

High Performance, Wide-Band Transconductance Amplifier!



### FEATURES

- Stability <10 ppm/hour @ 30 kHz
- Ranges, (6) 200  $\mu$ A to 20A
- Frequency DC to 1 MHz
- Compliance to 10 Volts
- Guarded Output
- IEEE-488 Interface
- Over Voltage and Over Current Protection



FOR THE MOST ADVANCED TRANSCONDUCTANCE AMPLIFIER MADE TODAY, CHECK OUT THE NEW GUILDLINE 7810 SERIES FROM 50A TO 100A @ 100 KHZ!

**Guidline's 7620 Transconductance Amplifier** is a very wide band Transconductance Amplifier. By connecting the output from a stable voltage source to the 7620, it is capable of producing outputs up to 20 A over a specified frequency range of DC to 100 kHz.

**THE 7620 ALLOWS CALIBRATION OF DEVICES REQUIRING A KNOWN STABLE SOURCE OF CURRENT UP TO 20 A AND PROVIDES AN AMAZING 100 KHZ TO 20 AMPERES AND 1 MHZ TO 8 AMPERES!**

The 7620 provides the capability of calibrating any device requiring a known stable source of current up to 20 A, such as current shunts and current meters. The Transconductance Amplifier satisfies the need for AC current measurement of power harmonics in power distribution systems.

The output of the 7620 uses a unique patented multi cell array, developed at The National Institute of Standards and Technology (NIST). This output array is extremely stable, with a zero drift of less than 50 ppm/hour at 20 A at 30 kHz.

The 7620 offers an impressive 10 V output compliance voltage at D.C. and low frequencies, reducing to 5 V at 100 kHz. A front panel display indicates the compliance voltage existing at the output at all times. Three compliance LEDs indicate the operating output current and frequency band in use.

Input errors have been eliminated by providing the unit with a four-terminal input. This enables the 7620 to be easily connected to most accurate 4-wire sensing voltage sources. One of the main sources of error in making current measurements is the leakage between the HI and LO terminals of the current source. To alleviate this condition, the 7620 has a driven output guard which provides a buffered signal whose potential follows that of the output HI.

The 7620 is fully programmable over the IEEE 488 General Purpose Interface Bus. The Bus address is selectable from the rear panel, and all front panel controls can be duplicated over the Bus with the exception of power on/off.

A sophisticated overload detection system is implemented on the unit to control and indicate when the 7620 is operating within its specified limits. It is also possible to operate the unit outside the specification but within its safe limits by disabling part of the protection system. In this case, information is still provided to the front panel and over the Bus as to the status of the instrument.

# 7620 Wide-Band Transconductance Amplifier

## 7620 Series Specifications

### Accuracy (24 hrs) @ 23 °C ± 2 °C 1 V input ≤ 5 V output compliance

Range	% of Reading and % of Range					
	DC	DC ⇔ 1 kHz	1 kHz ⇔ 5 kHz	5 kHz ⇔ 10 kHz	10 kHz ⇔ 20 kHz	20 kHz ⇔ 100 kHz
200 µA	0.02 + 0.01	0.15 + 0.02	0.15 + 0.05	10.0 + 0.1	Not Specified	
2 mA	0.015 + 0.01	0.08 + 0.01	0.1 + 0.05	0.2 + 0.1	1.0 + 0.1	10.0 + 0.4
20 mA	0.01 + 0.01	0.2 + 0.01	0.2 + 0.05	0.15 + 0.1	0.3 + 0.1	1.0 + 0.4
200 mA	0.01 + 0.01	0.15 + 0.01	0.15 + 0.05	0.15 + 0.1	0.15 + 0.1	1.0 + 0.2
2 A	0.01 + 0.01	0.15 + 0.01	0.15 + 0.05	0.15 + 0.1	0.15 + 0.1	1.0 + 0.2
20 A	0.02 + 0.01	0.15 + 0.02	0.15 + 0.05	10.0 + 0.1	Not Specified	

### Accuracy (1 year) @ 23 °C ± 2 °C 1V input < 5 V output compliance

Range	% of Reading and % of Range					
	DC	DC ⇔ 1 kHz	1 kHz ⇔ 5 kHz	5 kHz ⇔ 10 kHz	10 kHz ⇔ 20 kHz	20 kHz ⇔ 100 kHz
200 µA	0.03 + 0.01	0.15 + 0.02	0.15 + 0.05	10.0 + 0.1	Not Specified	
2 mA	0.025 + 0.01	0.08 + 0.01	0.1 + 0.05	0.2 + 0.1	1.0 + 0.1	10.0 + 0.4
20 mA	0.02 + 0.01	0.2 + 0.01	0.2 + 0.05	0.15 + 0.1	0.3 + 0.1	1.0 + 0.4
200 mA	0.02 + 0.01	0.15 + 0.01	0.15 + 0.05	0.15 + 0.1	0.15 + 0.1	1.0 + 0.2
2 A	0.02 + 0.01	0.15 + 0.01	0.15 + 0.05	0.15 + 0.1	0.15 + 0.1	1.0 + 0.2
20 A	0.02 + 0.01	0.15 + 0.01	0.15 + 0.1	0.4 + 0.1	1.0 + 0.25	4 + 0.5

Range	Noise (db of Full Scale)					
	≤ 100 Hz	100 Hz ⇔ 1 kHz	1 kHz ⇔ 5 kHz	5 kHz ⇔ 10 kHz	10 kHz ⇔ 20 kHz	20 kHz ⇔ 100 kHz
200 µA	-50	-50	-50	-25	Not Specified	
2 mA	-60	-60	-60	-60	-50	-30
20 mA	-70	-70	-60	-50	-40	-30
200 mA	-70	-70	-60	-60	-50	-45
2 A	-70	-70	-60	-50	-40	-30
20 A	-60	-60	-50	-50	-50	-40

Range	Distortion (% of Reading)					
	≤ 100 Hz	100 Hz ⇔ 1 kHz	1 kHz ⇔ 5 kHz	5 kHz ⇔ 10 kHz	10 kHz ⇔ 20 kHz	20 kHz ⇔ 100 kHz
200 µA	0.15	0.3	0.3	5.0	Not Specified	
2 mA	0.06	0.06	0.06	0.1	0.3	4.0
20 mA	0.03	0.03	0.1	0.3	1.0	2.0
200 mA	0.03	0.03	0.05	0.3	1.0	2.0
2 A	0.03	0.03	0.08	0.3	1.0	3.0
20 A	0.15	0.1	0.2	0.3	0.3	0.7

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Range	Temp Coeff (ppm/°C)	Drift		Phase Input to Output	
				Output Delay	Output Jitter
		@ 30 kHz (ppm/hr)	@ 100 kHz (ppm/hr)	5 kHz – 10 kHz (ns)	10 kHz – 20 kHz (ns)
200 µA	< 10	< 20	Not Specified	2000	Not Specified
2 mA	< 10	< 10	< 100	300	1
20 mA	< 15	< 10	< 40	300	1
200 mA	< 25	< 10	< 40	300	1
2 A	< 30	< 10	< 40	300	1
20 A	< 50	< 50	< 50	500	5

## GENERAL SPECIFICATIONS

Compliance Voltage	10 V at DC, 5Vrms at 100 kHz				
Peak Output Current (DC)	35 Amperes				
Maximum Continuous Output Current (DC)	20 Amperes				
Maximum AC Rms Output Current	20 Ampere at 100 kHz				
Bandwidth	DC – 100 kHz at 20 Amperes				
	Degraded output 100 kHz to 1 MHz (8 Amperes Maximum)				
Settling Time	1 s to full specification				
Input Voltage	1 V input max. = 1 V RMS, 10 V input max. = 10 V RMS				
Offset Current	0.01% of range				
Input Impedance	100 kΩ				
Load Compliance	Resistive & Capacitive Loads to full V-1 compliance				
	Inductive Loads to 125 µH				
Short Term DC Stability	±100 ppm over a 30-minute period, where the absolute value is defined as 2 times the standard deviation of the measurement at full scale, excluding noise, at 10 samples maximum per second				
Power Supply	VAC - 100, 120, 220, 240 ± 10 %, Frequency 50/60 Hz, 600 VA				
Environmental	Temperature		Humidity		
	Operating	18 °C to 28 °C	<70% RH		
	Storage	-20 °C to 60 °C	15% to 80% RH		
Dimensions	Height	Width	Depth	Weight	
	millimetres	178 mm	438 mm	457 mm"	20.5 kg
	inches	7"	17.5"	18"	45lbs

## ORDERING INFORMATION

7620	Wide Band Transconductance Amplifier
TM7620	Technical Manual (included)
/CC	Certificate of Calibration (included)
/RPT	Report of Calibration (extra charge)
<b>7620 Options</b>	
3201	Cable and Adapter Kit

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