Data Sheet

Gladiator
Acoustic Switch Series
Non-contact Self Cleaning Blocked Chute Detection

For more information, please visit >
www.hawkmeasure.com
Principle of Operation

The Gladiator Acoustic Switch uses Acoustic Wave technology in a new Sender / Receiver form for blocked chute detection and anti collision for heavy machinery. The Gladiator Amplifier powers two AW Transducers which use special HAWK developed software where both units pulse and receive each other’s Acoustic echoes. When the path between the Transducers is blocked, the units immediately detect the presence / absence change of the return signal and trigger a communications relay for indication or control purposes. The Transducers work both together and independently to detect pulse interference giving twice the application security.

HAWK’s Acoustic Wave Transducers are self cleaning. The Acoustic Switch is designed for continuous operation in dusty, wet environments where other technologies fail. The power of each pulse (pressure wave) blows the water, moisture and build-up off the face of the diaphragm.

Typical Uses

- Blocked chute detection in wet or dry environments
- Wet screen blocked chute detection
- Nucleonic / tilt switch replacement
- High level alarm / Low level alarm
- Truck / machine detection
  (ROM bins, Primary Crusher Dump Pockets)
- Sewage sludge handling
- Point level switch.

Function

The Gladiator Acoustic Switch can be used for blockage detection, barrier detection, machine detection / protection and point level measurement, and detection of objects or material between two points.

Primary Areas of Application

- Brewing
- Cement
- Chemical
- Fertilizer
- Food & Beverage
- Glass
- Mining & Metals
- Packaging
- Paper
- Pharmaceutical
- Plastics
- Refining
- Sugar
- Water & Wastewater
- Sewage Sludge
- Power Generation (coal fired).

Features

- No contact with the product required
- Self cleaning transducers
- Heavy duty titanium version available
- Designed for dusty, wet environments
- LCD setup / diagnostics on remote amplifier
- Simple ‘1-minute’ setup
- 2 Relay outputs
- Adjustable ON and OFF delays
- Remote 3G connection option & support
- Remote amplifier to sensor separation up to 500 meters (1640 ft).
Our on-going commitment is to provide **Industry Leading Technology** and **Cost Effective Solutions**.
Typical Applications

Bulk Solids

- Material flow blockage detection
- Designed for wet & dusty environments
- Self cleaning Transducers dislodge & prevent build up
- Heavy duty Titanium version for product impact resistance
- Apron Feeder
- Reclaim conveyor blocked
- Chute
- Jam protection
- Slurry
- Sludge product
- Stockpile detection.
HAWK FA4A-4 Flange

**STANDARD 4” ANSI FLANGE DIMENSIONS**

<table>
<thead>
<tr>
<th>SIZE</th>
<th>FLANGE TYPE</th>
<th>A (PCD)</th>
<th>B (OD)</th>
<th>C (ID)</th>
<th>D (Hole)</th>
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<tr>
<td>4”</td>
<td>FA4A</td>
<td>190.5</td>
<td>228</td>
<td>100</td>
<td>19</td>
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</table>

C* Interior diameter does not include HAWK’s threaded decoupled connection flange
System Components

Amplifier

Junction Box

Acoustic Switch 15kHz Remote Transducers with UHMW flush mount sleeve

Gladiator Remote Amplifier Wiring

Blocked Chute Mounting

Pipe Specification
4-00" Z40 ID
100-102mm Black Pipe

Minimum Range

Min. 400mm
### Remote Amplifier

**GSA** Remote Gladiator System Amplifier  
**Housing** Standard polycarbonate electronics housing  
**Power Supply**  
- B 12-30 VDC  
- C 30-48VDC and 48-90VAC  
- U 12-30VDC and 90-260VAC  
**Output Options**  
- S Switch, 1 level relay, 1 failsafe relay, with Modbus  
**Other Options**  
- A22 ATEX Grp II Cat 3 GD T85°C  
  - IP67 Tamb -40°C to 70°C  

### Junction Box

**AWRT-JB-01** HAWK multi purpose junction box for dual transducer applications  
**AWRT-JB-06** HAWK multi purpose junction box for dual transducer applications with 6m cable  

### Connection Cable

**Belden 3084A**  
**Belden 3082A** Contact HAWK for length availability & price

### Remote Transducer

**AWRT Acoustic Wave Remote Transducer**  
15 15kHz for applications with heavy duty self cleaning requirements  
**Transducer Diaphragm / Sleeve Material**  
- T Teflon / UHMW (applications suitable for Teflon (no sensor face wear))  
- Y Titanium face / UHMW (applications with possible sensor face wear eg crushers)  
**Transducer Housing Material**  
- 4 Polypropylene  
**Thread Standards for End cap**  
- X Not Available  
**Mounting Thread**  
- X 15kHz - GAWSLV-3-X sleeve mounted (3.5” BSP thread to suit FA4A-4 flange)  
**Approval Standard**  
- X Not Required  
- A22 ATEX Grp II Cat 3 GD T85°C IP67 Tamb -40°C to 70°C  
**Connection**  
- C IP68 Sealed unit with cable  
**Cable Length**  
- 15 15m cable (standard)  
- 30 30m cable  
**Accessories**  
- X UHMW sleeve  
**Software Options**  
- AS Gladiator Acoustic Switch  

### Mounting Flange

**FA4A-4** HAWK 4” ANSI flange with decoupled connection flange for acoustic switch sleeve  

### Hazardous area approvals and intrinsically safe options available, contact your local distributor or head sales office for further information.
Specifications
Gladiator Acoustic Switch Series

Operating Voltage
- 12-30VDC (residual ripple no greater than 100mV)
- 90-260VAC
- 36-60VDC.

Power Consumption
- <0.8W @ 24VDC
- <5VA @ 240Vac
- <3VA @ 115Vac.

Communications
- GosHawk, Modbus
- Multidrop mode can address 1-250 units over 4 wires.

Relay Outputs: (2) Remote
- Form 'C' (SPDT) contacts, rated 5A at 240Vac resistive
- Remote fail-safe test facility for one relay.

Operating Temperature
- Remote Electronics: -40°C (-40°F) to 80°C (176°F)
- Remote Transducers: -20°C (-4°F) to 80°C (176°F).

Fail-Safe
- Selectable - presence or absence of material
- High level fail-safe:
  - Relay is activated when material is present.
- Low level fail-safe:
  - Relay is activated when no material is present.

Maximum Range
- Blocked Chutes:
  - Maximum: 15m (50ft)
  - Minimum: 400mm (32”).

Transducer to Amplifier Separation
- Up to 500m (1640ft) using specified extension cable (Belden 3084A).

Maximum Operating Pressure
- 2 BAR.

Display
- 2 line x 12 character alphanumeric LCD
- Backlight standard.

Memory - Remote
- Non-Volatile (No backup battery required)
- >10 years data retention.

Enclosure Sealing
- Remote Electronics IP67 (Nema 4x)
- Remote Sensors IP68
- Junction Box IP67.

Cable Entries
Remote Sensors
- 1 x M20 Gland / 3/4” NPTF threaded adaptor.
Remote Amplifier
- 4 x 20mm (0.8”), 1 x 16mm (0.6”) knock outs.

Mounting
15kHz Blocked Chute
- Transducer 4” ANSI flange with decoupled thread piece
- Remote Amplifier Back mount, DIN rail mount
- Pipe Specification: 4-00” 40 ID = 100mm Black Pipe.

Typical Weight

<table>
<thead>
<tr>
<th></th>
<th>kg</th>
<th>lb</th>
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<tr>
<td>15kHz Transducer</td>
<td>8</td>
<td>17.6</td>
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<tr>
<td>Remote Amplifier</td>
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<td>2.2</td>
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For more information and global representatives: www.hawkmeasure.com

Additional product warranty and application guarantees upon request.
Technical data subject to change without notice.

Hawk Measurement Systems
(Head Office)
15 - 17 Maurice Court
Nunawading VIC 3131, AUSTRALIA
Phone: +61 3 9873 4750
Fax: +61 3 9873 4538
info@hawk.com.au

Hawk Measurement
96 Glenn Street
Lawrence, MA 01843, USA
Phone: +1 888 HAWKLEVEL (1-888-429-5538)
Phone: +1 978 304 3000
Fax: +1 978 304 1462
info@hawkmeasure.com

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