



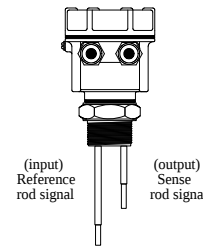
LWS Conductivity Level Switch for Conductive Liquids



Product Overview

Trumen Conductivity point level switch model LWS is suitable for conductive liquids. Conductivity level limit switches are static rendered furnished devices with no moving parts in the tank. Trumen conductivity point level switch are available in single, dual, tripple, quadruple and five rod probe & flexible rope probe depending upon the number of measuring points.

Operating Principle

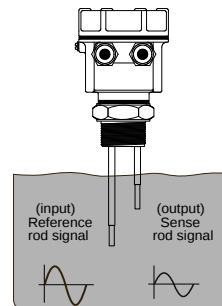


LWS Conductivity level limit switches are static rendered furnished devices with no moving parts.

A low voltage sine-wave is provided into the liquid using a reference rod (or electrode)



The electronics continuously scans the sense rod (or electrode) for the presence of sine-wave signal on it.



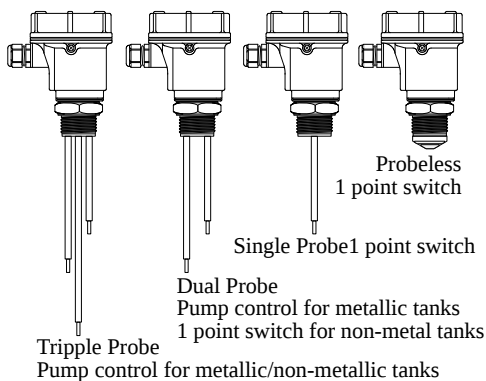
As soon as liquid bridges the two electrodes, the signal appears on sense-electrode.

Device gives the switching output by analyzing the received signal at sense electrode.

Applications

- Conductivity level switch is used in different applications like
 - Water
 - Shampoo
 - Acidic water
 - Conditioner
 - Raw water
 - Sewage water
- Single point, multipoint or pump-control switching.

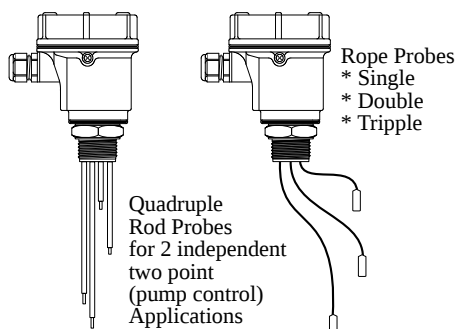
Integral Models



Features

- Compact size
- Fast switching response
- Low power consumption
- Durable Construction
- Calibration-less operation
- Minimum and maximum failsafe field selectable
- High sensitivity selection for low conductivity liquids
- Top mounting & side mounting options available
- Split models with controller+probe with 80 to 260 VAC / 15 to 80 VDC
- Ingress protection : IP 67/68 (as per IS/IEC 60529:2001)
- Process temperature max 250°C
- Process pressure max. 20 bar
- Rigid rod / flexible rope probe version
- Threaded / flanged / customized process connections
- Remote electronics requires ordinary shielded cable

More Probe Options



LWS: Conductivity Level Switch for Conductive Liquids

Performance Specifications

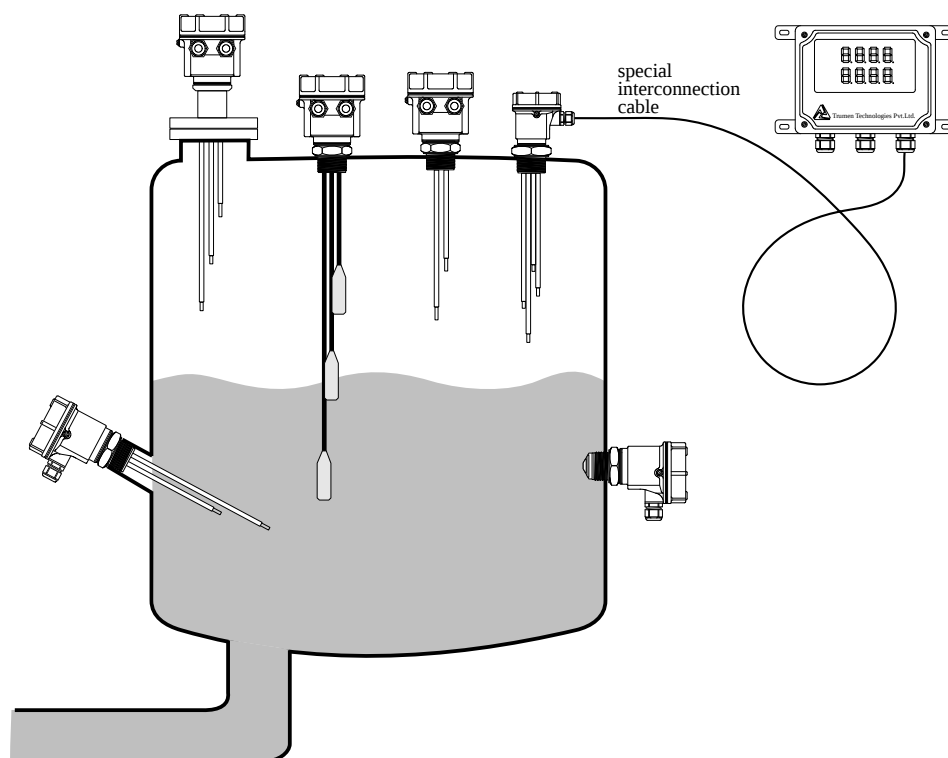
Parameter	Description
General	
Min. Conductivity	$\geq 5\mu\text{s/cm}$
Accuracy	$\pm 1\text{mm}$
Maximum measured error	$\pm 10\%$ at 40 K Ω , $\pm 5\%$ at 26 K Ω
Non-repeatability	$\pm 5\%$ at 40 K Ω , $\pm 1\%$ at 26 K Ω
Hysteresis	-10% for the MAX probe, in reference to the switch point
Influence 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 (Shielded)	Ordinary 2/3/4 core shielded cable as probe contains sensor unit (Longer length max. upto 15 meters)
Process	
Ambient Temperature	-20°C ... 70°C (-4°F ... 158 °F)
Process Temperature	-20°C ... 100°C (-4°F ... 212 °F)
Extended Process Temperature	-30°C ... 250°C (-22°F ... 392 °F), (extensions & heat sinks required)
Process Pressure	absolute / max. 20 bar
Physical Specifications	
Wetted Parts	SS-304, SS-316, SS-316L, PTFE, Part Ceramic, also with Hastelloy C tip
Process Connections	NPT / BSP ½", ¾", 1", 1-¼", 1-½", 2", Triclover 1-½", 2" & Flanged ANSI / JIS / DIN / ASA / custom
Probe Length	Flush installation to 3,000mm for rod probe and upto 20,000mm for rope probe

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



LWS: Conductivity Level Switch for Conductive Liquids

Performance Specifications

Parameter	Description	Electrical Connection
Electrical		
EIUDD / ERUDD Supply Output Relay Rating	Integral / Remote Electronics DPDT Output Universal Power Supply 15 to 80 VDC & 15 to 260 VAC 50/60Hz 1 DPDT potential free relay contact output single point sensing 5 A each @ 24VDC or 220VAC	
EIUDP/ERUDP Supply Output Relay Rating	Integral Electronics DPDT Universal Power Supply 15 to 80 VDC & 15 to 260 VAC 50/60Hz DPDT relay output for pump-control sensing 5 A @ 24VDC or 220VAC	
EIUSI / ERUSI Supply Output Relay Rating	Integral / Remote Electronics Universal Power Supply 15 to 80 VDC & 15 to 260 VAC 50/60Hz 2 SPDT relay for 2 single point independent sensing 5 A each @ 24VDC or 220VAC	
EIUSH / ERUSH Supply Output Relay Rating	Integral / Remote Electronics Universal Power Supply 15 to 80 VDC & 15 to 260 VAC 50/60Hz 2 SPDT relay output for 1 single point & 1 pump control sensing 5 A each @ 24VDC or 220VAC	
EIDPD / ERDPD Supply Output Output Limit	Integral Electronics 12 to 80 VDC PNP output 1 point / 1 (Pump) field settable 250mA max. Short Circuit Safe	
ERR2R/ERR3R Supply Output Relay Rating	Remote Electronics 80-270VAC, 50/60Hz Dual / Three SPDT output special cable 5 A each @ 24VDC or 220VAC	
EIFDS/ERFDS	Integral / Remote Electronics specially designed with special output	Electrical connection depends on selected model code.

Ordering Information

LWS **Hxx** - **Tx** - **Rx** - **Sx** - **Ix** - **Gx** - **Px** - **Cx** - **Exxx** - **Lxxxx**

Enclosure

HAN: Aluminum Non-Hazardous IP-67/68
HAX: Aluminum Flameproof IIa, IIb and IIc
HSN: Stainless steel
HES: Specially designed as per customer requirement

Material Temperature

T1: max 80°C
T2: max 200°C
T3: max 250°C
TS: Specially designed

Sensor rigid / flexible type

RD1: Single Rigid Rod Probe
RD2: 2 in 1 Rod Probe
RD3: 3 in 1 Rod Probe
RD4: 4 in 1 Rod Probe
RD5: 5 in 1 Rod Probe
RL1: Single Flexible Rope Probe for Liquids (3mm)
RL2: 2 in 1 Rope Probe
RL3: 3 in 1 Rope Probe
RL4: 4 in 1 Rope Probe
RL5: 5 in 1 Rope Probe
RS: Specially designed probe

Sensing Rod/Rope Material

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

Insulation type

I0: None
IP: Partly PVC insulated
IT: PTFE insulated
IS: Special Insulation

Sensor Extension Material

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

Insertion Length

Rigid Rod Probe:
 flush installation to 3,000mm
Flexible Rope Probe:
 upto 20,000mm

Electronics (Refer page 3 for detail description)

EIUDD: 1 DPDT relay O/P single point
EIU DP: 1 DPDT relay O/P pump-control
EIUSI: 2 SPDT relay O/P independent
EIUSH: 2 SPDT relay O/p for 1 single point & 1 pump control
EIDPD: PNP O/P 1 point / 1 (Pump) field settable
EIFDS: Special O/P
ERR2R: Dual SPDT O/P special cable
ERR3R: Three SPDT O/P special cable
ERUDD: Remote Electronics with 1 DPDT relay O/P
ERUSI: Remote Electronics with 2 SPDT relay O/P independent
ERUDP: Remote Electronics with 1 DPDT relay O/P pump-control
ERUSH: Remote Electronics with 2 SPDT relay O/p for 1 single point & 1 pump control
ERDPD: Remote Electronics with PNP O/P
ERFDS: Remote Electronics with special O/P

Process Connection Material

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

Process Connection Type

PB1: 1" BSP
PB2: 1-1/2" BSP
PB3: 3/4" BSP
PB4: 1-1/4" BSP
PB5: 2" BSP
PB6: 1/2" BSP
PN1: 1" NPT
PN2: 1-1/2" NPT
PN3: 3/4" 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