

FracSENS LB 6770

Rugged Densitometer for Hydraulic Fracturing and Cementing Applications

Made to Survive!



This woman is affected by forces of 4g, a well-trained human body can stand a maximum of 12 g. The Berthold FracSENS detector survived a shock test up to 500 g and was fully operational afterwards!

Small - Compact - Rugged

The FracSENS LB 6770 densitometer is specifically developed for the harsh environments that are typical for hydraulic fracturing and cementing. The count rate measured can be used to calculate PPA, PPG or SGU either in low pressure or in high pressure applications. With outer dimensions of 57 x 285 mm (2.2 x 11.2 inches) the detector is much smaller than any other fracturing densitometer and due to this compact design and its internal structure the detector is extremely resistant to vibration and mechanical shock, which has been proven successfully in excessive tests and in real applications.

Rugged design to withstand high vibrations and mechanical shock, approved up to 500g

Scintillation technology ensures high sensitivity for gamma radiation and allows reduction of source activity by a factor 10 compared to conventional Ion Chamber detectors

Stainless steel housing

Detector is supplied completely preconfigured. Calibration with empty pipe and water is all you need to do to set-up the device.

Easy plug & play amphenol cable connection for quick mount / dismount

Interfaces with most control systems, using one of the following output options:

- 0...10 VDC
- 4...20 mA
- pulses

High responsiveness - cycle time goes down to 100ms for high-speed measurements

Typical source size is 20 mCi or less





Extended Warranty

Based on our excellent field proven experience with this detector we guarantee that it will survive in the most demanding of fracturing conditions and we give 18 months warranty from time of shipment as a standard for this product.

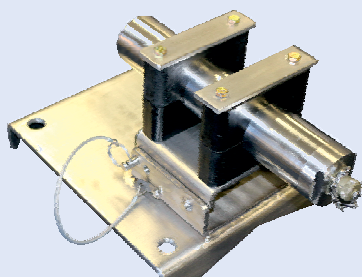
Ready to use in minimal time

Depending on your preferences the FracSENS LB 6770 detector either connects to the control system directly or to our LB 475 Fracturing system. In the first case customers will receive a signal proportional to count rate or density, which could either be a voltage output, a current output or a pulse output – whatever fits your control system. Even Modbus RTU communication is available.

The densitometer is pre-configured in our factory according to your needs, so anything you need to do on site is a quick calibration with empty pipe and water or with water and a slurry of known density to set the system up. That's it! According to your preference this can be done in the control system directly or with our LB 475 Fracturing system that can also calculate the pounds proppant added (PPA).

Easily Retrofit Existing Systems

The FracSENS densitometer can be used in combination with existing sources and clamps. We have different adapters and clamps available to adapt to your current system. Just contact us!



FracSENS LB 6770 Technical Data

Detector operating data	
Power supply	24 (15...28) VDC, ≤ 2 W
Cable connection	Amphenol PT02 E10-6P, 6-wire cable 1.5mm ² cross-section, shielded
Housing material	Stainless steel ISO 1.4301 / AISI 304 (others upon request)
Outer Dimensions	Ø 57 mm x 285 mm (Ø 2.24 inches x 11.2 inches)
Weight	Approx. 3 kg
Scintillator	Nal-crystal; Ø 40 mm, H: 50 mm
Operating temperature	-40 ... +60°C (-40 ... +140°F) ambient temperature
Storage temperature	-40 ... +70°C (-40 ... +158°F)
Performance	
Temperature stability	≤ 0.002 %/°C (over 100°C temperature regime)
Internal cycle time	100 ms
Signals & Process Interfaces	
Output Signals	proportional to count rate or logarithmic count rate (density) 0...10 VDC or 4...20 mA (max. 400 Ohm loop resistance) or pulses, max. 10 V
Communication	RS 485 - Modbus RTU (for detector temperature, actual high voltage and setting, time constant, detector errors and warnings etc.)
DuoSeries LB475	optionally connect to LB 475 Fracturing system for easy calibration and process interface.
Detector certificates & tests	
IP protection	IP 66
Environmental tests	IEC 60068-2-6 Vibration 5 ... 1000Hz, stay at resonance frequency IEC 60068-2-27 Mechanical shock (500g) IEC 60068-2-31 Drop test from 2m height IEC 60068-2-14 Temperature shock test (-40°C ... +70°C) IEC 16750-4 Intense water jet

