Supply Connector.....	Bendix PT-02A-10-8P (mate supplied)
Speed.....	Variable (1.5 RPM, typ)
Material	
Body.....	Aluminum
Finish.....	ARRA Blue per MIL-C-22750

Attenuator Characteristics

The RF specifications of this package are identical to those indicated for the specific variable attenuator model selected.

MODEL NUMBER CODE

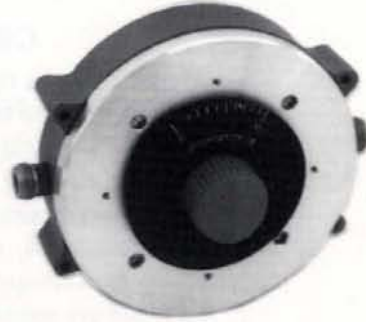
Basic Attenuator Model - XX	XX
Indicates appropriate DC voltage	28
	24
	15
	12
Ex: 5684-30-28	

CONTINUOUSLY VARIABLE ATTENUATORS

0.5 - 4.0 GHz
Models
5" Dia



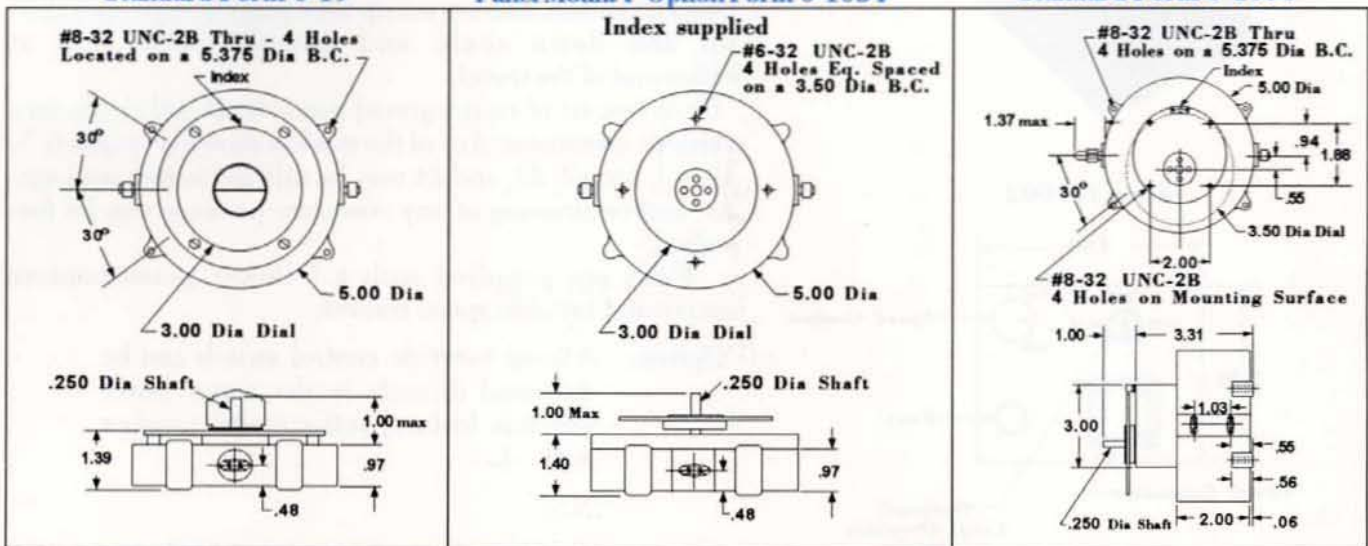
Standard Form 0-19



Panel Mount P Option Form 0-1034**



Standard Form 0-1030



Note: Knob supplied with all units

GENERAL CHARACTERISTICS

Direct Reading Models are furnished with dials individually calibrated in 1 dB increments. These units are flat with frequency.

Level Set Models are supplied with dials in degrees for reference. These units do not have attenuation vs frequency specifications. All level set models can be directly calibrated at a spot frequency; contact factory.

Special Models: Most units are manufactured to customer specifications. Accuracies can be quoted for your exact attenuation range and frequency band; contact factory.

- Low insertion loss:
 - 0.5 dB max for models up to 60 dB
 - 1.0 dB max for models above 60 dB
- Counter clockwise rotation increases loss
- Stops at low and high loss positions
- Material:
 - Body - Aluminum
 - Connectors - Stainless Steel
- Finish: ARRA Blue per Mil-C-22750
- 0.1 dB or better resettability
- 10 Watts average power, 5 kW peak
- Type N or SMA female connectors
- Low VSWR - 1.50 max
- Non - contacting
- Optional dial lock on P version (Form 6921) Precede model number with L

CONTINUOUSLY VARIABLE ATTENUATORS

0.5 - 4.0 GHz
Models
5" Dia



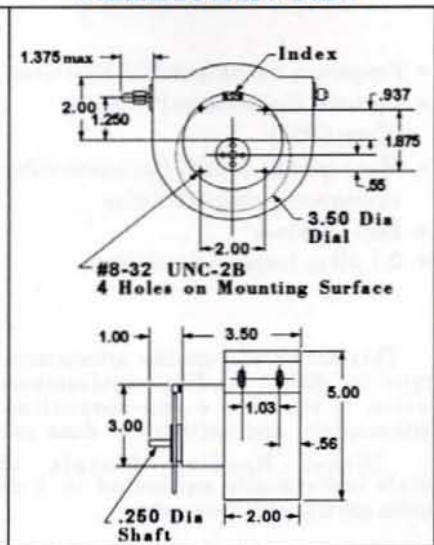
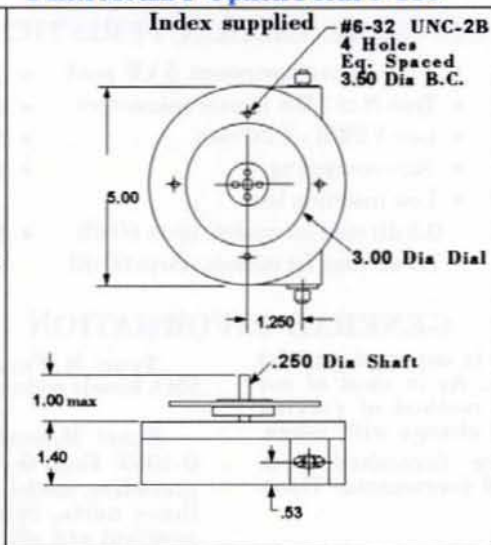
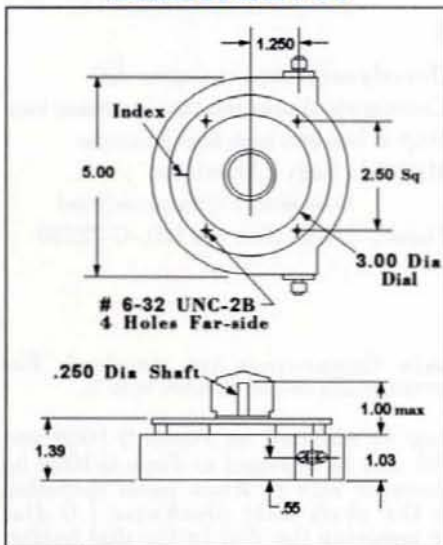
Standard Form 0-51



Panel Mount P Option Form 0-186 **



Standard Form 0-1029



Note: Knob supplied with all units.

TYPICAL DIRECT READING MODELS

Freq Range (GHz)	Atten Range (dB)	Atten vs Freq (\pm dB)	Form Factor	Model No. *
0.60-0.61	10	1.00	0-19	2614-10F
0.75-0.85	20	2.00	0-19	2614-20F
0.95-0.96	30	1.00	0-19	2614-30F
1.03-1.09	30	1.00	0-19	3614-30F
1.10-1.20	20	2.00	0-19	3614-20F
1.25-1.30	40	1.50	0-19	3614-40F
1.45-1.55	50	1.00	0-19	3614-50F
1.60-1.66	60	1.50	0-19	3614-60F
1.70-1.90	40	1.00	0-19	F3614-40
1.70-2.00	30	2.00	0-19	F3614-30
1.75-1.80	50	1.50	0-19	F3614-50
1.75-1.85	30	0.70	0-19	3614-30G
2.00-4.00	10	1.00	0-51	4674-10F
	20	1.50	0-51	4674-20F
	30	2.00	0-51	4674-30F
2.00-2.30	30	1.00	0-51	G4674-30
2.10-2.20	50	1.00	0-51	4674-50F
2.20-2.30	20	0.30	0-51	F4674-20
	50	1.00	0-51	F4674-50
	100	1.50	0-1029	F4674-100
2.30-2.70	30	1.00	0-51	F4674-30
2.40-2.70	20	0.50	0-51	4674-20X
2.50-4.00	10	0.75	0-51	4674-10G
	20	1.00	0-51	4674-20G
	30	1.50	0-51	4674-30G
2.70-2.90	30	1.00	0-51	4674-30X
	40	1.00	0-51	4674-40F
2.90-3.10	30	0.50	0-51	F4674-30A
3.00-3.70	40	1.00	0-51	F4674-40
3.40-4.20	40	1.50	0-51	G4674-40
3.70-4.20	20	0.75	0-51	G4674-20
	40	1.00	0-51	4674-40X

UNCALIBRATED LEVEL SET MODELS

Freq Range (GHz)	Atten Range (dB)	Form Factor	Model No. *
0.50-1.00	10	0-19	2614-10
1.00-2.00	10	0-19	3614-10
	20	0-19	3614-20
	30	0-19	3614-30
	40	0-19	3614-40
	55 > 1.3 GHz	0-19	3614-55
	45 < 1.3 GHz	70	0-1030
		80	0-1030
		90	0-1030
		100	0-1030
2.00-4.00	10	0-51	4674-10
	20	0-51	4674-20
	30	0-51	4674-30
	40	0-51	4674-40
	50	0-51	4674-50
	60	0-51	4674-60
	70	0-1029	4674-70
	80	0-1029	4674-80
	90	0-1029	4674-90
	100	0-1029	4674-100

* Model numbers indicate Type N connectors.
For SMA connectors, suffix model number with S.
** For panel-mounted version, precede model number with P.

CONTINUOUSLY VARIABLE ATTENUATORS

2.0-18.0 GHz
Models
3" Dia



GENERAL CHARACTERISTICS

- Frequency bands from 2.0-18.0 GHz
- Optional dial lock on P version (Form 6921)
- Many models exhibit flat attenuation vs frequency characteristics
- Zero backlash
- 0.1 dB or better resettability
- 10 watts average power, 5 kW peak
- Type N or SMA female connectors
- Low VSWR - 1.50 max
- Non-contacting
- Low insertion loss
0.5 dB max for models up to 60 dB
1.0 dB max for models above 60 dB
- Directly calibrated or degree dial
- Counter clockwise rotation increases loss
- Stop at low and high loss positions
- Material: Body - Aluminum
Connectors - Stainless Steel
- Finish: ARRA Blue per MIL-C-22750

GENERAL INFORMATION

This series of variable attenuators is our most popular type for direct reading requirements. As in most of our units, it features a non-contacting method of varying attenuation, and calibration does not change with usage.

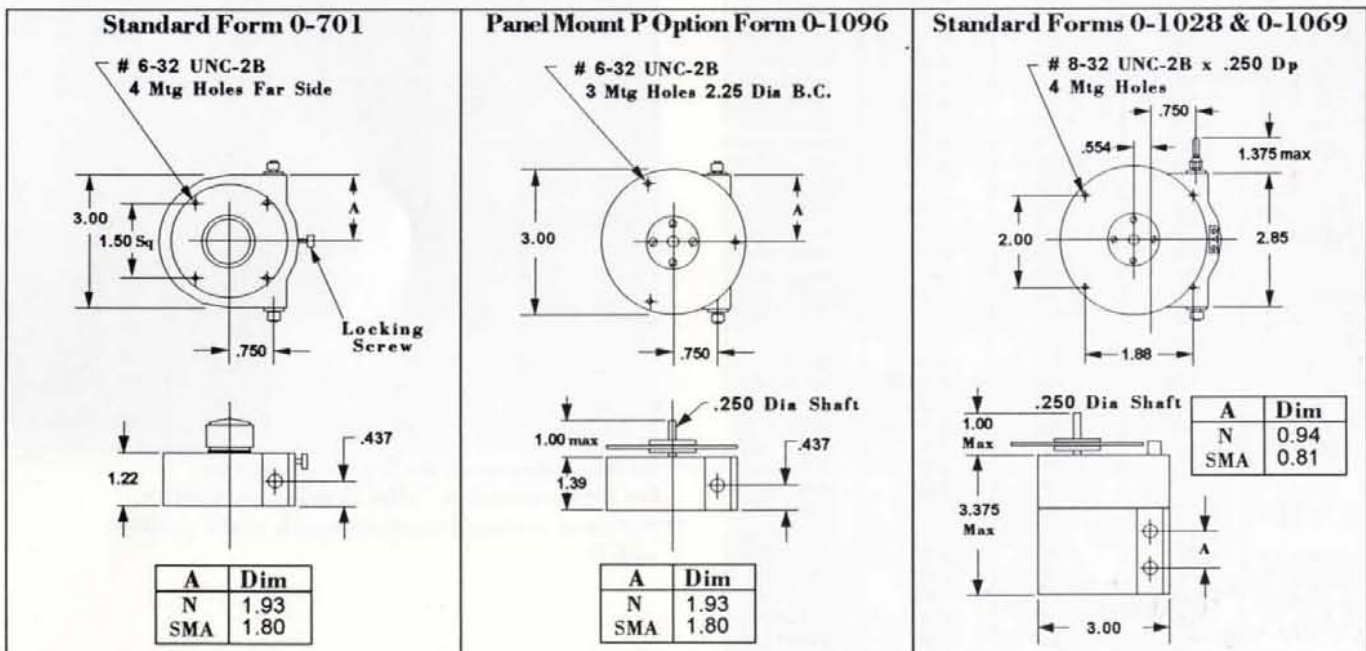
Direct Reading Models are furnished with dials individually calibrated in 1 dB increments. These units are flat with frequency.

Level Set Models are supplied with dials in degrees for reference. These units do not have attenuation vs frequency specifications. All level set models can be directly calibrated at a spot frequency; contact factory.

Special Models - Most units are manufactured to customer specifications. Accuracies can be quoted for your exact attenuation range and frequency band; contact factory.

Type N Female Connectors are standard. For SMA female connectors, suffix model number with S.

Panel Mounting is standard on Forms 0-1028 and 0-1069. Form 0-701 can be changed to Form 0-1096 by preceding model number with P. When panel mounting these units, turn the shaft fully clockwise (0 dial position) and after removing the dial in the dial holder, mount the unit behind the panel with the shaft protruding thru. Then set screw the dial hub to the shaft. The dial can be slipped to align the 0 with the index line (a separate index plate is furnished) and calibration accuracy is perfectly maintained. Because of this arrangement, the units can be oriented in any position behind the panel, while the index plate can be mounted to the panel anywhere on the periphery of the dial.



CONTINUOUSLY VARIABLE ATTENUATORS

2.0-18.0 GHz
Models
3" Dia

TYPICAL DIRECT READING MODELS

Freq Range (GHz)	Atten Range (dB)	Atten vs Freq (±dB)	Form Factor	Model No.*
2.0-3.0	15	2.00	0-701-2	4684-20G
2.2-2.3	20	0.50	0-701-2	F4684-20
2.6-3.0	10	0.50	0-701-2	F4684-10
2.9-3.1	20	0.50	0-701-2	A4684-20
	30	1.00	0-701-2	F4684-30
	50	1.50	0-701-2	F4684-50
3.0-3.5	10	0.25	0-701-2	G4684-10
	20	0.50	0-701-2	G4684-20
3.5-4.5	10	0.60	0-701-2	4684-10G
3.7-4.2	20	0.50	0-701-2	B4684-20
	30	0.75	0-701-2	G4684-30
	40	1.50	0-701-2	F4684-40
	50	2.00	0-701-2	G4684-50
3.7-6.5	30	2.00	0-701-2	F4-5684-30
3.8-4.0	50	1.50	0-701-2	F4684-50A
3.8-6.0	20	1.00	0-701-2	G4684-20
3.9-4.1	100	2.00	0-1069-2	F4-5684-100
3.9-4.2	30	1.50	0-701-2	F4-5684-30A
4.0-4.5	50	1.25	0-701-2	5684-50F
4.0-5.0	20	0.50	0-701-2	F5684-20
4.2-4.4	20	0.20	0-701-2	5684-20G
	40	0.75	0-701-2	F5684-40
4.4-4.8	60	1.50	0-701-2	5684-60F
4.4-5.0	70	1.75	0-1069-2	5684-70F
4.5-5.0	20	0.25	0-701-2	G5684-20
4.8-5.2	40	0.30	0-701-2	5684-40F
4.9-5.1	30	0.50	0-701-2	A5684-30F
5.0-8.0	30	1.50	0-701-2	5684-30G
5.0-6.0	50	1.50	0-701-2	G5684-50
5.1-5.9	30	1.00	0-701-2	G5684-30
5.2-5.9	120	2.00	0-1069-2	F5684-120
5.2-5.8	20	0.50	0-701-2	A5684-20
5.4-5.9	70	1.75	0-1069-2	F5684-70
	100	2.00	0-1069-2	F5684-100
5.4-5.8	80	2.00	0-1069-2	F5684-80
5.5-7.5	30	1.00	0-701-2	B5684-30
5.5-6.1	60	1.50	0-701-2	F5684-60
5.6-5.9	50	0.50	0-701-2	F5684-50
	70	1.00	0-1069-2	5684-70G
5.9-6.4	20	0.25	0-701-2	B5684-20
	30	0.50	0-701-2	F5684-30
	40	1.00	0-701-2	G5684-40
	60	1.50	0-701-2	5684-60G
6.2-6.4	100	1.00	0-1069-2	G5684-100
6.5-7.0	30	0.50	0-701-2	A5684-30
7.1-8.4	40	1.00	0-701-4	F6684-40
7.2-7.8	20	0.50	0-701-4	F6684-20
	40	0.50	0-701-4	6684-40F
	50	1.00	0-701-4	6684-50F
7.7-8.4	60	2.00	0-701-4	6684-60F
7.7-7.9	50	0.50	0-701-4	6684-50G
7.8-8.4	30	0.50	0-701-4	F6684-30
7.9-8.4	20	0.25	0-701-4	6684-20G
	40	0.50	0-701-4	6684-40G
	50	1.00	0-701-4	F6684-50
8.0-10.0	30	1.00	0-701-4	G6684-30
8.1-8.4	70	0.50	0-1028-2	6684-70F
8.2-8.4	60	1.00	0-701-4	F6684-60
8.5-9.7	40	1.00	0-701-4	G6684-40
8.5-9.6	100	3.00	0-1028-2	6684-100F
8.7-10.2	60	1.50	0-701-4	6684-60G
8.7-9.5	70	1.00	0-1028-2	6684-70G
9.0-10.0	50	1.00	0-701-4	G6684-50
	100	2.00	0-1028-2	6684-100G
9.1-9.4	50	0.50	0-701-4	A6684-50
9.2-9.5	120	2.00	0-1028-2	6684-120F
9.4-9.7	100	1.50	0-1028-2	F6684-100
9.5-10.5	30	1.00	0-701-4	6684-30G
9.6-9.8	100	1.00	0-1028-2	G6684-100
10.9-12.2	50	2.00	0-701-4	B6684-50
11.7-12.2	40	0.50	0-701-4	A6684-40
12.7-13.3	50	1.00	0-701-4	F9684-50
14.0-14.5	30	0.20	0-701-4	F9684-30
	50	1.00	0-701-4	G9684-50
14.4-15.3	100	1.50	0-1028-2	F9684-100
15.0-17.0	50	1.00	0-701-4	9684-50G
15.5-16.5	30	1.00	0-701-4	G9684-30
15.7-16.2	40	0.50	0-701-4	F9684-40

DIRECT READING OCTAVE BAND MODELS

Freq Range (GHz)	Atten Range (dB)	Atten vs Freq (±dB)	Form Factor	Model No.*
2.0-4.0	10	1.25	0-701-2	4684-10F
4.0-8.0	10	0.60	0-701-2	5684-10F
	20	1.00	0-701-2	5684-20F
	30	2.50	0-701-2	5684-30F
5.4-11.0	10	1.00	0-701-4	5-6684-10F
	20	1.50	0-701-4	5-6684-20F
7.0-11.0	10	0.50	0-701-4	6684-10F
	20	1.00	0-701-4	6684-20F
	30	2.00	0-701-4	6684-30F
8.0-12.4	10	0.50	0-701-4	6684-10X
	20	1.00	0-701-4	6684-20X
	30	2.00	0-701-4	6684-30X
12.4-18.0**	10	0.50	0-701-3	9684-10FS
	20	1.00	0-701-3	9684-20FS
	30	1.00	0-701-3	9684-30FS
	40	2.00	0-701-3	9684-40FS

UNCALIBRATED LEVEL SET MODELS

Freq Range (GHz)	Atten Range (dB)	Form Factor	Model No. *
2.0-4.0	10	0-701-2	4684-10
	20	0-701-2	4684-20
3.0-4.0	10	0-701-2	4684-10X
	20	0-701-2	4684-20X
	30	0-701-2	4684-30X
	40	0-701-2	4684-40X
	50	0-701-2	4684-50X
4.0-7.0	10	0-701-2	5684-10
	20	0-701-2	5684-20
	30	0-701-2	5684-30
	40	0-701-2	5684-40
	50	0-701-2	5684-50
	70	0-1069-2	5684-70
	80	0-1069-2	5684-80
	90	0-1069-2	5684-90
	100	0-1069-2	5684-100
5.4-11.0	10	0-701-4	5-6684-10
	20	0-701-4	5-6684-20
	30	0-701-4	5-6684-30
	40	0-701-4	5-6684-40
	50	0-701-4	5-6684-50
7.0-12.4	10	0-701-4	6684-10
	20	0-701-4	6684-20
	30	0-701-4	6684-30
	40	0-701-4	6684-40
	50	0-701-4	6684-50
	60	0-701-2	6684-60
	70	0-1028-2	6684-70
	80	0-1028-2	6684-80
	90	0-1028-2	6684-90
	100	0-1028-2	6684-100
12.4-18.0 **	10	0-701-3	9684-10S
	20	0-701-3	9684-20S
	30	0-701-3	9684-30S
	40	0-701-3	9684-40S
	50	0-701-3	9684-50S
	60	0-701-3	9684-60S
	70	0-1028-1	9684-70S
	80	0-1028-1	9684-80S
	90	0-1028-1	9684-90S

* Model numbers indicate Type N connectors. For SMA connectors, suffix model number with S. Ex: 6684-10S

To indicate panel-mounted version, precede model number with P. Ex: P6684-10

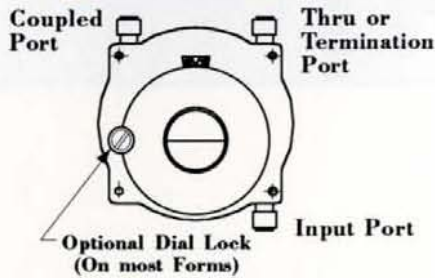
** Units 12.4-18.0 GHz are available with SMA connectors only.

VARIABLE COUPLER ATTENUATORS

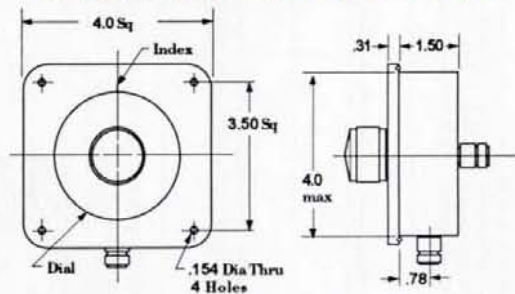
100 dB Range
Low Phase



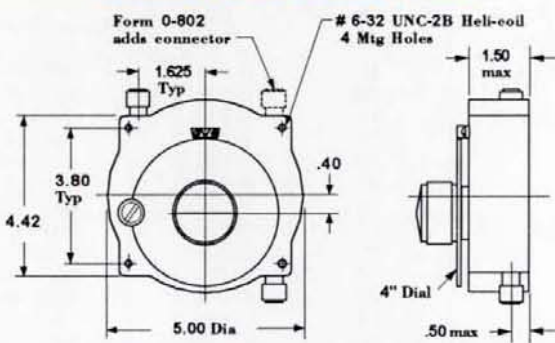
Typical Port Designation



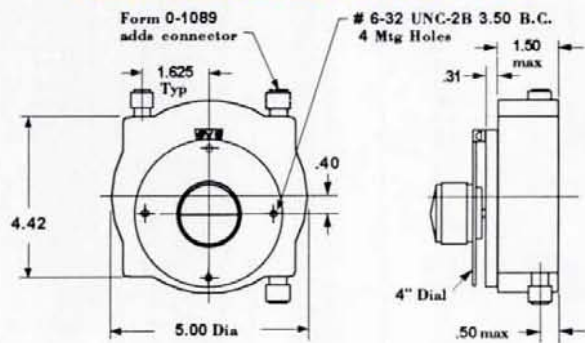
Panel Mount Standard Form 0-1212



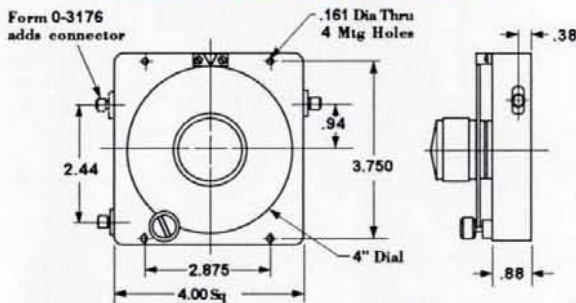
Standard Forms 0-660 & 0-802



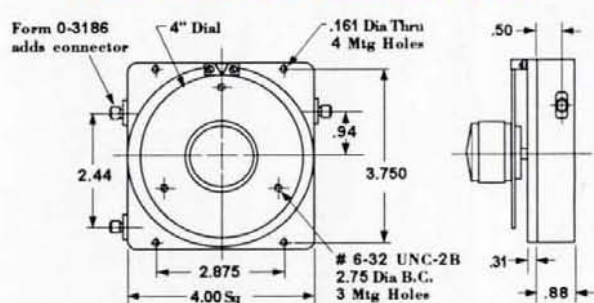
Panel Mount Forms 0-1074 & 0-1089



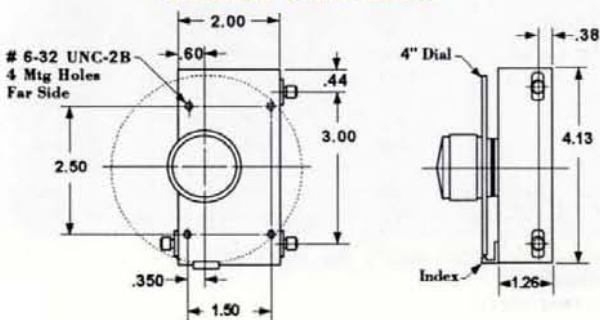
Standard Forms 0-3176 & 0-3177



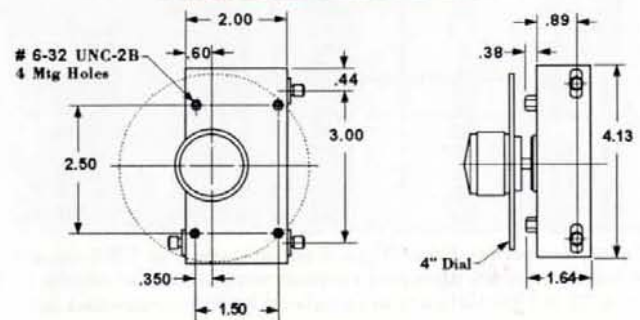
Panel Mount Forms 0-3186 & 0-3187



Standard Form 0-2366



Panel Mount Form 0-2760



VARIABLE COUPLER ATTENUATORS

100 dB Range
Low Phase

GENERAL DESCRIPTION

ARRA Variable Directional Couplers are ideal for applications requiring large dynamic attenuated output from the secondary line with minimum main line loss. These units are particularly useful in amplitude monitoring loops, AGC loops and mixer applications.

As in all directional couplers, the main line is isolated from the attenuated secondary line. This type of device can withstand extremely high power levels and may be utilized as a high power continuously variable attenuator with the appropriate termination on the main line output.

GENERAL SPECIFICATIONS

- Insertion Loss (max) 1.5 dB (Main Line)
6.0 dB (Secondary)
- Connectors * SMA or Type N Female
- VSWR (max) 1.5 after first 4 dB
- Dial Specifications Direct reading in
1 dB increments
- Phase Shift 6° typical
- Material:
 - Body Aluminum
 - Connectors MIL-C-39012
 - Finish ARRA Blue per
MIL-C-22750

Freq Range (GHz)	Atten Range (dB)	Atten vs Freq (±dB)	RF Power (Avg W)	Form Factor	Model No. *
0.5-1.0	60	1.00	200	0-3176	2951-60
	80	1.25	200	0-3176	2951-80
	60	1.00	15	0-3177	2952-60
	80	1.25	15	0-3177	2952-80
0.9-1.3	60	1.00	200	0-802	2-3951-60
	80	1.25	200	0-802	2-3951-80
	100	1.50	200	0-802	2-3951-100
	60	0.50	15	0-660	2-3952-60
	80	0.50	15	0-660	2-3952-80
	100	0.75	15	0-660	2-3952-100
0.960-1.215	90	0.50	5	0-1212	2-3954-90
	100	0.75	5	0-1212	2-3954-100
1.0-2.0	60	1.00	200	0-802	3951-60
	80	1.25	200	0-802	3951-80
	100	1.50	200	0-802	3951-100
	60	1.00	15	0-660	3952-60X
	80	1.25	15	0-660	3952-80X
	100	1.50	15	0-660	3952-100X
1.4-2.4	60	1.00	200	0-802	3-4951-60
	80	1.25	200	0-802	3-4951-80
	100	1.50	200	0-802	3-4951-100
	60	1.00	15	0-660	3-4952-60
	80	1.25	15	0-660	3-4952-80
	100	1.50	15	0-660	3-4952-100
2.0-4.0	60	1.00	200	0-802	4951-60
	80	1.25	200	0-802	4951-80
	100	1.50	200	0-802	4951-100
	60	1.00	15	0-660	4952-60X
	80	1.25	15	0-660	4952-80X
	100	1.50	15	0-660	4952-100X
4.0-8.0	60	1.25	1	0-2366	5955-60
	80	1.50	1	0-2366	5955-80
	60	1.25	50	0-2366	5956-60
	80	1.50	50	0-2366	5956-80

* To specify SMA connectors, suffix model number with S. Ex: 3952-60XS
 To specify panel-mounted version, precede model number with P. Ex: P3952-60X
 To specify dial lock option, precede model number with L. Ex: L3952-60X
 Note: Units covering other bandwidths are available; contact factory.

CONTINUOUSLY VARIABLE ATTENUATORS

50 & 100
Watts Avge
8 kW Peak

HIGH POWER



Form 0-1824
4" x 6" x 1.25"



Form 687
5" Dia

GENERAL SPECIFICATIONS

- Frequency bands from 500 - 12000 MHz
- Continuously variable for all values of attenuation
- Many models exhibit flat attenuation vs frequency characteristics
- Type N or SMA female connectors are standard
- Non-contacting
- Insertion Loss 0.5 dB max
- VSWR 1.50 max
- Directly calibrated models
- Material:
 - Body - Aluminum
 - Connectors - MIL-C-39012
- Finish: ARRA Blue per Mil-C-22750 (50 Watt models) or High Temp Black (100 Watt models)

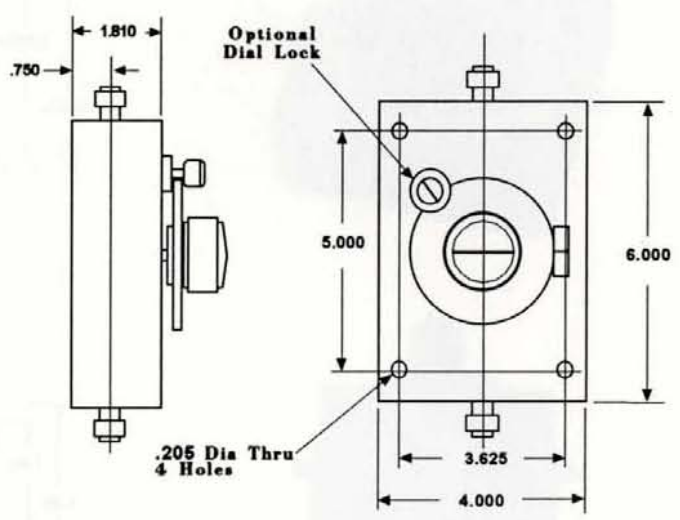
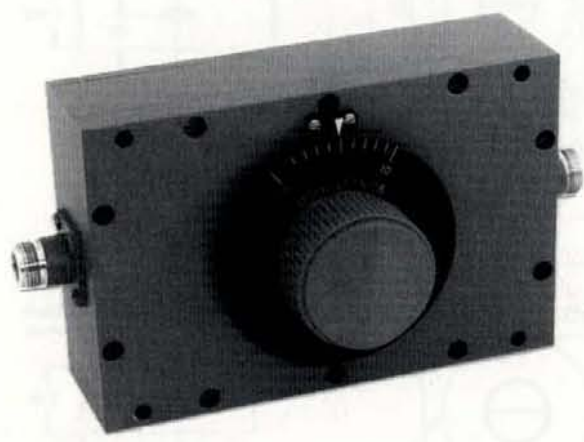
Freq Range (GHz)	Atten Range (dB)	Atten vs Freq (\pm dB)	RF Power * (Avge W)	Form Factor	Model No.**
0.5 - 1.0	10	N/A	50	00-1824	2487-10
0.925 - 1.225	15	0.5	50	00-1824	2-3487-15A
	30	N/A	50	00-1824	2-3487-30A
1.0 - 2.0	10	1.0	50	00-1824	3487-10
	20	N/A	50	00-1824	3487-20
	30	N/A	50	00-1824	3487-30
2.0 - 4.0	10	0.75	50	00-1824	4487-10
	20	N/A	50	00-1824	4487-20
	30	N/A	50	00-1824	4487-30
	30	N/A	50	00-1824	4487-30
4.0 - 7.0	10	1.0	100	687	5417-10
7.0 - 11.0	10	1.0	100	687	6417-10
7.0 - 12.0	10	N/A	100	687	5-6417-10

* All 50 Watt models can be modified to handle 100 Watts. Precede model number with H. Ex: H2487-10

** Model numbers indicate Type N connectors. To specify SMA connectors, suffix model number with S.

For locking screw option, precede model number with L. Ex: L2487-10 or HL2487-10 for 100 Watt version.

**HIGH POWER
DIRECTLY CALIBRATED MODELS**



Form 0-2266

GENERAL SPECIFICATIONS

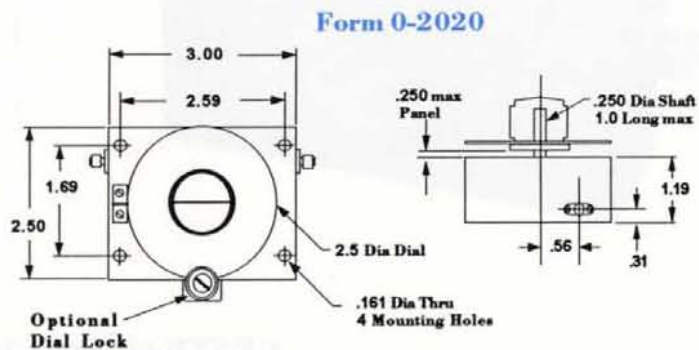
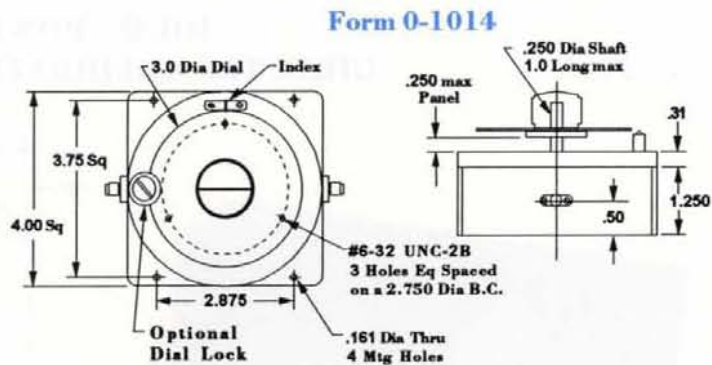
- Frequency bands from 500 - 4000 MHz
- Continuously variable for all values of attenuation
- Many models exhibit flat attenuation vs frequency characteristics
- Type N or SMA female connectors are standard
- Non-contacting
- Insertion Loss 0.5 dB max
- VSWR 1.50 max
- Directly calibrated models
- Material:
 - Body - Aluminum
 - Connectors - MIL-C-39012
- Finish: ARRA Blue per MIL-C-22750 (50 Watt models) or High Temp Black (100 Watt models)

Freq Range (GHz)	Atten Range (dB)	Atten vs Freq (\pm dB) *	RF Power ** (Aveg W)	Form Factor	Model No. ***
0.5 - 1.0	10	N/A	50	00-2266	2484-10
	15	0.5	50	00-2266	2-3484-15A
	30	N/A	50	00-2266	2-3484-30A
1.0 - 2.0	10	1.0	50	00-2266	3484-10
	20	N/A	50	00-2266	3484-20
	30	N/A	50	00-2266	3484-30
2.0 - 4.0	10	0.75	50	00-2266	4484-10
	20	N/A	50	00-2266	4484-20
	30	N/A	50	00-2266	4484-30

* Units with attenuation vs frequency specifications are supplied with direct-reading dials calibrated in 1 dB increments. Other models marked N/A are supplied with 180° dials for reference only.
 ** All 50 Watt models can be modified to handle 100 Watts. For this option, precede model number with H.
 *** Model numbers indicate Type N connectors. To specify SMA connectors, suffix model number with S. For dial lock option, precede model number with L. Ex: L2487-10 or HL2487-10 for 100 Watt version.

CONTINUOUSLY VARIABLE ATTENUATORS

High Power
50 Watts Avg
8 kW Peak



GENERAL SPECIFICATIONS

- Frequency bands from 925 - 18000 MHz
- Continuously variable for all values of attenuation
- Many models exhibit flat attenuation vs frequency characteristics
- Type N or SMA female connectors are standard
- Non - contacting
- Insertion Loss 0.5 dB max
- VSWR 1.50 max
- Directly calibrated models
- Material:
 - Body - Aluminum
 - Connectors - Stainless Steel
- Finish: ARRA Blue per MIL-C-22750
- Dial locking option available

Freq Range (GHz)	Atten Range (dB)	Atten vs Freq (\pm dB) *	RF Power (Avg W)	Form Factor	Model No. **
.925-1.225	15	0.75	50	0-1014	2-3617-15A
1.0-2.0	10	1.0	50	0-1014	3617-10F
	20	N/A	50	0-1014	3617-20
2.0-4.0	10	0.75	50	0-1014	4616-10X
	20	N/A	50	0-1014	4617-20X
4.0-8.0	10	N/A	20	0-2020	5617-10
	20	N/A	20	0-2020	5617-20
8.0-12.4	10	1.0	20	0-2020	6617-10
	20	1.5	20	0-2020	6617-20
8.0-18.0	10	2.0	20	0-2020	6-9617-10S***
	20	2.5	20	0-2020	6-9617-20S***
12.4-18.0	10	1.0	20	0-2020	9617-10S***
	20	1.5	20	0-2020	9617-20S***

* Units with attenuation vs frequency specifications are supplied with direct-reading dials calibrated in 1 dB increments. Other models marked N/A are supplied with 180° dials for reference only.

** Model numbers indicate Type N connectors. To specify SMA connectors, suffix model number with S. To specify dial-locking option, precede model number with L. Ex: L5617-10S

*** Available with SMA connectors only.

CONTINUOUSLY VARIABLE ATTENUATORS

500 Watts Avge
10 kW Peak

SUPER HIGH POWER

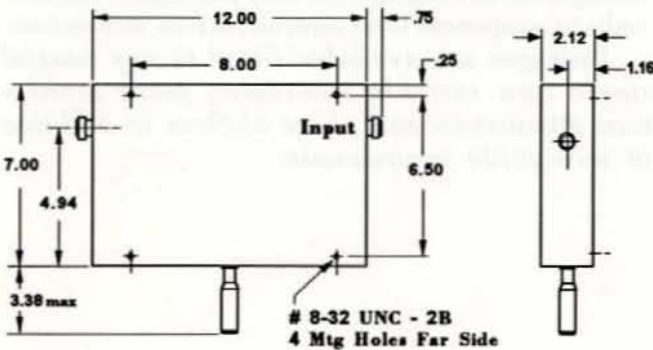
GENERAL SPECIFICATIONS

RF Power 500 Watts average
10 kW peak
Connectors Type N Female
SC Conn optional
Control Micrometer Head

Material:
Body Aluminum
Connectors MIL-C-39012
Finish High Temperature
Black
Mounting Provision Tapped holes on
bottom surface



Form 0-2170



GENERAL DESCRIPTION

These models, due to their extremely high power capability, require heat sinking. This should be done at the bottom surface of the attenuator which is unpainted. Altho not mandatory, it is also recommended that a blower be utilized, when available. Other models having higher attenuation

can be quoted. For such requirements, please contact the factory direct. Also, as these units are supplied with a micrometer control, a calibration chart may be supplied at any designated frequency at an additional charge.

Freq Range (GHz)	Atten Range (dB)	Ins Loss (Max dB)	VSWR (Max)	Model No. *
1.0 - 2.0	10	0.5	1.5	3417-10X
2.0 - 4.0	20	1.0	1.5	4417-20X

* For SC connectors, precede model number with SC. Ex: SC4417-20X

GENERAL DESCRIPTION

As an alternative to conventional DC motor control for remote operation, ARRA now offers stepper motor controlled components.

Brushless microstepping systems provide extremely fast and accurate positioning of ARRA's attenuators and phase shifters. Microprocessor based digital electronics offer complete control programming flexibility. The controls are easily interfaced with other equipment thru RS-232 and IEEE-488 communications as well as dedicated 5-24 VDC inputs and outputs.

Because stepper motors are brushless, there are no duty cycle constraints to worry about. Also, no motor maintenance is necessary.

Stepper motor systems are available in a variety of configurations ranging from fully packaged complete units to component level controls, drives, and motors.

Packages are available fitted to any coaxial single turn variable attenuator, many multi-turn attenuators and phase shifters in addition to waveguide components.

SAMPLE CONFIGURATIONS

