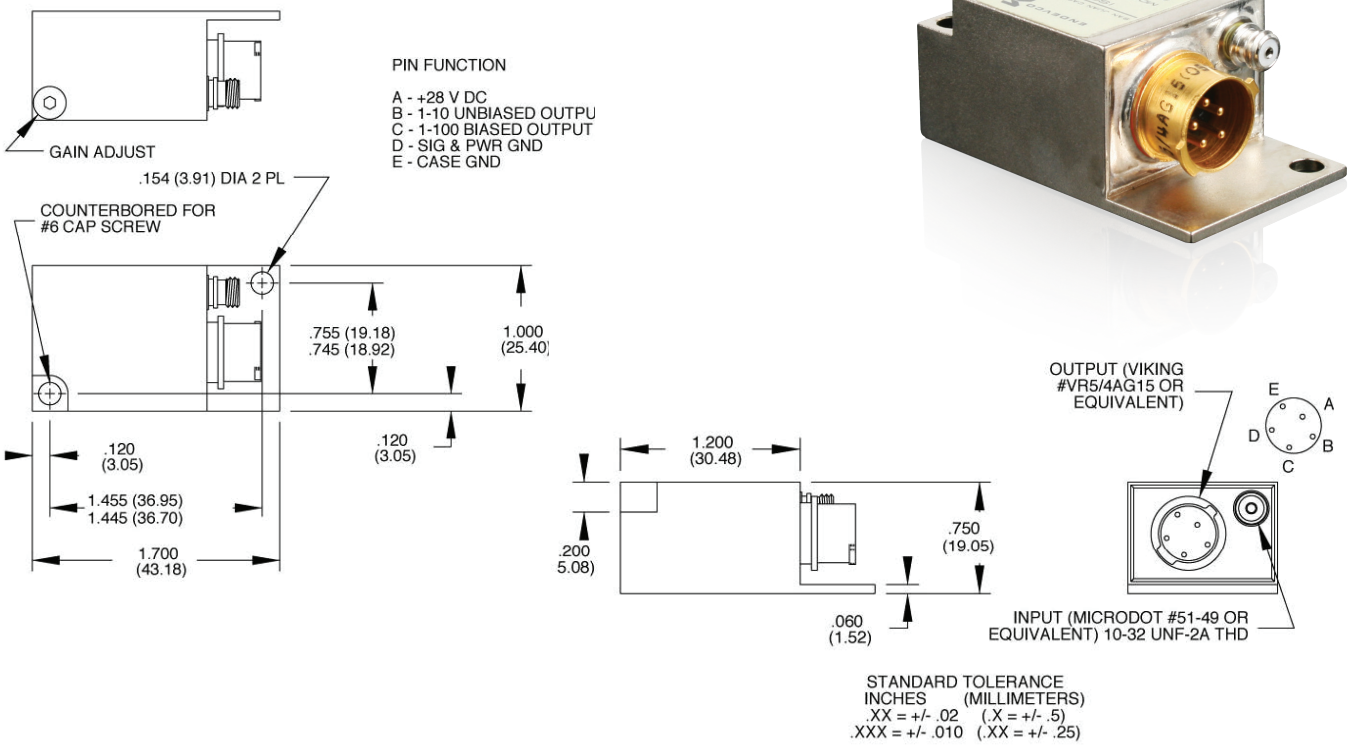
Endevco
AN MTS COMPANY

Airborne IEPE amplifiers

Model 2685M1-M7



Key features

- For use with IEPE transducers
- Small, rugged, light weight
- Dual outputs, biased and unbiased
- Adjustable gain
- Optional low pass filter

Description

The Endevco® Models 2685M1-XXX through M7-XXX conditioners are airborne devices designed for use with IEPE transducers. Hybrid microcircuit construction results in small size, ruggedness and low power consumption. The 2685 provides a constant current source to power the integral electronics of the transducer while maintaining a two wire connection. The use of modular construction techniques permits great versatility in gain and filter choices. This unit has two outputs, a biased output and an unbiased output. Both outputs are adjustable with a common gain control.

The M1 through M7 defines the amplifier gain per Table 1. The -XXX describes the optional filter upper cutoff frequency (-5% point) per Table 2. For example, a -101 has a low pass filter which is flat up to 100 Hz,a-502 has a low pass filter which is flat up to 5000 Hz.

The following performance specifications conform to ISA-RP-37.2 (1964) and are typical values, referenced at +75˚F (+24˚C) and 100 Hz, unless otherwise noted. Calibration data, traceable to National Institute of Standards and Technology (NIST), is supplied.

Specifications

Inputs	
Type	Single-ended with one side connected to signal ground. Compatible with constant current systems using two wire remote electronic transducers.
Source resistance	100 Ω maximum
Excitation current	4.3 mA typical
Source impedence	40k Ω minimum
Overload recovery	At 15 V pk-pk single at any frequency from 5 Hz to 20 kHz will cause no spurious effects at the amplifier output other than clipping, regardless of the amplifier's gain.
Outputs	
Type	Both biased and unbiased outputs are single-ended with one side connected to circuit ground.
Load impedance	The parallel combination of both outputs load resistors shall be 10 kΩ or greater to meet all specifications.
Output impedance	
Biased output	50 Ω max, direct coupled
Unbiased output	50 Ω max, in series with at least 16 µF
DC output bias voltage	
Biased output	2.50 V ±3% with load resistances of 10 kΩ minimum
Unbiased output	0.00 V +0.050 V / -0.00 V
Linear output voltage	
Biased output	4.65 V pk-pk minimum with 10 kΩ load
Unbiased output	4.65 V pk-pk minimum with 1 MΩ load
Limited output voltage (biased output)	0.00 V +0.075/-0.000 V and 5.30 V +0.00/-0.30 V
Limited output current (both output)	0.465 mA pk-pk minimum with 10 kΩ load
Transfer characteristics	
Gain range	Adjustable as specified in Table 1
Gain stability with supply voltage	.25% maximum with changes in supply voltage over the specified limits
Frequency response	Reference to 20 Hz response at temperature of interest per Table 2
Amplitude linearity	±0.5% of reading from best fit straight line approximation
Total harmonic distortion	Less than 0.5% for signals within the output limits
Residual noise	50 µVs rms RTI or noise RTO
Shock and vibration sensitivity	0.01 mV/g maximum RTI
Environmental	
Temperature	
Operating	-67°F to 212°F (-55°C to 100°C)
Storage	-99°F to 257°F (-73°C to 125°C)
Humidity	100% R.H. when sealing screw is soldered. Meets MIL-STD-810D, Method 507.2, Procedure III
Altitude	No effect when sealing screw is soldered.
Vibration	
120 mils D.A.	5 Hz to 55 Hz
20 g	55 Hz to 2000 Hz
Shock	
100 g	6.5 millisecond sawtooth
Power	
Voltage	20 to 32 VDC (28 VDC nominal)
Current	30 mA maximum
Polarity protection	Not damaged by a polarity reversal of the 28 V supply
Case isolation	Case and signal grounds isolated from each other by 50 MΩ or greater at 50 VDC
Physical characteristics	
Dimensions	See line drawing
Mounting [2]	6-32 screws
Case material	Aluminum with electroless nickel plate finish
Weight	1.2 oz (34 gm) maximum
Connectors	
Input	10-32 coaxial
Output	Viking VR5/4AG15. Pin A is the 28 VDC, Pin B unbiased output, Pin C biased output, Pin D power and signal ground, Pin E case ground
Gain control	10 turn trim pot, varies the gain a specified in Table 1

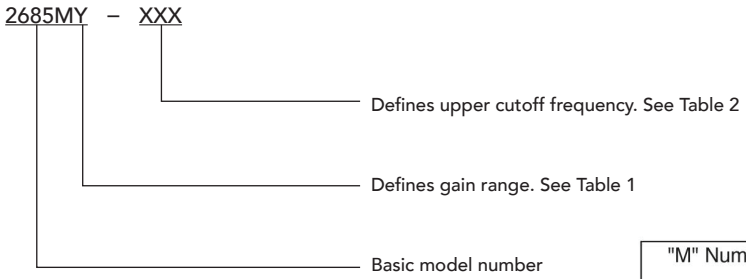
Accessories

Product	Description	2685M1-M7
21997	Accessory kit	Included
	EP38 - Mating plug (Viking #VP5/4CE6), QTY 1	Included
	EP35 - Hood (Viking #VS4/16C5), QTY 1	Included
	EP31- Potting sleeve (Viking #VS4/16C9), QTY 1	Included
	EHW172 - Lockwasher, #6, QTY 2	Included
	EH293 - Screw, CAP 6-32 X 3/4, QTY 1	Included
	EH535 - Screw, CAP 6-32 X 1/4, QTY 1	Included

Notes

1. Maintain high levels of precision and accuracy using Endevco's factory calibration services. Call Endevco's inside sales force at 866-ENDEVCO for recommended intervals, pricing and turn-around time for these services as well as for quotations on our standard products.

2. Model number definition:

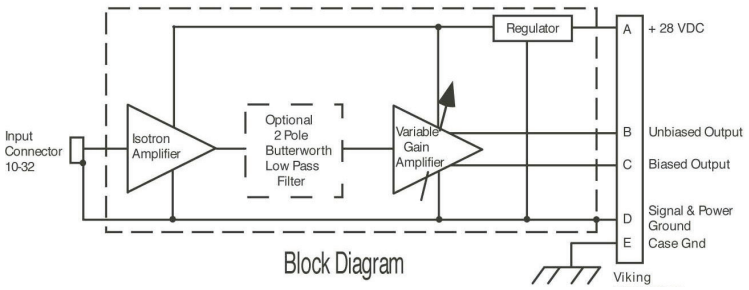


"M" Number	Gain Range [mV/mV]	Residual Noise [mV rms]
M1	0.1 to 1.0	1.5
M2	0.2 to 2.0	1.5
M3	0.5 to 5.0	1.5
M4	1.0 to 10.0	1.5
M5	2.0 to 20.0	1.5
M6	5.0 to 50.0	1.5
M7	10.0 to 100	2.0

TABLE 1: GAIN RANGES

Dash No.	Lower Cutoff Frequency [-3dB] Typical	Lower Cutoff Frequency [-5%] Freq	Upper Cutoff Frequency [-5%] Freq	Upper Cutoff Frequency [-3dB] Typical	Upper Cutoff Frequency [-12 dB] Typical
None	0.7	3 Hz ±2Hz	20 kHz	—	—
101	0.7	3 Hz ±2Hz	100 Hz	200 Hz	400 Hz
201	0.7	3 Hz ±2Hz	200 Hz	400 Hz	800 Hz
501	0.7	3 Hz ±2Hz	500 Hz	1 kHz	2 kHz
102	0.7	3 Hz ±2Hz	1 kHz	2 kHz	4 kHz
202	0.7	3 Hz ±2Hz	2 kHz	4 kHz	8 kHz
502	0.7	3 Hz ±2Hz	5 kHz	10 kHz	20 kHz
103	0.7	3 Hz ±2Hz	10 kHz	20 kHz	40 kHz
203	0.7	3 Hz ±2Hz	20 kHz	40 kHz	80 kHz
150	0.7	3 Hz ±2Hz	15 Hz	30 Hz	60 Hz

TABLE 2: FREQUENCY RESPONSE



Block Diagram

www.endevco.com | Tel: +1 (866) ENDEVCO [+1 (866) 363-3826] | 10869 NC-903, Halifax, NC 27839 USA

082620