

AUTOMATIC SLUDGE LEVEL DETECTOR

THE MARKLAND ADVANTAGE:

Maintain preferred sludge depth

- Control the sludge blanket, automatically. Avoid overflows and process problems.

Optimize water removal to reduce costly additional processing (belt presses, digesters, centrifuges, etc.)

- Maximize sludge density automatically. Avoid pumping large volumes of thin sludge or water.

Optimize energy usage

- Automate your desludge pumping, pump when you need to.

Maximize operators' time and energy

- Installs quickly and easily, no need to calibrate. Simplify operation with a reliable and durable instrument.

Reduce costs associated with inaccurate chemical dosing

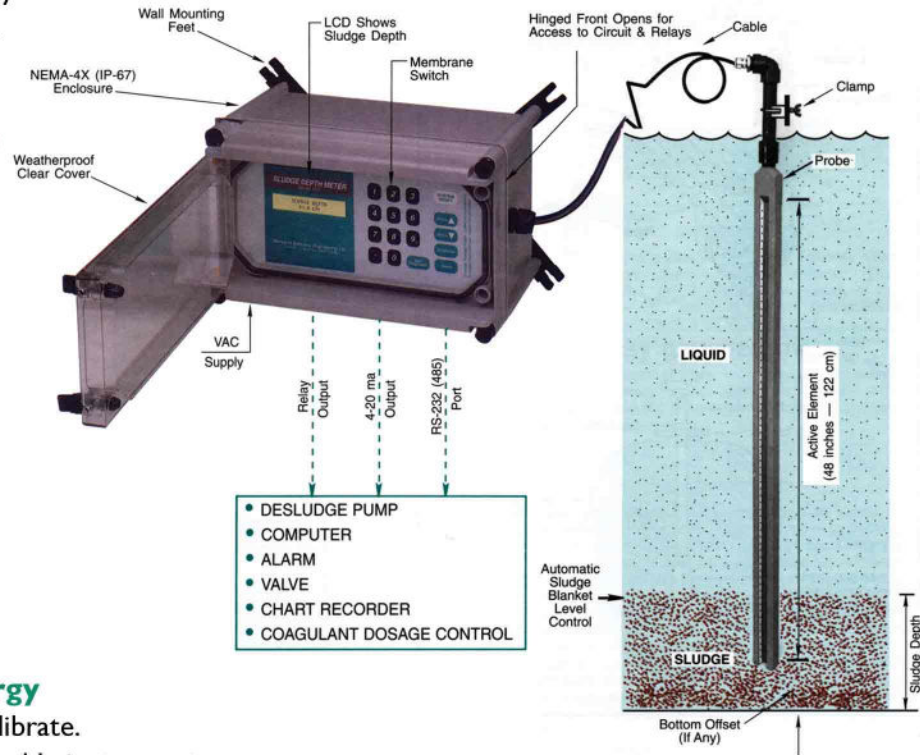
- Optimize flocculent/coagulant dosage control and process adjustment.

Reduce wear and tear on pumps

- Pump only when necessary.

Get answers when you have questions

- Technical assistance is direct from the designers and manufacturers.



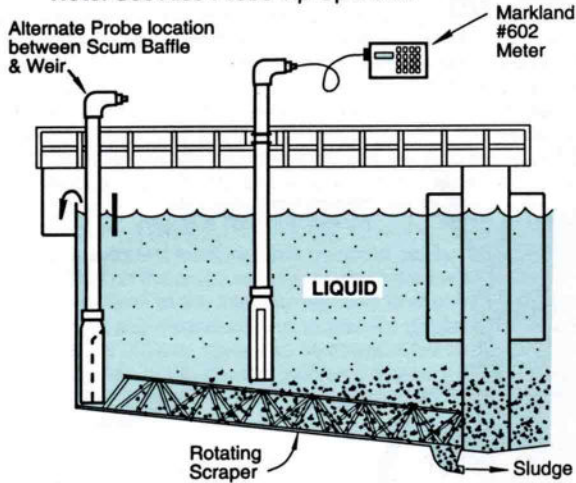
MARKLAND
Specialty Engineering Ltd.

*Reducing the waste in
waste management since 1967*
www.sludgecontrols.com

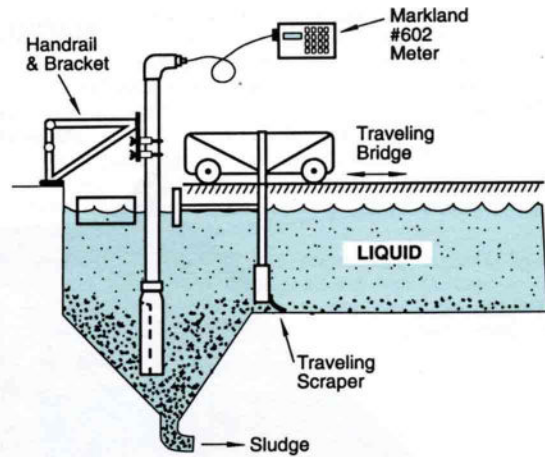
APPLICATIONS:

CIRCULAR CLARIFIER

Note: See Also Probe Tip-Up Detail

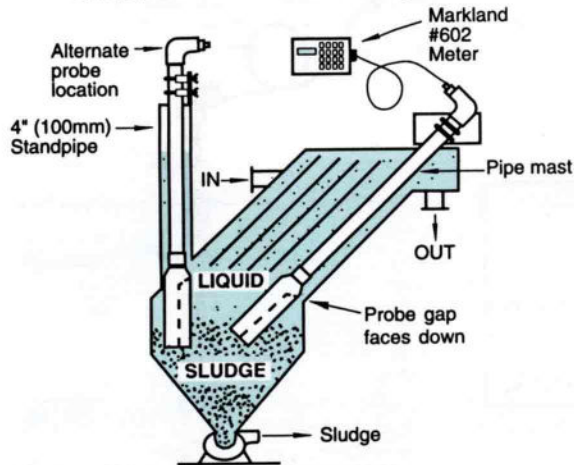


RECTANGULAR CLARIFIER



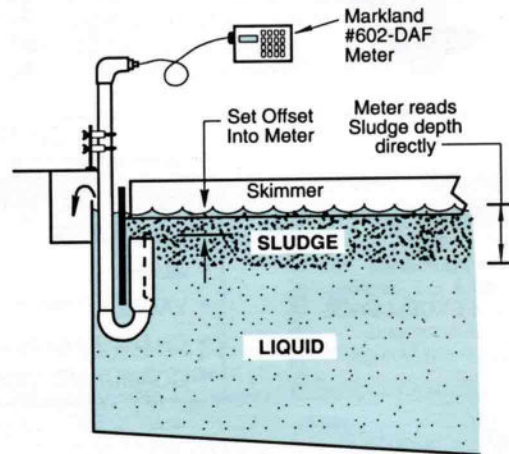
INCLINED PLATE SEPARATOR

Markland probe can either be slid down the incline as shown or, a standpipe can be installed for vertical probe installation.

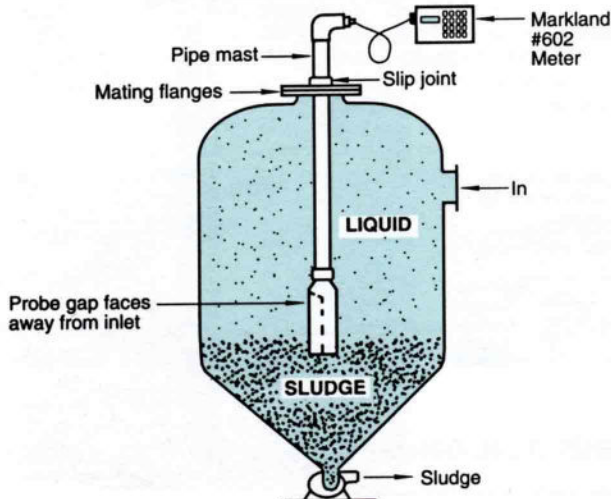


DISSOLVED AIR FLOTATION THICKENER

To remove probe, lower to bottom of tank, rotate 90°, & lift up & out.

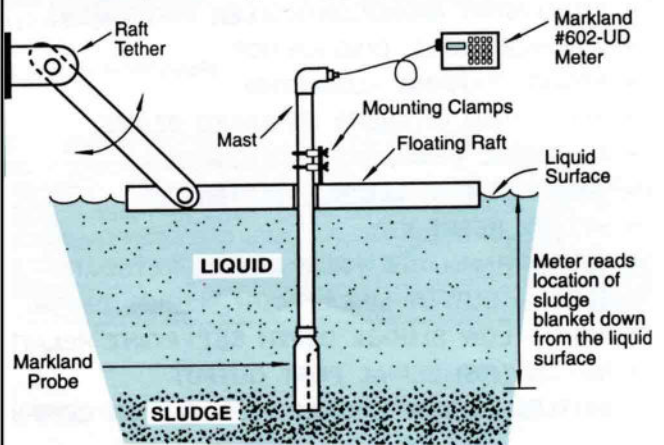


PRESSURIZED VESSEL



DECANT CONTROL

Liquid surface & floating raft move lower during decant & 602-UD meter monitors liquid surface approaching sludge blanket to stop decanting.



FEATURES:

- LED beam automatically adjusts its intensity to detect levels in thick or thin sludges, or in light flocs
- Detection is not distorted by the curved walls of lamellar® tanks
- Advanced self-diagnostics
- Ultra high intensity infrared beams
- Automatic beam intensity control
- 4 – 20 ma output linear with sludge depth
- High & low sludge depth set-point relays

HOW IT WORKS:

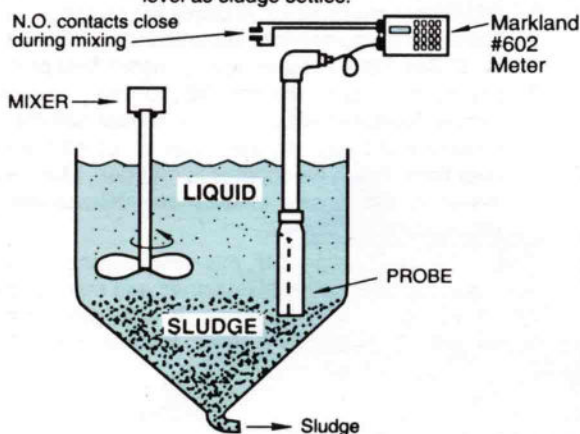
A vertical Probe, submerged in the tank, contains 64 infrared high intensity LEDs stacked vertically, which shine horizontally across a probe gap to 64 phototransistor detectors. This gap contains either liquid or sludge. The 64 pairs are sequentially scanned to locate the sludge bed. Beam power intensity is automatically adjusted to accommodate different sludge and overlying liquid concentrations. At its highest power level, the beam will shoot through your hand, you could count the bones, but there is not hazard since the beam is only on for a few microseconds. This high intensity beam easily penetrates fouling on the probe's windows, and as long as the solids in the probe gap are high relative to the solids in the scum layers on the windows, the meter continues to read correctly. Eventually, the probe has to be removed and given a wipe with a soft cloth.

PROCESS CONTROL

Automatic desludging yields thicker sludge than timers or manual methods, and reduces sludge disposal or processing cost. A desludge pump can be operated automatically from the Low Set-Point Relay along with a Pump Run Interval Timer, and the High Set-Point used as an alarm for excessive sludge depth. Alternatively, the desludge pump can be turned ON at the High Set-Point and OFF at the Low Set-Point, or the 4-20 ma output can be used for continuous variable speed drawoff. The 4-20 ma output can link the meter to your computer for centralized process control.

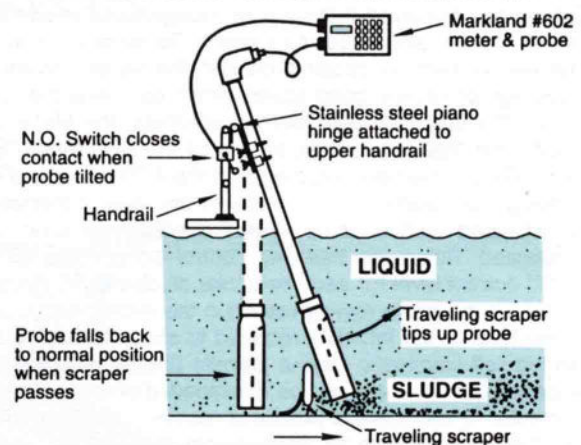
BATCH MIX/ SETTLE PROCESS

Pause feature is used to disable Markland Meter during mixing. Contacts reopen when mixer stops, enabling meter to read blanket level as sludge settles.



PROBE TIP-UP FEATURE

Pause Switch Terminals in meter accept contact closure & freeze meter reading while probe tipped up.



PAUSE SWITCH USES

An externally located switch, with a pair of Normally Open contacts, can be connected to act as a "Pause Switch". When these contacts close, the Markland meter freezes its last reading, and the LCD displays "METER DISABLED HOLDING LAST READING". This feature is used for a batch mix process to disable the meter during mixing. It is also used to lock out the meter, when the probe is tipped up by a traveling scraper. Both of these uses are illustrated in the accompanying diagrams. When the pause switch reopens its contacts, the meter waits 30 seconds for the sludge to settle down before resuming normal operation.

TECHNICAL SPECIFICATIONS:

Materials	Probe - PVC Mast - PVC Pipe Clamp - Stainless Steel & Polypropylene Cable - Vinyl Jacketed Enclosure - Fiberglass Body & Clear Plastic Cover
Dimensions	Probe: Overall Length 1330 mm (52¼ in.) Active Element Length 1219 mm (48 in.) Cross Section 64 mm (2½ in.) x 38 mm (1½ in.) Gap - 25 mm (1 in.) Mast - 3½ meters (12ft.), 1 in. Sch. 80, shipped in 3 pieces with fittings Enclosure: Width 343 mm (13½") · Height 229 mm (9") · Depth 200 mm (77/8")
Cable Length	15 meters (50 ft.) pigtail supplied (measured from top of Probe). Maximum cable length 150 meters (500 ft). Order extra cable separately if pigtail length not sufficient
Active Element Spacing	64 pairs infrared LED/Phototransistor, spaced vertically on 19 mm (¾ in.) centers. Dual Model has 128 pairs
Accuracy	± 2cm (± 1 in.)
Bottom Offset	Adjustable, 0-700 cm or in. (NOTE: For '-DAF' & '-UD' types this is Top Offset)
Depth Units	Selectable, inches or centimeters
Temperature	Maximum 50°C (120°F)
Power	110/220 VAC, 220/240 VAC, 50/60 Hz, 24 VDC (advise with order). 15 watts
Outputs	· Liquid Crystal display (LCD) 2x20 Digit Alphanumeric · 4 - 20 ma output signal, linear with sludge depth · Two DPDT, 5 Amp, Relays, independently adjustable set-points · RS - 232 Serial Port · RS - 485 Serial Port (Optional)
Models	602 - Reads sludge depth UP from tank bottom 602 - UD - Reads sludge blanket location DOWN from liquid surface 602 - DAF - Reads sludge/liquid interface in Dissolved Air Flotation thickeners 602 - LP - Special model for Drinking Water Plant upflow clarifiers where overlying water is very clear & sludge is thin (consult factory for further details) 602 DUAL & 602-DUAL-UD- Uses 2 probes, one mounted 48 in. (122 cm) above the other to give 96 in. (244 cm) continuous span
Approvals	CSA Approved and CE Conformance

OTHER MARKLAND SYSTEMS

Markland's portable sludge level detector, the SLUDGE GUN®, is a valuable operating tool for manual sludge bed detection. Markland also manufactures Suspended Solids Meters that use ultrasonic attenuation to measure concentration in sludges and slurries that are too thick for optical methods. Markland Automatic Duckbill® Samplers operate without mechanical moving parts for reduced maintenance and high reliability. Contact us for a complete catalog of Markland products.

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