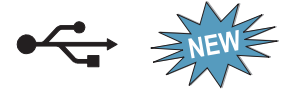


# Programmable Attenuators



## Model 4205 Digital Attenuator TTL & USB Control, SMA Connectors

0.2 to 6 GHz



### Features

- /// Ideal for Automated Test Equipment (ATE), WiMAX, LTE, WiFi, 3G/4G Fading Simulators, Engineering/ Production Test Lab environments
- /// Excellent Solid-state Repeatability & Performance
- /// Uninterrupted RF when changing attenuation values
- /// Ruggedized Construction

### Description

API / Weinschel's New series of MMIC Digital Attenuators operates over the 0.2 to 6 GHz frequency range and is in a variety of attenuation ranges up to 95.5 dB in 0.5 dB steps. These units can be controlled using either parallel TTL or USB interfaces.

### Specifications

**NOMINAL IMPEDANCE:** 50  $\Omega$   
**FREQUENCY RANGE:** 0.2 to 6.0 GHz

#### CELL CONFIGURATIONS:

Model Number	Attenuation Range/Steps (dB)	Attenuation Increments (dB)
4205-31.5	0 -31.5 / 0.5	0.5, 1, 2, 4, 8, 16
4205-63.5	0-63.5 / 0.5	0.5, 1, 2, 4, 8, 16, 32
4205-95.5	0-95.5 / 0.5	0.5, 1, 2, 4, 8, 16, 32, 32

#### ATTENUATION ACCURACY (dB):

dB range	4205-31.5	4205-63.5	4205-95.5
1 to 7.5 dB	$\pm 0.5$	$\pm 0.5$	$\pm 0.5$
8 to 11.5 dB	$\pm 1.0$	$\pm 1.0$	$\pm 1.0$
12 to 31.5	$\pm 1.25$	$\pm 1.25$	$\pm 1.25$ or 4%
32 to 63.5	---	$\pm 1.25$	$\pm 1.25$ or 4%
64 to 85 dB	---	---	$\pm 1.25$ or 4%
86 to 95 dB	---	---	$\pm 5\%$

#### MAXIMUM INSERTION LOSS (dB):

Frequency (GHz)	4205-31.5	4205-63.5	4205-95.5
0.2 - 3.0	3.0	4.5	6.5
3.0 - 6.0	4.0	6.0	8.0

#### MAXIMUM SWR:

Frequency (GHz)	4205-31.5	4205-63.5	4205-95.5
0.2 - 0.8	1.50	1.80	2.00
0.8 - 5.0	1.50	1.50	1.60
5.0 - 6.0	1.70	1.50	1.90

**POWER RATING:** +23 dBm maximum  
**SWITCHING SPEED:** 1  $\mu$ sec maximum (TTL)  
 5 msec typical (USB)  
**CONTROL LOGIC:** TTL or USB  
**OPERATING VOLTAGE:** +5 V @ 50 mA  
**TEMPERATURE RANGE:** 0  $^{\circ}$ C to + 70  $^{\circ}$ C

**TEST DATA:** Test data can be provided at additional cost.  
**CONNECTORS:** SMA female connectors - mates nondestructively with other SMA connectors per MIL-C-39012, 3.5mm and other 2.92mm connectors.

**CONTROL CONNECTOR:** The TTL control connector is an AMP-Latch 10 pin ribbon cable connector that mates with AMP P/N 746285-1 (supplied with each unit). The USB is a 5-pin female series B mini socket and mates with most standard USB 5-pin male series B mini plug connectors.

**WEIGHT:** 83 g (2.92 oz)

### Control Software Included



API / Weinschel's Labview based USB Control Center Software (AUCS) can also be used in the operation of this series of digital attenuators. The AUCS will allow the user to setup, control and perform test and measurements using these digital attenuators over a standard USB 2.0 communication interface.

**CONTROL CONFIGURATION:**

Units are supplied with both parallel-TTL and USB 2.0 interfaces. The mode of operation is determined by the source of DC power to the unit. NOTE: Do not simultaneously connect DC power to the J4 TTL connector while the USB is connected or to the USB while the J4 TTL is connected.

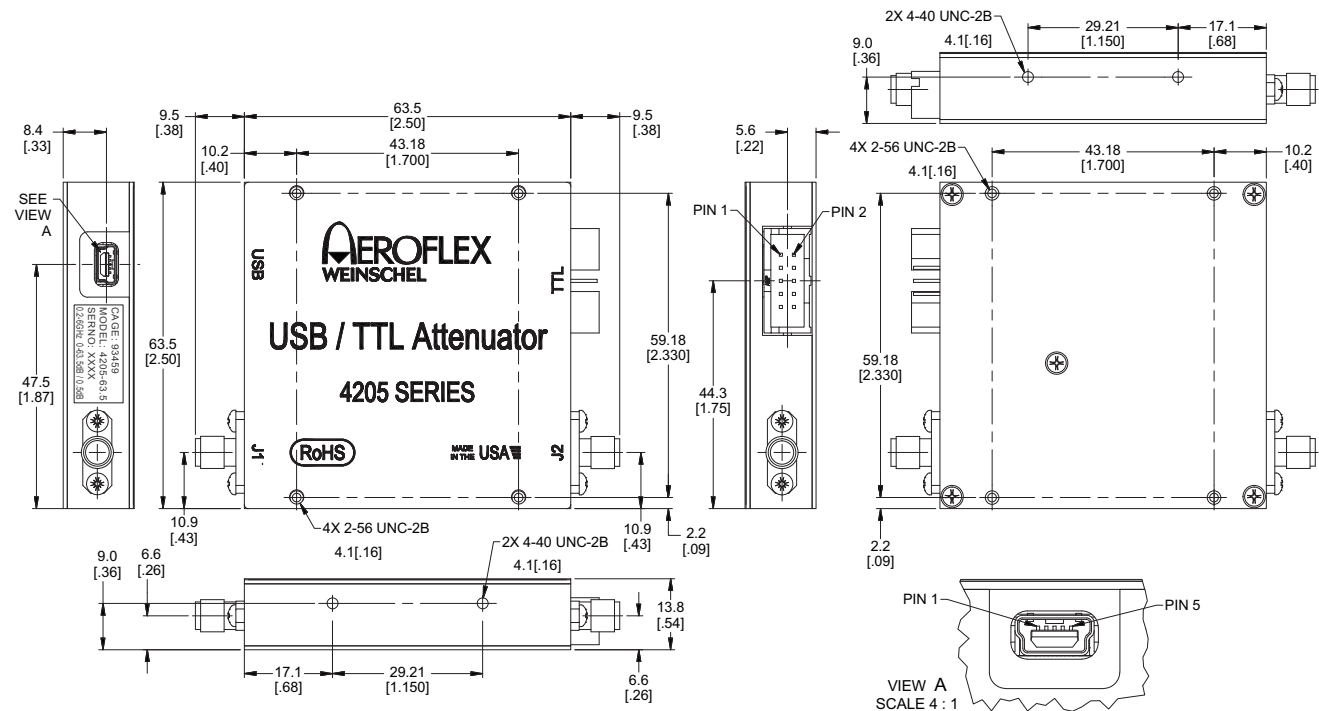
**USING TTL CONTROL:** Each unit is supplied with a mating 10 pin connector (Amp 746285-1). Refer to Physical Dimensions for mating connector pin/wiring details. Two pins are specified for supply voltage and ground. The remaining pins will accept TTL control signals to activate or de-activate a particular attenuation cell. A TTL high will

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energize a cell to the high attenuation state, whereas a TTL low will maintain a cell in its zero attenuation state.

**USING USB CONFIGURATION:** The USB interface is compatible with standard USB 2.0 interfaces. In USB mode, DC power to the attenuator is provided by the host USB connection. The attenuator operates as a USB CDC device and accepts simple ASCII text commands. This allows the unit to be controlled from any system capable of sending data via a standard COM port-style interface.

**PHYSICAL DIMENSIONS:**



**USB Control Connector J3 Pin Locations:**

USB Conn PIN No. (J3)	Function
1	V BUS +5 V
2	Data-
3	Data+
4	ID (NC)
5	GND

**TTL Control Connector J4 Pin Locations:**

TTL Conn PIN No. (J3)	4205-31.5 dB (Cell)	4205-63.5 dB (Cell)	4205-95.5 dB (Cell)
1	0.5	0.5	0.5
2	1	1	1
3	2	2	2
4	4	4	4
5	8	8	8
6	16	16	16
7	NC	32	32
8	NC	NC	32
9	+5V	+5V	+5V
10	GND	GND	GND

NC = Not Connected.

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