

## Models 8320 & 8321 Programmable Attenuator Units

Labview Attenuation Software & Graphical User Interface

up to 26.5 GHz



### Features

- /// Provides a flexible, easy to program, low cost solution for your bench test/calibration setups and subsystem applications.
- /// Front panel local control and display make it ideal for lab and manual test environments.
- /// Multi-Channel attenuation paths (up to 2 channels for 8320 & up to 12 channels for 8321)
- /// Relative vs. Nominal attenuation step function.
- /// Various Configurations, up to 26.5 GHz:
  - dc to 3, 6, 18 & 26.5 GHz
  - Attenuation ranges up to 127 dB
  - Solid-State (GaAs FET & PIN)
  - New MMIC switched digital attenuators
  - Relay Switched
- /// Accuracy & Repeatability.
- /// Designed to incorporate Aeroflex / Weinschel's line of digitally controlled programmable attenuators.
- /// Supplied with industry standard communication interfaces:
  - RS-232 (Serial)
  - Ethernet Control (10/100 BaseT)
  - USB
  - GPIB/IEEE-488 (HS-488 ready) optional
- /// Labview based Attenuation Control Software included.
- /// Rack Configurable: Rack ears are supplied with Model 8321 Series units only.

### Applications

Applications for the 8320 and 8321 Series range from providing control of a single Programmable Attenuator in a bench test/lab environment, to complex system applications where the 8320/8321 Series are employed in conjunction with many devices to create custom subsystems to reduce overall design cost. Multiple programmable attenuators can be used in conjunction with other coaxial devices such as switches, power combiners, directional couplers, and filters to create various multi-channel test configurations.

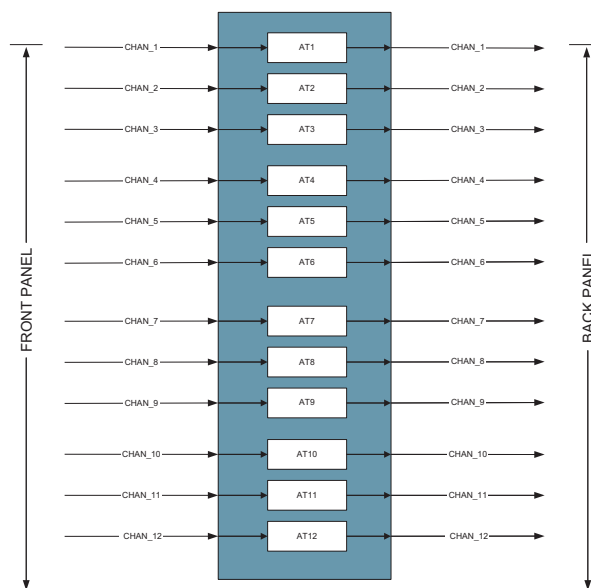
Manual control is accomplished without the need of any additional hardware. Remote control is easily implemented using only a PC.

### Description

Aeroflex / Weinschel's 8320 and 8321 Series Programmable Attenuator Units represent a new streamlined approach in programmable attenuation for bench test and subsystem applications. Standard 8320 and 8321 Series designs house and control various Aeroflex / Weinschel Programmable Attenuator Models (3200-XE, 3400, 150T, and 4200 Series) via front panel controls, ethernet, USB and Serial communications interfaces. A GPIB (IEEE-488) interface is also available as an option.

The 8320 series are single or dual channel configurations housed in half rack enclosures. The 8321 series are multi-channel configurations housed in 19 inch enclosures and can be configured for up to 12 attenuation channels. Both series can be configured for front, rear or through (front to rear) RF signal routing.

Aeroflex / Weinschel also provides custom subsystems where a variety of test configurations can be incorporated within a single unit. Contact us with your specialized needs.



Simplified 12 Channel Block Diagram

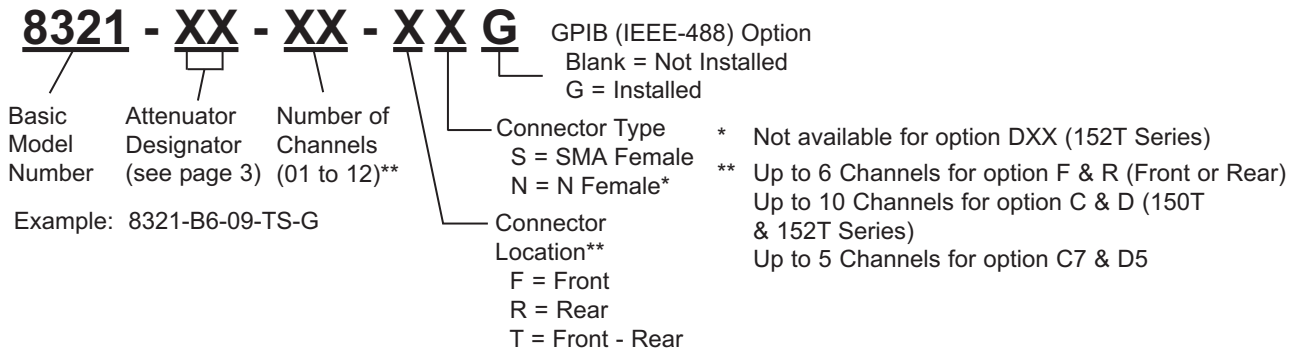
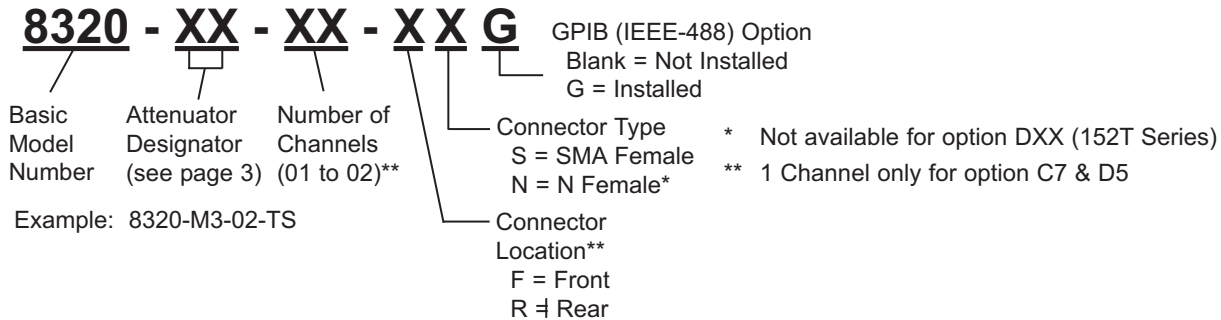
For additional information on the Model 8220 & 8321, visit our website @ [www.aeroflex.com/AW8320&8321](http://www.aeroflex.com/AW8320&8321)

## Specifications

SPECIFICATION	DESCRIPTION
<b>Input Power Requirements</b>	ac 100 to 240 Vac, 50/60 Hz, 180 Watts
<b>Environmental</b>	Operating Temperature: 0° to +50°C Storage Temperature: -67° to +167 °F (-55° to +75°C) Humidity: 96% (non-condensing) Altitude: 40,000' (12,192M)
<b>RS-232 Bus (1) Serial I/O</b>	Connector: 9-pin male D Signals: TXD, RXD, RTS, CTS, GND Baud Rates: 9600 to 230400 Data Bits: 8 Handshaking: None, RTS/CTS Parity: None
<b>USB 2.0</b>	Connector: Mini B
<b>Ethernet</b>	10/100 Base T Connector: Standard RJ45
<b>IEEE-488 Bus (2) (GPIB option)</b>	Connector: 24-pin per IEEE-488.1 Protocols: per IEEE-488.2
<b>RF Characteristics(3)</b>	Refer to Configuration Matrix (pg 3)

1. RS-232 can be used with standard PC serial port for short and medium distances (up to approximately 50 ft).
2. GPIB/IEEE-488 model allows user-selectable addresses. (Not included on standard models, must be ordered as an option).
3. Refer to Individual data sheet for detailed specifications on internal programmables.

## Model Number Configuration Matrix



Electro-mechanical								
Frequency Range	Attenuator Designation	Attenuator Model	Range (dB)	Step Size (dB)	Insertion Loss (maximum)	VSWR (maximum)	<input checked="" type="checkbox"/> RoHs	
DC-3 GHz	A	1	3205-1E	70	10	3.75 dB	1.4	
		2	3205-2E	55	5	3.75 dB	1.4	
		3	3205-3E	1.5	0.1	3.75 dB	1.4	
		4	3201-1E	31	1	4.00 dB	1.4	
		5	3206-1E	63	1	4.25 dB	1.4	
		6	3200-1E	127	1	5.25 dB	1.4	
		7	3200-2E	63.75	0.25	5.25 dB	1.4	
		8	3209-1E	64.5	0.1	6.00 dB	1.4	
DC-6 GHz	B	1	3404-15	15	1	3.50 dB	1.55	
		2	3404-55	55	5	3.50 dB	1.55	
		3	3404-70	70	10	3.50 dB	1.55	
		4	3406-55	55	1	4.50 dB	1.55	
		5	3408-55.75	55.75	0.25	6.00 dB	1.55	
		6	3408-103	103	1	6.00 dB	1.55	
DC-18 GHz	C	1	150T-70	70	10	3.25dB	1.75	✓
		2	150T-15	15	1	3.50 dB	1.95	✓
		3	150T-75	75	5	3.50 dB	1.95	✓
		4	150T-110	110	10	3.50 dB	1.95	✓
		5	150T-31	31	1	3.75 dB	1.95	✓
		6	150T-62	62	2	3.75 dB	1.95	✓
		7	150T-15 & 150T-110	125	1	5.25 dB	1.95	✓
DC-26.5GHz	D	1	152AT-70	70	10	4.75 dB	1.95	✓
		2	152T-15	15	1	5.00 dB	1.95	✓
		3	152T-75	75	5	5.00 dB	1.95	✓
		4	152T-90	90	10	5.00 dB	1.95	✓
		5	152T-90 & 152T-15	105	1	6.50 dB	1.95	✓
Solid State								
0.8 to 2.5/3 GHz	J	1	4226-63	63	1	4.75 dB	1.6	
		2	4228-63.75	63.75	0.25	6.00 dB	1.6	
		3	4228-103	103	1	6.00 dB	1.6	
0.01 to 2.5 GHz	K	1	4238-63.75	63.75	0.25	10.00 dB	1.75	
		2	4238-103	103	1	10.00 dB	1.75	
0.01 to 2.5 GHz	L	1	4246-63	63	1	11.00 dB	2.0	
		2	4248-63.75	63.75	0.25	14.00 dB	2.0	
		3	4248-103	103	1	14.00 dB	2.0	
0.2 to 6 GHz	M	1	4205-31.5	31.5	0.5	4.00 dB	1.8	✓
		2	4205-63.5	63.5	0.5	6.00 dB	1.8	✓
		3	4205-95.5	95.5	0.5	8.50 dB	2.0	✓

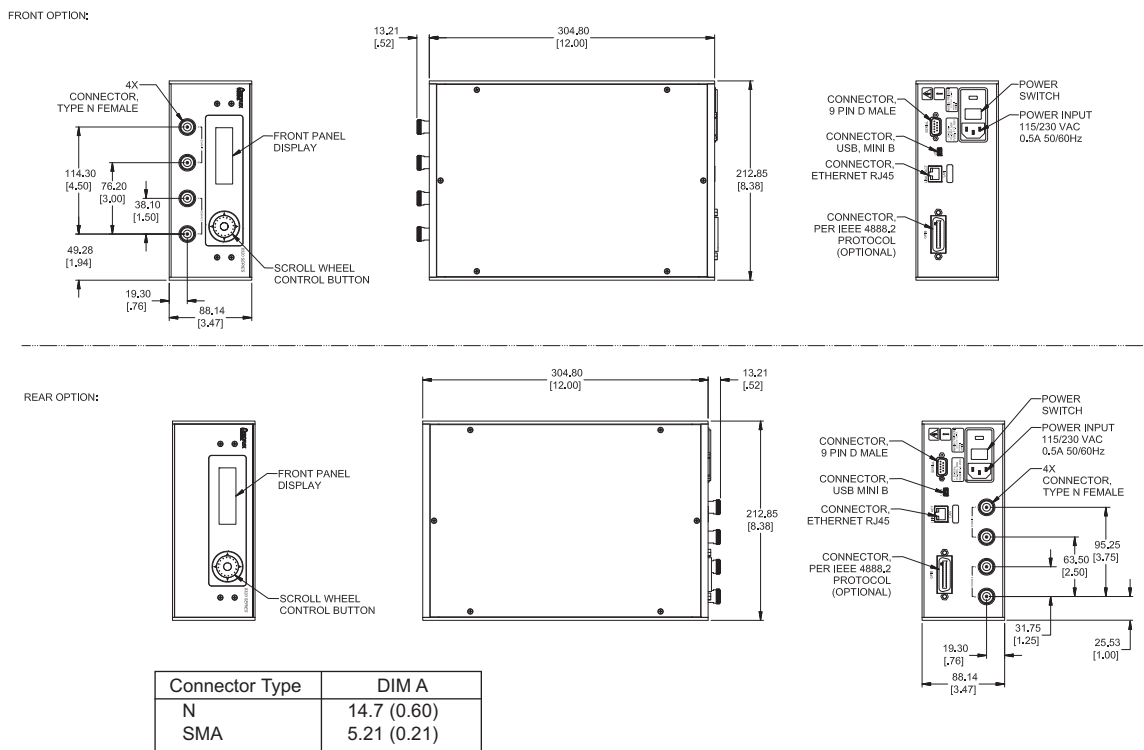
**RoHs** compliance dependent on attenuator installed. Some attenuators are NOT compliant.

# Programmable Attenuators

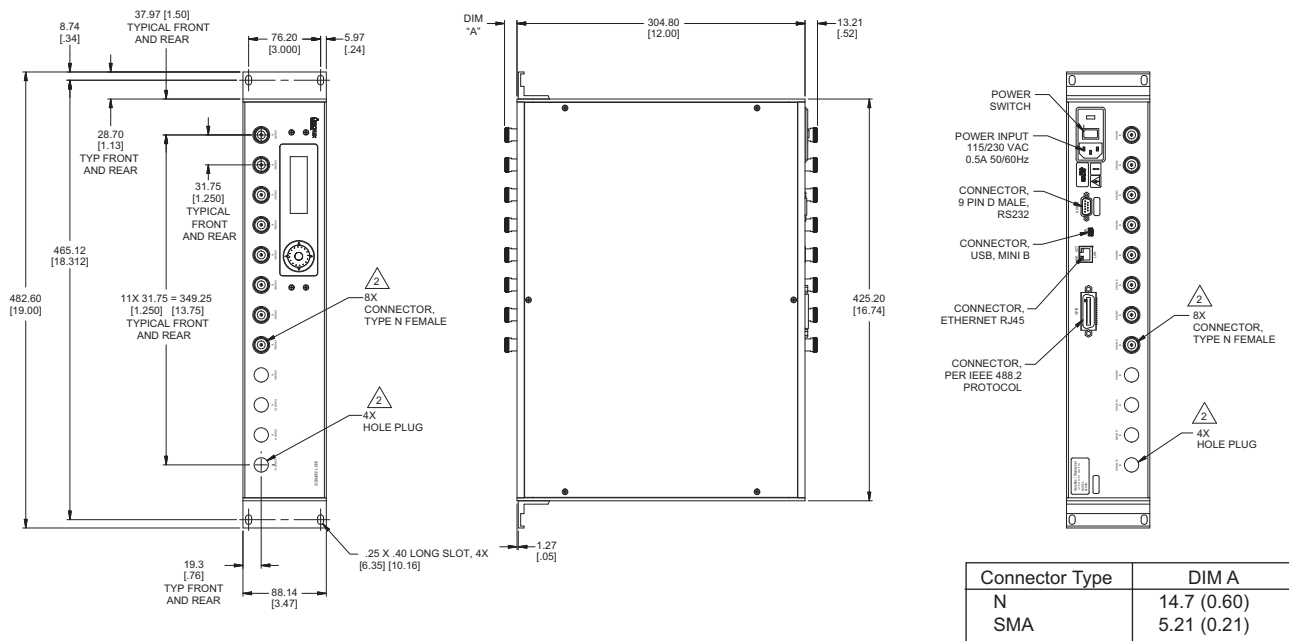


## Physical Dimensions

Model 8320, Half Rack Unit, 1 or 2 channels:



Model 8321, Standard 19 in Rack Unit up to 12 channels:



**NOTE:**

- All dimensions are given in mm (inches).
- Connectors and hole plugs are installed as required and determined by number of channel in unit. 2 channel shown for Model 8320 and 8 channel unit shown for 8321.
- Connector location (Front/Rear) may vary depending on Model ordered.