

7810 TRANSCONDUCTANCE AMPLIFIER

Low Uncertainty, 100 Ampere, Wideband AC and DC Transconductance Amplifier



FEATURES

- Calibrated Frequency Range (DC to 100 kHz)!
- 100 A Output at 120 kHz!
- ≤ 5 A Output up to 2 MHz
- High 8-9 V Voltage Compliance!
- Based on Patented AC Current Source PCB!
- Unique Touch Screen Interface and Embedded Windows Computer!
- Ethernet / IEEE-488.2 and USB Interfaces!
- SCPI Based Programming!
- Excellent Short Term Stability!
- Distortion Below -60 dB!
- Stable with Inductive Loads!
- Buffered Low Input Impedance!
- High Output Impedance!

Guildline Instruments 7810 Wideband Transconductance Amplifier is the latest innovation for High Current, Wide Bandwidth AC Outputs. The 7810 operates from DC to 100 kHz and higher frequencies with very low distortion. By connecting the output from a stable voltage source, the 7810 can produce outputs up to 100 A over a calibrated frequency range of DC to 100 kHz; up to 120 kHz uncalibrated at currents > 5 A; and up to 2 MHz uncalibrated at currents ≤ 5 A.

With a touch sensitive screen, the 7810 provides the capability of calibrating any device requiring a known stable source of AC current up to 100 A, manually or via automation.

GUILDLINE'S NEW 7810 TRANSCONDUCTANCE AMPLIFIER PROVIDES NEW PATENTED TECHNOLOGY AND INNOVATION - WHILE PROVIDING INDUSTRY LEADING MEASUREMENTS!

The 7810 is based on a unique patented multi cell current source array developed at Guildline Instruments. This output array is extremely stable, with a zero drift of less than 50 ppm/hour at 100 A at 100 kHz. The 7810 also offers an impressive 8 to 9 V output compliance voltage.

To automate testing and calibration setups, the 7810 Series is controllable via the Ethernet / IEEE-488.2 bus interface, or USB interface. Additionally, full manual operation is achieved via the embedded Windows Based Computer. The 7810 has a touch sensitive screen and color display capable of providing input control, output control, overload indication and temporary storage of data.

Uses for the Amplifier include calibration of alternating current (AC) and direct current (DC) shunts and calibration of AC and DC ranges on analogue and digital multi-meters.

7810 Wideband Transconductance Amplifier

Specifications are quoted at a coverage factor of $k=2$, equivalent to a confidence level of approximately 95 %.
Distortion measurements are based on full range current.

Accuracy (12 Months) $\pm$ (% of Reading + % of Range) 1 Hour Warm-up			
Selected Range $\Rightarrow$	100 A	50 A	5A
Output Currents $\Rightarrow$	50 A to 100 A	5 A to 50 A	0.5 A to 5 A
DC	$\pm (0.02 + 0.015)$	$\pm (0.02 + 0.015)$	$\pm (0.02 + 0.015)$
10 Hz – 10 kHz	$\pm (0.05 + 0.04)$	$\pm (0.05 + 0.04)$	$\pm (0.05 + 0.04)$
10 kHz – 30 kHz	$\pm (0.10 + 0.08)$	$\pm (0.10 + 0.08)$	$\pm (0.10 + 0.08)$
30 kHz – 50 kHz	$\pm (0.15 + 0.12)$	$\pm (0.15 + 0.12)$	$\pm (0.15 + 0.12)$
50 kHz – 100 kHz	$\pm (0.30 + 0.24)$	$\pm (0.30 + 0.24)$	$\pm (0.30 + 0.24)$

Accuracy (12 Months) $\pm$ (% of Reading + % of Range) 1 Hour Warm-up			
Selected Range $\Rightarrow$	500 mA	50 mA	5 mA
Output Currents $\Rightarrow$	5 mA to 500 mA	5 mA to 50 mA	0.5 mA to 5 mA
DC	$\pm (0.02 + 0.015)$	$\pm (0.02 + 0.015)$	$\pm (0.02 + 0.015)$
10 Hz – 10 kHz	$\pm (0.05 + 0.04)$	$\pm (0.05 + 0.04)$	$\pm (0.05 + 0.04)$
10 kHz – 30 kHz	$\pm (0.10 + 0.08)$	$\pm (0.10 + 0.08)$	$\pm (0.10 + 0.08)$
30 kHz – 50 kHz	$\pm (0.15 + 0.12)$	$\pm (0.15 + 0.12)$	$\pm (0.15 + 0.12)$
50 kHz – 100 kHz	$\pm (0.30 + 0.24)$	$\pm (0.30 + 0.24)$	$\pm (0.30 + 0.24)$

Current Range (Full Scale)	Output Current	Transconductance (Siemens)
5 mA	0.5 mA to 5 mA	1 m
50 mA	5 mA to 50 mA	10 m
500 mA	5 mA to 500 mA	100 m
5 A	0.5 A to 5 A	1
50 A	5 A to 50 A	10
100 A	50 A to 100 A	100

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GENERAL SPECIFICATIONS			
10 Minute Stability ►	Frequency		± % of Reading + % of Range
	DC		0.002 + 0.002
	10 Hz to 10 kHz		0.005 + 0.005
	10 kHz to 100 kHz		0.01 + 0.01
	> 100 kHz		Unspecified
Harmonic Distortion ►	10 Hz to 10 kHz		-60 dB
	10 kHz to 40 kHz		-50 dB
	40 kHz to 100 kHz		-40 dB
	> 100 kHz		Unspecified
Inductive Load Stability ►		Free of oscillations with inductive loads up to 1 mH	
Compliance Voltage ►		Maximum 8 to 9 Vdc or 8 to 9 Vrms	
Noise ►		± 0.05 % of current range in a band from DC to 100 kHz	
Power Factor Correction ►		Power factor corrected with a nominal power factor rating of 0.98	
Frequency Uncertainty ►		0.01 % of reading over a range of 10 Hz to 100 kHz Unspecified over a range ≥ 100 kHz	
Output Offset ►		Less than ± 3 ppm of full scale for each range	
Input Impedance ►		≤ 200 kΩ Buffered	
Communications ►		Ethernet / IEEE 488.2 / USB	SCPI Based Instructions
Output Connectors ►		25 - 100 A (LC)	<25 A (Type N)
Dimensions (H x D x W) All Models ►		18" x 22" x 17.25"	45.7 cm x 55.9 cm x 43.8 cm
Operating Temperature (Full)		22.8 °C ± 3.3 °C	73 °F ± 6 °F
Maximum Operating Range (<80 % RH)		+18 °C to +28 °C	+64.4 °F to +82.4 °F
Temperature Storage Range ►		-20 °C to +60 °C	-4 °F to +140 °F
Operating Humidity	20 % to 65 %	Storage Humidity	15 % to 80 % RH
Power ►		110, 115, 120, 220, 240 VAC ± 10 %	50 Hz or 60 Hz ± 5 %

Unparalleled Support

Guildline Instruments provides an industry leading two-year warranty on every 7810 Wideband Transconductance Amplifier. We know that the 7810 will work for you out of the box!

AC Shunts - Our 7340 and 7350 Series of AC/DC Shunts are available in a variety of ohmic and current values and provide the lowest uncertainties found in any commercial AC/DC Shunt. Housed in a ruggedized EMI case, these models provide a calibrated wide frequency bandwidth of up to 100 kHz and with currents to 100 A for the 7340 Series and 25 A for the 7350 Series. These shunts can operate at frequencies > 100 kHz, but are not calibrated above 100 kHz. Adaptors and cable sets are also available.



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APPLICABLE DOCUMENTS

This Transconductance Amplifier is designed for safety and meets the requirements of the following documents:

International Electro-Technical Commission Standards

IEC 61326 Electromagnetic Compatibility, Electrical Equipment for Measurement & Laboratory Use
IEC 61010-1 Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use PART 1: General Requirements

IEEE Standards

ANSI/IEEE Std. 488.2-1992 Standard Codes, Formats, Protocols and Common Commands for use with ANSI/IEEE Std 488.1-1987
USB-2.0 Universal Serial Bus Specification

ORDERING INFORMATION

7810-100	100 A Wideband Transconductance Amplifier
OM7810	Technical Manual can be downloaded from www.guildline.com
/Rack	Rack Mount Kit (supplied with Unit)

GUILDLINE IS DISTRIBUTED BY:

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