

Variable capacitance accelerometer Model 770A - 770F



Key features

- 2, 10, 30, 50, 100 and 200 g ranges
- Measures motion, low frequencies and tilt
- Frequency response from DC up to 1,500 Hz
- Rugged housing and cable
- U option for 7 to 36 V input
- R option for regulated 5 V input

Description

The ENDEVCO[®] Model 770A and 770F are low g DC accelerometers that utilize unique variable capacitance microsensors. These accelerometers are designed for measurement of relatively low level accelerations in automotive ride quality, motorsports and high speed rail applications where measurement of whole body motion immediately after the accelerometer is subjected to a shock motion and in the presence of severe vibrational inputs is required.

The 770A and 770F accelerometers are available with a choice of two power options. One option (U) allows for operation from 7V to 36V. The second option (R) allows for operation at a regulated excitation voltage of 5V. These accelerometers feature various full scale g ranges including $\pm 2g, \pm 10g, \pm 30g, \pm 50g, \pm 100g, \pm 200g$, and provide single-ended output with a 2.5V output bias voltage.

The Model 770A is designed for adhesive mounting for ultimate flexibility when mounting. The Model 770F is designed for screw mounting with the provided screws.



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All specifications assume +75°F (+24°C) unless otherwise stated. Calibration voltage for -R units is 5Vdc and for -U units is 15Vdc.

Dynamic characteristics	Units	±2	±10	±30	±50	±100	±200
Sensitivity	mV/g	1000	200	66	40	20	10
		±50	±10	±4	±2	±1.0	±1.0
Frequency response	Hz						
(±5% max, ref 100 Hz)		0-200	0-900	0-900	0-900	0-1500	0-1500
(±10% typical, ref 100 Hz)		0-350	0-1800	0-2400	0-2400	0-4000	0-4000
(±3dB typical, ref 100 Hz)		0-600	0-2600	0-3000	0-3000	0-5000	0-5000
Zero measurand output	mV	2500	2500	2500	2500	2500	2500
		±50	±50	±50	±50	±50	±50
Transverse sensitivity	%	3.0	3.0	3.0	3.0	3.0	3.0
Thermal zero shift (max)	%FSO	±2.0	±2.0	±2.0	±2.0	±2.0	±2.0
-40°C to +100°C (-40°F to +212°F)							
Thermal sens shift (max	%	±2.0	±2.0	±2.0	±2.0	±2.0	±2.0
-40°C to +100°C (-40°F to +212°F)		• -	• -	• -			
Combined non-linearity and hysteresis	%FSO	±0.5	±0.5	±0.5	±0.5	±0.5	±0.5
Natural frequency	Hz	1300	2700	5500	5500	9800	9800
Threshold (resolution) [1]	equiv. g's.	.0002	.001	.003	.005	.01	.02
Warm-up time (to within 1% of final output value)	30 ms						
Electrical							
Excitation voltage							
For option "R" supply voltage	5 Vdc						
For option "U" supply voltage	7 to 36 Vdc						
Current drain	8 mA max						
Output impedance	100 Ohms max						
ad 10k Ohms resistance minimum							
	50 pF capacitance maximum						
	100 μVrms typ, 500 μVrms max; 0.5 to 100 Hz						
Residual noise	100 µVrms ty	/p, 500 µVrm	s max; 0.5 to	100 Hz			
Residual noise			s max; 0.5 to s max; 0.5 Hz				
Residual noise Insulation resistance	500 µVrms ty		s max; 0.5 Hz				
	500 µVrms ty	/p, 1.0 mVrm	s max; 0.5 Hz				
Insulation resistance	500 μVrms ty 100 meg Oh	γp, 1.0 mVrm ms minimum	s max; 0.5 Hz	to 10 kHz	er		
Insulation resistance Physical	500 μVrms ty 100 meg Oh	p, 1.0 mVrm ms minimum hout cable) p	s max; 0.5 Hz at 50 Vdc	to 10 kHz	er		
Insulation resistance Physical Weight	500 μVrms ty 100 meg Oh 6 grams (with Anodized alu	yp, 1.0 mVrm ms minimum hout cable) p minum alloy	s max; 0.5 Hz at 50 Vdc us cable at 19	to 10 kHz 9 grams/mete		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material	500 µVrms ty 100 meg Oh 6 grams (with Anodized aluu Integral 4 co	yp, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28	s max; 0.5 Hz at 50 Vdc us cable at 19	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type	500 µVrms ty 100 meg Oh 6 grams (with Anodized aluu Integral 4 co	yp, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28	at 50 Vdc us cable at 1 ^o AWG Teflon	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental	500 µVrms ty 100 meg Oh 6 grams (with Anodized aluu Integral 4 co Adhesive mo	p, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28 bunt (770A); 1	s max; 0.5 Hz at 50 Vdc us cable at 1 AWG Teflon wo #2-56 Scr	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit	500 µVrms ty 100 meg Oh 6 grams (with Anodized aluu Integral 4 co Adhesive mo 10000 g (0.1	p, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28 bunt (770A); T 5 mS haversin	a max; 0.5 Hz at 50 Vdc us cable at 1 AWG Teflon wo #2-56 Scru ne pulse)	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit Operating temperature	500 µVrms ty 100 meg Oh 6 grams (with Anodized aluu Integral 4 co Adhesive mod 10000 g (0.1 -40°C to +10	p, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28 bunt (770A); T 5 mS haversii 0°C (-40°F tc	a max; 0.5 Hz at 50 Vdc us cable at 1 AWG Teflon wo #2-56 Scru ne pulse) +212°F)	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit Operating temperature Storage temperature	500 µVrms ty 100 meg Oh 6 grams (with Anodized aluu Integral 4 co Adhesive mod 10000 g (0.1 -40°C to +10	p, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28 bunt (770A); T 5 mS haversin	a max; 0.5 Hz at 50 Vdc us cable at 1 AWG Teflon wo #2-56 Scru ne pulse) +212°F)	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit Operating temperature	500 µVrms ty 100 meg Oh 6 grams (with Anodized aluu Integral 4 co Adhesive mc 10000 g (0.1 -40°C to +10 -40°C to +10	p, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28 bunt (770A); T 5 mS haversii 0°C (-40°F tc	a max; 0.5 Hz at 50 Vdc us cable at 1 AWG Teflon wo #2-56 Scru ne pulse) +212°F)	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit Operating temperature Storage temperature Humidity Calibration data	500 µVrms ty 100 meg Oh 6 grams (with Anodized alur Integral 4 co Adhesive mod 10000 g (0.1 -40°C to +10 IP67	p, 1.0 mVrm ms minimum hout cable) p minum alloy nductor, # 28 Junt (770A); 1 5 mS haversin 10°C (-40°F tc 00°C (-40°F tc	a max; 0.5 Hz at 50 Vdc us cable at 1° AWG Teflon wo #2-56 Scro he pulse) +212°F) +212°F)	to 10 kHz 9 grams/mete insulated lead		ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit Operating temperature Storage temperature Humidity	500 µVrms ty 100 meg Oh 6 grams (with Anodized alur Integral 4 co Adhesive mod 10000 g (0.1 -40°C to +10 IP67 Measured at	yp, 1.0 mVrm: ms minimum hout cable) p minum alloy nductor, # 28 punt (770A); 1 5 mS haversin 10°C (-40°F tc 00°C (-40°F tc 1 g and 100	a max; 0.5 Hz at 50 Vdc us cable at 1° AWG Teflon wo #2-56 Scro +212°F) +212°F) Hz for the -2	to 10 kHz 9 grams/mete insulated lead ews (770F)	ds, shielded w	ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit Operating temperature Storage temperature Humidity Calibration data Sensitivity	500 µVrms ty 100 meg Oh 6 grams (with Anodized alu Integral 4 co Adhesive mod 10000 g (0.1 -40°C to +10 IP67 Measured at Measured at	yp, 1.0 mVrm: ms minimum hout cable) p minum alloy nductor, # 28 punt (770A); 1 5 mS haversin 10°C (-40°F tc 00°C (-40°F tc 00°C (-40°F tc 1 g and 100 10 g and 100	a max; 0.5 Hz at 50 Vdc us cable at 1° AWG Teflon wo #2-56 Scr +212°F) +212°F) Hz for the -2) Hz for the -1	to 10 kHz 9 grams/mete insulated lead ews (770F) 10, -30, -50, - ⁴	ds, shielded w	ith white poly	urethane jacket
Insulation resistance Physical Weight Case material Cable type Mounting/torque Environmental Shock limit Operating temperature Storage temperature Humidity Calibration data	500 µVrms ty 100 meg Oh 6 grams (with Anodized alu Integral 4 co Adhesive mo 10000 g (0.1 -40°C to +10 IP67 Measured at Measured at Measured at	yp, 1.0 mVrm: ms minimum hout cable) p minum alloy nductor, # 28 punt (770A); 1 5 mS haversin 0°C (-40°F tc 0°C (-40°F tc 0°C (-40°F tc 1 g and 100 10 g and 100 1 g, 20 to 10	s max; 0.5 Hz at 50 Vdc us cable at 1 AWG Teflon wo #2-56 Scro +212°F) +212°F) Hz for the -2 0 Hz for the -1 00 Hz for the -1	to 10 kHz 9 grams/mete insulated lead ews (770F) 10, -30, -50, -7	ds, shielded w		urethane jacket

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Accessories					
Options	Description	770			
EH136	Screw, socket head, 2-56 x ¼ alloy steel blk oxide (x2)	Included			
EHM178	Hex wrench	Included			
7971	Triaxial mounting block	Optional			

Ordering information:

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.

Notes

- 1. Threshold = 2x max. residual noise; .5 to 100Hz/sensitivity
- 2. Model number definition:

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