



LSVR

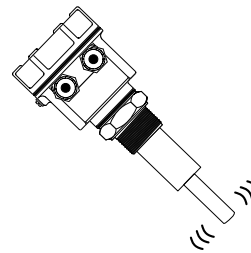
Vibrating Rod Point Level Switch for Solids & Powders



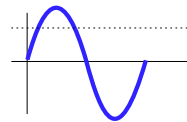
Product Overview

Trumen vibrating rod point level switch model LSVR is suitable for solid and powder & use in all process industries like cement, pvc, food grains, coal and steel. Trumen vibrating rod is a single element tuned mechanical level sensing device.

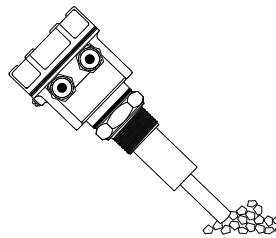
Operating Principle



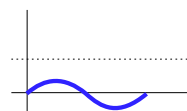
Electronics of LSVR excites the piezo-electric-crystals inside the tuning rod, which makes the rod vibrate at its natural resonance frequency in free air.



Amplitudes of vibration are above threshold when rod is free to vibrate.



When material touches the rod, vibration stops as resonance gets disturbed.

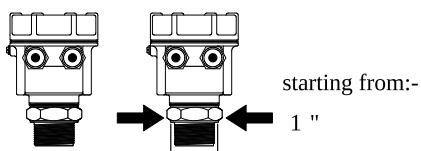


Amplitudes of vibration, as sensed by the electronics falls below the threshold, material presence is thus detected by observing the amplitude of vibration.

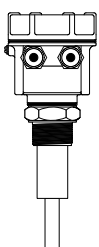
Applications

- Vibrating rod level switch is used in different applications like
 - Free flowing solids
 - Fly ash
 - Cement
 - Powder
 - Clinker
 - Salt
 - Calcium carbonate
 - Food grains
 - Steel
 - Coal
 - PVC
 - Sand
- Granuels size should not be more than 25mm.

Compact Process Connection



Immune to Material Properties



Works Independent of Material's ~

- ~ Dielectric Constant
- ~ Conductivity
- ~ Stickiness

Features

- Compact size
- Fast switching response 2 sec (0.8 sec and 1.5 sec available on demand)
- Low power consumption (0.5 to 0.7VA)
- Calibration-less operation
- Durable Construction
- Immune to External Vibrations
- Tropicalized & potted electronics module
- Suitable for side as well as top mounting
- Minimum and maximum failsafe field selectable
- Settable switching delay as a standard feature
- Ingress protection : IP 67/68 (as per IS/IEC 60529:2001)
- Process temperature max 150 Deg C
- Process pressure max. 20 bar
- 1" threaded mountings available
- Threaded / flanged / customized process connections
- Remote electronics with as standard 10 meters cable length

LSVR: Vibrating Rod Level Switch for Solids & Powders



Performance Specifications

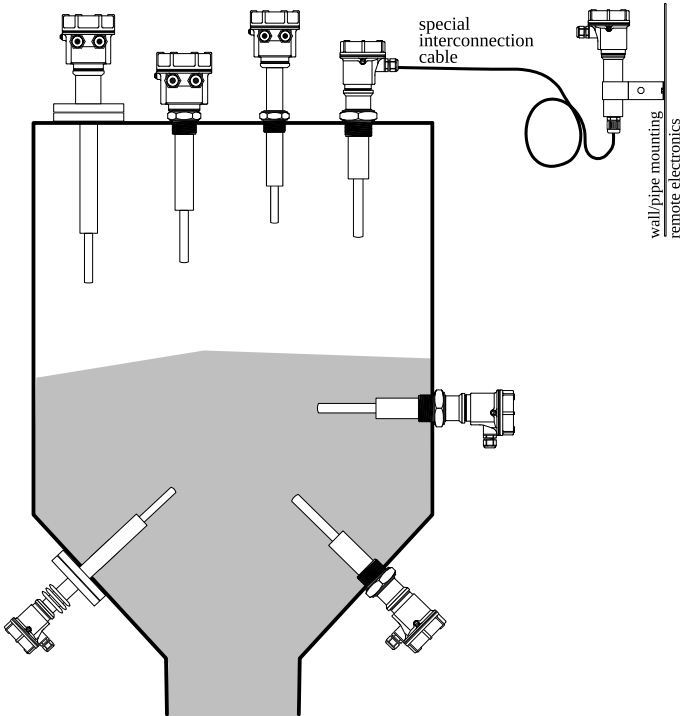
Parameter	Description
General	
Min. Density	>=300 gram/litre, not fluidized
Maximum measured error	Max. ±1 mm (at reference operating conditions)
Repeatability	0.1 mm
Hysteresis	Approx. 2 mm
Influence of medium temperature	Max +2 to -3 mm (-20 to +150 °C)
Influence of medium density	Max +5 to -4 mm (1.0 to 2.5 g/cm ³)
Influence of medium pressure	Max 0 to -3 mm (-1 to 20 bar)
Sensor Cable	Remote electronics require special cable from rod to controller, 10 meter standard length (Longer length max. upto 15m)
Process	
Ambient Temperature	-20°C ... 70°C (-4°F ... 158 °F)
Process Temperature	-20°C ... 80°C (-4°F ... 176 °F)
Extended Process Temperature	-30°C ... 150°C (-22°F ... 302°F) (extensions & heat sinks required)
Process Pressure	Absolute / max. 20 bar
Physical Specifications	
Wetted Parts	SS 316 or SS 316L
Process Connections	NPT / BSP 1/2", 1", 1-1/4", 1-1/2", 2", Triclover 1", 1-1/2", 2" and Flanged ANSI / JIS / DIN / ASA / custom
Extensions Tube & Material	SS 304, SS 316, SS 316L
Insertion Length	250mm to 3,000mm

Approvals & Certifications

ISO Certification	ISO 9001:2015
CE certification	All product comply as per directives 2014/35/EU Low Voltage Directive & 2014/30/EU Electromagnetic Compatibility Directive
RoHS Certification	RoHS Compliance as per RoHS Directive (2011/65/EU); Certificate No. RoHS-TTPL-2021-0305
Ingress Protection	IP67/68 as per IS/IEC 60529:2001
Ex-proof (Ex d T6 IIC)	Flameproof as per IS/IEC 60079-1:2014, Ingress Protection (IP-67) as per IS/IEC 60529:2001 Suitable for Gas Group: IIC, Suitable for Zone 1 & 2 atmospheres and Dust hazardous area Zone 21 & 22
Ex-ia Approval	Intrinsically safe according to the requirement of IS/IEC 60079-0:2011, IS/IEC 60079-11:2006 & IS/IEC 60529: 2001
EMC Certification	EMC Certified as per Standard IEC 61000-4-3, IEC 61000-4-2, IEC 61000-4-6, IEC 61000-4-29, IEC 61000-4-4, IEC 61000-4-5, CISPR 11
Vibration Test Certificate	Vibration complied as per IEC 60068 part 2-6 sinusoidal, 10-55Hz, 0.15mm

Specifications are subject to change without prior notice

Typical Installation



LSVR: Vibrating Rod Level Switch for Solids & Powders



Performance Specifications

Parameter	Description	Electrical Connection
Electrical		
EIUD / ERUD	Integral / Remote Electronics	
Supply	Universal Power Supply 15 to 80 VDC & 15 to 260 VAC 50/60Hz	
Output	1 DPDT potential free relay contact output	
Relay Rating	5 A each @ 24VDC or 220VAC	
EIDP / ERDP	Integral / Remote Electronics	
Supply	12 to 60 VDC	
Output	PNP output	
Output Limit	250mA max. Short Circuit Safe	
EIUSP / ERUSP	Integral / Remote Electronics	
Supply	Universal Power Supply 15 to 80 VDC & 15 to 260 VAC 50/60Hz	
Output	Potential free SPDT relay contact output	
Relay Rating	5 A each @ 24VDC or 220VAC	
DC Supply	15 to 60 VDC for PNP output	
PNP Output	250mA max. Short Circuit Safe	
EIAR	Integral Electronics	
Supply	18 to 260 VAC	
Output	Two Wire AC series relay not less than 4mA to release external relay maximum 150mA to magnetize relay	
Output Limit	Use relays/contactors will more than 4mA holding current	
EIDL	Integral Electronics 4-20mA Loop Powered	
Supply	15 to 60 VDC	
Output	Two Wire DC 8 / 16mA & 4 / 20mA	
Output Limit	8mA (±1mA max) / 16mA (±1mA max)	
EIFS / ERFS	Integral / Remote Electronics specially designed with special output	Electrical connection depends on selected model code.

LSVR: Vibrating Rod Level Switch for Solids & Powders

Ordering Information

LSVR **Hxx** - **Tx** - **Sx** - **Gx** - **Px** - **Cx** - **Exxx** - **Lxxxx**

Enclosure

HAN: Aluminum Non-Hazardous IP-66/68
HAX: Aluminum Flameproof Ila, I Ib and I Ic
HSN: Stainless steel
HPN: Polycarbonate (Plastic)
HES: Specially designed as per customer requirement

Material Temperature

T1: max 80°C
T2: max 150°C
TS: Customer Specified Special designed

Sensing Surface Material

S4: SS 304
S6: SS 316
SL: SS 316L
SS: Special Surface

Sensor Extension Material

G4: SS 304
G6: SS 316
GL: SS 316L
GS: Special Surface

Process Connection Type

PB1: 1" BSP
PB2: 1-1/2" BSP
PB4: 1-1/4" BSP
PB5: 2" BSP
PB6: 1/2" BSP
PN1: 1" NPT
PN2: 1-1/2" NPT
PN4: 1-1/4" NPT
PN5: 2" NPT
PN6: 1/2" NPT
PT1: 1", 1-1/2" Triclover/Triclamp
PT2: 2" Triclover/Triclamp
PFL: Flanged Type (Fxxx)
F001: 1/2" B16.5 ANSI/ASA 150#RF
F002: 3/4" B16.5 ANSI/ASA 150#RF
F003: 1" B16.5 ANSI/ASA 150#RF
F004: 1-1/4" B16.5 ANSI/ASA 150#RF
F005: 1-1/2" B16.5 ANSI/ASA 150#RF
F006: 2" B16.5 ANSI/ASA 150#RF
F007: 2-1/2" B16.5 ANSI/ASA 150#RF
F008: 3" B16.5 ANSI/ASA 150#RF
F009: 4" B16.5 ANSI/ASA 150#RF
F010: 5" B16.5 ANSI/ASA 150#RF
F011: 6" B16.5 ANSI/ASA 150#RF
PCS: Special Process Connection

Insertion Length

250mm to 3000mm

Electronics (Refer page 3 for detail description)

EIUD: 1 DPDT relay O/P
EIDP: PNP O/P
EIUSP: 1 SPDT relay+PNP O/P
EIAR: Two Wire AC series relay O/P
EIDL: 8/16mA & 4-20mA O/P
EIFS: Special O/P
ERUD: Remote Electronics with 1 DPDT relay O/P
ERDP: Remote Electronics with PNP O/P
ERUSP: Remote Electronics with 1 SPDT relay+PNP O/P
ERFS: Remote Electronics with special O/P

Process Connection Material

C4: SS 304
C6: SS 316
CL: SS 316L
CS: Special Surface