



## LBV300

Tuning forks – tough and flexible in bulkSolids

**SICK**  
Sensor Intelligence.



### Technical data overview

|                                   |                                                                                                                  |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Measurement principle</b>      | Vibrating level switch                                                                                           |
| <b>Detection principle</b>        | Contact                                                                                                          |
| <b>Medium</b>                     | Bulk solids                                                                                                      |
| <b>Measurement</b>                | Switch                                                                                                           |
| <b>Process temperature</b>        | –50 °C ... +250 °C, detection of solids in water, Temperature range with temperature adapter (depending on type) |
| <b>Process pressure</b>           | –1 bar ... 25 bar (depending on type)                                                                            |
| <b>Output signal</b>              | Non-contact switch<br>Double relay (DPDT)<br>1 x PNP/NPN<br>NAMUR signal (depending on type)                     |
| <b>Accuracy of sensor element</b> | ± 10 mm                                                                                                          |

### Product description

The rugged, reliable, and highly accurate vibrating level switches in the LBV300 product family signal full, empty, or demand states in bulk materials. The tuning fork reacts to changes in density, and thus operates independently of silo shape or the tank material used. The rugged stainless steel tuning fork is piezo-electrically energized and vibrates at its resonance frequency when it is covered by bulk materials. This change is detected and converted into a switching signal. While the LBV310 compact device is used for horizontal mounting and to signal full states, the LBV320 cable-extended switch and the LBV330 tube-extended switch are used for vertical mounting in silos and bridge sensing ranges of up to 80 m and 6 m respectively. With a wide variety of thread and flange connections, and several electronic variants, the LBV330 offers a solution for almost all applications, even in potentially explosive atmospheres.

### At a glance

- Tough device design
- Several housing materials and electrical outputs available
- Immune to deposit formation
- Commissioning without filling
- Process temperature up to 250 °C
- Very high repeatability
- ATEX versions (1D/2D/1G/2G) available
- Tube-extended version (LBV330) up to 6 m and rope extensions version (LBV320) up to 80 m available for vertical mounting

### Your benefits

- Easy installation and commissioning, no pre-calibration necessary
- Easy operation and integration
- Maintenance-free system
- Sensors can be tested while installed
- Flexible, reliable measurement system suitable for many types of applications
- Vertical mounting, even in difficult installation and ambient conditions

## Type code

Other models and accessories → [www.sick.com/LBV300](http://www.sick.com/LBV300)

## LBV310 type code

**Certification**

|    |                                                       |
|----|-------------------------------------------------------|
| XX | without                                               |
| CX | ATEX II 1G, ½ G, 2G Ex ia IIC T6                      |
| CK | ATEX II 1G, ½ G, 2G Ex ia IIC T6+ATEX II 1/2 D IP6X T |
| LX | ATEX II 1G, ½ G, 2G Ex d IIC T6                       |
| LK | ATEX II ½ G, 2G Ex d IIC T6+ATEX II 1/2 D, 2D IP6X    |
| GX | ATEX II ½ D IP6X T                                    |

**Execution / Process temperature**

|   |                                                   |
|---|---------------------------------------------------|
| A | Standard / -50 °C ... +150 °C                     |
| B | With spacer / -50 °C ... +250 °C                  |
| C | Detection of solids in water / -50 °C ... +150 °C |

**Process connection / Material**

|          |                                               |
|----------|-----------------------------------------------|
| GD       | Thread G 1 ½ A, PN 25 / 316L                  |
| ND       | Thread 1 ½" NPT, PN 25 / 316L                 |
| EF       | Flange DN 50, PN 40, form C, DIN 2501 / 316L  |
| No error | Flange DN 80, PN 40, form C, DIN 2501 / 316L  |
| ZF       | Flange DN 100, PN 6, form C, DIN 2501 / 316L  |
| MF       | Flange DN 100, PN 16, form C, DIN 2501 / 316L |
| OF       | Flange DN 100, PN 40, form C, DIN 2501 / 316L |
| QF       | Flange DN 150, PN 16, form C, DIN 2501 / 316L |
| 2F       | Flange DN 200, PN 10, form C, DIN 2501 / 316L |
| EB       | Flange DN 50, PN 40, EN 1092-1 Form B1 / 316L |
| HA       | Flange 2", 150 lb RF, ANSI B16.5 / 316L       |
| HE       | Flange 2", 150 lb FF, ANSI B16.5 / 316L       |
| IA       | Flange 2", 300 lb RF, ANSI B16.5 / 316L       |
| OA       | Flange 3", 150 lb RF, ANSI B16.5 / 316L       |
| OE       | Flange 3", 150 lb FF, ANSI B16.5 / 316L       |
| PA       | Flange 3", 300 lb RF, ANSI B16.5 / 316L       |
| JA       | Flange 3 ½", 150 lb RF, ANSI B16.5 / 316L     |
| SA       | Flange 4", 150 lb RF, ANSI B16.5 / 316L       |
| UA       | Flange 4", 300 lb RF, ANSI B16.5 / 316L       |
| AU       | Flange DN 50, 10K RF, JIS / 316L              |
| BU       | Flange DN 80, 10K RF, JIS / 316L              |
| CU       | Flange DN 100, 10K RF, JIS / 316L             |

**Electronics**

|   |                                                    |
|---|----------------------------------------------------|
| C | Contact-free switch 20 ... 253 V AC (DC)           |
| R | Relay (DPDT) 20 ... 72 V DC / 20 ... 253 V AC (3A) |
| T | Transistor (NPN/PNP) 10 ... 55V DC                 |
| N | NAMUR signal                                       |

**Housing / Enclosure rating**

|   |                                                          |
|---|----------------------------------------------------------|
| K | Plastic / IP 66, IP 67                                   |
| A | Aluminum / IP 66, IP 67                                  |
| V | Stainless steel (investment casting) 316L / IP 66, IP 67 |
| 8 | Stainless steel (electropolished) 316L / IP 66, IP 67    |

**Cable entry / Male connector connection**

|   |                     |
|---|---------------------|
| M | M20 x 1.5 / Without |
| N | ½" NPT / Without    |

LBV310 - [ ] [ ] [ ] [ ] [ ] [ ] [ ] X

Not all variants of the type code can be combined!

## LBV320 type code

**Certification**

|    |                                                      |
|----|------------------------------------------------------|
| XX | without                                              |
| CX | ATEX II 1G, ½ G, 2G Ex ia IIC T6                     |
| CK | ATEX II 1G, ½ G, 2G Ex ia IIC T6+ATEX II 1/2D IP6X T |
| GX | ATEX II ½ D IP6X T                                   |

**Execution / Process temperature**

|   |                                                             |
|---|-------------------------------------------------------------|
| C | Cable PUR, detection of solids in water / -20 °C ... +80 °C |
| H | Cable FEP / -40 °C ... +150 °C                              |
| T | Cable PUR / -20 °C ... +80 °C                               |

**Process connection / Material**

XX

GD

ND

EF

No  
er-  
ror

ZF

MF

OF

QF

2F

EB

HA

HE

IA

OA

OE

PA

JA

SA

UA

AU

BU

CU

Without / 316L  
Thread G 1 ½ A, PN 16 / 316L  
Thread 1 ½" NPT, PN 16 / 316L  
Flange DN 50, PN 40, form C, DIN 2501 / 316L  
Flange DN 80, PN 40, form C, DIN 2501 / 316L  
  
Flange DN 100, PN 6, form C, DIN 2501 / 316L  
Flange DN 100, PN 16, form C, DIN 2501 / 316L  
Flange DN 100, PN 40, form C, DIN 2501 / 316L  
Flange DN150, PN 16, form C, DIN 2501 / 316L  
Flange DN 200, PN 10, form C, DIN 2501 / 316L  
Flange DN 50, PN 40, EN 1092-1, form B1 / 316L  
Flange 2", 150 lb RF, ANSI B16.5 / 316L  
Flange 2", 150 lb FF, ANSI B16.5 / 316L  
Flange 2", 300 lb RF, ANSI B16.5 / 316L  
Flange 3", 150 lb RF, ANSI B16.5 / 316L  
Flange 3", 150 lb FF, ANSI B16.5 / 316L  
Flange 3", 300 lb RF, ANSI B16.5 / 316L  
Flange 3 ½", 150 lb RF, ANSI B16.5 / 316L  
Flange 4", 150 lb RF, ANSI B16.5 / 316L  
Flange 4", 300 lb RF, ANSI B16.5 / 316L  
Flange DN 50, 10K RF, JIS / 316L  
Flange DN 80, 10K RF, JIS / 316L  
Flange DN 100, 10K RF, JIS / 316L

Electronics

C

R

T

N

Housing / Enclosure rating

K

A

V

8

Cable entry / Male connector connection

M

N

Length 480 up to max. 80,000 mm

Contact-free switch 20 ... 253 V AC (DC)  
Relay (DPDT) 20 ... 72 V DC / 20 ... 253 V AC (3A)  
Transistor (NPN/PNP) 10 ... 55 V DC  
NAMUR signal  
  
Plastic / IP 66, IP 67  
Aluminum / IP 66, IP 67  
Stainless steel (investment casting) 316L / IP 66, IP 67  
Stainless steel (electropolished) 316L / IP 66, IP 67  
  
M20 x 1.5 / Without  
½" NPT / Without

LBV320 -

X

Not all variants of the type code can be combined!

LBV330 type code

Certification

XX

CX

CK

LX

LK

GX

without  
ATEX II 1G, ½ G, 2G Ex ia IIC T6  
ATEX II 1G, ½ G, 2G Ex ia IIC T6+ATEX II 1/2 D IP6X T  
ATEX II 1G, ½ G, 2G Ex d IIC T6  
ATEX II ½ G, 2G Ex d IIC T6+ATEX II 1/2 D, 2D IP6X  
ATEX II ½ D IP6X T

Execution / Process temperature

A

B

C

Standard / -50 °C ... +150 °C  
With spacer / -50 °C ... +250 °C  
Detection of solids in water / -50 °C ... +150 °C

Process connection / Material

GD

ND

EF

No  
er-  
ror

ZF

MF

OF

QF

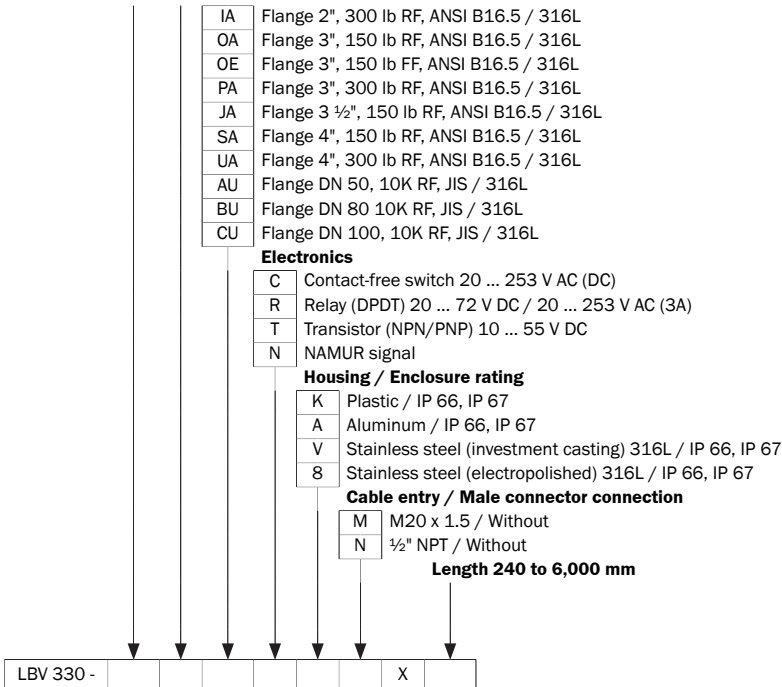
2F

EB

HA

HE

Thread G 1 ½ A, PN 25 / 316L  
Thread 1 ½" NPT, PN 25 / 316L  
Flange DN 50, PN 40, form C, DIN 2501 / 316L  
Flange DN 80, PN 40, form C, DIN 2501 / 316L  
  
Flange DN 100, PN 6, form C, DIN 2501 / 316L  
Flange DN 100 PN 16 form C, DIN2501 / 316L  
Flange DN 100, PN 40, form C, DIN 2501 / 316L  
Flange DN 150, PN 16, form C, DIN 2501 / 316L  
Flange DN 200, PN 10, form C, DIN 2501 / 316L  
Flange DN 50, PN 40, EN 1092-1, form B1 / 316L  
Flange 2", 150 lb RF, ANSI B16.5 / 316L  
Flange 2", 150 lb FF, ANSI B16.5 / 316L



Not all variants of the type code can be combined!

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

**For us, that is “Sensor Intelligence.”**

## WORLDWIDE PRESENCE:

Contacts and other locations –[www.sick.com](http://www.sick.com)