

## Berthold Technologies Technical Services Department

Berthold Technologies Technical Service Department can provide technical assistance, repairs, and start up and commissioning service for any of its products.

Being able to provide new systems as well as retrofit our detection systems to competitive radiometric sources requires skill and expertise. To insure the measurement can be in the safest manner possible our technical staff performs the necessary calculations so that existing sources can be used. In this manner, you can be assured your new Berthold Technologies measurement systems will work with existing sources safely and efficiently.

Berthold Technologies' Field Technical Service Staff have the necessary experience to commission, troubleshoot and repair its systems—even under the most harsh and rugged conditions.

Berthold Technologies can also provide information on radiometric safety, source handling, moving radiometric systems and licensing. Our factory trained service technicians will work with you to insure your systems are operating properly and provide any recommendations to improve their performance.

Many companies use phone menus, place you in a queue, or force you to select from a question menu. Not us. When you call in for a service or support question, you will talk to a Technical Service specialist—and not a recording, phone menu or answering machine.



## Berthold Technologies-Germany and USA

Founded in 1949, Berthold Technologies has been a world leader in radiometric measurement technologies as well as being on the forefront of microwave moisture detection. Corporate headquarters are located in the beautiful Black Forest area of Southwestern Germany.

Berthold Technologies, USA is located in Oak Ridge Tennessee. It is responsible for Sales, Operations and Service in both North and South America. The office includes Sales, Technical Support, Engineering and Administrative support personnel.



## Berthold Technologies Supplemental Products

### The 4-20 Translator

Berthold Technologies' 4-20 Translator is the solution where a non density output is required—without the need for DCS/PLC or similar interfaces. Units such as kgSA, PPA, and others can be programmed so that the 4-20 mA output will read out in the desired measurement unit. The 4-20 Translator fits easily into the existing Berthold Technologies Evaluation Unit cabinet making installation easy and fast. The 4-20 Translator—powerful and reliable calculation power in a small and attractive package!

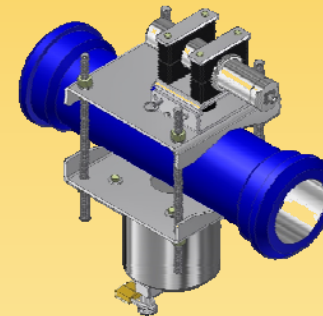


The optional 4-20 translator—shown on the right side of the cabinet. The LB 444 Evaluation Unit is on the left.

NEW

### Quick Release Detector Mount

Berthold Technologies' new Quick Release mount provides a fast and effective way for detector removal—without disassembling the entire pipe clamp. Operation is simple—just press down on the detector and insert a pin into hole on the mount. A lock cap can be used on the outer holes insuring the detector is not removed without proper permission. Using the Quick Release Mount can extend detector life by removing it from the Iron when the rig is transported between locations. The detector itself, once removed, can be securely stored for use during the next run. The Quick Release Detector Mount saves time and labor removing and re-mounting the detector to the pipe clamp.



NEW

### Transport Collar for LB 8010 Shield

To comply with current US Department of Transportation regulations, a Transport Collar must be mounted around a shield containing a radioactive source. Berthold Technologies' Type A certified Transport Collar is the solution to this requirement. Designed to mount on the shield while the truck is in motion, the Transport Collar meets all DOT requirements for proper markings which insures compliance to current regulations.



[www.berthold-us.com](http://www.berthold-us.com)



## Measurement Solutions for Fracturing/Cementing Density and Oilfield Services



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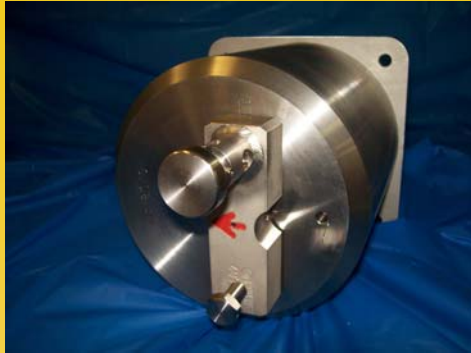
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## Fracturing/Cementing Density System



### LB 8010 Stainless Steel Shielding

Berthold Technologies LB 8010 Stainless Steel Shielding will stand up to the rigors of the fracturing/cementing world. Made of 100% stainless steel, the LB 8010 is built to stand up to the rigged environments of high pressure and vibration common to most applications.



Berthold Technologies Fracturing Density system uses its standard scintillation detector modified for fracturing/cementing applications. Due to this highly sensitive detector, source sizes can be dramatically reduced compared to other fracturing density systems.



Berthold Technologies has designed a new pipe clamp built to the unique requirements posed in fracturing/cementing operations. The clamp is designed to be used for axial or radial mounting—whichever configuration fits the space requirement of the job.



The operator interface is Berthold Technologies' evaluation unit. More than just a standard transmitter, the evaluation unit monitors a number of different critical operating parameters. In this manner, parameters such as detector temperature, high voltage and other operating conditions can be assessed and problems can be dealt with—before they happen.

## NEW **FracSENS LB 6770**

### Direct Replacement Detector



Berthold Technologies announces the introduction of its newest product for the Hydraulic Fracturing Industry—the *FracSENS* LB- 6770 Direct Replacement Detector for proppant measurement in hydraulic fracturing stages.

The *FracSENS* LB 6770 is designed to be a direct replacement for the Thermo Fisher SGD/O and other similar densimeters. It can be used when the requirement calls for a direct voltage output. (nominally 0-10 VDC). It does not require a transmitter or similar operator interface. The detector output feeds into a variety of Software and Interface platforms insuring easy set up and operation.

The *FracSENS* LB 6770, in the tradition Berthold Technologies' rugged Heavy Duty (HD) detector, can stand up to the most punishing of Hydraulic Fracturing applications—even high pressure lines.

Its small footprint can be used for mounting in the radial mounting configuration..

The *FracSENS* LB6770 can be used in conjunction with Berthold Technologies new Quick release Detector Mount. The Detector can be quickly released from the pipe clamp without the necessity of dis-assembling the entire section.

The *FracSENS* LB 6770 detector has the same rock-solid stability for which Berthold Technologies has become known. Using proprietary software routines, the LB 6770 will provide consistent reading regardless of environmental conditions.

When your requirement is for a straight, voltage output detector—and nothing else, the *FracSENS* LB 6770 is the right choice!

**(NOTE-Release date Spring 2015)**

### Fracturing/Cementing system retrofits

Can we retrofit other companies' density gauges using existing sources and Berthold Technologies density detection systems? Absolutely! Although every fracturing/cementing company has different circumstances, it may be possible to keep existing radiometric sources and shields and retrofit with our electronics. As each situation is different, we will be glad to review your individual situation and offer an opinion on whether its best to retrofit—or replace existing sources with new, lower energy Berthold Technologies sources and shields.

[www.berthold-us.com](http://www.berthold-us.com)

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## Our Experience in Fracturing/Cementing Density Measurement Systems



Berthold Technologies began supplying the fracturing market with a standard source shield and scintillation detector. Doing this greatly reduced the typical source size when compared to other vendors of fracturing/cementing density gauges. However, the standard system did not hold up in the high pressure applications we began to see. So we began to modify and adapt our standard density systems for the oilfield market.

We next began a program to modify our highly sensitive scintillation detectors to stand up to the rugged and robust environment experienced in the fracturing world. In doing so, we were able to eliminate problems caused by vibration and other factors.



We then turned our attention to our shielding. The challenge—to design and manufacture a 100% stainless steel shield which will withstand the highest vibration conditions possible in the fracturing world. Our newest product, the LB 8010, meets that challenge. We can also significantly reduce our source size when compared to other density measurement equipment.



The complete Berthold Technologies Fracturing Density system. The specially designed Berthold Technologies pipe clamp, designed for the higher pressure and vibration applications, insures correct alignment with the collimated radiometric source and scintillation detector. It will also permit mounting in the vertical or horizontal mode depending upon existing space requirements.