DCWBA3500M-ADJ

(Rev. r1.0, February 18, 2026)

Digitally Adjustable DC-Coupled Wideband Amplifier

Features

- Adjustable gain: +4 to +34 dB in 2 dB steps
- DC coupled
- Bandwidth 3.5 GHz
- 5–12 V supply (USB-C plug)
- Adjustable DC output offset (±1 V range)
- Differential output
- 50 Ω input and outputs
- Compact size: 32 × 50 × 14 mm

Typical Applications

- PMT (photo multiplier tube) pulse amplifier
- General purpose signal amplifiation
- Automated test equipment (ATE)

General Description

The Sigtrona DCWBA3500M-ADJ is a wideband, DC-coupled amplifier with digitally adjustable gain. Its wide gain range of +4 to +34 dB, combined with an adjustable DC output offset, makes it suitable for a broad range of applications. The device features differential outputs, providing both inverted and non-inverted versions of the signal. Power is supplied via a USB-C connector, and the amplifier accepts input voltages from 5 to 12 V, enabling straightforward integration into OEM systems.

Variants and Order Codes

- **DCWBA3500M-ADJ-F**: Female SMA input connector, female SMA output connectors.
- **DCWBA3500M-ADJ-M**: Male SMA input connector, female SMA output connectors.

Sigtrona GmbH
Im Thal 10,
82377 Penzberg, Germany
web: www.sigtrona.com
e-mail: info@sigtrona.com

Contents

1 Specifications

1.1 Electrical and Environmental Characteristics

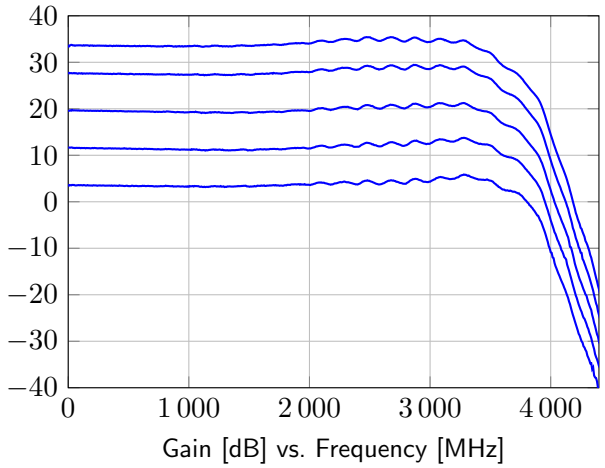
Parameter	Conditions	Min	Typ	Max	Units
DC Characteristics					
Supply Voltage (V_S)	Via USB-C connector	4.5	12	14	V
Supply Current	$V_S = 5\,\text{V}$		300		mA
	$V_S = 12\,\text{V}$		145		mA
AC Characteristics					
Bandwidth	Gain 4 dB, Flatness ±1.5 dB		3 500		MHz
	Gain 20 dB, Flatness ±1.5 dB		3 500		MHz
	Gain 34 dB, Flatness ±1.5 dB		3 500		MHz
Rise Time	Gain 20 dB (computed)		100		ps
Signal Gain	Gain 4 dB, f=2 GHz	3	4	6	dB
	Gain 20 dB, f=2 GHz	19	20	22	dB
	Gain 34 dB, f=2 GHz	33	34	36	dB
Input Noise Density[1]	Gain 34 dB, DC–1 GHz		1.4		$\text{nV}/\sqrt{\text{Hz}}$
Input Characteristics					
Input Impedance			50		Ω
Input Voltage Range	Absolute maximum	−3.5		+3.5	V
Output Characteristics					
Output Impedance			50		Ω
Output Voltage Range		−800		+800	mV
Output Offset Adjustment Range		−750		+650	mV
Environmental Characteristics					
Thermal dissipation	$V_S = 5\,\text{V}$		1.5		W
	$V_S = 12\,\text{V}$		1.75		W
Operating Ambient Temperature	non-condensing	−20		+40	°C
Storage Temperature	non-condensing	−20		+90	°C
Weight			46		g

Please contact Sigtrona if you need further specs.

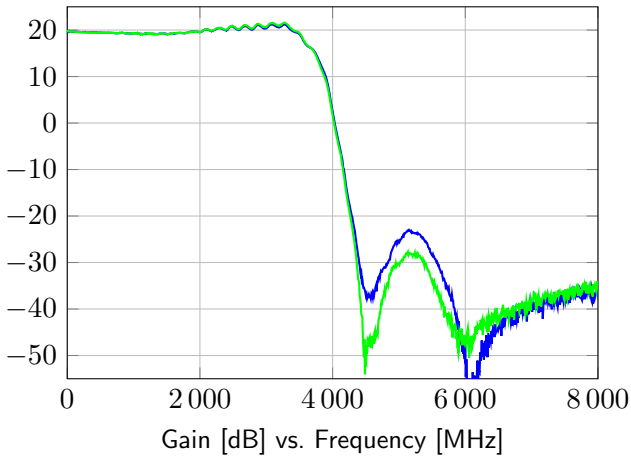
[1] 50 Ω terminated input to Out+ output.

1.2 Gain Graphs

Standard test conditions, unless otherwise specified: Output offset is set to 0 V, unused output terminated with 50 Ω.

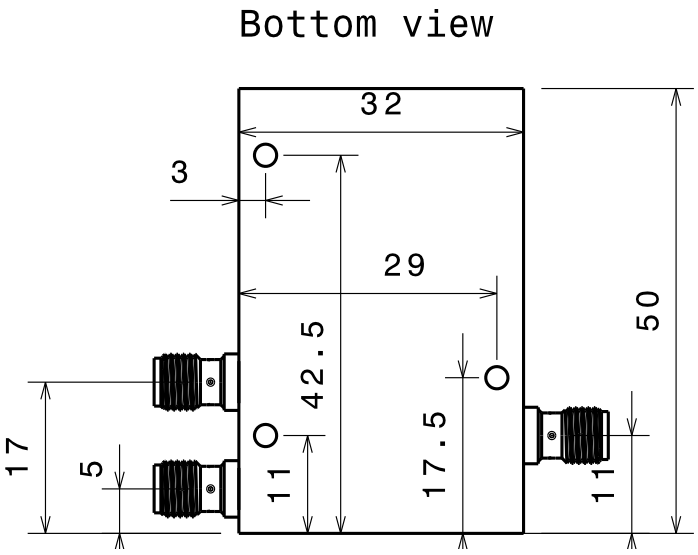


Gain at settings 34 dB, 28 dB, 20 dB, 12 dB, 4 dB (top to bottom)



Gain from DC to 8 GHz at setting 20 dB, Out+ (blue) and Out− (green)

1.3 Mechanical Dimensions



Bottom view with 3 mounting holes. All dimensions in mm. The drawing shows the SMA female input variant.

The DCWBA3500M-ADJ has 3 mount holes on the bottom for metric M 2.5 mm screws. These screws can penetrate 3 mm into the metal case.

2 Connections and Operation

The DCWBA3500M-ADJ features the following frontpanel elements:

- SMA male/female input (photo shows the male version; see variants) with internal 50 Ω termination.
- Two SMA female outputs, matched to 50 Ω. These two outputs are complementary.
- USB-C style power connector. It does not support automatic voltage negotiation but you can supply any voltage from 5 to 12 V via the USB power pins.
- The DC offset can be adjusted by a multi-turn potentiometer over a range of at least ±1 V (flat screwdriver required for operation).
- The gain adjustment is provided by a 16-step rotary switch (flat screwdriver required for operation).

It is important to understand that the offset adjustment potentiometer changes the *output* offset. It cannot be used to remove a large offset present at the *input* into the amplifier. The total output voltage range given in the spec (±800 mV) refers to the total output voltage, i.e. offset plus amplified signal.