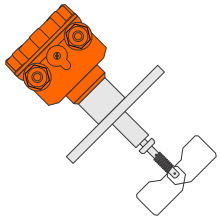
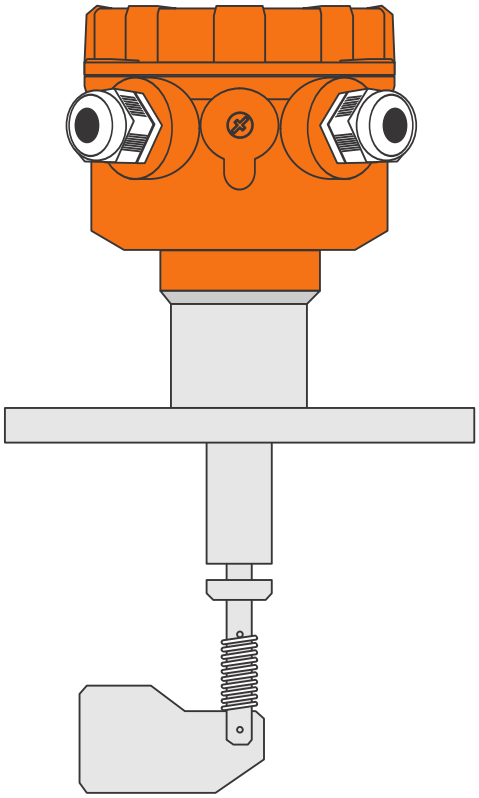


LSR
Rotating Paddle Level Switch for Solids & Powders

Trumen®
sensing matters

Instruction Manual



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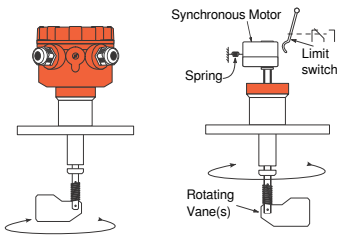
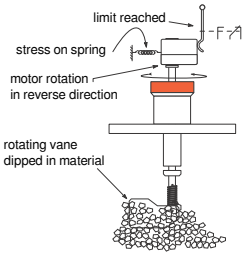
List of content

Operating Principle



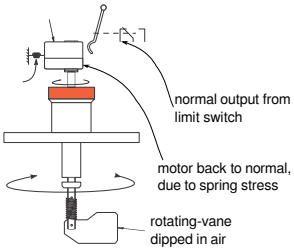
Rotating paddle level switches are basically a spring loaded, eccentricaly driven rotating vanes (or blades) which rotate at one revolution per minute, using an ac synchronous motor.

When no material is present, rotating vanes, (or blades or paddles) are free to move and motor is held by a spring in its normal position.



When material reaches the rotating vanes, it tries to stop the rotation of vanes, causing a reverse rotation of motor and stress on the spring which is holding the motor.

When motor rotates to a degree where limit switch is present, the power to motor is turned-off and output is generated.



As soon as material level falls, the vanes become free to rotate once again, causing the motor to turn back to its normal position due to stress on the spring holding the eccentric-drive, synchronous motor.

Technical Specification

Features

1. Compact size
2. Industrial power supply 230 VAC
3. Low power consumption
4. No calibration required
5. Durable construction
6. Spring loaded blades
7. Customized process connection
8. Electronic Inserts support all requirements
9. Ingress protection : IP 68 (as per IS-13947)
10. Ex-proof (Ex d T6 IP-66 IIC)
    - Flameproof as per IS/IEC 60079-1:2007
    - Weatherproof (IP-66) as per IS/IEC 60529:2001
    - Suitable for Gas Group : IIC
    - Suitable for Zone 1 & 2 atmospheres
11. Rigged construction and design along with proper sealing to prevent dust penetration

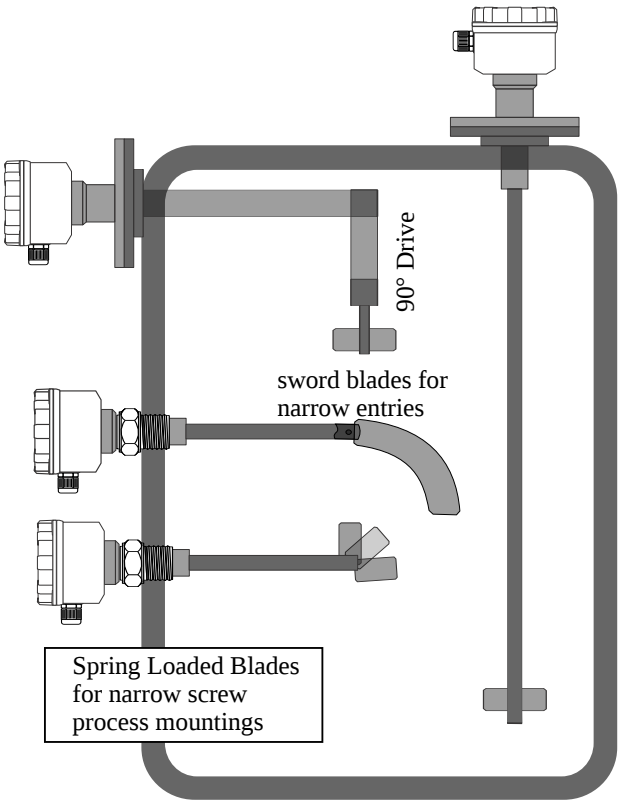
Applications

1. Suitable for free flowing powders and granules
2. Suitable for side as well as top mounting
3. Minimum and maximum failsafe field selectable
4. Process temperature max 80°C
6. Process pressure max. 3 bar

Specifications

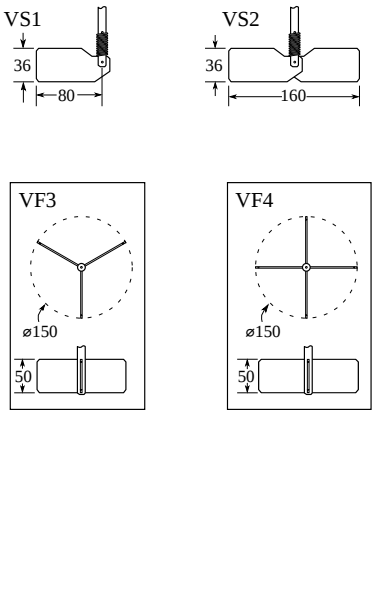
Supply (M2) Output Rating	220V AC ±10%, 50/60Hz Potential Free SPDT Limit Switch 5 A each @ 24VDC or 220VAC
Supply (M1) Output Rating	110V AC ±10%, 50/60Hz Potential Free SPDT Limit Switch 5 A each @ 24VDC or 220VAC
Supply (M3) Output Rating	24V DC, SPDT Limit Switch 6 A each @ 24VDC or 220VAC
Temperature: Ambient Process	-20°C ... 80°C (-4°F ... 176 °F) -30°C ... 100°C (-22°F ... 212 °F) (extensions & heat sinks required)
Pressure	atmospheric
Blade Material	SS 316 or SS 316L
Process connections	NPT / BSP ¾", 1", 1¼", 1½", 2" etc Flanged : ANSI/JIS/DIN/ASA/custom
Paddle guide pipe material	SS 304, SS 316, SS 316L
Max lengthBlade Thickness	100mm to 2,000mm 2mm

Typical Mountings



Blade Types

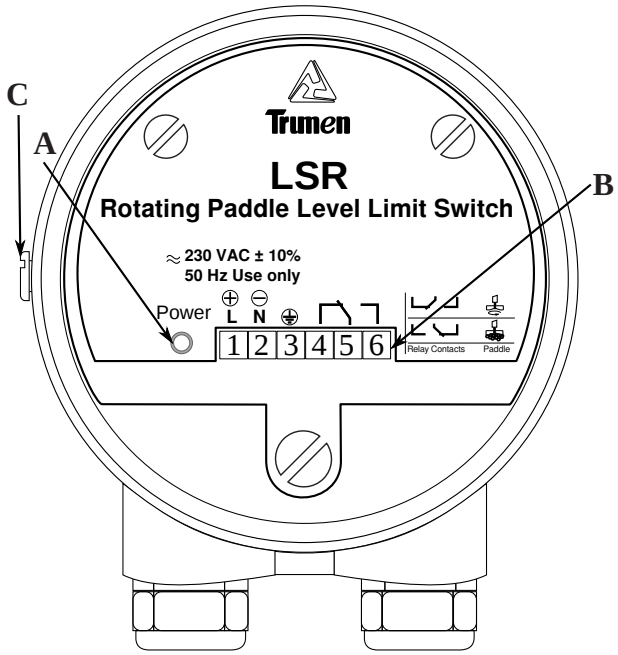
Typical Dimensions



Specifications are subject to change without prior notice

Annexure-1

Introduction - LSR



Controls & indicators

A	Power LED Indicator
B	Connecting Terminals
C	External Earthing Terminal

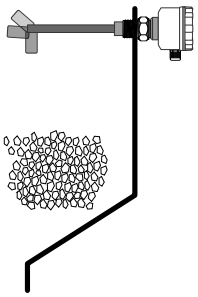
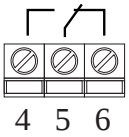
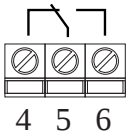
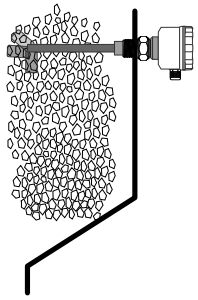
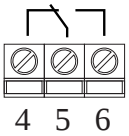
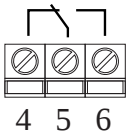
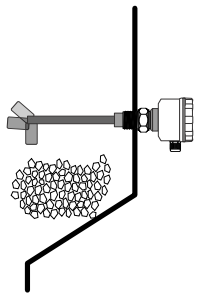
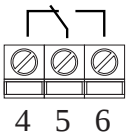
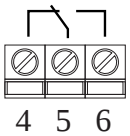
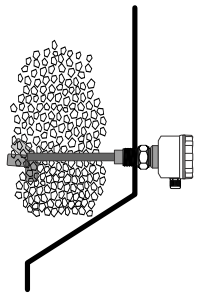
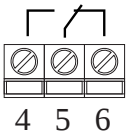
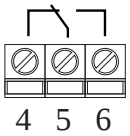
Connection terminals

1	+ of DC or Live of AC Supply input
2	- of DC or Neutral of AC Supply input Supply: 24VDC ± 10% or 230VAC ± 10% 50/60Hz
3	Earth terminal for safety
4	Normally connected terminal of contact 1
5	Common terminal of contact 1
6	Normally open terminal of contact 1

Annexure-1

Operation Matrix - LSR

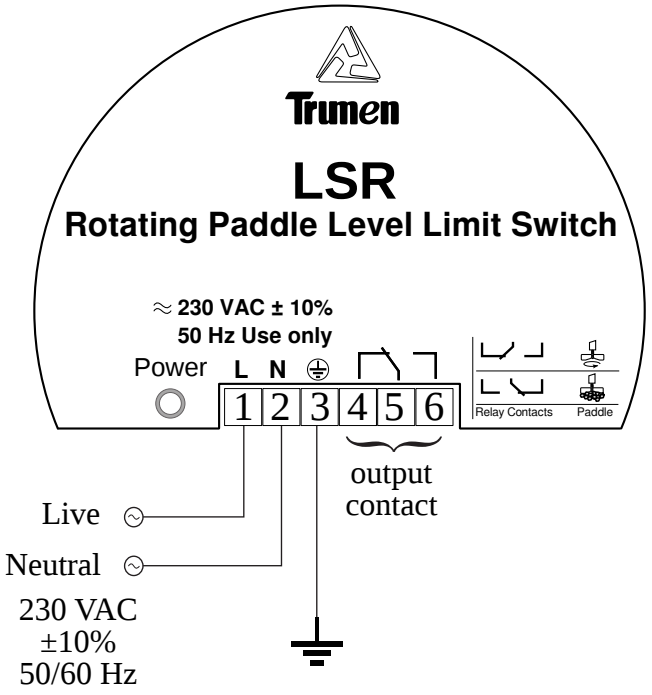
Rotating paddle installation and operation matrix define below.

	Material & Installation	Material Status	SPDT Relay Contacts	
			Power ON	Power OFF
High level / overflow detection		No material at high level.	 Relay ON normal or healthy contacts.	 Relay OFF alarm contacts. (due to power failure)
		Material is above the high level or fin is covered with material.	 Relay OFF alarm contacts.	 Relay OFF alarm contacts. (as it is)
Low level / underflow detection		No material at low level.	 Relay OFF alarm contacts.	 Relay OFF alarm contacts. (as it is)
		Material is above the low level or fin is covered with material.	 Relay ON normal or healthy contacts.	 Relay OFF alarm contacts. (due to power failure)

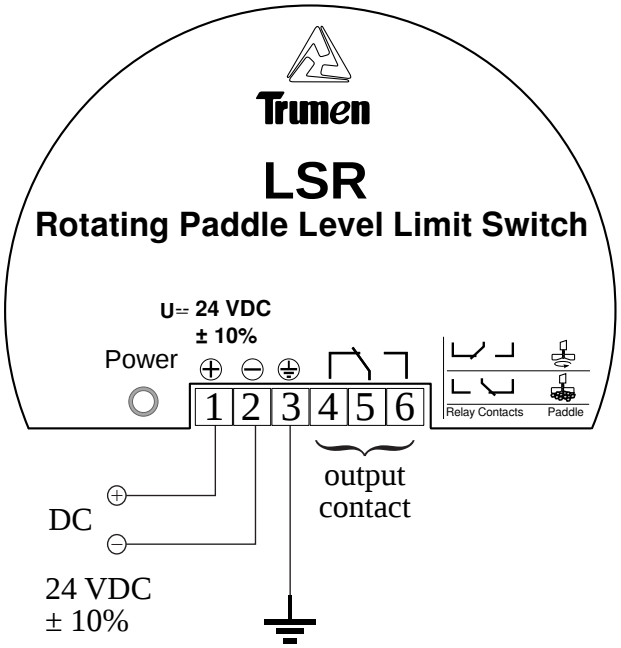
Annexure-1

Electrical Connections - LSR

electrical connections (AC)



electrical connections (DC)



Proper connection to supply earth terminal (3) and the external earth terminal (screw) is must.