



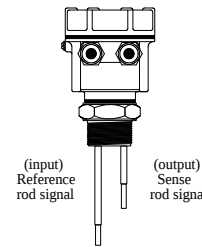
## LWS Conductivity Level Switch for Conductive Liquids



### 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

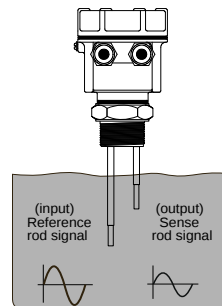


LWS Conductivity level limit switches are static rendered furnished devices with no moving parts.

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.



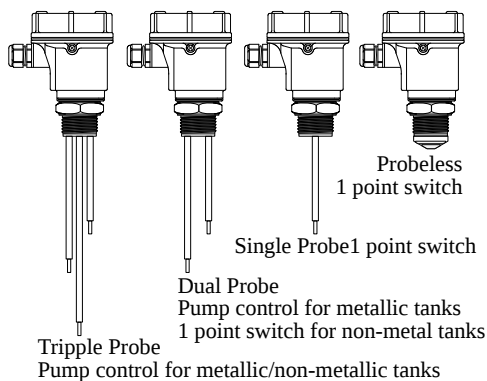
As soon as liquid bridges the two electrodes, the signal appears on sense-electrode.

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

### Applications

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

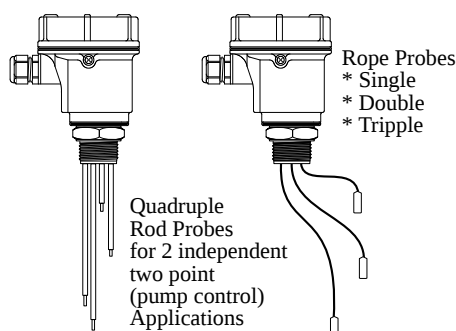
### Integral Models



### 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

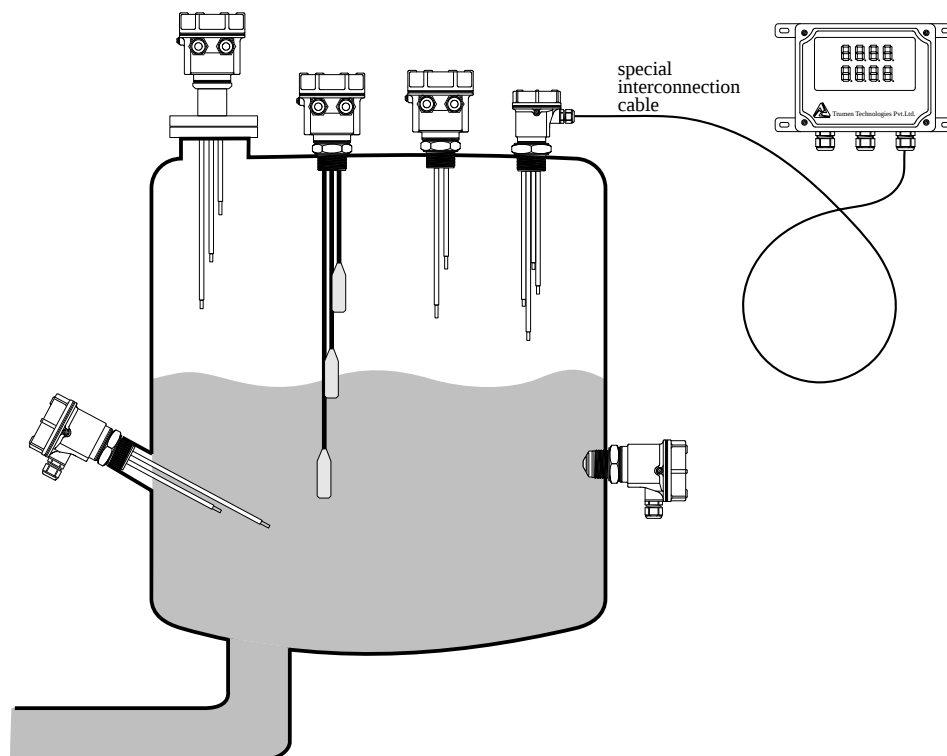
Parameter	Description
<b>General</b>	
Min. Conductivity	$\geq 5\mu\text{s/cm}$
Accuracy	$\pm 1\text{mm}$
Maximum measured error	$\pm 10\%$ at 40 K $\Omega$ , $\pm 5\%$ at 26 K $\Omega$
Non-repeatability	$\pm 5\%$ at 40 K $\Omega$ , $\pm 1\%$ at 26 K $\Omega$
Hysteresis	-10% for the MAX probe, in reference to the switch point
Influence of medium density	Max +5 to -4 mm (1.0 to 2.5 g/cm <sup>3</sup> )
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)
<b>Process</b>	
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
<b>Physical Specifications</b>	
Wetted Parts	SS-304, SS-316, SS-316L, PTFE, Part Ceramic, also with Hastelloy C tip
Process Connections	NPT / BSP ½", ¾", 1", 1-1/4", 1-1/2", 2", Triclover 1-1/2", 2" & Flanged ANSI / JIS / DIN / ASA / custom
Probe Length	Flush installtion 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
<b>Electrical</b>		
<b>EIUDD / ERUDD</b> 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	
<b>EIUDP/ERUDP</b> 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	
<b>EIUSI / ERUSI</b> 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	
<b>EIUSH / ERUSH</b> 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	
<b>EIDPD / ERDPD</b> Supply Output Output Limit	Integral Electronics 12 to 80 VDC PNP output 1 point / 1 (Pump) field settable 250mA max. Short Circuit Safe	
<b>ERR2R/ERR3R</b> Supply Output Relay Rating	Remote Electronics 80-270VAC, 50/60Hz Dual / Three SPDT output special cable 5 A each @ 24VDC or 220VAC	
<b>EIFDS/ERFDS</b>	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