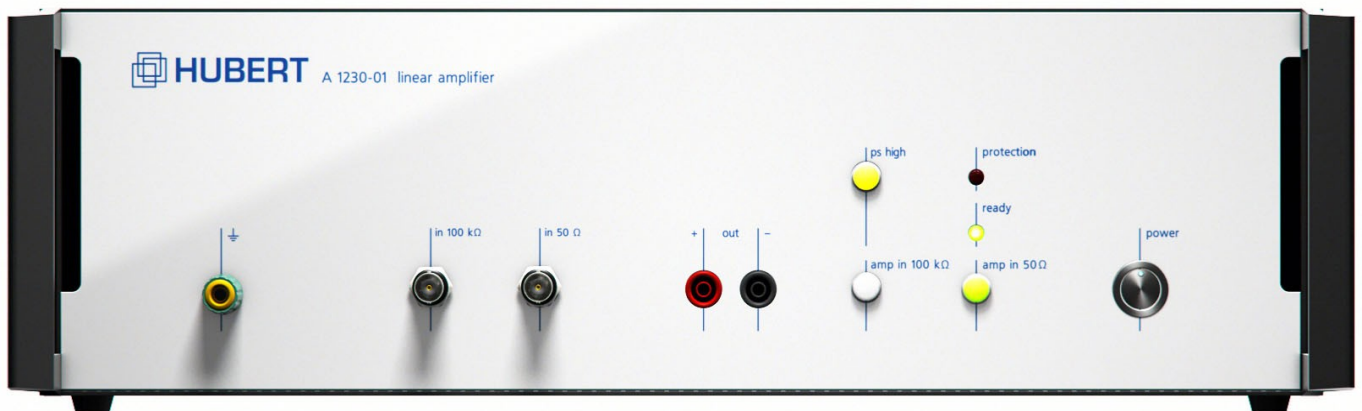




# HUBERT

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## Datasheet



# A1230-01

DC – 7 MHz | 450 V/ $\mu$ s | 185 W (DC-source) | 68 W (DC-sink)



# 1 Product Description

The A1230-01 is a linear, extreme broadband precision power amplifier. It is ideally suited for applications that require quickly changeable signals at optional resistive and complex loads.

The A1230-01 is equipped with two added inputs with 50  $\Omega$  and 100 k $\Omega$  input resistance, respectively; the 50  $\Omega$  input makes it the ideal downstream equipment for conventional function generators.

There are two operating voltages available for optional selection: high-voltage / low-current or low-volt / high-current. Particularly for very low-ohm loads, selection of low operating voltage results in significant reduction of the dissipation loss and a higher output current.

If higher output voltages are required, the preamplifier output (bridge out) allows for simple bridge circuit structures with a second A1230-01 for doubling the output voltage.

The device is equipped with a low-noise, temperature-controlled fan. In addition to over temperature shut-down, a feature for dissipation power calculation ensures fast power monitoring for perfect short-circuit and overload protection.

Operation is performed via the control elements on the front panel of the amplifier. Moreover, the amplifier can be completely remote-controlled by means of a simple byte protocol via the USB interface.

If higher output voltages or higher output currents are needed, configurations with several A1230-01 devices connected in series or in parallel are possible.

Please find the latest release of this datasheet on our website:  
[www.drhubert.com](http://www.drhubert.com)



## 2 Features

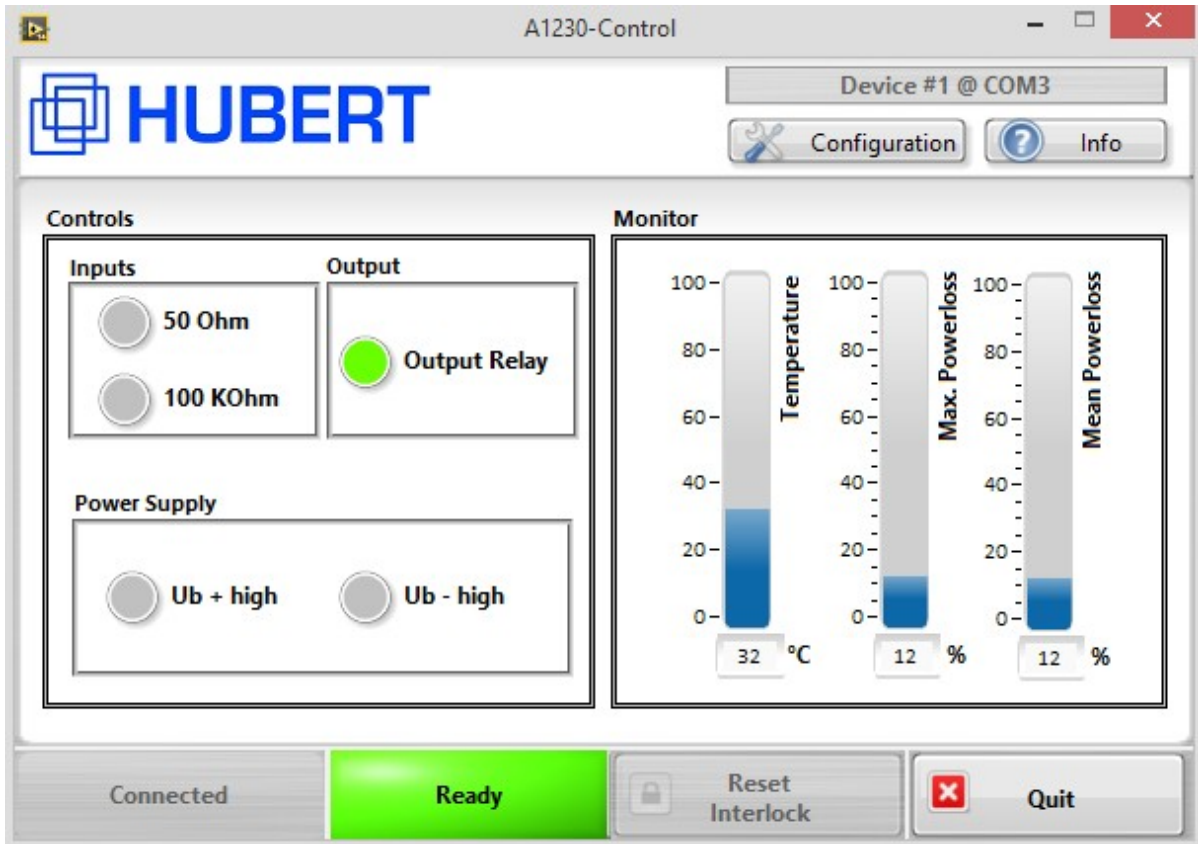
- Universally applicable broadband lab amplifier; ideally suited as downstream equipment for function generators
- Amplifier is stable with all inductive and capacitive loads
- Output voltages up to  $75 V_{DC/peak}$
- Output current up to  $5 A_{DC} / 10 A_{peak} (> 10 \text{ Hz}) / 15 A_{peak} (< 5 \text{ ms})$
- Two added inputs with  $50 \Omega$  and  $100 \text{ k}\Omega$  input resistance, respectively
- Preamplifier output (bridge out) allows for simple bridge circuit structures for doubling the output voltage
- 2 supply voltages for ideal load adjustment
- USB port (emulated COM port) as standard

## 3 Applications

- General lab applications for research, development and testing
- EMC testing
- Material testing
- MRI
- Component tests
- Plunger coil drives
- Piezo actuation
- Generation of magnetic fields (e.g. with Helmholtz coils)
- Medical engineering
- Laser technology
- Plasma technology



## 4 Control Software



## 5 Pictures





## 6 Specifications

Parameters	Specification	Conditions/Moments
		Mains: 230 V
		25° C ambient temperature
		Continuous operation
Input Impedance	50 $\Omega$ $\pm$ 1% Gain: 20 $\pm$ 1% ( $\pm$ 100ppm/°C)	
	100 k $\Omega$ $\pm$ 1% Gain: 10 $\pm$ 1% ( $\pm$ 100ppm/°C)	
Maximum Input Level	$\pm$ 7,5 V	100 k $\Omega$ Input
	$\pm$ 3,75 V	50 $\Omega$ Input
Maximum allowed Input Voltage	$\pm$ 15 V	100 k $\Omega$ Input
	$\pm$ 10 V	50 $\Omega$ Input
Small Signal Frequency Response		
	DC - 7 MHz	-3 dB, 100 mV <sub>rms</sub> @ 50 $\Omega$ Load
	DC - 5 MHz	-1 dB, 100 mV <sub>rms</sub> @ 50 $\Omega$ Load
Phase response	0, -5 degrees	DC – 120 kHz @ 50 $\Omega$ Load
Output Voltage (continuous)		
50 $\Omega$ Load, < 1% THD+N	$\pm$ 75 V <sub>peak</sub>	< 800 kHz; High Voltage Mode
	$\pm$ 62 V <sub>peak</sub>	< 1 MHz; High Voltage Mode
	$\pm$ 37.5 V <sub>peak</sub>	< 1 MHz; Low Voltage Mode
Output Current (continuous)	$\pm$ 2.5 A <sub>DC</sub>	High Voltage Mode
	$\pm$ 5 A <sub>DC</sub>	Low Voltage Mode
Output Current (pulse < 5 ms)	$\pm$ 7.5 A <sub>peak</sub>	High Voltage Mode
	$\pm$ 15 A <sub>peak</sub>	Low Voltage Mode
Slew Rate	450 V/uSec	50 $\Omega$ Load
Rise Time	< 280 ns	$\pm$ 75 V Rectangular @ 50 $\Omega$ Load
	< 200 ns	$\pm$ 60 V Rectangular @ 50 $\Omega$ Load



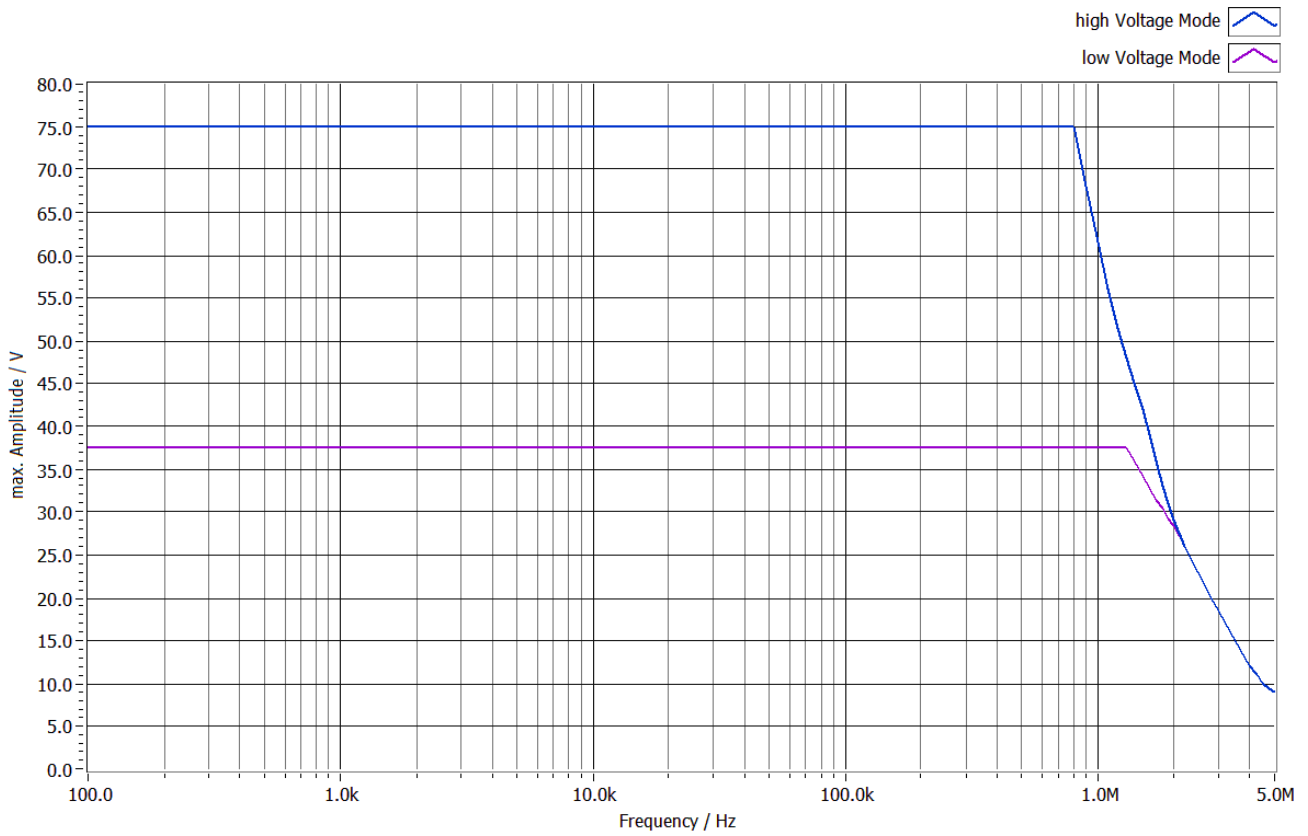
<b>Noise</b>		
20 Hz - 10 MHz	< 1.5 mV <sub>rms</sub>	
DC - 20 MHz	~ 10 mV <sub>pp</sub>	
<b>THD+N</b>		
100 kHz	< 0.1 %	53 V <sub>rms</sub> / 50 Ω Load
1 MHz	< 0.3 %	40 V <sub>rms</sub> / 50 Ω Load
<b>Output Offset</b>	± 2 mV typ.; ± 5 mV max. (± 0.1 mV/°C)	
<b>Output Impedance</b>	~ 50 mΩ + 0.30 μH	
<b>Output Impedance Bridge Out</b>	47 Ω	Load > 2 kΩ
<b>Source Power, DC</b>		
30 Ω	185 W	High Voltage Mode
7.5 Ω	185 W	Low Voltage Mode
<b>Sink Power, DC</b>	68 W	High/Low Voltage Mode
<b>Physical Characteristics</b>		
<b>AC Power</b>	230 VAC / 50 Hz	
<b>Remote control</b>	USB	
<b>Operating Temperature</b>	10 °C to 55 °C	
<b>Humidity</b>	80% or less at 40 °C	non-condensing
<b>Cooling</b>	Forced air	
<b>Dimensions (W x H x D)</b>	449 x 133 x 435.5 mm	
<b>Weight</b>	Approx. 14 kg	



## 6.1 Output Voltage vs. Frequency (THD + N < 1%)

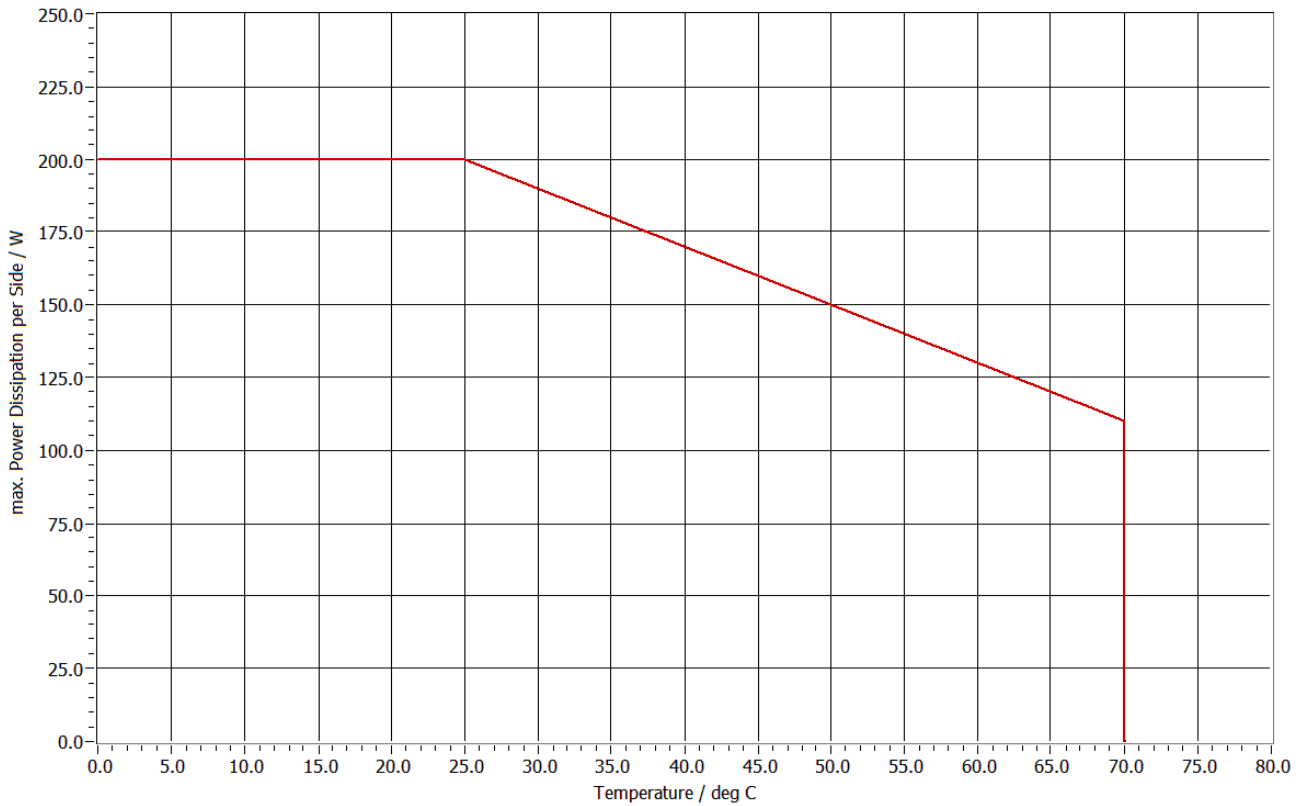
Blue: High Voltage Mode

Magenta: Low Voltage Mode

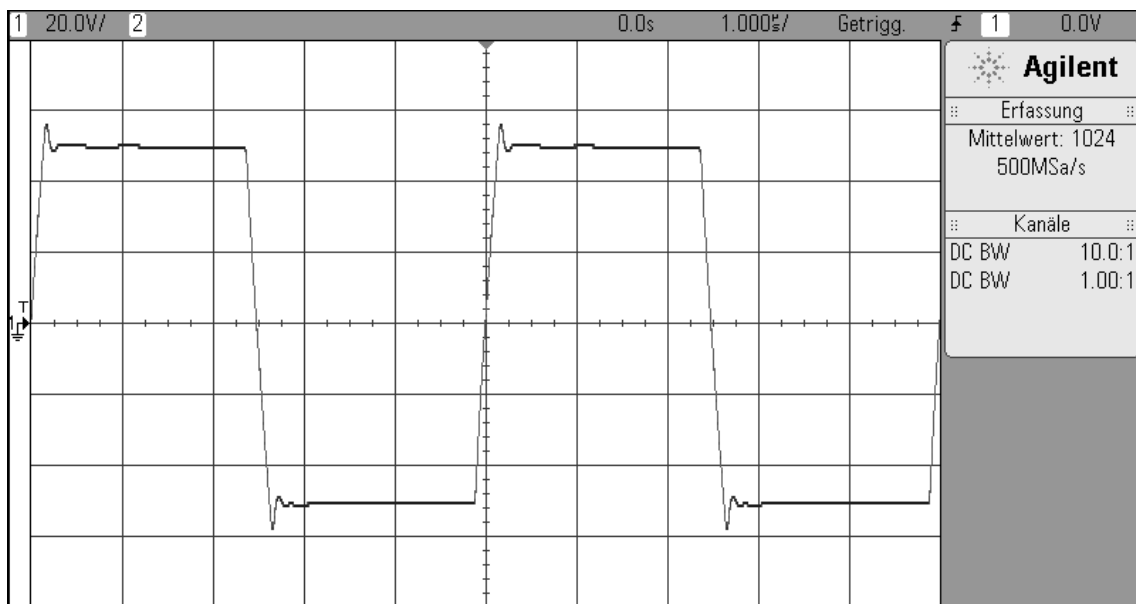




## 6.2 Power Dissipation per Side



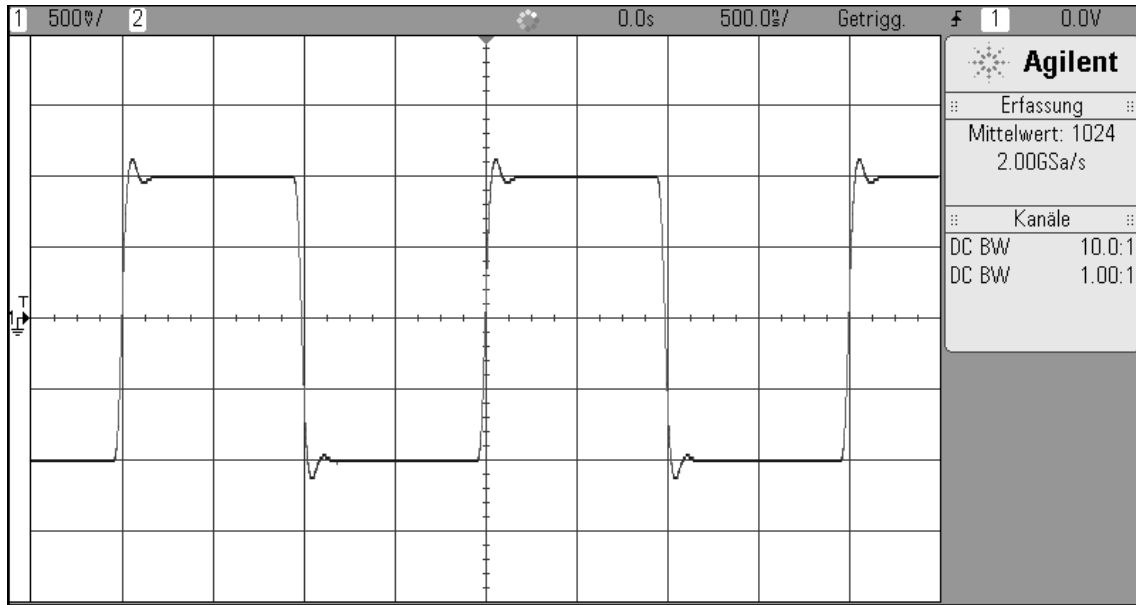
## 6.3 Square Wave at 200 kHz and 50 V Amplitude





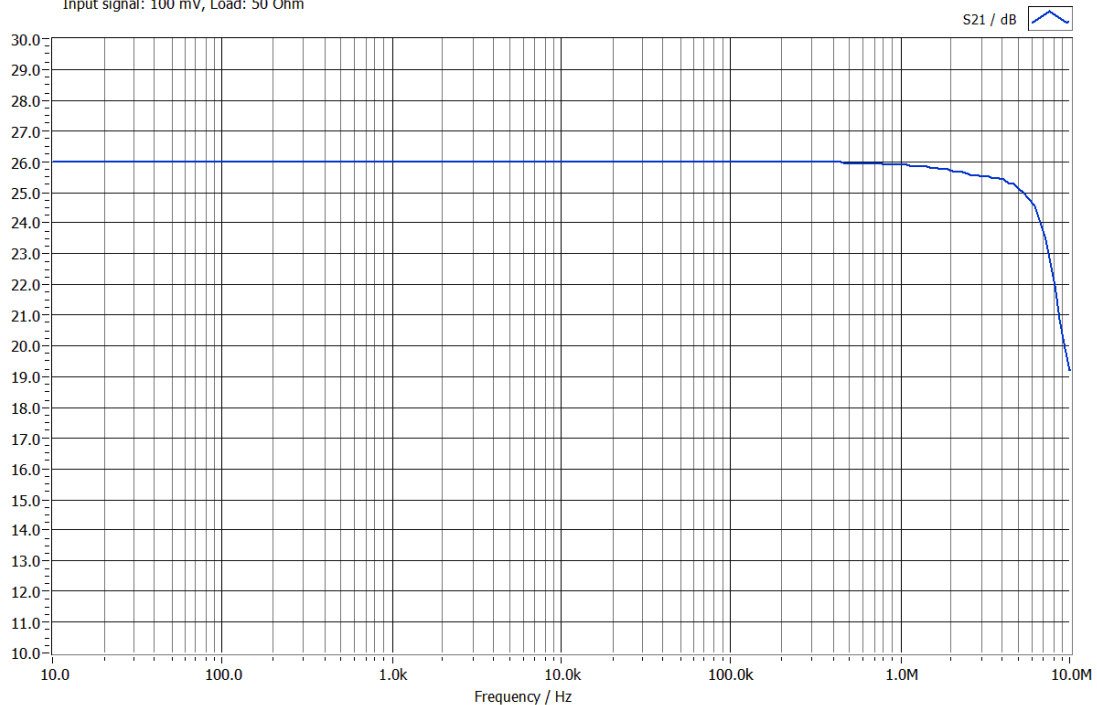


## 6.4 Square Wave at 500 kHz and 1 V amplitude



## 6.5 Gain 50 $\Omega$ Input

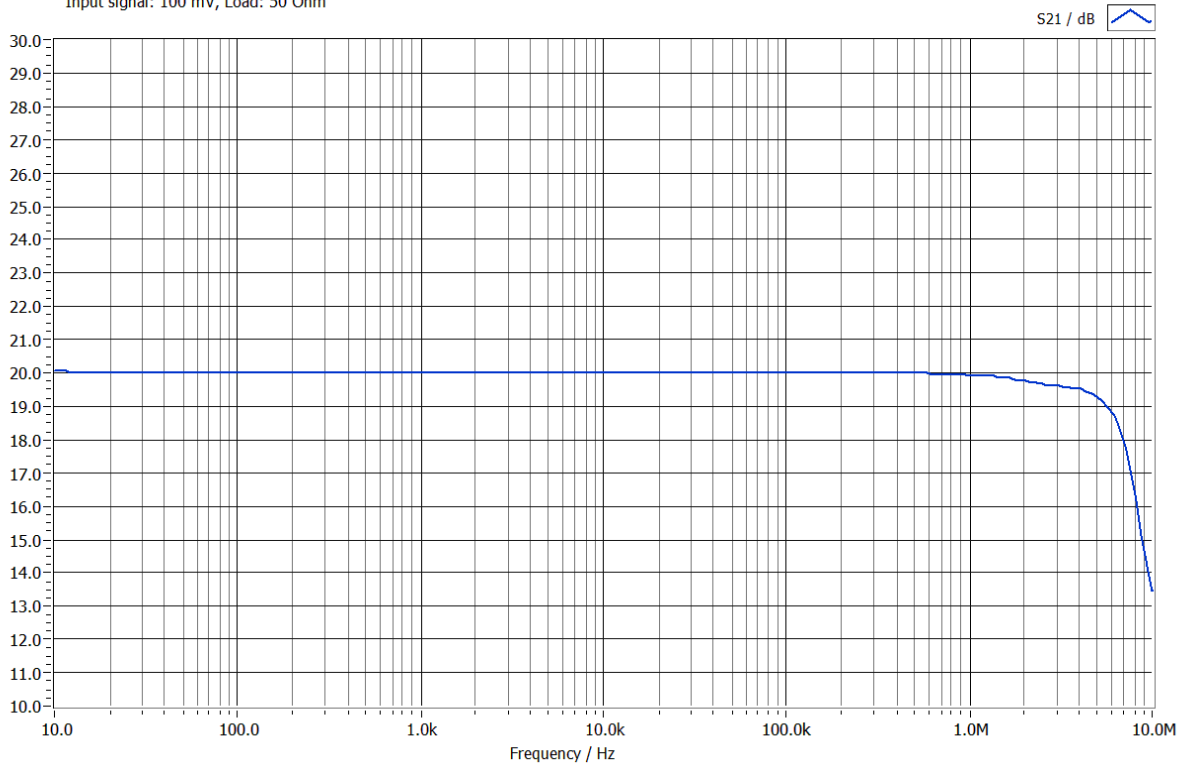
Network Analyser HP8751A (S.-No.: 3315J01756), Test Set 87512A (S.-No. MY43100614)  
A1230-01, Low signal gain, 50 Ohm Input  
Input signal: 100 mV, Load: 50 Ohm





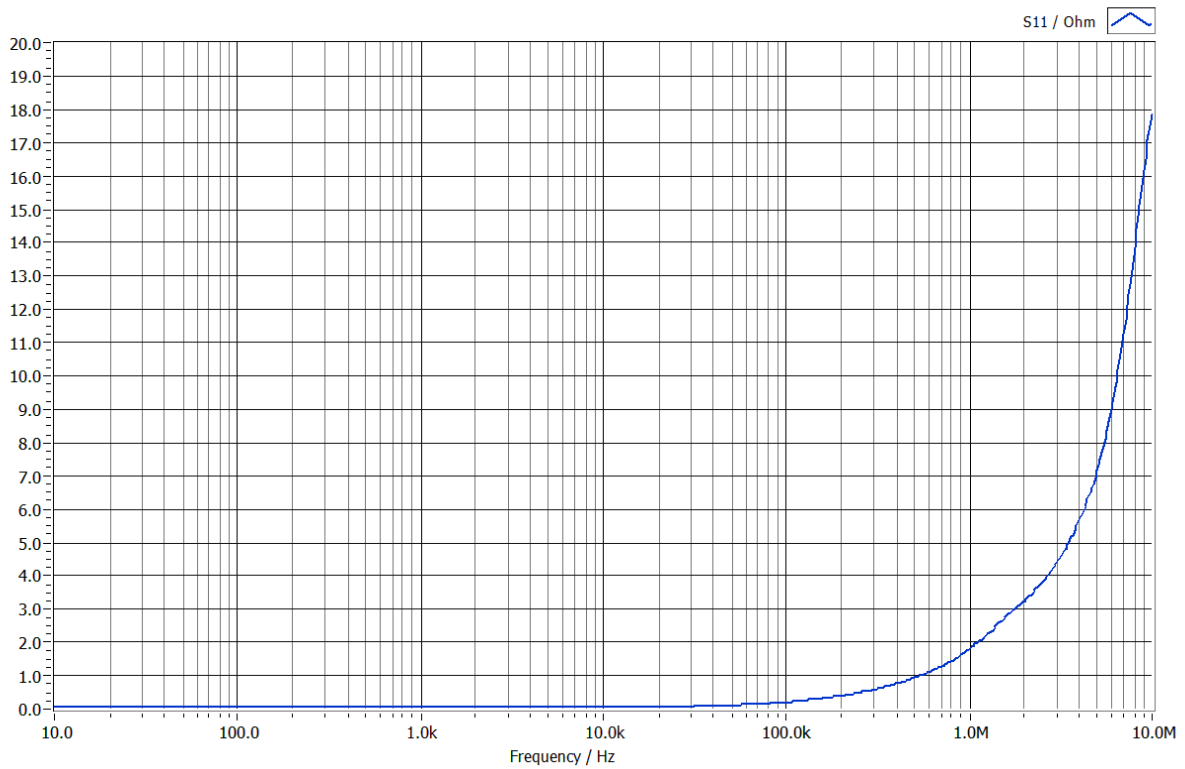
## 6.6 Gain 100 k $\Omega$ Input

Network Analyser HP8751A (S.-No.: 3315J01756), Test Set 87512A (S.-No. MY43100614)  
A1230-01, Low signal gain, 100 k $\Omega$ m Input  
Input signal: 100 mV, Load: 50 Ohm



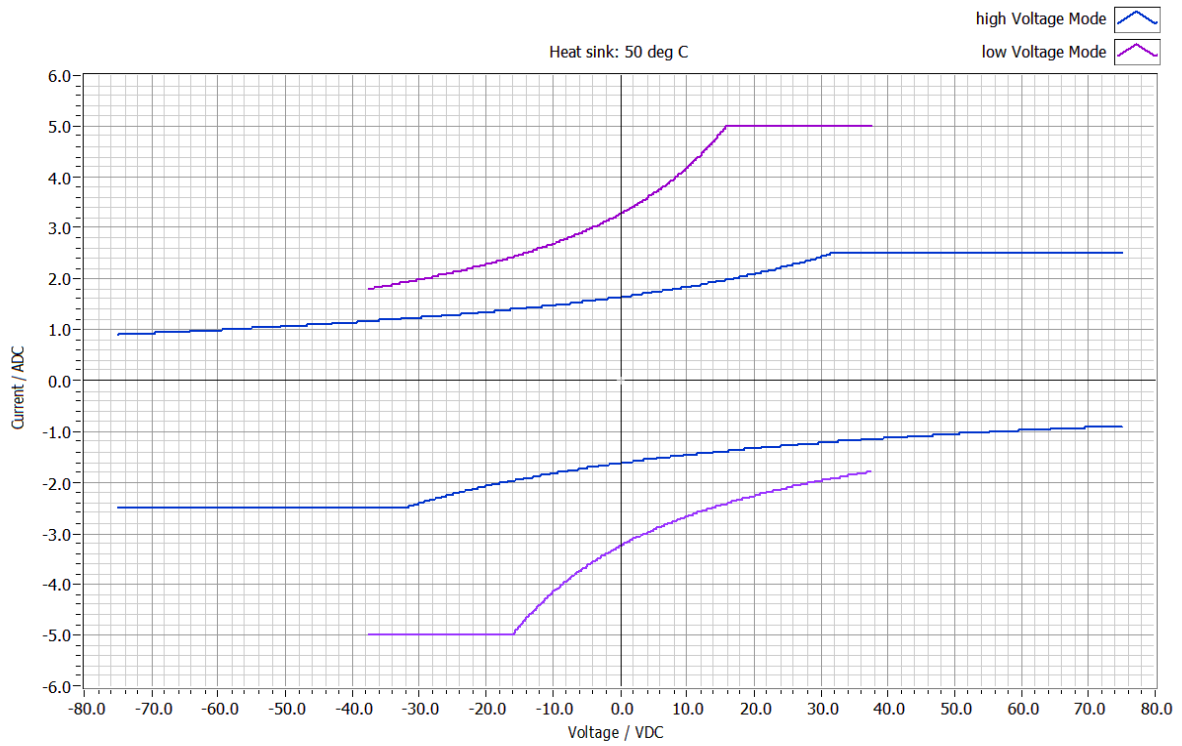
## 6.7 Output Impedance

Network Analyser HP8751A (S.-No.: 3315J01756), Test Set 87512A (S.-No. MY43100614)  
A1230-01, Output Impedance



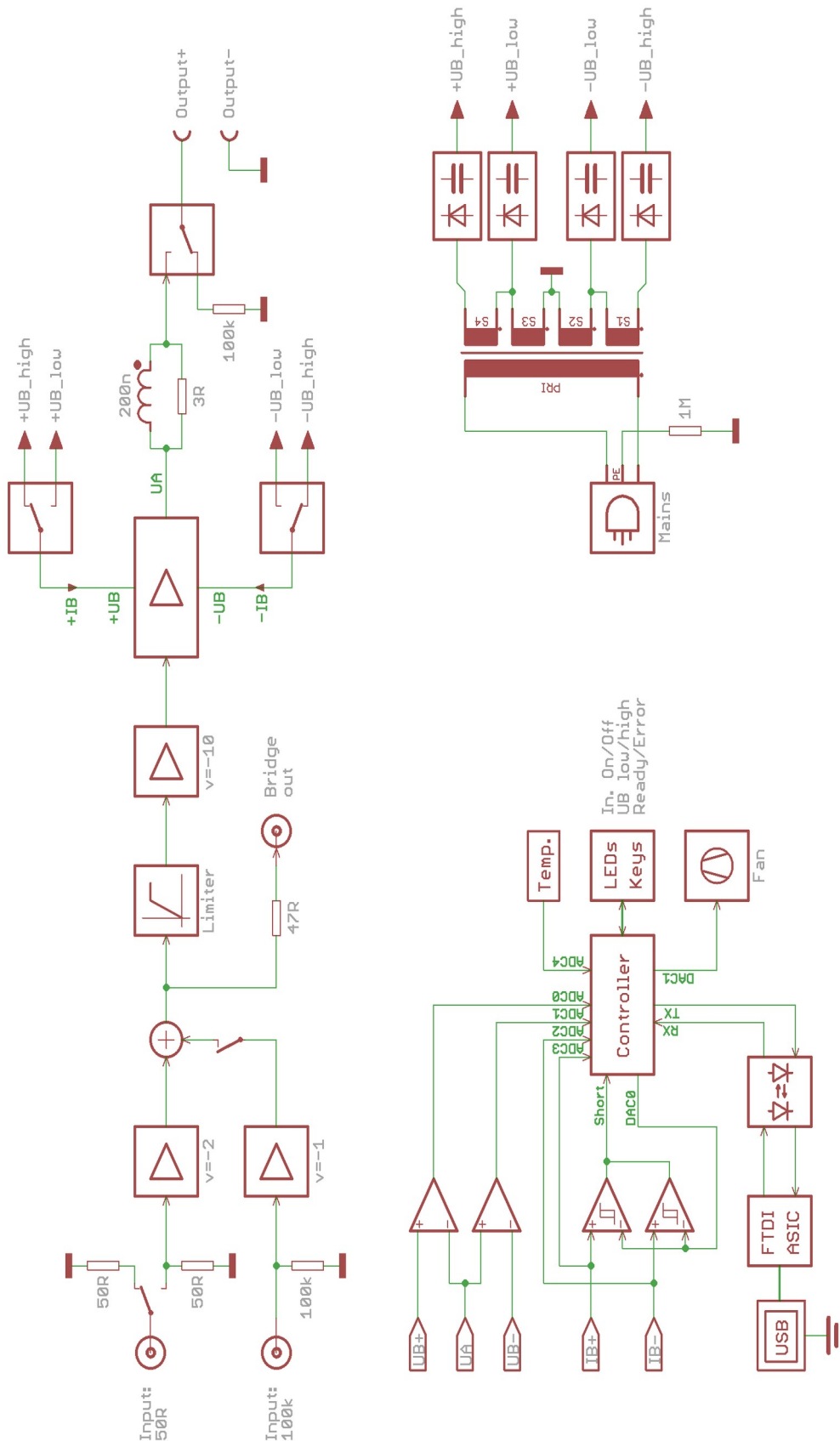


## 6.8 Output Current vs. Output Voltage DC Limit





# 7 Block Diagram





## 8 Product Options

The following product options are available at the time of placing the order. Upgrades of existing devices are not possible.

Article Name	Article Description	Article Number
Ethernet Option	Option-06: Ethernet interface (RJ-45)	11101060

## 9 Contact

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## 10 Document History

Revision	Date	Changes
2.0	March 2020	First publication in new layout