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

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### 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
Depening 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

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### 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 60682-2-6 Vibration 5 ... 1000Hz, stay at resonance frequency
  - IEC 60682-2-27 Mechanical shock (1000g)
  - IEC 60682-2-31 Drop test from 2m height
  - IEC 60682-2-14 Temperature shock test (-40°C ... +70°C)
  - IEC 16750-4 Intense water jet