# Technical **Datasheet**

## Vibrating Level Switch

## Solids Level Measurement

Series: VLS

### Key **Features**

- Adjustable sensitivity
- 1 ½" BSP or NPT threaded connection
- Side or top mounting
- Extension lengths to 20m
- Robust aluminium housing
- IP67 ingress protection
- AC or DC supply voltages
- Dust explosion protection

### Series Overview

The Vibrating rod Level Switch (VLS) is the perfect solution for single point level switching in free flowing solids. For tanks, silos or hopper bins, and for a wide density range of solids from fine powders, grains to aggregates. A single rod design provides the solution to tuning forks which may become blocked or bridged.

The vibrating rod is energised and kept in resonance by an electronic circuit. When covered by material, the damping of the vibration is detected by the electronics which switch the output relay after a configurable time delay.

Configurable for low or high density solids, and for fail safe modes. Extended rod or cable options available.

### Other products

Other products we can offer:

- Ultrasonic Level Transmitters and Control Unit for liquid level measurement

### Product **applications**

- Powders
- Pellets
- Granulates
- Grains
- Flour
- Fly ash
- Cement and sand
- Coal, slag
- Aggregate

### How can we **help you?**

Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our website at www.delta-mobrey.com to find your local support centre or call us on:
**+44 (0)1252 729140**

| Vibrating Level Switch | |
|---|---|
| **Media density** | > 50 kg/m$^3$ |
| **Process connection** | 1 ½" BSP or 1 ½" NPT |
| **Conduit connection** | 2 x Pg16 (BSPT model) or 2 x ½" NPT (NPT model) |
| **Output** | 1 SPDT relay, 8A at 250VAC |
| **Response time** | Selectable 2 or 5 seconds |
| **Rod length** | Standard 207mm |
| **Extended rod length** | 300mm to 3000mm |
| **Extended cable length** | 1000mm to 20,000mm |
| **Process temperature** | Standard model: -30°C to 110°C (-22 to 230°F)<br>With extension cable: -30°C to 80°C (-22 to 176°F)<br>High temp model: -30 to 160°C (-22 to 320°F)<br>ATEX models VLS***35A: refer to the table further below |
| **Ambient temperature** | -30 to 60°C (-22 to 140°F) |
| **Medium pressure** | 25 bar maximum (extended cable 6 bar maximum) |
| **Power supply** | Order code 1Z: 20 to 255Vac (50/60 Hz) and 20 to 255Vdc<br>Order code 5A: 20 to 250Vac (50/60 Hz) and 20 to 50Vdc |
| **Housing material** | Aluminium alloy, powder paint coated |
| **Rod material** | 316 stainless steel |
| **Housing rating** | IP67 |
| **Weight** | Approx. 2kg |
| **Approvals** | ATEX II 1/2 D |

Temperature limitations for ATEX models VLS***35A

| | VLS**435A | | | VLSK*(1/3)35A | | | | VLSH**35A |
|---|---|---|---|---|---|---|---|---|
| Process temperature (Tp)<br>(EPL Da—category 1D) | +60°C | +70°C | +80°C<br>+95°C(1) | +60°C | +70°C | +95°C | +110°C | +160°C |
| Process temperature (Ta)<br>(EPL Db—category 2D) | +60°C | +50°C | +60°C | +60°C | +50°C | +60°C | +50°C | +35°C |
| Maximum surface temperature<br>(process connection) | +85°C | +85°C | +95°C | +85°C | +85°C | +95°C | +95°C | +135°C |
| Maximum surface temperature T | +85°C | +85°C | +95°C | +85°C | +85°C | +95°C | +110°C | +160°C |
| T Class | T90°C | | T100°C | T90°C | | T100°C | T115°C | T170°C |

1. The process temperature can reach +95C for a maximum period of one hour.

**SENSITIVITY**

The VLS will operate in bulk materials with density over 50 kg/m$^3$. A switch setting allows adjusting of the sensitivity to Low for products with density less than 100 kg/m$^3$ or High for products with density above this.

**FAILSAFE**

The VLS can be set to failsafe high or failsafe low depending on the application.

**TOP MOUNTING**

Either in standard length or extended length, the VLS can be mounted from the top of a silo.

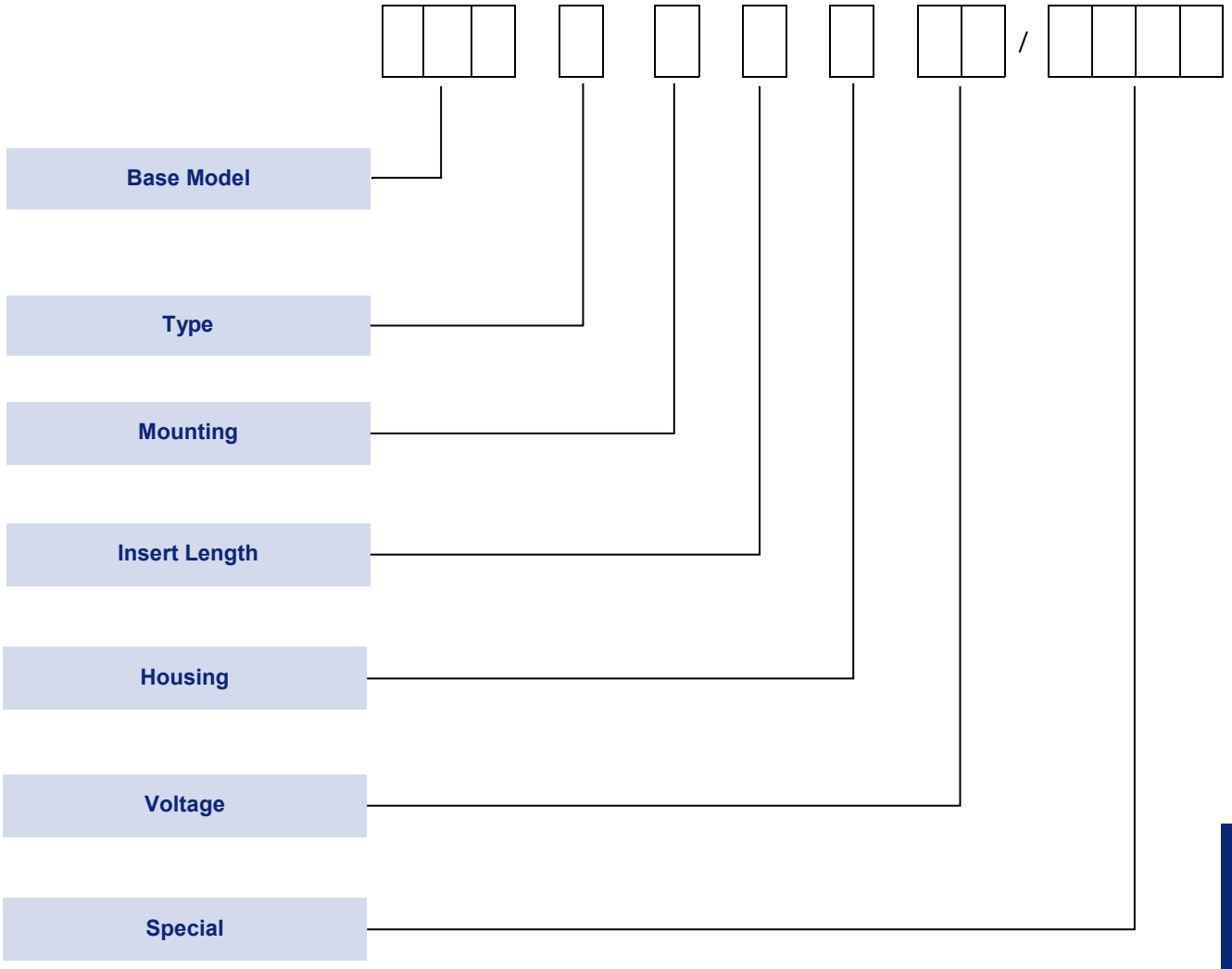
**SIDE MOUNTING**

Ideal for use as a failsafe high level switch. If used in low level applications it is advised to protect the probe from excessive loading exerted by the medium and from direct impact as the silo is being filled. A simple shield mounted above the probe is sufficient.

## How to order

*Vibrating Level Switches can be configured by selecting codes representing the desired features from the tables that follow.*

*The table below, describes how the model code is built up. For assistance in configuring a transmitter that best suits your needs, please contact your local sales office.*



## Base Model

TABLE 1 [ ][ ][ ] [ ] [ ] [ ] [ ] [ ][ ] / [ ][ ][ ][ ]

| Description | Code |
|---|---|
| Vibrating Rod Level Switch | **VLS** |

## Type

TABLE 2 [ ][ ][ ] [ ] [ ] [ ] [ ] [ ][ ] / [ ][ ][ ][ ]

| Description | Code |
|---|---|
| Standard model with 1 SPDT relay | **K** |
| High temperature model with 1 SPDT relay (excludes Extended Cable) | **H** |

## Mounting

TABLE 3 [ ][ ][ ] [ ] [ ] [ ] [ ] [ ][ ] / [ ][ ][ ][ ]

| Description | Code |
|---|---|
| R 1 ½ " BSPT mounting | **B** |
| N 1 ½ " NPT mounting | **N** |

## Insertion Length

**Note 1:** Rod construction 3 & 4 requires the Enclosure code "9"
**Note 2:** for any combination of special cable length but also a special rod length, please select "3" + Enclosure "9". Cable & rod length will be specified in the Engineering Special (last 4 digit of the code)

TABLE 4 [ ][ ][ ] [ ] [ ] [ ] [ ] [ ][ ] / [ ][ ][ ][ ]

| Description | Code |
|---|---|
| Standard length rod, 207mm insertion length | **1** |
| Extended rod, 300mm to 3000mm insertion length (with Encl. 9) | **3** |
| Cable extended, 1000 to 20,000mm insertion length (rod=std 207) | **4** |

## Housing

TABLE 5 [ ][ ][ ] [ ] [ ] [ ] [ ] [ ][ ] / [ ][ ][ ][ ]

| Description | Code |
|---|---|
| Aluminium Alloy housing, power coated | **3** |
| As code 3, with remote electronics (for safe area only) | **9** |

## Voltage

TABLE 6 | | | | | | | | | / | | | | |

| Description | Code |
|---|---|
| 20-255V ac / 20-255V dc, no hazardous area approval | **1Z** |
| 20-250V ac / 20-50V dc, ATEX Dust Certification II 1/2 D | **5A** |

## Special

TABLE 7 | | | | | | | | | / | | | | |

| Description | Code |
|---|---|
| Extended length (rod or cable) | **/**** |

## Approvals

**EUROPEAN DIRECTIVES**

**Electromagnetic Compatibility Directive (EMC) 2014/30/EU**
Compliant to EMC directive

**Low Voltage Directive (LVD) 2014/35/EU**
Compliant to LVD directive

**Pressure Equipment Directive (PED) 2014/68/EU:**
This product is outside the scope of the PED directive

**ATEX DIRECTIVE 2014/34/EU**

Certificate No. BKI19ATEX0011

EN 60079-0, EN 60079-31

For Zone 20/21 models (Code VLS***35A/**** see tables 5 and 6)


II 1/2 D Ex ta / tb IIIC T90°C…T170°C Da/Db

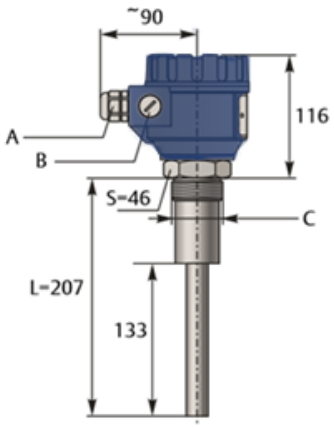
## Special Engineering

Many other options already designed and configured, for example:
- Stainless Steel sensor
- Special construction

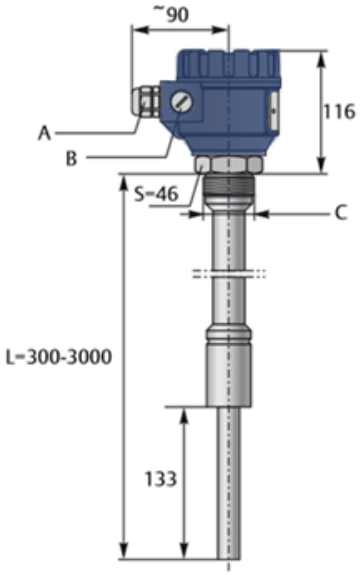
Other options can also be designed to meet specific requirements of an application. Please contact us for further information.

## Dimensional Drawings

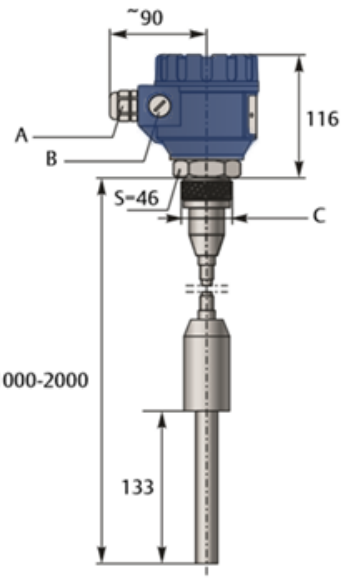
**Standard version**

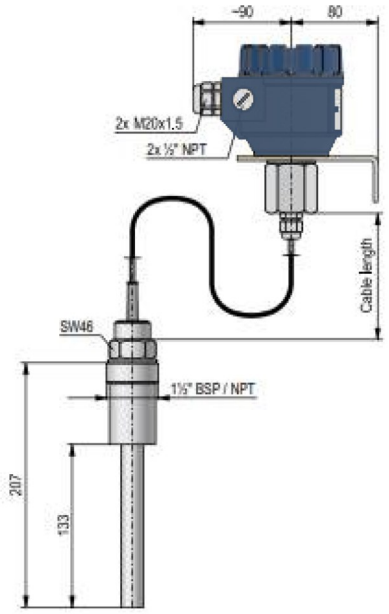



**Extended rod version**




**Cable extended version**




A. 2 off M20x1.5 conduit entries
B. 2 off NPT $^{1}/_{2}$-in. conduit entries
C. $1^{1}/_{2}$-in. BSP or NPT threaded process connection
Dimensions are in mm.





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