

Programmable Attenuators



Models 4216 & 4218 Pin Switched Programmable Attenuators

0.8 to 2.3 GHz
1 Watt

Low Insertion Loss, Fast Switching



Features

Ideal for use in Wireless/Cellular, RF Simulation/Emulation, & Communication Test Applications.

- /// **Available in 6 and 8 Cell Configurations -**
127 dB/1 dB steps
63 dB/1 dB steps
63.75/0.25 dB steps
- /// **High accuracy & fast switching speed**
- /// **Built-in TTL Driver Circuitry**
- /// **Special Configurations Available Upon Request.**
- Custom Cell/Step Size & Frequency Bands

Specifications

NOMINAL IMPEDANCE: 50 Ω
FREQUENCY RANGE: 0.8 to 2.3 GHz

MAXIMUM SWR:	
Frequency Range (GHz)	SWR
0.8 - 2.3	1.50

CELL CONFIGURATIONS:			
Model Number	NO. Cells	Attenuation Range/Steps (dB)	Cell Increments (dB)
4218-127	8	127/1	1, 2, 4, 8, 16, 32, 64
4218-63.75	8	63.75/0.25	0.25, 0.5, 1, 2, 4, 8, 16, 32
4216-63	6	63/1	1, 2, 4, 8, 16, 32

INCREMENTAL ATTENUATION ACCURACY:

Frequency Range (GHz)	Accuracy
0.8 - 2.3	± 0.4 dB or 2.0%

INSERTION LOSS, Nominal (dB):

Frequency Range (GHz)	4218-X	4216-63
0.8 - 1.0	3.00	2.40
1.0 - 2.3	4.90	3.40

MONOTONICITY: 0.8 to 2.3 GHz

3rd ORDER INTERMODULATION (IM3): -55 dBm typical, measured with two +10 dBm tones @ 869 MHz (f1) and 894 MHz (f2), the IM3 frequency being 847 MHz (2f1-f2).

$$IP3 \text{ (input)} = +41.5 \text{ dBm}$$

The input IP3 is derived from the following relationship:

$$IP3 = \frac{3(Pin-\alpha)-IM3}{2} + \alpha$$

where α = the insertion loss (dB) at the IM3 frequency;
Pin=single tone input power (dBm).

POWER RATING: +24 dBm operating
+30 dBm (1 dB compression point)

SWITCHING TIME: 2 μsec. maximum

OPERATING VOLTAGE: +5 V ± 5% @ 160 mA for 6 cell/
200 mA for 8 cell typical

TEMPERATURE RANGE (Operating): 0°C to +70°C

TEMPERATURE COEFFICIENT: < 0.002 dB/dB/°C

CONNECTORS: SMA female connectors - mate nondestructively with MIL-C-39012 connectors.

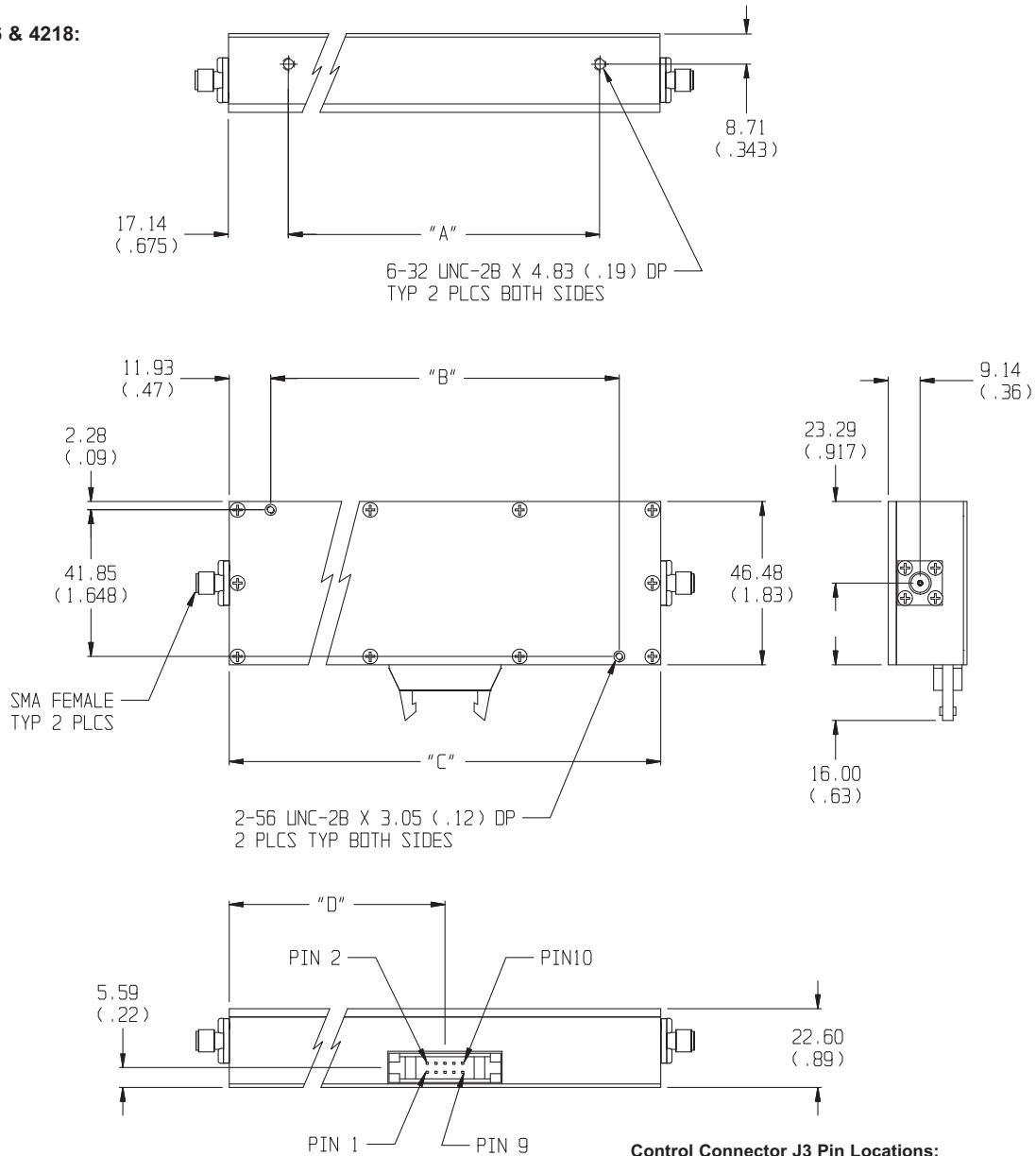
CONTROL CONNECTOR: AMP-Latch 10 pin ribbon cable connector mates with AMP P/N 746285-1 (supplied with each unit)

WEIGHT: 4216-X 175 g (6.1 oz)
4218-X 215 g (7.5 oz)

CONTROL CONFIGURATION: Units are supplied with a built-in TTL interface. Each unit is supplied with a mating 10 pin connector (Amp 746285-1). Refer to Physical Dimensions for mating connector pin/wiring details. Two wires are specified for supply voltage and ground. The remaining wires will accept TTL control signals to activate or de-activate a particular attenuation cell. A TTL high will energize a cell to the high attenuation state, whereas a TTL low will maintain a cell in its zero attenuation state.

PHYSICAL DIMENSIONS:

Models 4216 & 4218:



Model No.	A	B	C	D
4216-X	63.50 (2.50)	71.12 (2.80)	94.74 (3.73)	47.49 (1.87)
4218-X	88.90 (3.50)	99.56 (3.92)	123.19 (4.85)	61.72 (2.43)

NOTE: All dimensions are given in mm (inches) and are maximum, unless otherwise specified.

Control Connector J3 Pin Locations:

TTL Conn PIN No. (J3)	4216-63 dB (Cell)	4218-63.75 dB (Cell)	4218-127 dB (Cell)
1	1	0.25	1
2	2	0.50	2
3	4	1	4
4	8	2	8
5	16	4	16
6	32	8	32
7	NC	16	32*
8	NC	32	32*
9	+5V	+5V	+5V
10	COM	COM	COM

NC = Not Connected
*Pins 7 and 8 combined to create 64 dB cell.