

A Higher Level of Performance



Data Sheet

ORCA

Sonar System

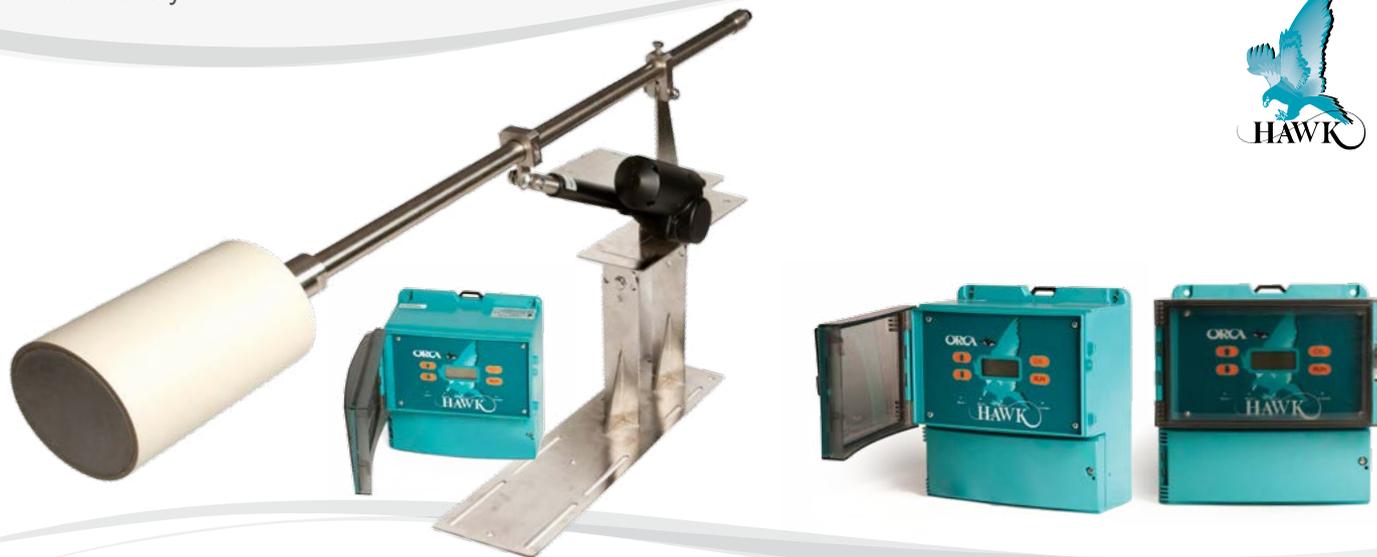
Sludge and Settling Level Interface Monitoring



For more information, please visit >
www.hawkmeasure.com

Overview

ORCA Sonar System



Principle of Operation

The ORCA Sonar Series transducer emits a high powered low frequency pulse, which is reflected from the interface density selected.

The reflected signal is processed using specially developed software algorithms, that eliminate lighter floating densities and stratified layers, allowing measurement of Bed or RAS levels. It can be calibrated to measure lighter densities such as the hindered / free settling layer & floc or one of the outputs could be used for a "Clarity" output, similar to a basic turbidity transmitter measuring solids in suspension.

Function

The ORCA Series Sonar, sludge blanket and interface controller, consists of a microprocessor based transmitter, with easy menu driven programming via keypad, PC or 3G modem. The ORCA controller works together with appropriate sonar transducer and transducer cleaning mechanism.

Primary Areas of Application

Mining / Process:

- Concentrate Thickeners
- Tailings Thickeners
- Hi-Rate Thickeners
- Paste Thickeners
- Deep Cone Thickeners
- Thickeners
- CCD's
- Settling Ponds / Lagoons
- Water Treatment
- Carbon Columns.

Features

- Dual independent analogue outputs to track two different interfaces, or clarity simultaneously, with the one sonar sensor
- Easy calibration to track specific density interfaces, eg: floc / fluff layer - 1g/l, Bed 10g/l+
- Industrial scum cleaning mechanisms, that do not require maintenance
- No wiper blade assemblies
- Control room graphics of tanks and interfaces via GosHawk II
- Wide range of communications: Modbus, HART, Foundation Fieldbus, DeviceNet, Profibus DP and Profibus PA
- 3G remote support capability for calibration, commissioning or technical back-up
- 3 programmable relays.



Technological Breakthrough for ORCA Sonar Transducer Range

HAWK has released the “fourth generation” sonar transducers, designed to increase the overall power, penetration and calibration density range of thickeners and CCD’s. HAWK has recognized that when monitoring thickeners and CCD’s, further penetration of the Bed level interface was necessary, to provide a wider density calibration range for the sonar transmitter.

The ORCA sonar transducer will allow the following improved capability in Thickeners and CCD’s when monitoring Bed level.

1. Greater penetration through the clarified level & the free settling zone
3. Penetration into the hindered settling zone dependent on frequency
4. The compacted zone can also be monitored using the second analogue output or one of the communication options: Modbus, Profibus PA, Profibus DP, Foundation Fieldbus, DeviceNet, HART etc.

The ORCA sonar transmitter can monitor two (2) different densities from one sonar transducer simultaneously - typically bed level and the hindered / settling density to be targeted with chemical dosing.

Transducer Selection Guidelines

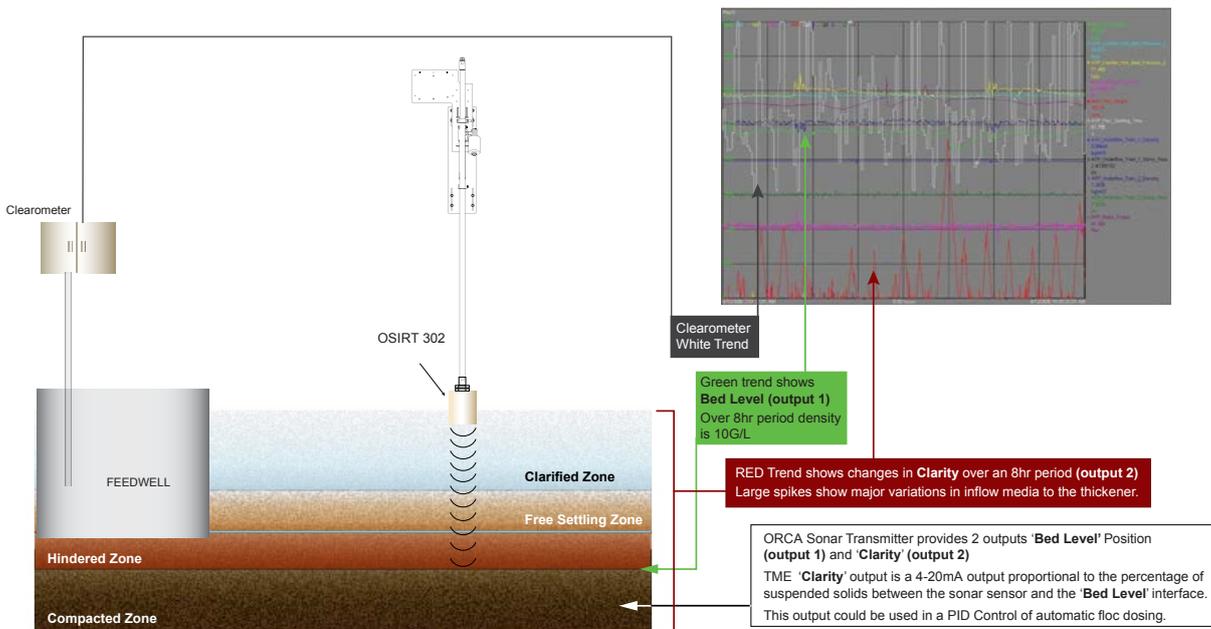
The standard sensor for mining & heavy industry process is the OSIRT302SHXC6 (150kHz).

General mounting requirements:

1. Identify a position away from direct inflow, where turbulence is minimized
2. An automatic scum cleaner is required - typically mounted on the hand rail
3. The sonar transducer should be at least 1/3 radius from circumference of the tank away from the influence of the feed well
4. Submerge approximately half of the transducer.

Mining Thickeners

Typical Bed Level Control



Sonar Transducer Penetration Capability Depending On Power Level.

- OSIRT302: Tailings Thickeners, Paste Thickener, Hi-rate Thickener, CCD's, Concentrate Thickeners.



A Breakthrough Sonar Transducer For Level Control

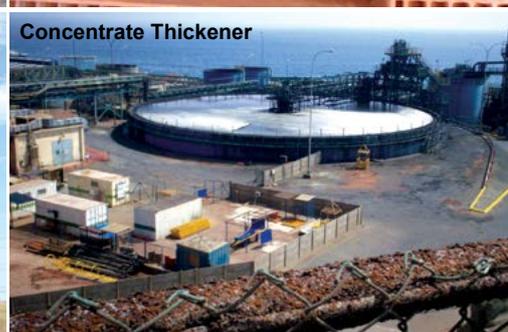
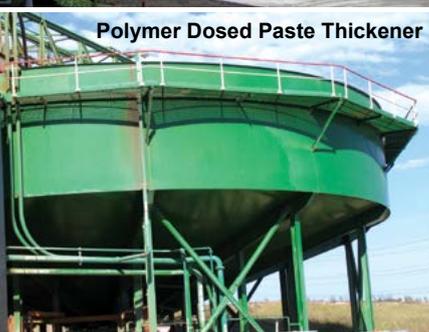


HAWK has produced the ORCA sonar range, to control process tanks in the water and waste water industry. Most other vendors' sonar products are good for monitoring purposes only.

HAWK has the largest range of sonar transducers that guarantee performance from water treatment, waste water treatment through to heavy industrial mining applications. HAWK can demonstrate that by using the ORCA sonar range to control RAS blankets in secondary clarifiers or bed levels in thickeners, that the payback on the equipment and savings to the plant happen very quickly.

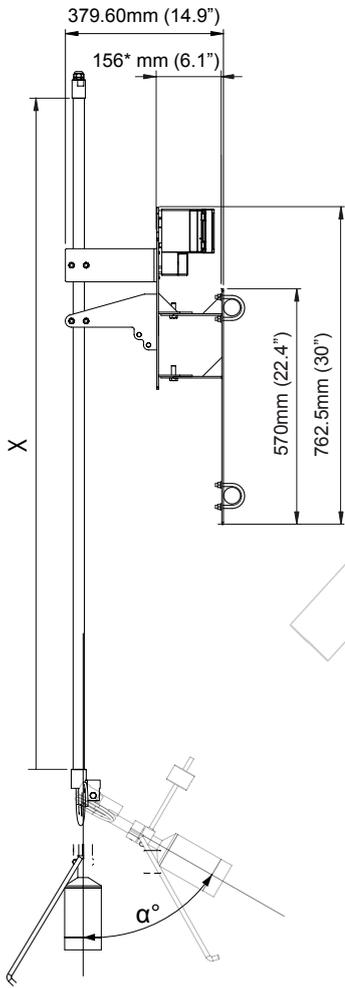
Typical Applications

Area	Functions
Mining / Mineral processing	
Clarifier Tank	Blanket level / clarity suspended solids / stratified floc layers
Thickener Tank	Sludge bed level / clarity suspended solids / stratified floc layers
CCD's Tank	Sludge bed level / clarity suspended solids / stratified floc layers
Settling Ponds	Sludge bed level
Industrial (food, paper etc.)	
Primary Sedimentation Tank	Sludge blanket level
Secondary Clarifier Tank	RAS blanket level / clarity suspended solids / rag / pin floc layer
Thickener Tank	Sludge bed level / clarity suspended solids / floc level
"DAF" Tank	Sludge bed level / floating sludge level
Sequential Batch Reactor (SBR)	Settling blanket level / RAS bed level
Carbon Column	Carbon bed level

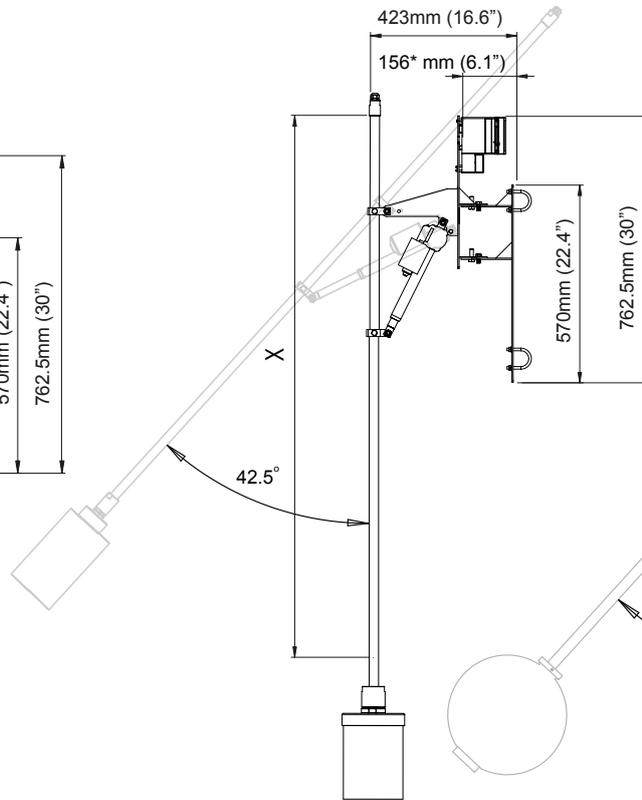




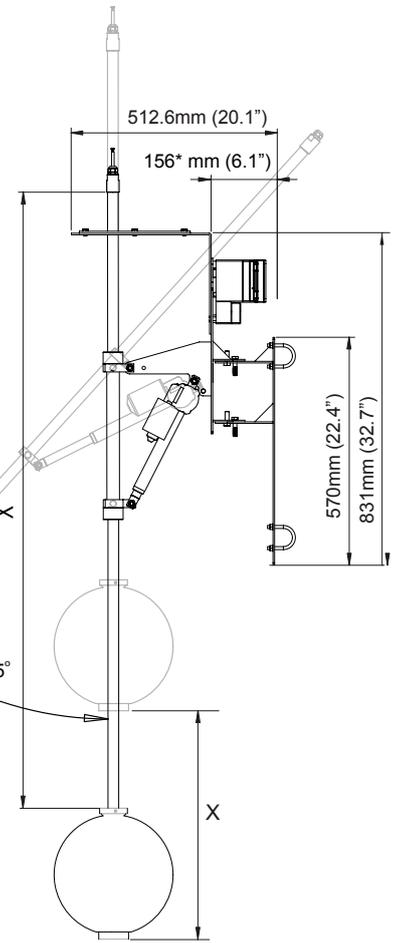
Sonar Impact Plate



Sonar Actuator Cleaner

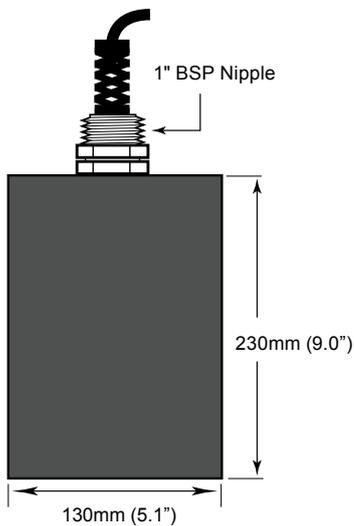


Floating Sonar Sensor



X = Decent Range
Distance from safety
rail or Bridge may vary

OSIRT 302 Transducer

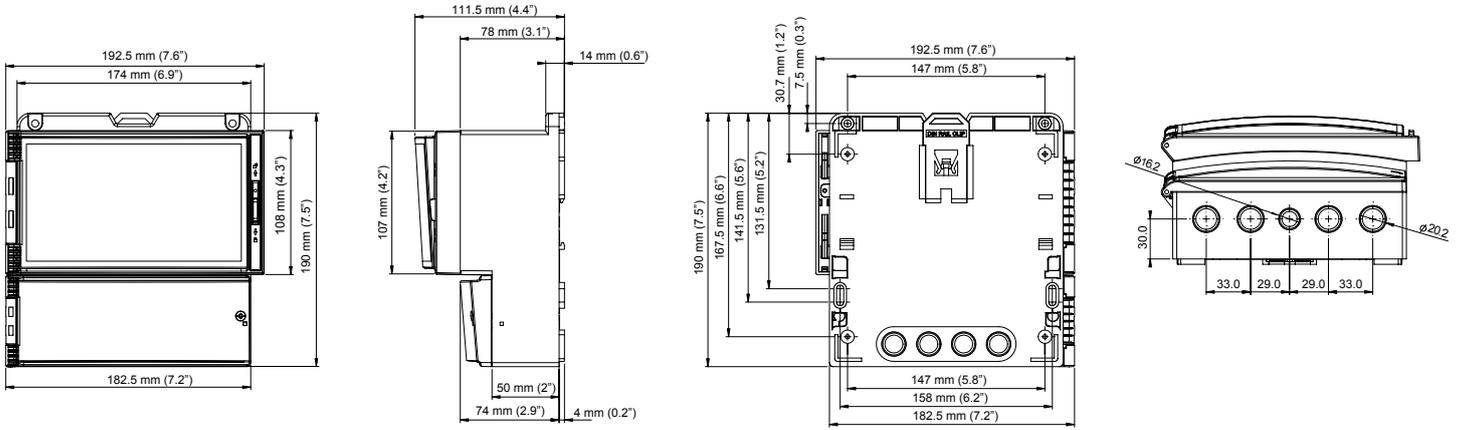


Dimensions

ORCA Sonar System

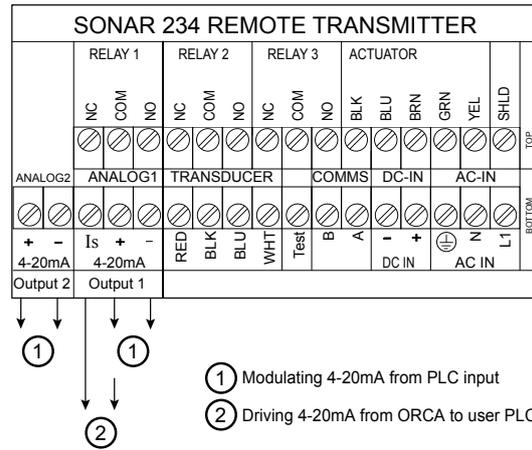
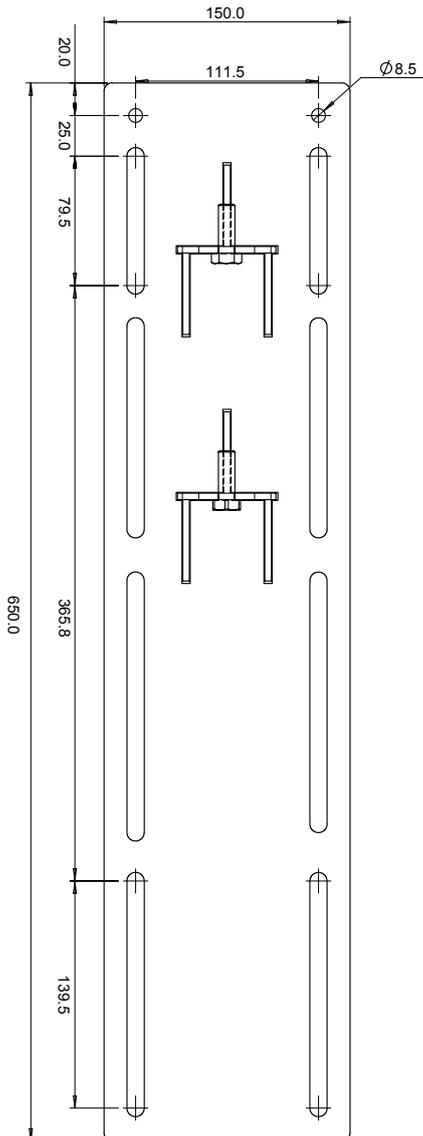


Remote Enclosure



Rail Base Plate

ORCA Remote Wiring





ORCA Remote Electronics

OSIR Sonar Level Transmitter, 3 relay alarms, Modbus

Power Supply

- B 24-30 VDC
- D 90-250VAC and 24-30VDC

Additional Communications

- X 1 x 4-20mA analog output module with Modbus
- Y 2 x 4-20mA analog output modules with Modbus Comms
- I 1 x 4-20mA analog output module with Modbus and HART
- J 2 x 4-20mA analog output modules with Modbus and HART
- W Modbus
- P Profibus DP
- A Profibus PA
- F Foundation Fieldbus
- D DeviceNet
- X This field is intentionally left blank

OSIR D Y X

Accessories

Mounting Extension

OSIRMEL Mounting Extension Stainless Steel Pipe

Length

- 2 2 meters
- 3 3 meters
- 4 4 meters
- 5 5 meters

H Full transducer / pole FRP fibreglass encapsulation (consult factory)

OSIRMEL 2

Automatic Scum Cleaner

OSIRSC Automatic Scum Cleaner

Type

- A 24VDC Electric Actuator incl. Mounting Accessories
- D Floating Sonar with 24VDC Electric Actuator incl. Mounting Accessories
- E2 Impact Plate Dual Direction plus Mounting Bracket with Mounting Accessories

OSIRSC A

Remote Sonar Transducer

OSIRT ORCA Sonar Transducer¹

Transducer Strength

- 3 Industrial / Mining

Transducer Frequency

- 02 (150kHz)

Facing & Housing material*

SH Full fiberglass high temperature version (max. 80°C 180°F)

Approval Standard

(Hazardous location rated units available, consult factory)

- X Not Required

Connection

C IP68 Sealed with 6 metre cable

- 6 6m cable
- 15 15m cable
- 30 30m cable
- 50 50m cable

FRP Full transducer / pole FRP fibreglass encapsulation (requires OSIRMELxH) consult factory

OSIRT 3 02 SH X C 6

¹ORCA Remote Electronics are fully compatible with Sultan Sonar Transducer models for lighter interface measurement with higher frequencies.

Consult Sultan Sonar datasheet for more information.

Specifications

ORCA Sonar System



Sonar Frequency Selection

- 150kHz

Operating Voltage

- 90 - 260Vac 50 / 60Hz
- 24Vdc (min. 5A supply)
- Residual ripple no greater than 100mV.

Power Consumption

- <10VA @ 240Vac
- <10W @ 24Vdc.

Analogue Output

- Either single or dual analogue
- 1 x 4-20mA (isolated) 600 ohms max.
- 1 x 4-20mA (non isolated) 600 ohms max.

Communications

- GosHawk, HART, Modbus, Profibus DP, DeviceNet, Foundation Fieldbus, Profibus PA.

Relay Output

- 3 x s.p.d.t. 0.5amp / 240vac
- Form c. type non-inductive load
- Fully programmable.

Maximum Range

- 25 meters.

Blanking Distance

- 450mm: 150kHz.

Resolution

- 1mm.

Accuracy

- +/- 0.25%

Operating Temperature

- Remote Electronics: -40°C to 70°C
- Sonar Transducer FRP Fibreglass: -40°C to 80°C.
- Electronic Actuator: 0°C to 80°C (recommend cover / heating for sub zero environments).

Transducer / Transmitter Separation

- >500m

Note: Must be BELDEN 3084A

Actuator / Transmitter Separation

- Consult ORCA Manual for wiring information

Cable (Sonar Transducer)

- BELDEN 3084A.

Sealing

- Remote Electronics IP67
- Remote Transducer IP68.

Cable Entries

- Remote Electronics: 3 x 20mm 1 x 16mm.

Typical Weight

- Remote Electronics 1kg
- Remote Transducer 1kg
- Cleaning Mechanism 5kg.

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Additional product warranty and application guarantees upon request.

Technical data subject to change without notice.

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