Agilent 33502A 2-channel 50 Vpp Isolated Amplifier

Data Sheet

- Full-power BW 100kHz @ 50Vpp
- Small-signal BW> 300kHz
- Slew Rate 20V/µs min.
- THD+N < 0.01% @ 10kHz, 40Vpp.
- Output drive 200mA max.
- Isolation Floats ±42Vpk to earth

The Agilent 33502A is a dual-channel, high voltage output amplifier. It has an isolated analog front end with up to 50 Vpp (±25 V) output voltage range. It is also a very low-distortion amplifier with < 0.01% @ 10 kHz and 40 Vpp. The 33502A is designed to work as a companion for function generators to offer low-distortion, higher voltage outputs.

The 33502A has a fully isolated front end, which offers superior 5X voltage amplification to other amplifiers. You can independently configure input coupling (AC|DC) and input impedance (50Ω|1MΩ) to match you circuit. The input path can also be switched from amplified to direct (unamplified) without removing or connecting cables.

The 33502A, in a 2 unit, half-rack mechanical form factor, fits well on both your bench and in your test system. It also is configured with LAN (LXI Class-C compliant) and USB interfaces to meet your computer IO needs.

The 33502A provides both a programmable interface and a softkey-driven front panel for flexibility in configuring.

The 33502A is compatible with existing Agilent function/arbitrary waveform generators including the 33120A, 33210A, 33220A, and 33250A. It can also be used to amplify signals fromnon-Agilent function and arbitrary waveform generators.

Agilent Technologies

Table 1.

Feature	Characteristic
General	
Number of channels	*2*
Channel to channel ground connection	*Not connected in BYPASS ON. Connected with both channels OFF or in Gain of 5x*
Floating Voltage	*±42 Vpk to earth*
Input Configuration & Specification	
Input Coupling	
AC Coupling	*Programmable*
DC Coupling	*Default, Programmable*
Input Impedance	
1MΩ	*Default, Programmable*
50Ω	*Programmable*
Input Voltage Range	
Maximum Voltage Range	*±5 Vpk for gain of 5x, ±30 Vpk for bypass*
Damage Level	*±10 Vpk for 50 Ω input ±35 Vpk for 1 MΩ input*
Input Path	*Programmable gain of 5x, bypass (1x), or off state*
Input Gain 5X	*5X, Fixed, Non-Inverting*
Gain Accuracy[2]	*±0.1% @ 1KHz*
Flatness DC coupling[1]	*0.1% : dc - 10KHz 1% : dc - 40KHz 5% : dc - 100KHz*
Flatness AC coupling[1]	*0.1% : 30Hz - 10KHz 1% : 10Hz - 40KHz 5% : 3Hz - 100KHz*
Small Signal Bandwidth[1]	*> 300 KHz (-3db)*
Full Power Bandwidth[1]	*100KHz @ 50Vpp output*
Input Bypass	
Bandwidth for 50Ω system Maximum Current	*> 300 MHz (-3db) 0.2 Apk*
Noise	
Input referred noise	*< 40nV/ rt-Hz @ 1kHz*
Output Configuration & Specification	
Output Current	*200mA. (150mA for continuous output from -8V to +8V)*
DC Output Resistance	*< 2Ω*
Max Output Level[1]	*±25Vpk*
Output DC Offset	*<10mV*
Output Slew Rate[1]	*> 20V/us*
THD + N[1]	*< 0.01% @ 10kHz, 40 Vpp*
Aberrations[1]	*<5% for waveforms with <3V input step or non slewing output*

[1]*For all loads >250 ohms and <400 pF of capacitance*
[2]*Measured with >=1 Mohm load and 1 Mohm input selection.*

Table 1 (cont'd).

Feature	Characteristic
Transition time[1] *(Final value ±1% of step size)*	*2.5uSec+ 50nSec/volt of output step*
Channel to channel isolation for gains of 5x	*> 75dB*
Capacitive Load for no oscillation	*< 1 nF*
Output Protection	*Continuous short circuit protection* *Thermal overload shutdown.* *Over temperature status flag.*

[1]*For all loads >250 ohms and <400 pF of capacitance.*

Table 2

General Characteristics	
Power Supply	100V/120V/ 220V / 240V ± 10%
Power Line Frequency	*50–60 Hz ± 10%,* *400 Hz ± 10%.*
Power Consumption	*100 VA peak (typical value depends on configuration and load)*
Operating Environment	*Full accuracy for 0 °C to 55 °C* *Full accuracy to 80% R.H. at 40°C Non–condensing*
Storage Temperature	*–40 °C to 70 °C*
Operating Altitude	*Up to 3000m*
Bench Dimensions (WxHxD)	*261.2mm x 103.8mm x 303.2mm*
Weight	*3.1 kg (6.8 lbs)*
Safety	*Complies with European Low Voltage Directive and carries the CE-marking* *Conforms to UL 61010-1, CSA C22.2 61010-1, and IEC 61010-1:2001*
EMC	*Complies with European EMC Directive for test and measurement products.* *- IEC/EN 61326-1* *- CISPR Pub 11 Group 1, class A* *- AS/NZS CISPR 11* *- ICES/NMB-001* *Complies with Australian standard and carries C-Tick mark* *This ISM device complies with Canadian ICES-001.* *Cet appareil ISM est conforme á la norme NMB-001 du Canada*
Acoustic Noise	*Normal operating mode: SPL 35db(A)*
Display	*4.3" Color TFT WQVGA (480x272), LED backlight*
Remote Interfaces	*10/100Mbit LAN* *USB 2.0 Standard*
Language	*SCPI – 1994.0, IEEE–488.2*
LXI Compliance	*LXI Class C, Version 1.0*
Number of Channels	*2*
Channel to channel ground connection	*Not connected in BYPASS ON.* *Connected with both channels OFF or in Gain of 5x*
Floating Voltage	*±42 Vpk to earth*