

# Linear Accelerometers

## SA-120R, SA-120RNP

The Columbia Models SA-120R and SA-120RNP Force Balance Accelerometers have been designed as Measurement While Drilling (MWD) sensors for use in downhole well service applications. These sensors are completely self-contained and require no additional signal conditioning.

The Models SA-120R and SA-120RNP Accelerometers are extremely rugged and will survive severe shock and vibration exposures. The Model SA-120RNP provides optimum accuracy and repeatability in high temperature environments up to +125 degrees C. Refer to Columbia Model SA-120RHT for extreme high temperature applications up to 200 degrees C. *Consult the factory for customized versions of these sensors.*

- \* **Miniature MWD Sensors**
- \* **Operational to 125°C**
- \* **Low Cost and High Performance**



### Specifications

	SA-120R	SA-120RNP
<b>Operational</b>		
Ranges Available	±1 G To ±10 G	
Output Voltage	±5 Volts into 100K Load	
Excitation	±15 VDC <20 mA	
Output Impedance	<5000 Ohms	
Sensitive Axis Alignment	Better Than 0.5 Deg	Better Than 0.25 Deg
Scale Factor Tolerance	±1%	
Scale Factor Temp Coefficient	0.025% / Deg C Max.	
Zero Bias	±0.1% F.R.	±0.05% F.R.
Null Temp Sensitivity	0.001% F.R./ Deg C	
Natural Frequency	50 To 300 Hz Dependent Upon Range	
Damping	0.7 ±0.2	
Cross Axis Sensitivity	0.005 G/G	
Output Noise	<0.02% F.R.	
Non-Linearity	±0.05% F.R.	±0.045% F.R.
Hysteresis & Non-Repeatability	±0.1% F.R.	±0.06% F.R.
Threshold & Resolution	±0.001% F.R.	

### Environmental

Temperature, Operating	-50 To +125 Deg C	
Temperature, Storage	-60 To +150 Deg C	
Vibration Survival (2 To 2,000 Hz)	25 G RMS, 0.5" Disp D.A.	
Shock Survival	1,000 G, 0.5 mSec	1,500 G, 0.5 mSec 12 Shocks per Axis
Ambient Pressure	0 To 5 Atmospheres	
Humidity	95% R.H.	

### Physical

Weight	1.5 Oz (42.5 Gm)	
Size		
Standard Square Flange	1.16 In Sq x 0.73 In H (2.95 cm Sq x 1.46 cm H)	
Optional Round Flange	1.10 In Dia. x 0.73 In H (2.79 cm Dia. x 1.86 cm H)	
Case Material	Nickel-Plated Aluminum	
Sealing	Environmental	
Electrical Interface	4 Terminal Pins	

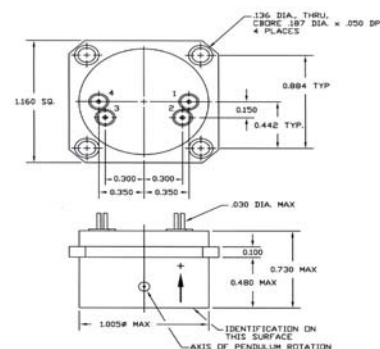
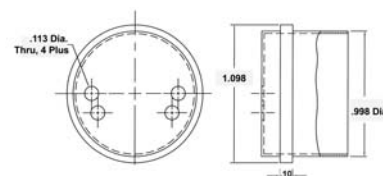


Figure 1 – Optional Round Flange



### Output Terminal Pin Functions:

SA-120R and SA-120RNP	
Pin	Function
A	+15 VDC
B	Ground
C	-15 VDC
D	Output

### Ordering Information:

SA-120R (+/- X G) **F**  
 SA-120RNP (+/- X G) **F**

Standard Accelerometer  
 Range +/- X G (Required)

Optional Round Flange (See Fig. 1 Above)



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