

RF ADMITTANCE LEVEL SWITCH FOR SOLIDS & POWDERS



IPS-LS-10

TECHNICAL SPECIFICATION

PRODUCT OVERVIEW



IP SPL RF admittance level switch model IPS-LS-10 is suitable for bulk solids, clinker and powders & use in all process industries like cement, fly ash, power, animal feed, material handling and material having coat forming tendency and even suitable for use in harsh environment conditions and up to 600 °C process temperature. IP SPL IPS-LS-10 is available with PTFE or Ceramic insulation rod probe or flexible rope probe depending on the process requirement.

OPERATING PRINCIPLE

IP SPL IPS-LS-10 having three element probe

Earth Extension (body)
Compensation Shield
Sensing Rod

.. which from the capacitances:-
Shield Earth Capacitance
Shield Sense Capacitance
Sense Earth Capacitance

A Sine wave of high frequency is fed into both sensing rod as well as compensation shield.

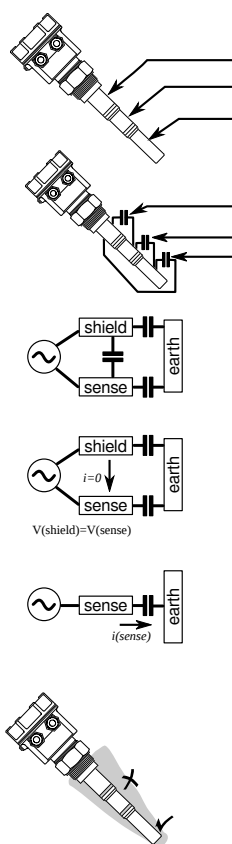
Voltage at shield is equal to the voltage at sense, no effective current flows between sense and shield.

This removes shield-sense capacitance from the measurement.

Shield-earth capacitance is simply ignored by not measuring it.

This removes the effect of material coating on probe.

Material is detected by measuring sense-earth capacitance.



APPLICATIONS

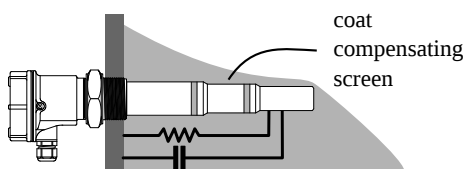
RF Admittance level switch probe is used in different applications like.

- Cement
- Fly ash
- Hot clinker
- Limestone
- Plastic
- -Oil Extraction
- Rice husk

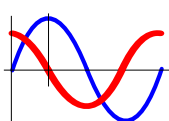
- Chemical
- Grease
- Dairy
- Chocolate
- Animal feed and pallets
- Pharma

Flush mount probe construction for small insertion to avoid heavy impact of lumps, rocks and bolder etc.

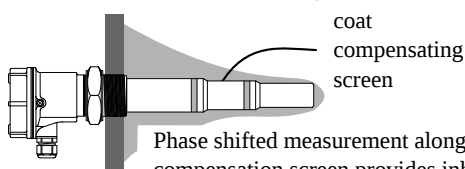
Tru-Admittance Measurement



Bulk Material forms resistive path as well as capacitive path between sense and earth. The phase of current is 90° ahead in capacitor than that of voltage applied to it.



90° shifted measurement of sense RF current flowing through the material removes the measurement error caused by resistive path in the material (e.g. moisture etc.)



Phase shifted measurement along with compensation screen provides inherent immunity against the material coating

FEATURES

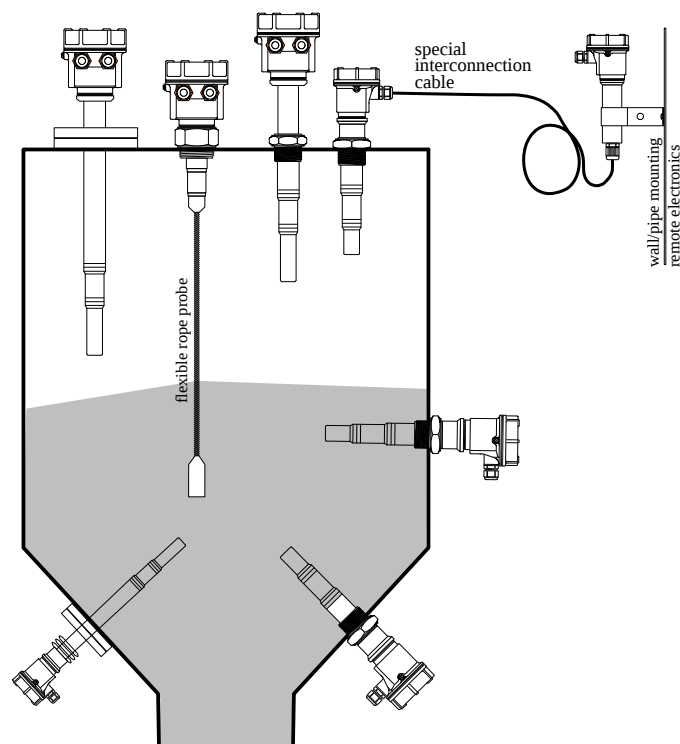
- Compact size
- Fast switching response 1 sec
- Low power consumption
- Easy calibration via DIP switch
- Auto calibration facility
- 90° Phase shifted admittance measurement
- Static charge safe for fly ash, plastic and other applications
- High temperature endurable probes
- Active shield compensation against material build-up
- Ingress protection: IP 67/68 (as per IS/IEC 60529:2001)
- Electronic inserts support all requirements
- Process temperature max 600 °C
- Process pressure max. 20 bar
- Rigid rod / flexible rope probe version
- Threaded / flanged / customized process connections
- Remote electronics with standard 5 meters cable length

Performance Specifications

Parameter	Description
General	
Min. Dielectric Constant	1.6 (non-hygroscopic)
Reproducibility	±0.1 %
Accuracy	±0.3 %
Influence of medium temperature	Max +2 to -3 mm (-20 to +150 °C)
Sensor Cable	Remote electronics require special interconnection cable from probe to controller 5 meter standard length
Process	
Ambient Temperature	-20°C ... 80°C (-4°F ... 176 °F)
Process Temperature	-20°C ... 100°C (-4°F ... 212 °F)
Extended Process Temperature	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	(*Note- Ceramic part insulation probe suitable for non-conductive or low dielectric material only) Absolute / max. 20 bar (with PTFE insulation), absolute / max. 2.5 bar (with Ceramic insulation)
Physical Specifications	
Wetted Parts	SS-304, SS 316, SS-316L, PTFE, Part ceramic
Process Connections	NPT / BSP 1", 1-1/4", 1-1/2", 2", TC 1-1/2", 2" & Flanged ANSI / JIS / DIN / ASA / custom
Probe Insertion Length	Rigid Rod Probe: 50mm to 3,000mm, Flexible Rope Probe: 100mm to 10,000mm
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



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	15 to 60 VDC	
Output	PNP Output single / 2 point (Pump) field settable	
Output Limit	250mA max. Short Circuit Safe	
EIDL	Integral Electronics	
Supply	15 to 60 VDC	
Output	Two wire DC supply with 8 / 16mA current output suitable for 4-20mA analog inputs	
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

Due to continuous development of our products technical information's are subject to change.

Please ensure the compatibility between the measured medium and the contacting part of the product when placing an order.

IPSPL reserves the right to make any change in this datasheet without notice. The information provided is believed to be accurate and reliable as of this product sheet.

Contact factory for custom configurations not shown

Ordering Information

IPS-LS-10 **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
T4 = max 600°C
TS = Customer specified special designed

Sensor rigid / flexible type

RD = Rigid Rod Probe
RPS = Flexible Rope Probe for solid (6mm)
RPT = Flexible Rope Probe for solid (12mm)
RS = Specially designed probe

Sensing Rod/Rope Material

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

Insulation type

IP = Partly PTFE insulated
IT = Full PTFE insulated
IC = Partly ceramic insulated

Sensor Extension Material

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

Insertion Length

Rigid Rod Probe: 50mm to 3,000mm
Flexible Rope Probe: 100mm to 20,000mm

Electronics (Refer page 3 for detail description)

EIUD = 1 DPDT relay O/P
EIDP = PNP O/P single / 2 point
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 single / 2 point
ERFS = 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
PB4 = 1-1/4" BSP
PB5 = 2" BSP
PN1 = 1" NPT
PN2 = 1-1/2" NPT
PN4 = 1-1/4" NPT
PN5 = 2" NPT
PT1 = 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



IndustriX Precise Solutions Private Limited

Room No – 303, Bhumika Residency, Plot No-21, Sector-20, Roadpali, Kalamboli, Panvel (Tal.), Raigad (Dist.), Maharashtra, India – 410218.

Mobile: +91 99309 98399 / +91 99674 97447

E-mail: admin@ipspl.in / sales@ipspl.in Website: www.ipspl.in

CIN : U52399MH2021PTC368555