

MODEL 831 SOUNDING PLUMMET LEVEL TRANSMITTER

FOR DIFFICULT APPLICATIONS – HOT PRESSURIZED, CORROSIVE SOLIDS UNDER LIQUIDS, LIQUIDS UNDER FOAM, SALT IN BRINE MAKEUP TANKS, PELLET WASHING, GROUND UP TIRES

FEATURES

- Thousands of Series 830 **KODATA®** level transmitters have been in world wide service for over 25 years
- Unaffected by dust, foaming, varying materials, air turbulence, high viscosity, etc.
- Can be operated directly by a PLC or digital I.F.
- Modern design has reliable digital electronics
- No tank climbing - you can calibrate, reconfigure, test, and readout up to 4000 feet (1200 m) away
- Smart software - can operate from manual M/N 825 control
- 4-20 mA, RS485, CC pulse output signals
- Self checking diagnostics - displayed remotely on M/N 825
- Can read 100% full tank, top dead space not required
- Up to 30 transmitters may be in a single 2 wire loop.
- High torque brushless motor reliably pulls plummet up - avoids entrapment by collapsing solids
- Long life and low maintenance design. No gears, commutators, springs, relays, or mechanical switches
- Suitable for top of tank service at -40°F(-40°C)
- Available in all stainless steel and Teflon® parts
- **NOZZLEGARD** protects the cable, virtually eliminating problems such as fraying, kinking, and breaking

OPERATING PRINCIPAL

A sounding transmitter is located on top of the tank or silo to be measured. A plummet, selected for the service is lowered until it touches the process material and is then lifted. The distance traveled is computed and transmitted as a signal representing level or volume. The signal is locally displayed and may be remotely transmitted. All calibration, configuration, and test data reside in the memory of the sounding transmitter. The optional remoted operate/display device is inherently very simple and easy to setup and program. Each sounding unit(s) may be operated by multiple remoted devices in separate locations. The operating device may be a PLC, Model 825, host computer, or a combination of these.

INTERFACE SENSING

The Delta Controls Model 831 transmits interface positions in many applications where conventional methods fail or require excessive maintenance. A liquid surface under heavy or variable foam conditions is easily sensed. The elevation of granular solids under a liquid, such as charcoal in a rapid filter are easily measured. The Model 831 measures materials in tanks up to 110 feet (30m) tall. The interface elevation may vary from 1.0 to 120 feet (0.3 to 36 m). The tank need not be totally full, the level can range anywhere from 1 to 100% full. Either the upper or lower material may constitute any percentage of the total tank contents.



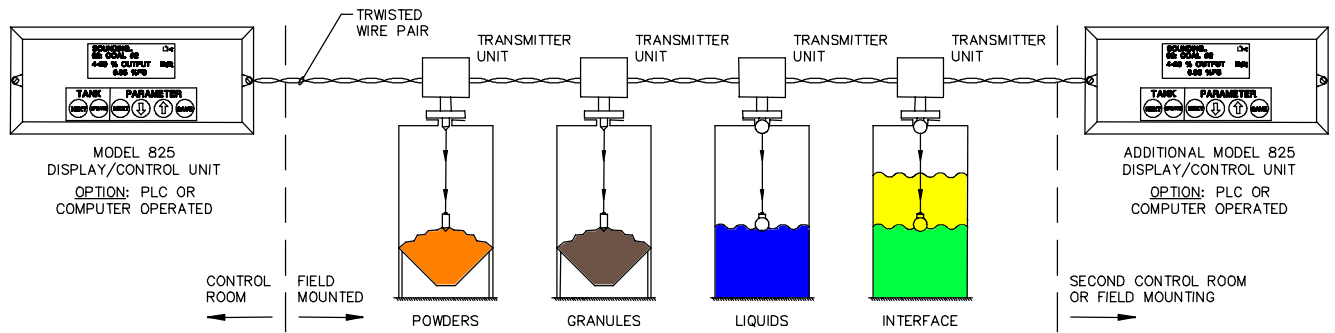
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HOSEPROOF WITH BASIC WEIGHT PLUMMET

OPERATING SEQUENCE

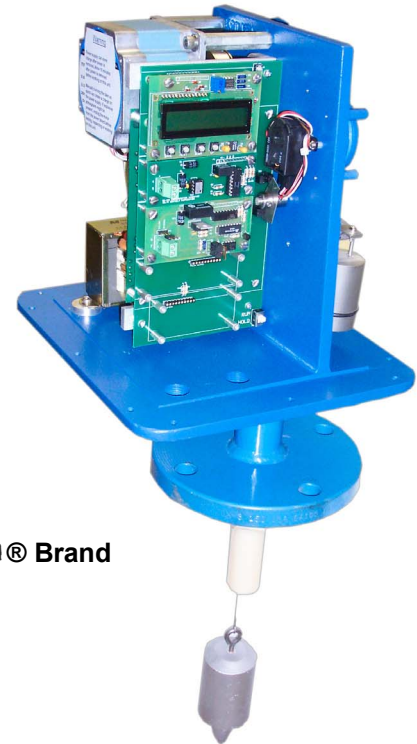
An update command is generated by a manual push button, PLC, computer, or internal timer. The plummet moves to a "start" reference point. The reading of a high-resolution optical encoder is stored in memory. The cable begins to pay out which lowers the plummet and turns the encoder wheel. A decrease in cable load occurs when the plummet touches the process material. This is detected, the encoder is read, the cable begins to retract the plummet to a selected location, and the output signal is updated. The Model 831 limits bearing loading and unnecessary wear by utilizing soft start, stop, and reversal algorithms. The speed of the plummet is varied depending on its elevation in the tank. The 831 transmitter also has a special routine to extract the plummet should it become buried by material slides, rapid dump filling, etc. It will produce up to 17 pounds (8Kg) pull on the cable. It will also resort to a hard jerking motion if the plummet does not immediately pull free. It will pull out of over 6 feet (2M) of loose powder.

DELTA CONTROLS CORP



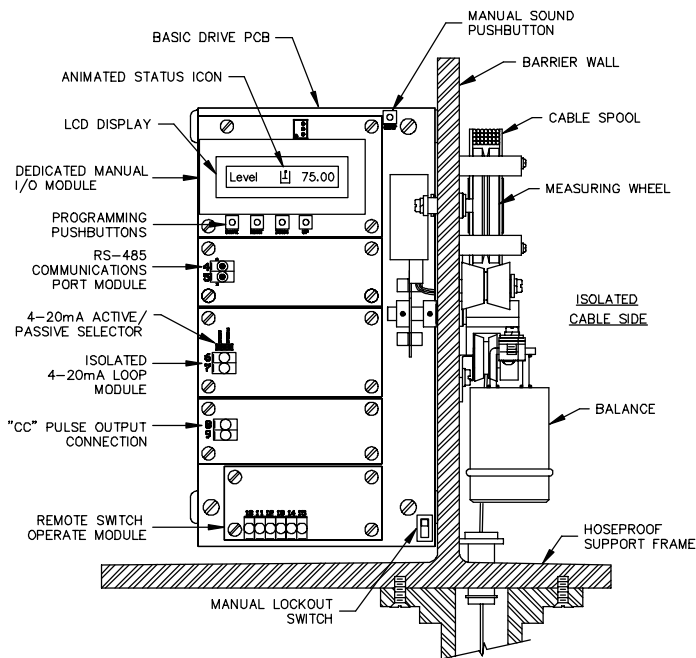
MULTIPLE SILO TANK SYSTEM

Up to 30 Model 831 transmitters may be time shared on a single RS 485 two wire communication/signal loop. One (or two) 825 display/control units may be in the loop. The Model 825 displays the amount of material in (or out) of the selected tank. The display reads out in the desired engineering units. A PLC or computer may be substituted for either or both of the Model 825 display/control units. They can also be connected in parallel with the Model 825 display/control unit(s). The PLC or computer would be driven by each 4-20 mA output signal and would also be able to update each transmitter as required. The name of each tank, silo, bin, hopper, etc is displayed on the Model 825 and is field programmable. The language may be English, Spanish, French, or German. The display units may be English or metric scales. All setup, configuration, and calibration for each transmitter is completely accessible at both of the Model 825 display control units. There is no need to climb the tank for normal test or recalibration procedures.



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SIDE VIEW SHOWING MODULE OPTIONS

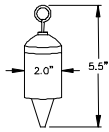


831 WITH COVER REMOVED SHOWS DISPLAY/KEYBOARD/COMPUTER

DIAGNOSTICS AND MAINTENANCE

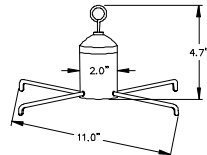
The Delta Controls Model 831 is self checking with the software necessary to pinpoint and report the cause of a malfunction. This diagnosis appears on the model 825 display as an automatic alarm. The Model 831 also has a software totalizer which keeps a record of the number of sounding cycles that it has completed. This is used as part of a preventive maintenance program. The severity of the service determines the inspection frequency. Typically, the Model 831 should be inspected every 100,000 cycles; which is equivalent to 1 to 3 years of normal service. The correct inspection period has to be established from experience with each individual installation. Initially, inspection should be done more frequently. The use of ISO-9000 procedures facilitates this determination. There is no periodic maintenance, such as lubrication, required.

SOUNDING PLUMMET SENSORS



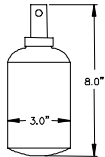
"WG" BASIC WEIGHT

Suitable for 80% of all solids applications aluminum or S.S. material, also for solids underwater interfaces



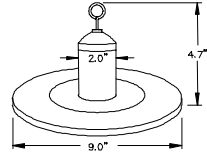
"SG" SPIDER

Used on glazed and granular solids with high angles of repose, shelled corn, steel shot, wood frit. Aluminum or S.S. material. Also variations for interface service.



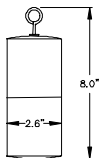
"BP" PLASTIC BOTTLE

Used where the possibility of metal contamination must be avoided. Polyethylene, to be filled with the material being sensed.



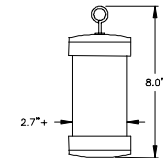
"DG" DISC

Used on low density, fluffy materials less than 10 lbs/cu. ft., such as plastic fluff, wood fines, and styrofoam flakes. Plastic disc; aluminum or S.S. body material.



"FY" FLOAT

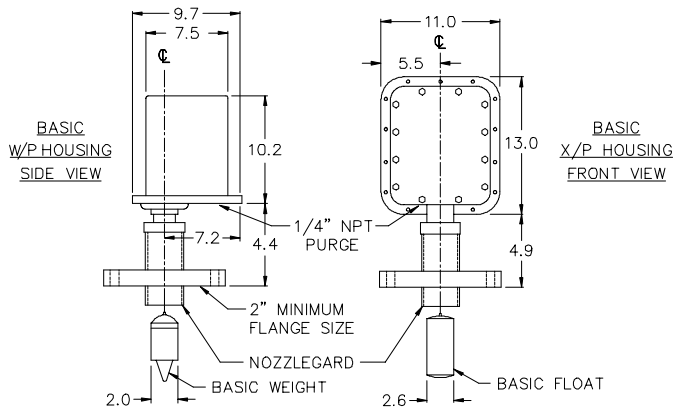
Used for liquids, 2.6"ø, 7" long, 316 S.S., will enter a 3" NPT hole or a 3" schedule 80 flanged nozzle. Also for low density solids under liquid interface



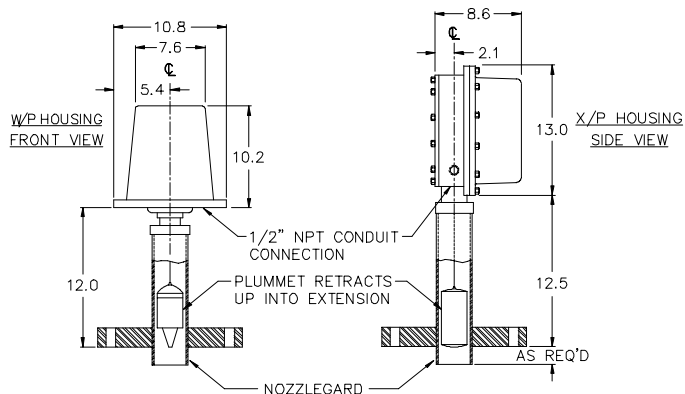
"IZ" INTERFACE DISPLACER

Used to sense the interface between liquids submerged solids and the top liquid. Materials required.

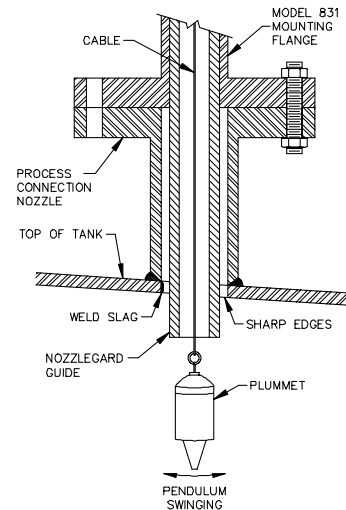
OUTLINE DIMENSIONS



EXTENSION FOR READING TANK TO 100% FULL



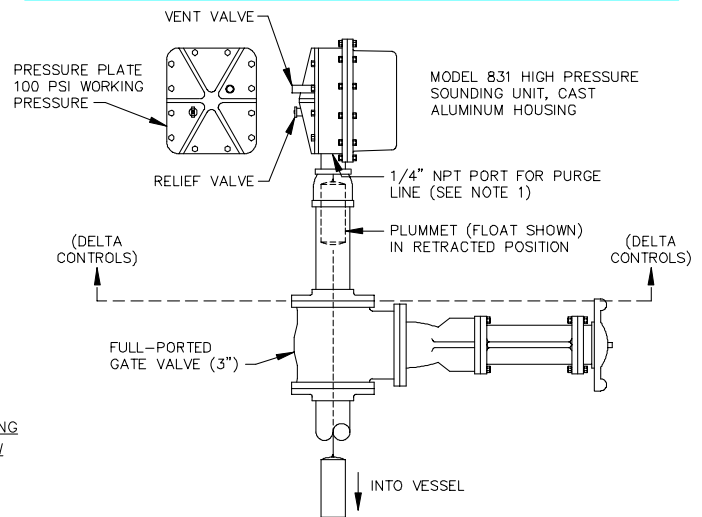
NOZZLEGARD PROTECTS CABLE



The plummet is pushed to one side when it sounds onto solids with a high angle of repose or into agitated liquids. When the cable begins to rewind; the plummet is pulled back towards the centerline of its travel. Inertia causes the plummet to swing through the cable centerline and a back and forth penduluming action begins. This action intensifies as the plummet rises and the cable becomes shorter. This causes the cable to be dragged across the nozzle to tank joint, first on one side and then on the other. Most nozzles have sharp edges and weld slag at the joint. Dragging the cable across these causes fraying and kinking of the cable. This damage will result in sounding errors, possible "hang ups" and other problems.

The Delta Controls **NOZZLEGARD** extends into the tank and protects the cable from damage. The **NOZZLEGARD** virtually eliminates cable problems.

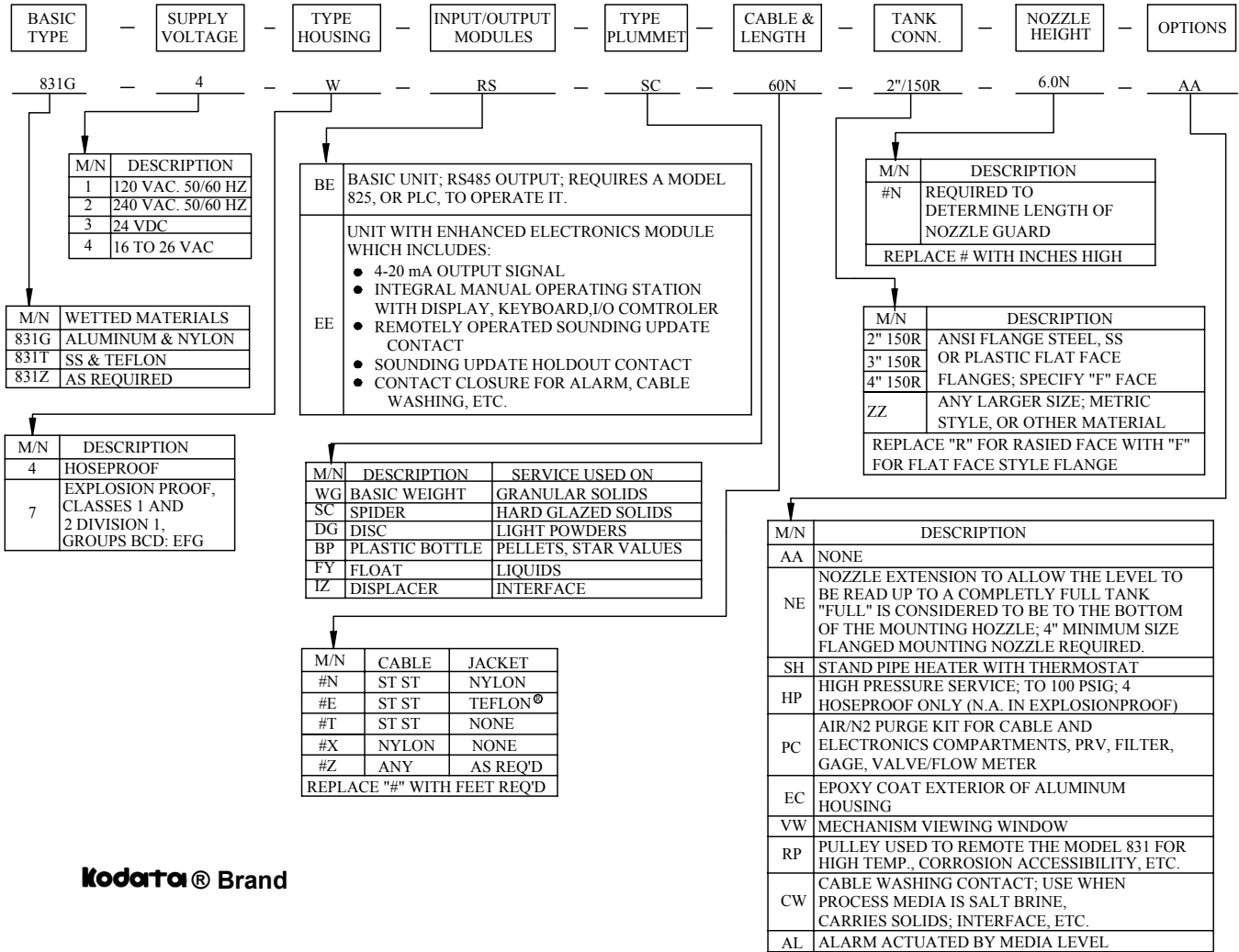
MEASURING LEVEL IN PRESSURIZED VESSELS



NOTES:

- PURGING WITH 2 PSI OR MORE POSITIVE PRESSURE IS MANDATORY, USUALLY AIR OR NITROGEN; 4-5 SCFH, 120 PSIG REGULATED SUPPLY MAXIMUM.
- SOUNDING UNIT AND FLOAT SHOWN ABOVE DOTTED LINE SUPPLIED BY DELTA CONTROLS.
- EQUIPMENT BELOW DOTTED LINE SUPPLIED BY OTHERS.
- HOUSING 4 HOSEPROOF ONLY; N.A. IN EXPLOSIONPROOF.

MODEL NUMBERING SYSTEM



Kodatta® Brand

BASIC SPECIFICATIONS

SHORT FORM SPECIFICATIONS

Range: Up to 110 feet (30m)
Resolution: 0.005 inches (0.002mm)
Accuracy: 0.1 inches (2.5mm) or better
Output signals: RS485 digital; 4-20 mA analog
Plummet: Weight, float, or interface displacer
Calibration & testing: Done from an integral RS485 interface module, remoted display/control unit, PLC, or host computer
Motor: High torque magnetic, no gears or comutators
Detectors: Solid state optical; no relays or mechanical contact switch detectors
Diagnostics: Self monitoring, automatic reporting
Sounding speed: Variable, up to 50 FPM (15 MPM)
Cable: Stainless steel with a protective jacket is basic

Cable pull: Over 17 pounds (8 kilograms)
Operating temperature: (50 watt heater is basic) -40°F to +150°F; insulate when ambient is below 10°F (-11°C)
Operating pressure: -1 to +4 PSIG (-0.15 to 0.6 KPa); 100 PSIG (14.5 KPa) is optional, type 4 housing only
Mounting connection: 2"/150 # ANSI or larger flange
Housing: 4 Hoseproof or Classes 1 & 2, Division 1, Groups CD, EFG; Explosionproof and 4
Wetted Materials: Aluminum/steel/nylon or S.S./Teflon®
Supply power: , 120, or 240 VAC, or 24 VDC
Multipoint: Up to 30 transmitters in one 2 wire RS 485 loop. Quantity is unlimited when using the 4-20 mA output signals with a PLC, host, and most bus systems.

DELTA CONTROLS CORP

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