

LMC... Technical Specification Document

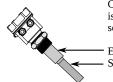
Capacitance Type Level Limit Switch for Liquids & Solids



Approvals & Certifications:



Operating Principle

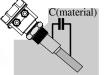


Capacitance type limit switch is a static level sensor, Its sensing parts are:-

Earth Extension (body) Sensing Rod

The capacitance is formed by the sense rod and earth extension.

When no material is present, the capacitance is analogically a multiple of probe dimension and dielectric constant of air $\{\varepsilon(air)\approx 1\}.$



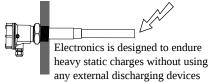
C(material) > C(air)

When material is present, the capacitance gets multiplied by dielectric constant of the material.

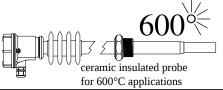
This variation in capacitance is then translated into switching output by the device.



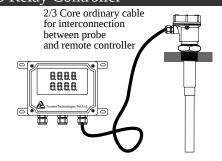
Static Charge Safe



High Temperature Probes



3 Relay Controller



Potential-Free

DPDT

Universal In DPDT Output

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15 to 80 VDC

15 to 265 VAC

Compact Size

Durable Construction

Easy Installation

Order Code

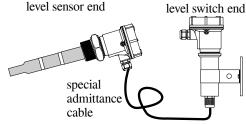
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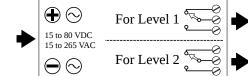
Hxx

Tx

Rx

Remote Electronics





Universal In 2 SPDT Output

Sensor rigid/flexible type, RD: Rigid Rod Sensor, RP: Flexible Rope Sensor for Solids (6/12mm),

RL: FlexibleRope Sensor for Liquids (2mm), RS: Specially designed sensor) Sensing Rod/Rope Material (S4: SS-304, S6:SS-316, SL, SS-316L, SS: Special material)

Insulation type: I0: None, IP: Partly PTFE insulated, IT: Full PTFE insulated, IC: Partly ceramic insulated, Ix

Enclosure: HAN: Aluminum Non-Hazardous IP-65/68, HAX: Aluminum Flameproof IIa, IIb and IIc,

Inactive Length or Sensor Extension Material (G0: None, G4: SS-304, G6: SS-316, GL: SS-316-L, GS: special material) Gx

HSN: Stainless steel, HES: Specially designed enclosure as per customer requirement, HPN: Polycarbonate IP-66

Material Temperature (T1: max 100°C, T2: max 200°C, T3: max 250°C, T4: max 600°C, TS: Specially designed)

Stilling Well Material (W0: None, W4: SS-304, W6: SS-316, WL: SS-316-L, WS: special material) Wx

Px Process Connection Type (PFL: Flanged Type – description of flange - FL -at the end of order code)

(PB1: BSP 1", PB2: BSP 11/2", PB4: BSP 1 1/4", PB5: BSP 2")

Capacitance Level Switch for Liquids and Powders

(PN1: NPT 1", PN2: NPT 1 ½", PN4: NPT 1 ¼", PN5: NPT 2")

(PT1: Triclover/Triclamp 1..1½", PT2: Triclover/Triclamp 2")(PCS: Special Process Connection) Process Connection Material (C4: SS-304, C6: SS-316, CL: SS-316L, CS: Special material)

Cx

Electronic Power Supply and Outputs:-

EIUDD Integral Electronics with Universal supply (15-80V DC & 15-260V AC) & 1 DPDT potential-free relay output Integral Electronics with Universal supply (15-80V DC & 15-260V AC) & 2 SPDT potential-free relay output **EIUSI**

suitable for 2 single-point independent level switching EIUSP

same as EIUSI but suitable for 2 individual pump control (material calibrated hysterisis) switching **EIUSH**

same as EIUSI but suitable for 1 single point and 1 pump control (material calibrated hysterisis) switching **EIDPD** Integral Electronics with DC power supply (15-80V DC) & one short circuit safe PNP output

EIDPI same as EIDPD but with two PNP output, suitable for 2 single-point switching (like EIUSI)

EIDPP same as EIDPI but suitable for 2 individual pump control (material calibrated hysterisis) switching (like EIUSP)

EIDLD Integral Electronics with Two wire DC supply with 8/16mA current output suitable for 4-20mA analog inputs

EINLx Integral Electronics NAMUR Output: (EINL1: Single Channel, EINL2: Double Channel)

Integral Electronics Specially designed with special output **EIFDS**

ER2RR Remote electronics IP 65 wall mounted with universal power supply (80-260V AC or 18-60V DC)

2xSPDT relay with 10 meter special interconnection cable. ER3RR provides 3 Relays.

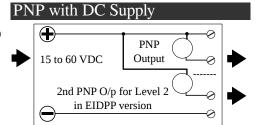
ER2RS Remote electronics IP 65 wall mounted with universal power supply $\,$ (80-260V AC or 18-60V DC) 2xSPDT relay with 2/3 core shielded ordinary cable upto any length with DC resistance not exceeding 25 Ohm/core

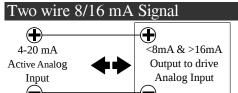
ER3RS same as ER2RS but provides 3 Relays.

ERFDS Specially Designed Remote Electronics

Insertion length (100mm to 3000mm) Lxxxx

Flange type and bore size specified for ASA/ANSI/JIS/DIN/Custom FLxxxx









Technical Specification

Features

- 1. Fast Switching Response
- 2. High temperature endurable probes
- 3. Single sensor allows pump-control & multi-point switching
- Easy calibration with or without material
- Remote electronics with std 10 meters cable length
- External indication LED available
- 7. Threaded & Flanged Mountings
- Electronic Inserts support all requirements 8.
- Ingress protection: IP 68/65 (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. Vibration complied as per IEC 60068 part 2-6

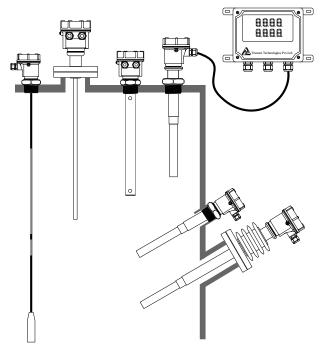
Applications

Capacitance type level limit switch used as a full, empty and demand alarm in containers, hoppers, silos containing bulks and powders of various types.

Typical applications:

water, waste water, cereals, beans, edible oil process, animal feed, rice plants, soya plants, dye powder, chalk, gypsum, fly-ash, cement, sand, plastic granules, spices, milk powder.

Typical Mountings



Specifications

Specifications	
EIUD Supply & Output	Integral Electronics DPDT Output Single/2 point (Pump) field settable Universal Supply DPDT Output 15 to 80 VDC
Relay Rating	15 to 260 VAC 50/60Hz 5 A each @ 24VDC or 220VAC
EIUSI Supply & Output	Integral Electronics 2 SPDT Relays for 2 Single point sensing Universal Supply DPDT Out 15 to 80 VDC
Relay Rating	15 to 260 VAC 50/60Hz 6 A each @ 24VDC or 230VAC
EIUSD Supply & Output	Integral Electronics 2 SPDT Relays for 2 Pump-control Universal Supply DPDT Out 15 to 80 VDC 15 to 260 VAC 50/60Hz
Relay Rating	6 A each @ 24VDC or 230VAC
EIDPD Supply & Output Output Limit	Integral Electronics for PNP Output Single/2 point (Pump) field settable 15 to 60 VDC, PNP 250mA max. Short Circuit Safe.
EIDPI Supply & Output Output Limit	Integral Electronics with 2 PNP for 2 Single point sensing 15 to 60 VDC, PNP 150mA max. Short Circuit Safe.
EIDPP Supply & Output	Integral Electronics with 2 PNP for 2 Pump control 15 to 60 VDC, PNP
Output Limit	150mA max. Short Circuit Safe.
EIDLD Supply & Output Output Limit	Integral Electronics 4-20mA Loop Powered single/pump settable Two Wire DC 8 / 16 mA 15 to 60 VDC 8mA (-1mA max) / 16mA (+1mA max)
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EINLx Supply & Output	NAMUR (L-H / H-L) as per IEC-60947-5-6 8.2 VDC 1 K Ω series resistance
ERR2R/ERR3R Supply & Output Relay Contact	Remote Electronics Dual / Three SPDT Output, special cable 80-270VAC, 50/60Hz 5 A each @ 24VDC or 220VAC
ERS2R/ERS3R	Remote Electronics Dual / Three SPDT Output, normal shielded cable
Supply & Output Relay Contact	80-270VAC, 50/60Hz 5 A each @ 24VDC or 220VAC
Sensor Cable (Special)	Enclosure for Remote Electronics is IP-65 and probe is IP-68
Sensor Cable (Shielded)	Remote electronics require special cable from probe to controller. 10 meter standard length more available on demand Ordinary 2/3 core shielded cable as probe contains sensor unit.
Min. Dielectric Constant	1.6 (non-hygroscopic)
Ambient Temp.	-20°C 70°C (-4°F 158 °F)
Process Temp. Extended Process Temperature	-20°C 100°C (-4°F 212°F) PTFE Insulation: -30°C 250°C (-22 °F 482 °F) Ceramic Insulation: -30°C 600°C (-22°F 1,112°F) (extensions & heat sinks required)
Process Pressure	absolute / max. 15 bar
Wetted Parts	SS-304, SS-316, SS-316L, PTFE, part ceramic
Process Connection	NPT / BSP 1", 1¼", 1½", 2" etc Flanged : ANSI/JIS/DIN/ASA/custom
Vibration Test	As per IEC 60068 part 2-6 sinusoidal, 10-55Hz, 0.15mm
Probe Insertion Length:	Rigid Rod: 50mm to 3,000mm Flexible Rope: 100mm to 20,000mm

Specifications are subject to change without prior notice



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