DC~50GHz 2.4mm110dB Programmable Step Attenuator P/N: YX-PSADC-50G-110-10P1

Overview:

The 2.4mm 110dB programmable stepping attenuator provides step attenuation of 0 to 110dB across a wide frequency range of DC to 50GHz, with a minimum step size of 10dB. It offers high accuracy, good repeatability, low insertion loss, and long service life. This device is primarily used to control the signal amplitude entering the system, manage output power, adjust matching between the signal source and

Features:

- High attenuation accuracy
- Good repeatability
- Low insertion loss
- Long service life

Typical Applications:

- Broadband spectrum analyzers
- Broadband vector network analyzers
- Broadband synthesized signal sources
- Noise figure test instruments
- Microwave automatic test systems
- Wireless communication systems

RoHS

Performance characteristics			
Frequency Range	DC ~ 50GHz		
Attenuation	110dB		
Step amount	10dB		
Connector	2.4mm		
Electrical connector	Pitch: 2.54mm×2.54mm; Straight needle section: 0.64mm×0.64mm; Number of cores: 14		
VSWR	≤2.0		
Insertion loss	≤5.0dB (when 0dB)		
Attenuation	10~30	40 ~80	90~110
Attenuation Accuracy	±1.5	±3.5	±5.0
Repeatability	≤0.05dB (typical value)		
Max input power	1W (continuous wave)		
Minimum service life	1 million cycles (per stage)		
Working temperature	-20 ℃ ~+75 ℃		

Storage temperature	-55 ºC ~85 ºC
Impact (working condition)	10g, 6ms, three axial and six directions.
Vibration (working state)	Acceleration 5g, 50~2000Hz
Humidity resistance	240h@40 ºC, 95%RH

Mechanical Characteristics	
Weight	Max. 0.42kg
Switching speed	20ms Max
Relay drive voltage	20V ~ 28V, rated voltage: 24V
Relay driving current	126mA (rated voltage at room temperature, per stage)

Attenuation Composition:

The programmed attenuator contains five parts inside, each part can be switched between the direct and different attenuators to achieve the switch of direct and attenuator. Such as the first part contains pass-through slice and 10dB attenuator slice, the second part contains pass-through slice and 30dB attenuator slice, the third part contains straight-through slice and 20dB attenuator slice, the fourth part contains pass-through slice and 30dB attenuator slice, the fifth part contains pass-through slice and 20dB attenuator slice, pass-through slice and attenuator slice combination can achieve 0dB ~ 110dB attenuation. The specific combination method is as follows:

Attenuation	First Stage	Second Stage	Third Stage	Fourth Stage	Fifth Stage
0dB	O	O	O	O	O
10dB	×	O	O	O	O
20dB	O	O	×	O	O
30dB	O	×	O	O	O
60dB	O	×	O	×	O
110dB	×	×	×	×	×

Note: O for the transmission signal through the transmission piece, × for the transmission signal through the attenuation piece transmission.

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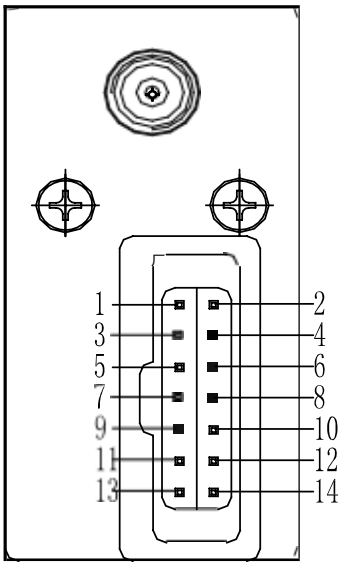
Control Mode:

The relay inside the drive program controlled stepping attenuator needs to provide 20V ~ 28Vdc DC voltage, and the drive current is 126mA (at room temperature, 24V drive voltage, each stage). Relay with latch device, relay action after the internal drive circuit automatically cut off the power supply, low power consumption. Relay switching time ≤20ms.

The control relay needs to input TTL level to the corresponding connector to select the through piece or the attenuation piece. The driving mode is triggered by the falling edge ***(the falling edge from high level to low level works, and the low level duration needs to be greater than 20ms)***.

The specific control relationship is as follows:Power supply: Pin 4 of the connector is the positive terminal of the power supply (+20 ~ +28Vdc), rated voltage +24Vdc, pin 9 is the negative terminal (ground).

Control: If the pin changes from TTL high level to low level (0V ~ +1.0Vdc) and the low level duration is greater than 20ms, the other pins (except pins 1, 2, 4 and 9) are TTL high level (+4.2V ~ +5Vdc) to achieve their respective functions.



Pin 1	Unused
Pin 2	Unused
Pin 3	Second stage 30dB attenuation
Pin 4	+24Vdc
Pin 5	Fourth Stage 30dB attenuation
Pin 6	Third stage 20dB attenuation
Pin 7	Third stage pass-through
Pin 8	Fourth Stage pass-through
Pin 9	Ground
Pin 10	Second Stage pass-through
Pin 11	First stage pass-through
Pin 12	First stage 10dB attenuation
Pin 13	Fifth stage pass-through
Pin 14	Fifth stage 20dB attenuation

For example: to achieve 50dB attenuation, power the connector as follows:

Pin 3	TTL high level to low level and low level duration greater than 20ms
Pin 4	+24Vdc Pin
Pin 5	TTL high level
Pin 6	TTL high level
Pin 7	TTL high level to low level and low-level duration greater than 20ms
Pin 8	TTL high level to low level and low-level duration greater than 20ms
Pin 9	Ground
Pin 10	TTL high level
Pin 11	TTL high level
Pin 12	TTL high level turns to low level and the low level duration is greater than 20ms
Pin 13	TTL high level
Pin 14	TTL high level

Cautions:

1. When powering the programmed stepping attenuator, pin 9 must be well grounded, otherwise it may cause permanent damage to the internal components of the programmed stepping attenuator.
2. When the attenuator is installed, in order to make it have better seismic performance, place the attenuator horizontally (that is, the mounting screw of the attenuator is perpendicular to the horizontal plane).
3. The attenuator can only withstand a maximum of 1W (CW) of power, so do not input more than 1W (CW) of power into this attenuator port at this time.
4. The programmable stepping attenuator port is a precision female connector, which can only be connected with its matching connector. At the same time, when connecting, attention should be paid to whether the port size to be connected meets the national standard requirements to avoid damage to the connector, affecting the indicators and service life of the device. In addition, when the connector is connected and disconnected, it is best to use a torque wrench. When not in use, the connector will be covered with a dust-proof cap to avoid excess into the attenuator internal impact indicators.
5. The programmed stepping attenuator is a non-sealed attenuator, please store in a dry and dust-free environment.