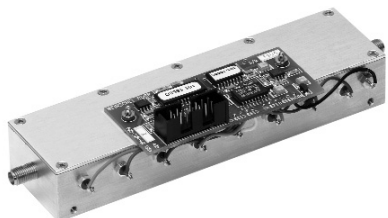


**Models 3404T, 3406T & 3408T**  
**SmartStep® Programmable Attenuators**  
 with built-in Microprocessor-Based Driver  
 For Use with Weinschel 8210A Controller

**dc to 6.0 GHz**  
**1 Watt**



## Features

- /// **Higher Frequency range to 6 GHz.**
- /// **Wide Selection of Attenuation Ranges & Step Sizes**
  - 0 to 15 dB in 1 dB steps
  - 0 to 55 dB in 1 dB steps
  - 0 to 55.75 in 0.25 dB steps
  - 0 to 103 dB in 1 dB steps
  - 0 to 70 dB in 10 dB steps
- /// **High Quality Construction & Connectors**
- /// **Built-In TTL\CMOS Interface Driver Circuitry**
- /// **Special Configurations Available Upon Request**

## Description

This line of intelligent programmable step attenuators with a built-in digital interface are designed to simplify the control and integration of these devices into subsystem and bench applications. This series of Programmable Step Attenuators is designed for use in automatic test equipment and OEM systems operating in the dc to 6 GHz frequency range. These models are available in many standard attenuation ranges and cell configurations. Each cell contains a double-pole, double-throw relay that provides a minimum loss or attenuated path for the RF signal.

Microstrip circuitry and special compensation techniques produce flat attenuation versus frequency characteristics. The microstrip construction, using thick-film circuit elements, ensures product uniformity. To minimize RF leakage, the 3400T Series Attenuators are provided with gold-plated contact areas and feedthrough filters at each control terminal.

## Specifications

**NOMINAL IMPEDANCE:** 50 Ω  
**FREQUENCY RANGE:** dc to 6.0 GHz

MAXIMUM SWR:	
Frequency Range (GHz)	SWR
dc - 3	1.30
3 - 6	1.45

## CELL CONFIGURATIONS:

Model Number	NO. Cells	Attenuation Range/Steps (dB)	Cell Increments (dB)
3404T-15	4	15/1	1, 2, 4, 8
3404T-55	4	55/5	5, 10, 20, 20
3404T-70	4	70/10	10, 20, 20, 20
3406T-55	6	55/1	1, 2, 4, 8, 16, 24
3408T-55.75	8	55.75/0.25	0.25, 0.5, 1, 2, 4, 8, 16, 24
3408T-103	8	103/1	1, 2, 4, 8, 16, 24, 48*

\*48 dB cell comprised of two 24 dB cells

## INCREMENTAL ATTENUATION ACCURACY:

Frequency Range (GHz)	Accuracy
dc - 3	±0.3 dB or 2% whichever is greater
3 - 6	±0.4 dB or 3% whichever is greater

## MAXIMUM INSERTION LOSS (dB):

Frequency Range (GHz)	3404T-15 3404T-55 3404T-70	3406T-55	3408T-55.75 3408T-103
dc - 3	1.80	2.60	3.40
3 - 6	2.60	3.80	5.00

- MONOTONICITY:** dc to 6.0 GHz (minimum 1 dB change)
- POWER RATING:** 1 watt average to 25°C ambient temperature, derated linearly to 0.25 watt @ 70°C. 50 watts peak (5 μsec pulse width; 1% duty cycle)
- POWER COEFFICIENT:** <0.005 dB/dB/watt
- RATED SWITCH LIFE:** 5 million cycles operations per cell @ 0 dBm
- SWITCHING TIME:** 6 msec. maximum at nominal rated voltage
- RELEASE TIME:** 5 msec maximum
- SWITCHING SPEED:** 5 Hz maximum per relay
- OPERATING VOLTAGE:** +12V (+13V maximum; +9V minimum)
- OPERATING CURRENT:** 17 mA typical per cell @ +12V
- TEMPERATURE RANGE (Operating):** -30°C to +70°C

# Programmable Attenuators



## Specifications - Con't

### DRIVER INTERFACE:

Parameter	Specification
V <sub>IL</sub>	Low-level input V: -0.5V min, 0.8V max
V <sub>IH</sub>	High-level input V: 2.0V min, 5.25V max
I <sub>PU</sub>	Pullup current: 50 μA min, 400 μA max
V <sub>IN</sub>	Supply Voltage: +12.0 to +15.0V
I <sub>IN</sub>	Supply current: 25 mA
I <sub>CELL</sub>	Supply current: 16.6 mA @ 12V (digital section)

**TEST DATA:** Test data is available at additional cost.

**CONNECTORS:** SMA female connectors per MIL-STD-348 interface dimensions - mate nondestructively with MIL-C-39012 connectors.

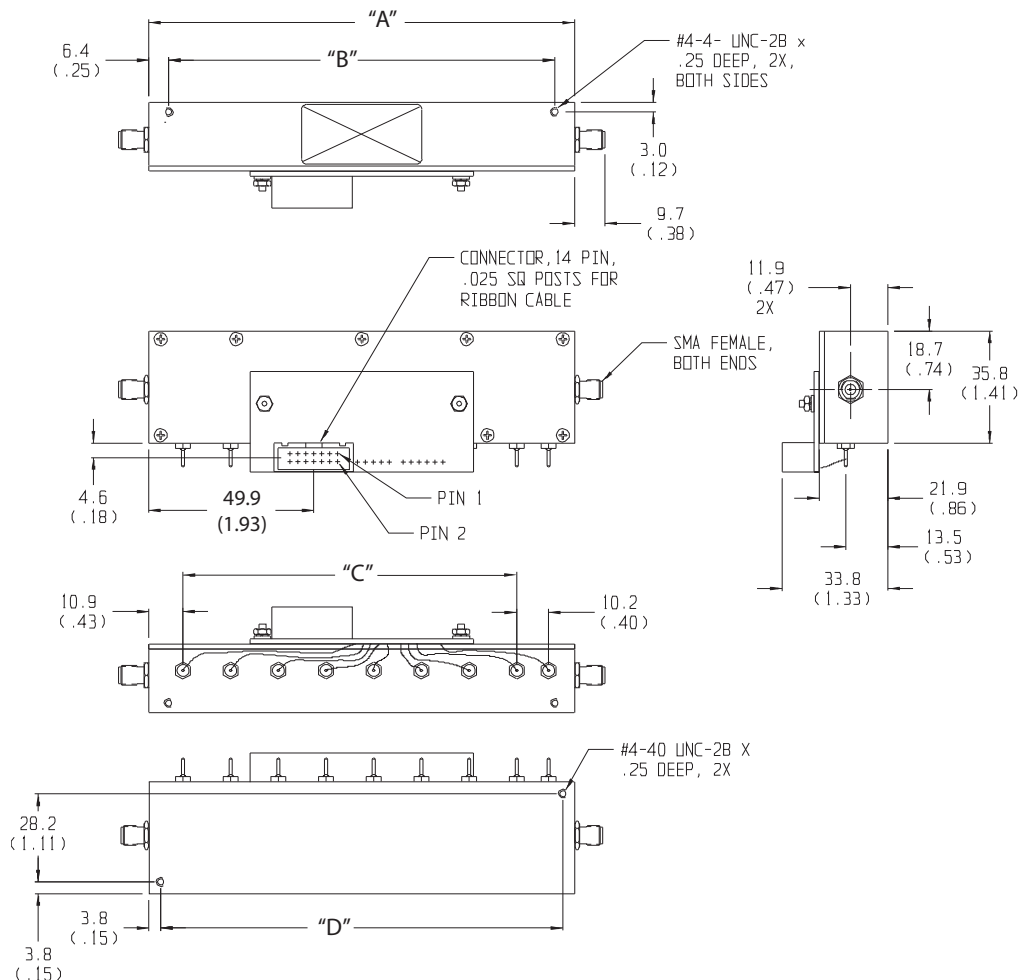
**INTERFACE CONNECTOR:** 14 pin .025 square post header on .1 center. Mates with Amp connector 746285-2 or equivalent.

### CONSTRUCTION:

Housing: Aluminum  
 Connectors: Stainless steel body and beryllium copper contacts.  
 Control terminals: Brass/Copper, Silver plated

**WEIGHT (Typical):** 3406T-X: 99 g (3.5 oz)  
 3408T-X: 135 g (4.8 oz)

### PHYSICAL DIMENSIONS:



Model No.	No. Cells	A	B	C	D
3408-X	8	136.1 (5.36)	123.4 (4.86)	7 EQ SPCS @ 15.20 (.60) = 106.7 (4.20)	128.5 (5.06)
3406-X	6	105.7 (3.66)	93.0 (3.66)	5 EQ SPCS @ 15.20 (.60) = 76.0 (3.00)	98.0 (3.86)
3404-X	4	75.18 (2.96)	62.48 (2.46)	3 EQ SPCS @ 15.20 (.60) = 45.72 (1.80)	67.56 (2.66)

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