

The **NEW** GENERAL MAGNETICS

Solid State Magnetic Demodulators

The new G/M Magnetic Demodulators are solid state circuits for converting phase reversing AC signal voltages into phase detected polarity reversing DC voltages. The amplitude and polarity of the DC output are directly proportional to the phase and amplitude of the AC signal.

The new solid state demodulators feature contactless switching for high vibration and shock resistance. Stability of performance and ruggedized construction offer the solution to problems inherent in today's critical applications.

A typical unit gives 1 v. DC per 1 v. AC and provides 10 K impedances on both signal and reference windings. This demodulator provides less than 2% absolute linearity from 0.1 v. to 10.0 v. output. Operation is over an ambient range of -55°C to $+125^{\circ}\text{C}$. Output impedance less than 500 ohms DC; offset null less than 8 m.v. over the entire ambient range.

Demodulator Type Number	DMD-803-1	DMD-931-1	DMD-1012-1	DMD-1013-1	DMD-1017-1	DMD-1023-1	DMD-1025-1	DMD-1040-1	DMD-1028-1
REFERENCE A. Voltage B. Frequency C. Impedance	120 V ± 10 V 60 Hertz 15 K	26 V 400 Hertz 30 K	115 V 60 > 50 K	115 V 400 Hertz > 50 K	115 V 400 Hertz > 5 K	30 V-P-P 55 Hertz ≈ 2.7 K	30 V 900 Hertz ≈ 31 K	115 V 400 Hertz > 100 K	15 V 50 to 60 Hertz ≈ 5.1 K
SIGNAL A. Voltage Range B. Frequency C. Impedance	0-760 mv 60 Hertz 10 K	0-12 V 400 Hertz > 10 K	0-1 V 60 Hertz 10 K $\pm 10\%$	0-10 V 400 Hertz 10 K $\pm 10\%$	0-10 V 400 Hertz > 10 K	0-5 V 55 Hertz > 10 K	0-0.05 V 900 Hertz > 3 K	0-3.2 V 400 Hertz > 3 K	0-10 V 50 to 60 Hertz ≈ 3 K
OUTPUT A. Maximum Output B. Load C. Linearity D. Frequency Response E. Ripple F. Null	± 1 V $\pm 5\%$ — $\pm 0.8\%$ fs — 8.4 mv 1 mv	± 3.6 V $\pm 10\%$ 10 K $\pm 2\%$ A 20 cps < 100 mv < 15 mv	± 0.5 V $\pm 5\%$ 25 K $\pm 1\%$ fs — No Filter < 10 mv	± 5 V $\pm 5\%$ 5 K $\pm 1\%$ fs — No Filter < 10 mv	± 3 V $\pm 5\%$ 2 K $\pm 1\%$ fs 40 Hertz < 150 mv < 10 mv	± 4 V $\pm 5\%$ 10 K $\pm 1\%$ fs 0.5 Hertz < 200 mv < 10 mv	± 0.5 V $\pm 10\%$ 1 M $\pm 1\%$ fs 10 Hertz < 10 mv < 1 mv	± 5 V $\pm 5\%$ 50 K $\pm 1\%$ fs — No Filter < 10 mv	± 10 V $\pm 5\%$ 10 K $\pm 1\%$ fs — < 400 mv < 15 mv
AMBIENT TEMP. RANGE	-40°F to $+120^{\circ}\text{F}$	-15°C to $+60^{\circ}\text{C}$	-30°C to $+85^{\circ}\text{C}$	-30°C to $+85^{\circ}\text{C}$	-30°C to $+71^{\circ}\text{C}$	0°C to $+50^{\circ}\text{C}$	0°C to $+50^{\circ}\text{C}$	-30°C to $+85^{\circ}\text{C}$	-10°C to $+55^{\circ}\text{C}$
PHYSICAL SIZE	3 x 2 $\frac{1}{2}$ x 4 $\frac{1}{16}$	2 x 2 x 0.7	1 x 1 x 2.5	1 x 1 x 2.5	1 x 1 x 2.5	0.95 x 1 x 2.5	1 x 1.7 x 0.75	1 x 1 x 2.5	1.9 x 1.25 x 2.9
TERMINAL TYPE	HP PIN	PIN	PIN	PIN	PIN	PIN	HP PIN	PIN	HP
D.C. POWER	No	No	± 15 V	± 15 V	28 V	± 15 V	± 15 V	No	± 15 V

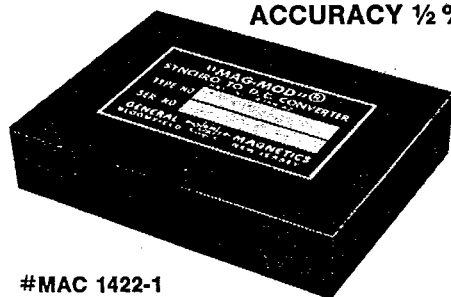
Features

- High reference impedance resulting in very small reference power requirements
- Output as high as ± 10 v. DC in present units
- Unit operation frequencies: 60 Hz to 100 KHz
- Very low DC offset null voltages (as low as 0.1% of full scale)
- Operation over wide environmental conditions
- Completely solid state — no moving parts
- Signal and reference terminals may be isolated
- Low output impedance
- Small physical size

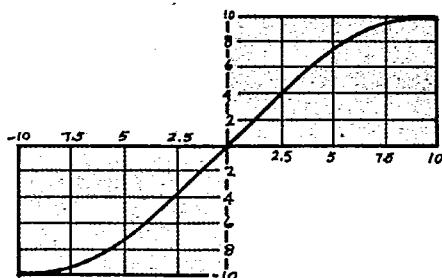
DMD-1034-1	DMD-1053-3	DMD-1074-1	DMD-1095-1	DMD-1104-1	DMD-1206-1	DMD-1207-1	DMD-1268-1	DMD-1377-1	DMD-1420-1
26 V 400 Hertz > 8 K	115 V 400 Hertz > 100 K	115 V $\pm 5\%$ 400 Hertz $\pm 5\%$ > 100 K	26 V $\pm 5\%$ 400 Hertz $\pm 5\%$ > 10 K Ω	26 V 800 Hertz 35 K	26 V 400 Hertz > 50 K	26 V 2 K Hertz > 50 K	26 V 400 Hertz > 5 K	10 V RMS $\pm 10\%$ 60 Hertz to 2 K Hertz > 25 K	7 V RMS 100 Hertz > 4 K
0-5 V 400 Hertz > 10 K	0-10 V 400 Hertz > 100 K	0-50 V 400 Hertz > 1 MEG	0- ± 6.36 V 400 Hertz > 20 K Ω	0-1 V 800 Hertz > 50 K	0-1 V 400 Hertz > 15 K	0-1 V 2 K Hertz > 15 K	0-10 V 400 Hertz > 10 K	0-5 V RMS 60 Hertz to 2 K Hertz > 50 K	0-7 V RMS 100 Hertz > 20 K
± 5 V $\pm 5\%$ 10 K $\pm 1\%$ fs 100 Hertz < 450 mv < 15 mv	± 2.5 V $\pm 10\%$ 10 K $\pm 1\%$ fs 30 Hertz < 125 mv < 4 mv	± 50 V $\pm 5\%$ 100 K $\pm 1\%$ fs 80 Hertz < 50 mv < 100 mv	± 5.73 V $\pm 5\%$ 10 K Ω $\pm 1\%$ fs — No Filter < 15 mv	± 2.0 V $\pm 5\%$ 10 K Ω $\pm 1\%$ fs N.S. < 50 mv < 10 mv	1.0 V 30 K 0.5% fs 30 Hertz < 30 mv 1 mv	1.0 V 30 K 0.5% fs 30 Hertz < 10 mv 1 mv	± 3 V $\pm 5\%$ 2 K $\pm 1\%$ fs 40 Hertz < 150 mv < 5 mv	2.5 V $\pm 5\%$ 1 Meg 0.2% — No Filter < 2 mv	3 V $\pm 5\%$ 1 Meg 0.2% — No Filter < 3 mv
0°C to +85°C	-20°C to +50°C	0°C to +65°C	-54°C to +55°C	1200 M	-55°C to +125°C	-55°C to +125°C	-30°C to +71°C	0°C to +70°C	-25°C to +40°C
0.6 x 0.9 x 1.8	1 x 1 x 2.5	2.6 x 1.95 x 2	1.200 x 1.250 x 0.500	1.350 x .600 x .650	0.95 x 1.65 x 0.1	0.95 x 1.3 x 0.1	1 x 1 x 2.5	0.9 x 1.65 x 0.6	1.25 x 1.125 x 0.8
PIN	PIN	HP	PIN	PIN	PIN	PIN	PIN	PIN	PIN
± 15 V	+24-32 V	± 15 V ± 60 V	± 15 V	± 15 V	± 15 V	± 15 V	+28 V	± 15 V DC	± 15 V DC

3 Wire Synchro to Linear D.C. Converter

ACCURACY 1/2 %



#MAC 1422-1



- Scaled for $\pm 10V$ DC output
- Operates from $\pm 15V$ supplies
- No external adjustments
- Hermetically sealed
- Output short circuit protected
- Units can be altered to operate with different L-L Voltages or frequency

Specifications

Accuracy: $\pm 1\%$ over temperature range

Input: 11.8V, 400HZ line to line 3 wire synchro voltage

Output impedance: less than 10 Ohms

Input impedance: 10K minimum line to line

Reference: 26V $\pm 10\%$ 400HZ (Unit can be altered to accommodate 115V if available at no extra cost)

Operating temperature range: $-25^{\circ}C$ to $+85^{\circ}C$

Storage temperature range: $-55^{\circ}C$ to $+100^{\circ}C$

DC power: $\pm 15V \pm 1\%$ @ 75ma (approx.)

Case material: High permeability Nickel Alloy

Weight: 6 Ozs.

Size: 3.6" x 2.5" x 0.6"

There is No Substitute
for Reliability



GENERAL MAGNETICS, INC.

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(201) 743-2700

Precision Analog Components for Signal Manipulation and Function Generation

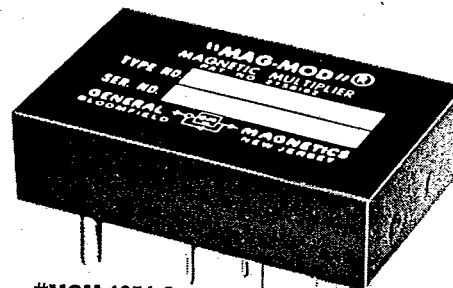
- Radiation Hardened Analog Multipliers and Modulators
- Linear DC to Synchro Converter
- Sine-Cosine to 3 Wire Converter
- 3 Wire to Linear DC Converter
- 3 Wire to Sine-Cosine Converter
- Sine-Cosine Generators
- Precision Modulators
- Precision Analog Multipliers
- Squaring/Square Root Modules
- Precision Analog Divider
- Precision A.C. Regulators
- Demodulators
- Transformers

Analog Computing Applications

- Trigonometric Manipulations
- Multiplying
- Dividing
- Squaring
- Modulating
- Automatic Gain Control
- Demodulation
- RMS Computation
- Phase Measurement
- AC Amplitude Regulation and Modulation
- Linearizing
- Square Rooting
- Power Measurement
- Ratio Measurement

4 Quadrant Magnetic Analog Multiplier

DC x AC = AC Output



#MCM 1351-2

Product Accuracy
is $\pm 1/2\%$ of all readings Over Full Temperature Range of $-55^{\circ}C$ to $+125^{\circ}C$

- Product accuracy is specified in % of reading for all output analog voltage product points over the full military temperature range instead of % of full scale error giving superior results for small values.
- Linearity, product accuracy, and zero point virtually unaffected by temperature changes.
- All units are hermetically sealed and completely shielded from external electric or magnetic fields.

Specifications Include:

Transfer equation: $E = XY/3$

X & Y input signal ranges: 0 to $\pm 3V$ Peak

Maximum static and dynamic product error: $1/2\%$ of point or 2 MVRMS, whichever is greater, over entire temperature range

Input impedance: X = 10K; Y = 10K

Full scale output: 3 VRMS

Minimum load resistance for full scale output: 2000 ohms

Output impedance: Less than 50 ohms

X input bandwidth: $\pm 0.5db$, 0 to 200 hertz

Y input bandwidth: $\pm 0.5db$, 20 hertz to 1000 hertz

DC power: $\pm 15V$ unless otherwise required @ 20 ma

Size: 1.8" x 1.1" x 0.5"

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