



P R O C E S S C O N T R O L

Fracturing/Cementing Density System

Highly accurate measurements for the Oilfield Service Industry



Berthold Technologies Fracturing/Cementing Density System

Berthold Technologies Fracturing/Cementing Density System is the premier oilfield services measurement product on the market today. The system includes a stainless steel shield with internal shutter, a highly ruggedized Heavy Duty scintillation counter, and a transmitter (we call it an evaluation unit) capable of performing sophisticated on-going detector diagnostics. And that's not all. Due to the high sensitivity of the detector, the Berthold Density Fracturing/Cementing system normally uses only 10-20 mCi of Cs-137 for almost any measurement requirement. This is in contrast to sources used by traditional suppliers which are as much as 10 times larger. Using lower source sizes does not mean a sacrifice in performance. Typical accuracy/ repeatability is between 0.1 to 0.5%—compare that to the equipment you are now using.

We know how critical support and service are. That's why we guarantee 48 hour out the door turnaround time for any required repairs. Compare that to your present supplier!

Can we retrofit using your existing sources? Retrofits are our specialty and due to the high sensitivity of our scintillation counters, we can save thousands of dollars each year in disposal costs and provide new life to your existing systems.

Primary System Components



LB 8010 Shield

Berthold Technologies LB 8010 shield is the perfect solution for the rugged and harsh environment of fracturing/cementing. Its 100% all stainless steel construction and internal shutter insure reliability and performance. Typical source sizes— 20 mCi of Cs-137 which provide extremely low dose rates around the shield.



LB 444 evaluation unit

Berthold Technologies LB 444 evaluation unit is the brains behind the system. Its unique FSK communication allows 2 way data exchange between detector and evaluation unit—thus assuring continuous monitoring of such diagnostic functions as detector temperature, high voltage and other system parameters.



LB 5441-02 HD detector

Berthold's unique rugged detector (the LB 5441-02HD-Heavy Duty detector) was designed specifically for the fracturing/cementing market. Using a highly sensitive scintillation counter with a 40mmx35mm Sodium Iodide crystal, the detector has excellent performance in both low/ high pressure environments.

OPTIONAL 4-20 Translator © pending



Shown with LB 444 evaluation unit

If you cannot work with SG (specific gravity) or other such density units, the 4-20 translator will do the job. Designed to supply 2 separate and isolated 4-20 mA outputs the Translator can read out PPA, KsA, PPG, Kg/m³ and other such units of measure closely related to fracturing/cementing.

Technical Specifications - Electronics

LB 444 Evaluation Unit

Design 19" module 3 HE, 21 TE, protection class IP 20
Dimensions-App. 4.2 X 5 X 6.8 inches
Weight approx. 3 pounds
Power supply 230/115 V AC +/- 10%, 18 to 32 V DC
Power consumption approx. 30 VA (AC), 30 W (DC)
Operation temperature: 0 to + 50 °C (32-122 deg. F), (273 to 323 K) no condensation
Storage temperature - 40 to + 60 °C (-40 °F to 140 °F) no condensation
Mounting in a panel
 in a 19" rack 21 HE, 84 TE (max. 4 units)
 wall mounted cabinet (IP 65/NEMA 4)
Digital inputs DI1/DI2: for external selection of a calibration curve
 DI3: for external start/stop of measurement
Analog Outputs 0/4 to 20mA isolated, max. 500 ohm
Digital outputs:
 1 relay for collective failure message
 2 relays for thresholds
 max load:
 AC: max. 250 V AC, max. 1 A, max. 200 VA
 DC: max. 300 V; max. 1 A, max. 60 W not inductive
Display LCD-display with 4 x 20 characters, illuminated, data input via membrane keys

LB 5441-02 HD Heavy Duty Detector

Detector Scintillation counter, stainless steel housing, IP 65/NEMA 4
 Connection for RTD Pt 100
Cable glands M16 M12
Cable diameter 5 to 10 mm 4 to 7 mm
Connection cable LiYCY 2 x 1 mm²
Max. cable length with cable Id Nr. 32024
 EEx ib IIB EEx ib IIC-1,000-3000 feet
Protection class
 ATEX II 2 G EEx de IIC T6 or
 II 2 G EEx ib d IIC t6
Options: ATEX II 2 D IP65 T 80 °C
 FM Class I Division 1 Group A, B, C, D
 Class II Division 1 Group E, F, G
 Temperature class: T6 (85 °C, 185 degrees F)
 Detector crystal type-Nal doped (TI)
 Crystal size -40x35mm ;
Weight approx. 36 pounds
Long term stability: +/- 0.1 -0.5% depending upon application
Storage temperature: - 40 to + 55 °C, (-40F to 122F)
Operation temperature: - 40 to + 50 °C, (-40 °F to 122 °F)



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