

Comlinear® CLC1200

Instrumentation Amplifier



FEATURES

- ±2.3V to ±18V supply voltage range
- Gain range of 1 to 10,000
- Gain set with one external resistor
- ±125µV maximum input offset voltage
- 0.1µV/°C input offset drift
- 700kHz bandwidth at G = 1
- 1.2V/µs slew rate
- 90dB minimum CMRR at G = 10
- 2.2mA maximum supply current
- 6.6nV/√Hz input voltage noise
- 70nV/√Hz output voltage noise
- 0.2µV_{pp} noise (0.1Hz to 10Hz)
- DIP-8 or Pb-free SOIC-8

APPLICATIONS

- Bridge amplifier and scales
- Thermocouple amplifier
- ECG and medical instrumentation
- MRI (Magnetic Resonance Imaging)
- Patient Monitors
- Transducer interface
- Data acquisition systems
- Strain gauge amplifier
- Industrial process controls

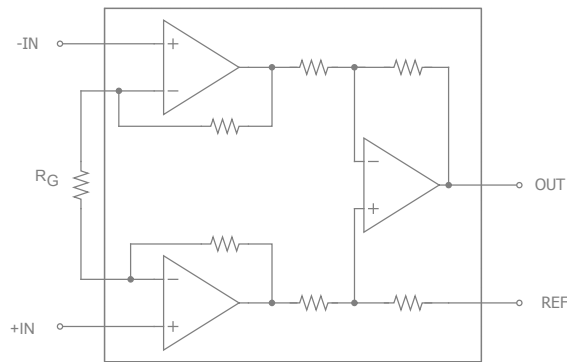
General Description

The CLC1200 is a low power, general purpose instrumentation amplifier with a gain range of 1 to 10,000. The CLC1200 is offered in 8-lead SOIC or DIP packages and requires only one external gain setting resistor making it smaller and easier to implement than discrete, 3-amp designs.

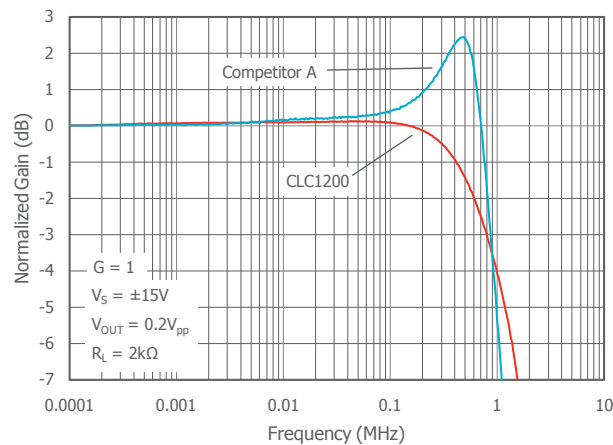
While consuming only 2.2mA of supply current, the CLC1200 offers a low 6.6nV/Hz input voltage noise and 0.2µV_{pp} noise from 0.1Hz to 10Hz.

The CLC1200 offers a low input offset voltage of ±125µV that only varies 0.1µV/°C over it's operating temperature range of -40°C to +85°C. The CLC1200 also features 50ppm maximum nonlinearity. These features make it well suited for use in data acquisition systems.

Functional Block Diagram



Competitive Comparison Plots (continued in data sheet)



Ordering Information

Part Number	Package	Pb-Free	RoHS Compliant	Operating Temperature Range	Packaging Method
CLC1200ISO8	SOIC-8	Yes	Yes	-40°C to +85°C	Rail
CLC1200ISO8X	SOIC-8	Yes	Yes	-40°C to +85°C	Reel
CLC1200IDP8	DIP-8	No	No	-40°C to +85°C	Rail

Moisture sensitivity level for all parts is MSL-1.

Electrical Characteristics

$T_A = 25^\circ\text{C}$, $V_S = \pm 15\text{V}$, $R_L = 2\text{k}\Omega$ to GND; unless otherwise noted.

$G = 1 + (49.4\text{k}\Omega / R_G)$; Total RTI Error = $V_{OSI} + (V_{OSO} / G)$

Parameter	Conditions	Min	Typ	Max	Units
Gain					
Gain Range		1		10,000	
Gain Error	$G = 1, V_{OUT} = \pm 10\text{V}$	-0.1		0.1	%
	$G = 10, V_{OUT} = \pm 10\text{V}$	-0.375		0.375	%
	$G = 100, V_{OUT} = \pm 10\text{V}$	-0.375		0.375	%
	$G = 1,000, V_{OUT} = \pm 10\text{V}$	-0.8		0.8	%
Nonlinearity	$G = 1 - 100, V_{OUT} = -10\text{V to } 10\text{V}$		10	50	ppm
Gain vs. Temperature	$G = 1$		TBD		ppm/ $^\circ\text{C}$
	$G > 1$		TBD		ppm/ $^\circ\text{C}$
Reference Gain Error ⁽¹⁾	$V_S = \pm 16.5$	-0.03		0.03	%
Voltage Offset					
Input Offset Voltage	$V_S = \pm 4.5$ to ± 16.5	-125		125	μV
	$V_S = \pm 4.5$ to $\pm 16.5, -45^\circ\text{C to } +85^\circ\text{C}$	-225		225	μV
Output Offset Voltage	$V_S = \pm 4.5$ to $\pm 16.5, G = 1$	-1500	200	1500	μV
Offset Referred to the Input vs. Supply	$G = 1, V_S = \pm 2.3$ to $\pm 18\text{V}$	80	100		dB
	$G = 10, V_S = \pm 2.3$ to $\pm 18\text{V}$	95	120		dB
	$G = 100, V_S = \pm 2.3$ to $\pm 18\text{V}$	110	140		dB
	$G = 1,000, V_S = \pm 2.3$ to $\pm 18\text{V}$	110	140		dB
Input					
Input Bias Current	$V_S = \pm 16.5$	-2	0.5	2	nA
Input Offset Current	$V_S = \pm 16.5$	-1		1	nA
Common Mode Rejection Ratio	$G = 1, V_S = \pm 16.5\text{V}$	70	90		dB
	$G = 1,000, V_S = \pm 16.5\text{V}$	108	130		dB
Output					
Output Swing	$V_S = \pm 2.3\text{V to } \pm 4.5\text{V}$	$-V_S + 1.1$		$+V_S - 1.2$	V
	$V_S = \pm 18, G = 1$	$-V_S + 1.4$		$+V_S - 1.2$	V
Short Circuit Current			± 20		mA
Dynamic Performance					
Small Signal Bandwidth	$G = 1$		700		kHz
	$G = 10$		400		kHz
	$G = 100$		100		kHz
	$G = 1,000$		12		kHz
Slew Rate	$G = 10, V_S = \pm 15\text{V}$	0.6	1.2		V/ μs
Input Voltage Noise	1kHz, $G = 1,000, V_S = \pm 15\text{V}$		6.6	13	nV/ $\sqrt{\text{Hz}}$
Output Voltage Noise	1kHz, $G = 1, V_S = \pm 15\text{V}$		70	100	nV/ $\sqrt{\text{Hz}}$
Power Supply					
Operating Range		± 2.3		± 18	V
Supply Current	$V_S = \pm 16.5\text{V}$		1.3	2.2	mA
	$V_S = \pm 15\text{V}, -40^\circ\text{C to } +85^\circ\text{C}$			2.5	mA

NOTES:

1) Nominal reference voltage gain is 1.0

Refer to the data sheet for complete product specifications

For additional information regarding our products, please visit CADEKA at: cadeka.com

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Available Packages

SOIC-8, DIP-8

