

# MODEL 751F

## FOCUSED NATURAL GAMMA SENSOR

### FEATURES

- Operational temperature up to 150°C
- Digital serial input/output
- High sensitivity crystal - photomultiplier tube design
- Rugged design for use in high shock and vibration environments
- Axial and transverse 50 gee accelerometers for vibration monitoring

### APPLICATIONS

- Geosteering in narrow/thin zones
- Evaluation of downhole strata in drilling and logging applications
- Evaluation of downhole vibration and shock magnitudes

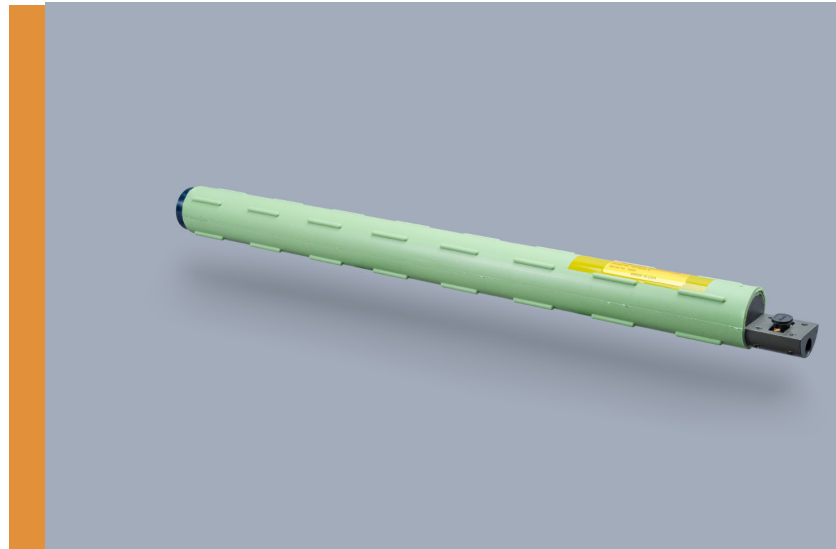
The Applied Physics Systems Model 751F Focused Natural Gamma Sensor measures the gamma radiation occurring in well bores to detect the presence of porous petroleum reservoirs.

The sensors scintillation crystal and tungsten shield shields one side of the formation from the gamma sensor, which allows operators to differentiate sands from limestones. This allows operators to determine the downhole lithology and accurately place the well path inside the producing (sand) zone.

The sensors are temperature calibrated to ensure that it is accurate throughout the range.

To operate the sensor, rotation in the drillstring is stopped and the sensor is oriented in a specific direction (usually up or 0° and then down or 180°) and readings are taken to determine if any corrective steering action is necessary to stay within the target zone.

The Model 751F sensor can be used as either a standalone system or in with the Applied Physics Model 750 or 760 directional sensors. Communication with the Model 751F is achieved using a bi-directional TTL serial port. To achieve high gamma sensitivity, a 0.7 inch diameter by 5.3 inches long scintillation crystal is used to detect gamma rays.



The Model751F sensor has a two-axis 50 gee vibration sensor to monitor drilling induced vibration and shock. The vibration sensor is oriented to measure axial and lateral shock and vibration.

#### Related Products (others available)

**Model 751** Standard

**Model 751F** Focused Gamma Sensor with Vibration and Shock Detection

**Model 751AZ** Azimuthal Gamma Sensor with Vibration and Shock Detection

PIN	FUNCTION
1	TTL Serial Out (from Gamma)
2	TTL Serial In (to Gamma)
3	Voltage
4	Ground
Remaining pins	No used

**ELECTRICAL**

Input Voltage Range	+15 V to +30 V
Current Draw	40 mA @ 15V 20 mA @ 30V
Power Requirements	1.5 W (max)
Logic Level	TTL
Baud Rate	User Programmable up to 9600 baud
Protocol	User Selectable: ASCII or binary

**ENVIRONMENTAL**

Operating Temperature Range	0°C to +150°C
Storage Temperature Range	-55°C to +160°C
Shock	1000 G 1 ms half sine wave
Vibration	10 G RMS random 50 Hz to 500 Hz

**PERFORMANCE**

Accuracy	±0.5°
Thin Bed Resolution	6" (152.4 mm) in an 8" (203.2 mm) diameter hole
Vibration and Shock Detection	2 axis ± 50 gee 400 Hz

**PHYSICAL**

Outside Diameter (OD)	1.25" (31.75 mm) without Qpak Qpak sleeve/mold can be made to any size that customer's desire. Larger than 1.25"
Length	18.95" (481 mm) with Qpak 18.49" (470 mm) without Qpak
Weight	3.6 lb (1.63 kg)
Scintillation Crystal	0.7" diameter (17.78 mm) x 5.3" long (134.62 mm) in a stainless steel case
Photomultiplier Tube	Hamamatsu Model 3991A
Main Connector	MDM9
Mating Connector	MDM9

**OPERATIONAL GUIDANCE****SHOCK AND VIBRATION LEVELS**

LEVEL	SHOCK	VIBRATION
GREEN	< 17 g	< 4 g
YELLOW	17 to <26 g	4 to <6 g
ORANGE	26 to <36 g	6 to <5 g
RED	+35 g	+ 8 g

*Specifications are subject to change without notice.*