SLUDGE FINDER 2

Reliable & continuous sludge blanket level measurement.

Two-Part System Purposely Designed for Sludge Blanket Level Measurement

The Sludge Finder 2 is a versatile, accurate, and reliable solution to the problem of accurately measuring interface levels in primary or secondary settlement tanks and Sequencing Batch Reactors (SBR) systems. Operating ultrasonically through a liquid, Sludge Finder 2 uses proven echo processing algorithms to identify the sludge interface level using state of the art digital echo processing technique found only in this unit.

The unique viper transducer is immersed in the liquid, emitting a high-frequency ultrasonic pulse down towards the sludge interface. The pulse reflects from the interface of the denser material back to the Viper transducer face. This echo is analyzed by the controller unit providing a depth reading and an analog output proportional to the height of the interface above the vessel bottom.

THE RIGHT METER FOR

- Primary & Secondary Settlement Tanks
- DAF Thickeners
- Gravity Thickeners
- Stationary & Traveling Bridges

Multiple Tanks & *Multiple Applications*

Sludge Finder 2 will operate with one or two transducers, you can mix and match Sludge Transducers and Pulsar Measurement's main dB Transducer range to give astonishing versatility. Manage two clarifier's / thickeners, or one clarifier plus an ultrasonic level application from a sludge unit, providing flexible, economical control and a sludge connection point for system interface.

Sludge Finder 2 features a microprocessor and a multifunction display showing blanket level, complete echo profile, alarm points, tank depth, and multiple tank status.

Output Options

Sludge Finder 2 features 4-20mA isolated outputs for each channel, with an optional RS485 connection (Modbus RTU or Profibus). Six control relays are included (5A rated), assignable to any channel. An optional Radio Telemetry System may be fitted with a 500 m (1,640 ft) line of sight range. Up to 48 Nodes can be used using a 'Multihop' receiver installation.

The Hygienic Solution

Remote measurement with Sludge Finder 2 means you can put an end to tedious, time-consuming, potentially unhygienic, and hazardous manual measurements using gap switches or vacuum probes.

Self-Cleaning Transducer

Sludge Finder 2 is designed to be maintenance-free. Sludge Finder's Viper transducer is a single beam ultrasonic unit immersed just below the liquid surface. A wiper blade sweeps the transducer face, ensuring that it remains clean. The Viper transducer may be positioned up to 200 m (656.2 ft) from the control unit and has a measurement range of 300 mm to 10 m (11.8 in to 32.8 ft). Accuracy is 0.25% of the measured range. A tight 6-degree beam angle and sophisticated echo processing algorithms make sure that Sludge Finder 2 deals with difficult tanks and rotating equipment with ease.

Sludge settlement tanks at a Sewage Treatment Works.

Viper transducer doing it's job!

Easy Installation & Set Up

Sludge Finder 2 is simply installed and the transducer cable can be easily extended with twin pair screened cable. To program Sludge Finder 2, the operator enters operating parameters via a menu-driven operator interface and the Sludge Finder 2 automatically tracks to the blanket interface. Sludge Finder 2's operator interface consists of several screens that make setting up the unit straightforward and communicates information about the process quickly, clearly, and concisely.

Sludge Finder 2 allows a user to set up two interface points to display and to control the process via the echo profile returned from a single self-cleaning Viper transducer. One of the primary benefits is the ability to monitor sludge interface levels of differing densities.

The new feature could reveal a high level of flocculant spilling into the local watercourse, potentially causing pollution and a breach of consent at the same time as measuring and controlling the Return Activated Sludge (RAS) layer in the normal way.

The unit can output two isolated 4-20mA signals, one for each interface.

Technical Specifications

PHYSICAL

Controller Body Dimensions:	235 mm x 184 mm x 120 mm (9.3 in x 7.2 in x 4.7 in) Wall mount only.
Weight:	Nominal 1 kg (2.2 lb)
Enclosure Material/ Description:	Polycarbonate, flame resistant to UL94-5V
Cable Entry Detail:	10 cable entry knock outs, 5 x M20 and 1 x M16 underside. 4 x PG11 at rear
Transducer Cable Extensions:	2 twisted pair 0.5 mm^2 with overall screen
Maximum Separation:	200 m (656.2 ft)

ENVIRONMENTAL

IP Rating:	IP65/NEMA 4X
Max. & Min. Temperature (Electronics):	-20 °C to +50 °C (-4 °F to +122 °F)
Flammable Atmosphere Approval:	For installation in non-flammable area only. Most compatible transducers suitable for flammable atmospheres. See sensor / transducer datasheet or brochure.
CE Approval:	2014/30/EU & 2014/35/EU — EMC Directive. Standards applied: EN 61010-1:2010 / EN 61326-1:2013 / EN 55011 / EN 61000 (3-2 / 3-3 / 4-2 / 4-3 / 4-4 / 4-5 / 4-6 / 4-7 / 4-11
ATEX Approval:	Controller must be within a safe area. See dB transducers for level sensor approvals

OUTPUTS

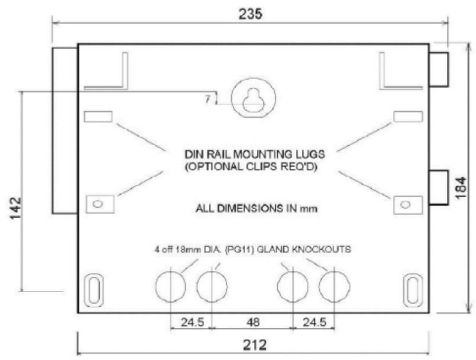
Analog Output:	2 off isolated (to 150 V floating) output of 4-20mA or 0-20mA into 1 kΩ (user programmable and adjustable) 0.1% resolution
Digital Output:	Half-duplex RS232
Volt Free Contacts, Number, and Rating :	6 form "C" (SPDT) rated at 5 A at 115 V AC
Display:	192 x 128 pixel illuminated graphical display showing a variety of screens including echo profile. Fully programmable display options, integral keypad with menu navigation keys.
Radio Modem (Optional):	4-20mA using wireless exempt frequencies. Maximum range 500 m (1,640 ft) line-of-sight
Communication Bus (Optional):	RS485 Modbus RTU/ASCII or Profibus DPV0 or DPV1 (slave device)

PROGRAMMING

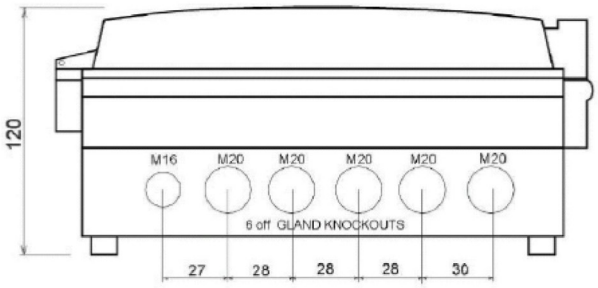
Onboard Programming:	By integral keypad
PC Programming:	Via RS232
Programming Security:	Via passcode (user selectable and adjustable)
Programmed Data Integrity:	Via non-volatile memory
PC Software:	Sludge Finder PC within PC Software Suite — compatible with XP (service pack 3), Windows 7/8/10

SUPPLY

Operating Voltage:	Universal 100-240 V AC 50/60 Hz, 22-28 V DC
Power Consumption:	20 W maximum power (typically 11 W)
Fuse:	2 A slow blow



Sludge Finder 2 Drawing Back



Sludge Finder 2 Cable Entry Drawing

Delivering the Measure of Possibility

Pulsar Measurement offers worldwide professional support for all of our products, and our network of global partners all offer full support and training. Our facilities in Malvern, UK and Largo, USA are home to technical support teams who are always available to answer your call or attend your site when required. Our global presence, with direct offices in the UK, USA, Canada, and Malaysia, allows us to create close relationships with our customers and provide service, support, training, and information throughout the lifetime of your product.

By taking a step forward in echo processing technology, Pulsar Measurement addresses applications previously thought to be beyond the scope of ultrasonic measurement. This technology improves signal processing at the transducer head which has made it possible to increase resistance to electrical noise, enabling the transducer to 'zone in' on the true echo.

For more information, please visit our website:

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Rev 6.0

VIPER TRANSDUCER

Technical Specifications:

The Viper sludge transducer can be positioned up to 200 m (656.2 ft) from the controller and has a measurement range of 300 mm to 10 m (11.8 in to 32.8 ft) — accuracy is 0.25% of the measured range. A tight 6° beam angle makes confined or cluttered applications easy and the self-cleaning face removes the need for regular inspection and maintenance — meaning you can avoid that unhygienic and hazardous task you hate!

PHYSICAL

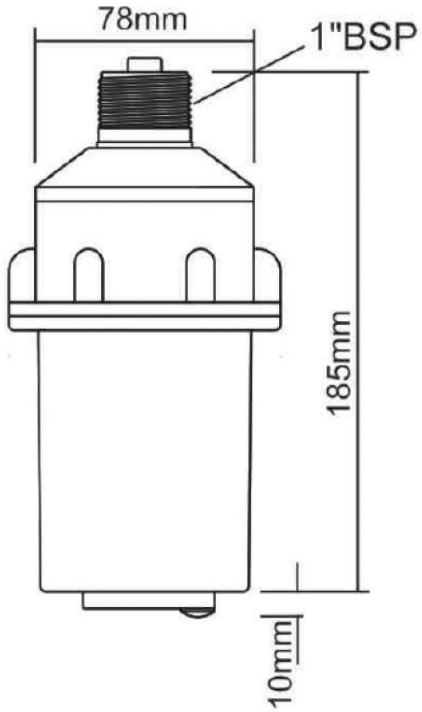
Sensor Body Dimensions:	78 mm D x 195 mm H (3.1 in x 7.7 in)
Weight:	Nominal 1.5 kg (3.3 lb)
Enclosure Material/ Description:	Valox 357. Wiper blade — Stainless steel
Transducer Cable Extensions:	4-core screened
Maximum Separation:	200 m (656.2 ft)

ENVIRONMENTAL

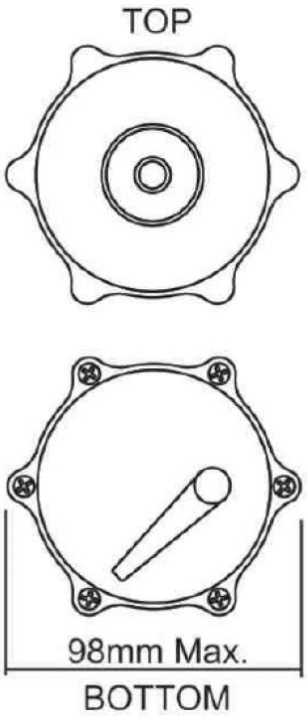
IP Rating:	IP68
Max. & Min. Temperature (Electronics):	-20 °C to +50 °C (-4 °F to +122 °F)
CE Approval:	2014/30/EU & 2014/35/EU — EMC Directive. Standards applied: EN 61010-1:2010 / EN 61326-1:2013 / EN 55011 / EN 61000 (3-2 / 3-3 / 4-2 / 4-3 / 4-4 / 4-5 / 4-6 / 4-7 / 4-11
ATEX Approval:	Viper transducer must be within a safe area

PERFORMANCE

Accuracy:	0.25% of the measured range or 10 mm (0.4 in), whichever is greater
Resolution:	0.25% of the measured range or 10 mm (0.4 in), whichever is greater
Max Range:	10 m (32.8 ft)
Min Range:	300 mm (11.8 in)
Minimum Sludge Density:	0.5% concentration



Viper Transducer Side Drawing



Viper Transducer Top and Bottom Drawing

Delivering the Measure of Possibility

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