

MODEL 7620

WIDE BAND TRANSCONDUCTANCE AMPLIFIER

"SATISFYING THE NEED FOR AC CURRENT MEASUREMENT OF POWER HARMONICS IN POWER DISTRIBUTION SYSTEMS"



Guildline Model 7620 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 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 has been designed to satisfy a growing 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.

The 7620 is intended to calibrate devices requiring a known stable source of current up to 20 A.

7620 FEATURES

- > Stability <10 ppm/hour @ 30 kHz
- > Ranges, (6) 200 μ A to 20 A
- > Frequency DC to 100 kHz
- > Compliance 10 V
- > Guarded output
- > IEEE 488 Interface
- > Over voltage & over current protection

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.

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7620 SPECIFICATIONS

Noise and Distortion

Range	Frequency ≤ 100 Hz		Frequency 100 Hz - 1 kHz		Frequency 1 kHz - 5 kHz		Frequency 5 kHz - 10 kHz		Frequency 10 kHz - 20 kHz		Frequency 20 kHz - 100 kHz	
	Noise (dB of full scale)	Distortion (% rdg.)	Noise (dB of full scale)	Distortion (% rdg.)	Noise (dB of full scale)	Distortion (% rdg.)	Noise (dB of full scale)	Distortion (% rdg.)	Noise (dB of full scale)	Distortion (% rdg.)	Noise (dB of full scale)	Distortion (% rdg.)
200 μA	-50	0.15	-50	0.3	-50	0.3	-25	5.0				
2 mA	-60	0.06	-60	0.06	-60	0.06	-60	0.1	-50	0.3	-30	4.0
20 mA	-70	0.03	-70	0.03	-60	0.1	-50	0.3	-40	1.0	-30	2.0
200 mA	-70	0.03	-70	0.03	-60	0.05	-60	0.3	-50	1.0	-45	2.0
2 A	-70	0.03	-70	0.03	-60	0.08	-50	0.3	-40	1.0	-30	3.0
20 A	-60	0.15	-60	0.1	-50	0.2	-50	0.3	-50	0.3	-40	0.7

Gain Stability

Range	Temp. Coeff. (ppm/°C)	Drift	
		@ 30 kHz (ppm/hr)	@ 100 kHz (ppm/hr)
200 μA	< 10	< 20	
2 mA	< 10	< 10	< 100
20 mA	< 15	< 10	< 40
200 mA	< 25	< 10	< 40
2 A	< 30	< 10	< 40
20 A	< 50	< 50	< 50

Phase Input to Output

Range	Output Delay 5 kHz - 10 kHz (ns)	Output Jitter 10 kHz - 20 kHz (ns)
200 μA	2000	
2 mA	300	1
20 mA	300	1
200 mA	300	1
2 A	300	1
20 A	500	5

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

Range	± (% of reading + % of range)					
	Frequency DC	Frequency DC - 1 kHz	Frequency 1 kHz - 5 kHz	Frequency 5 kHz - 10 kHz	Frequency 10 kHz - 20 kHz	Frequency 20 kHz - 100 kHz
200 μA	0.02 + 0.01	0.15 + 0.02	0.15 + 0.05	10.0 + 0.1		
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	0.01 + 0.01	0.15 + 0.01	0.15 + 0.1	0.4 + 0.1	1.0 + 0.25	4 + 0.5

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

Range	± (% of reading + % of range)					
	Frequency DC	Frequency DC – 1 kHz	Frequency 1 kHz – 5 kHz	Frequency 5 kHz – 10 kHz	Frequency 10 kHz – 20 kHz	Frequency 20 kHz – 100 kHz
200 µA	0.03 + 0.01	0.15 + 0.02	0.15 + 0.05	10.0 + 0.1		
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

Maximum Compliance

Voltage:	10 V at DC, 5 V RMS at 100 kHz
Peak Output Current (DC):	35 A
Maximum Continuous Output Current (DC):	20 A
Maximum AC RMS Output Current:	20 A at 100 kHz
Bandwidth:	DC – 100 kHz at 20 A Degraded output above 100 kHz to 1 MHz
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.

7620 ORDERING INFORMATION

7620	Wide Band Transconductance Amplifier
TM7620	Technical Manual (included)
	Certificate of Calibration (included)
	Report of Calibration (extra charge)

ACCESSORIES:

73201	Cable and Adapter Kit
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GENERAL SPECIFICATIONS

Power Supply	Voltage	100, 120, 220, 240 ± 10%
	Frequency	50/60 Hz
	Consumption	600 VA
Environment	Operating	18 °C to 28 °C
		< 70% RH non-condensing
	Non Operating	28 °C to 40 °C
		< 50% RH non-condensing
Dimensions	178 H x 438 W x 457 D mm	
	(7 H x 17.25 W x 18 D in)	
Weight	20.5 kg (45 lbs)	
Rack Mounting Version Standard	19 in	

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