

AM-450, AM-460 Series Wide Bandwidth, Fast-Settling Monolithic Operational Amplifiers

PRODUCT DATA SHEET

FEATURES

- 120V/Microsecond slew rate
- 100 MHz Gain bandwidth
- 200 Nanoseconds settling to 0.1%
- 300 Megohm input impedance
- Bipolar differential inputs
- 5 nA Input offset current

GENERAL DESCRIPTION

DATEL's AM-450 and AM-460 series bipolar input operational amplifiers provide a wide spectrum of capabilities required for high-speed, wide bandwidth signal processing applications. Features available within these two high-performance families include a 100 MHz gain-bandwidth-product (AM-462), a 120V/microsecond slew rate (AM-452), 300 megohm input impedance (AM-460 and AM-462) and 200 nanoseconds settling time to 0.1% of full scale (AM-452).

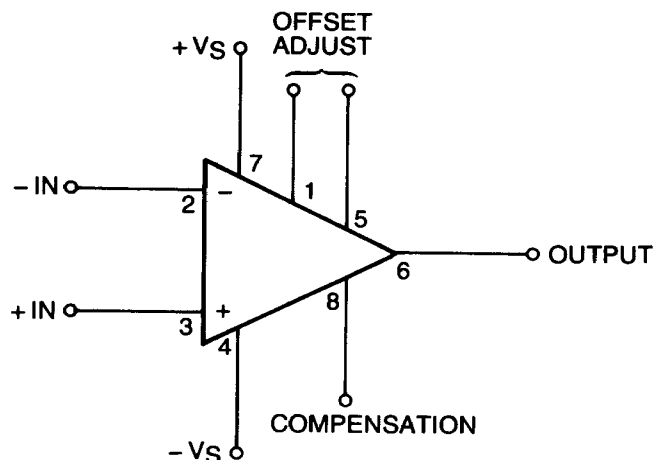
All models provide a full $\pm 10V$ output at 10 mA and may be operated in non-inverting as well as inverting modes. Other features common to these units are low input offset currents and low input offset voltages as well as common mode rejection ratios typically greater than 90 dB.

The AM-460 devices are bipolar operational amplifiers with very high impedance differential inputs, making them particularly well suited to applications as high speed comparators, wideband active filters and low distortion oscillators.

Both AM-450 and the AM-460 series units find many applications as fast acquisition sample and hold amplifiers, D/A output amplifiers, A/D input buffer amplifiers, pulse amplifiers, and fast integrators.

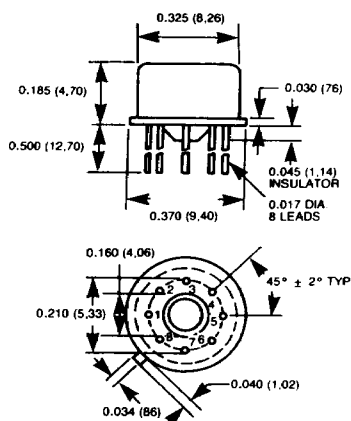
All models are packaged in an 8-lead, hermetically sealed TO-99 package with standard pin out, allowing them to be used easily as pin-for-pin replacements for general purpose IC operational amplifiers.

All models are available in $0^{\circ}C$ to $+70^{\circ}C$ operating temperature range or in $-55^{\circ}C$ to $+125^{\circ}C$ for suffix M models.



MECHANICAL DIMENSIONS INCHES (MM)

TO-99



AM-450, AM-460 SERIES WIDE BANDWIDTH, FAST SETTLING MONOLITHIC OPERATIONAL AMPLIFIERS

ABSOLUTE MAXIMUM RATINGS	AM-450	AM-452	AM-460	AM-462
Power Supply Voltage	± 20V	± 20V	± 22.5V	± 22.5V
Differential Input Voltage	± 15V	± 15V	± 12V	± 12V
Peak Output Current	50 mA	50 mA	Short Circuit Protected	Short Circuit Protected

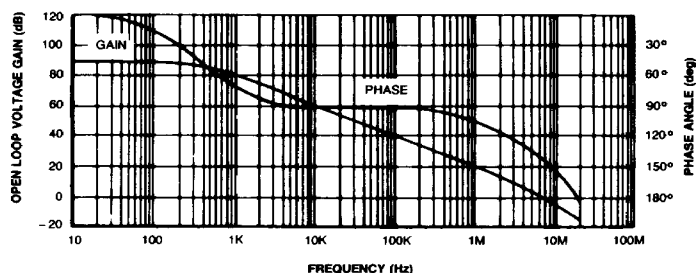
FUNCTIONAL SPECIFICATIONS

Typical at +25°C, ±15V dc supplies, $R_L = 2K$, unless otherwise noted.

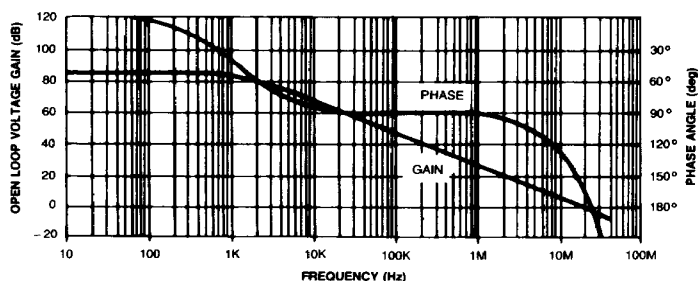
INPUT CHARACTERISTICS	AM-450	AM-452	AM-460	AM-462
Common Mode Voltage Range ¹ , minimum	± 10V	± 10V	± 11V	± 11V
Input Resistance	50 Meg	100 Meg	300 Meg	300 Meg
Input Resistance, minimum	20 Meg	20 Meg	40 Meg	40 Meg
Input Offset Voltage	± 4 mV	± 5 mV	± 3 mV	± 3 mV
Input Offset Current, typical	20 nA	20 nA	5 nA	5 nA
maximum	50 nA	50 nA	25 nA	25 nA
Input Bias Current, typical	125 nA	125 nA	5 nA ⁶	5 nA
maximum	250 nA	250 nA	25 nA	25 nA
OUTPUT CHARACTERISTICS				
Output Voltage, minimum	± 10V	± 10V	± 10V	± 10V
Output Current, minimum ⁷	± 10 mA	± 10 mA	± 10 mA	± 10 mA
PERFORMANCE				
DC Open Loop Gain ²	25k V/V	15k V/V	150k V/V	150k V/V
Full Power Bandwidth ²	500 kHz	1600 kHz	75 kHz	600 kHz
Gain Bandwidth Product	12 MHz	20 MHz	12 MHz	100 MHz
Slew Rate	30V/μsec.	120V/μsec.	7V/μsec.	35V/μsec.
Settling Time, 10V to 0.1%	330 nsec. ³	200 nsec. ³	1.5 μsec. ⁴	1.0 μsec.
Common Mode Rejection Ratio ⁵ , typical	90 dB	90 dB	100 dB	100 dB
maximum	74 dB	74 dB	74 dB	74 dB
Input Offset Voltage Drift	20 μV/°C	30 μV/°C	10 μV/°C	15 μV/°C
External Compensation Required	None	Gains < 3	Gains < 3	Gains < 5
Power Supply Rejection Ratio	90 dB	90 dB	90 dB	90 dB
POWER REQUIREMENTS				
Voltage, Rated Performance	± 15V dc	± 15V dc	± 15V dc	± 15V dc
Operating Voltage Range, minimum	± 10V	± 10V	± 5V	± 5V
maximum	± 20V	± 20V	± 22.5V	± 22.5V
Supply Current, maximum	6 mA	6 mA	4 mA	4 mA
PHYSICAL/ENVIRONMENTAL				
Oper. Temp. Range, – 2 Models	0° to +70°C – 55°C to +125°C – 65°C to +150°C TO-99			
– 2M Models				
Storage Temp. Range				
Package Type, – 2 & – 2M Models				
FOOTNOTES:				
1. At Full Temperature				
2. V _{out} = ± 10V				
3. C _L = 50 pF				
4. C _L = 100 pF				
5. For ± 5V Common Mode Range				
6. 15 nA typical for AM-460-2M only				
7. AM-460 and AM-462 outputs are short circuit protected				

TYPICAL OPEN LOOP FREQUENCY AND PHASE RESPONSE

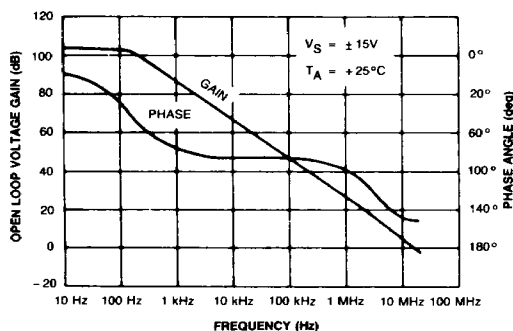
AM-450 ✓



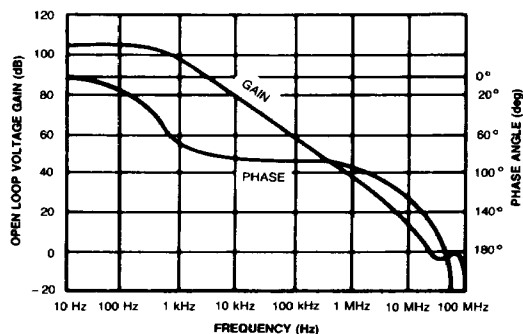
AM-452 ✓



AM-460 ✓



AM-462 ✓



CONNECTIONS

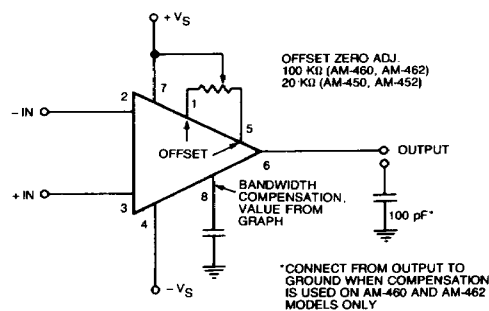
INPUT/OUTPUT CONNECTIONS

ALL -2 AND -2M MODELS

PIN	FUNCTION
1	OFFSET ADJUST
2	-INPUT
3	+INPUT
4	-Vs
5	OFFSET ADJUST
6	OUTPUT
7	+Vs
8	BANDWIDTH CONTROL

ON AM-460, AM-462 THE CASE IS CONNECTED TO-SUPPLY

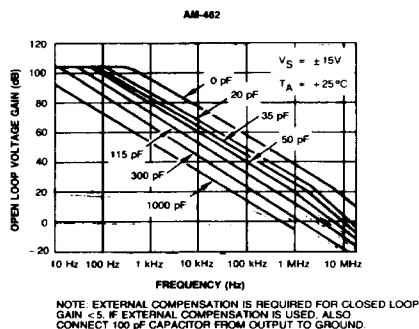
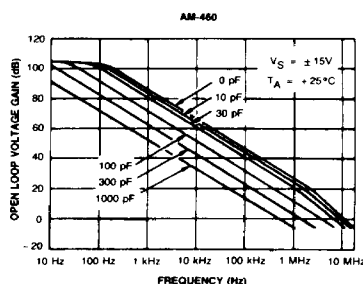
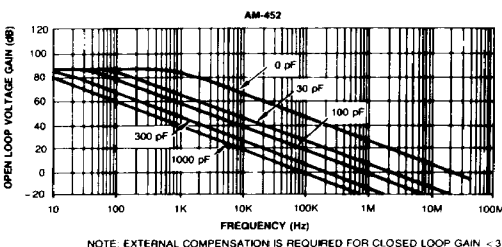
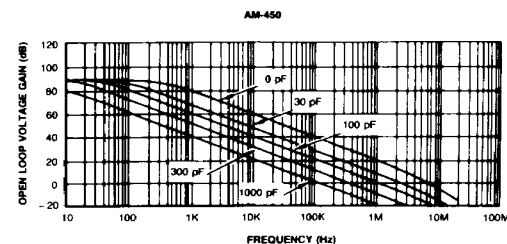
EXTERNAL OFFSET ADJUSTMENT AND BANDWIDTH COMPENSATION (ALL MODELS)



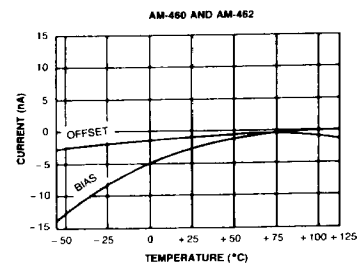
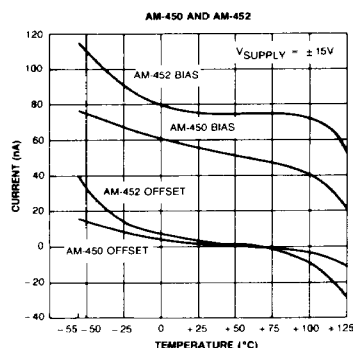
NOTE: PINS SHOWN FOR TO-99 CASE

TYPICAL PERFORMANCE CURVES

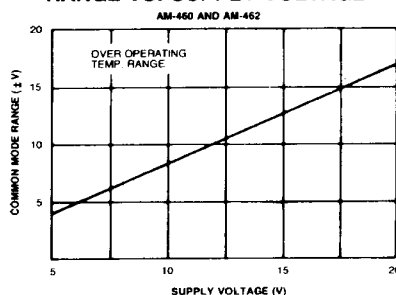
OPEN LOOP FREQUENCY RESPONSE AND EXTERNAL BANDWIDTH COMPENSATION



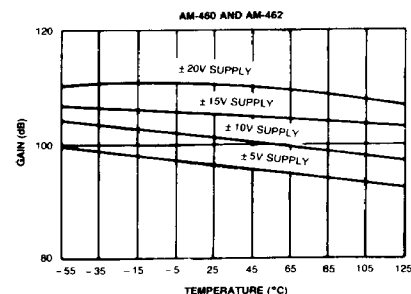
INPUT BIAS AND OFFSET CURRENT VS. TEMPERATURE



COMMON MODE VOLTAGE RANGE VS. SUPPLY VOLTAGE



OPEN LOOP VOLTAGE GAIN VS. TEMPERATURE



ORDERING INFORMATION

MODEL NO.

AM-450-2	0°C to +70°C
AM-450-2M	-55°C to +125°C
AM-452-2	0°C to +70°C
AM-452-2M	-55°C to +125°C
AM-460-2	0°C to +70°C
AM-462-2	0°C to +70°C

OPERATING TEMP. RANGE

ACCESSORIES

Part Number
TP100K, TP20K

Description

Trimming Potentiometers

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SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE

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