Level Measuremetn & Control Solutions

Capacitance Level Probes For Solids

These capacitance type level probes are meant for use with capacitance type level switches of series 112 and 114. These can be used in a variety of applications for detecting / controlling level of dry / wet solids like cement, clinker, limestone, coal, fly ash, foundry sand, iron ore, nylon / PVC chips & pellets and food grains etc.
For selection of suitable level switch refer LF-114-0802 (Single point switch) & LF-112-0801 (Two point / Dual level switch).
The probe unit consists of an electrode and a transducer housed in a weatherproof / flameproof probe head. The 24 VDC supply for the transducer comes from the switch unit. Interconnection of switch & probe unit is done with 3 core cable.

FEATURES

- ❒ Weatherproof / Flameproof probe heads
- ❒ Transducer moulded in epoxy for shock and corrosion resistance
- ❒ Wide range to suit various applications
- ❒ Intrinsically safe versions
- ❒ High temperature versions

SPECIFICATIONS

PROBE HEAD

- ❒ Enclosure :
  (For integrally mounted Transducer)
  Weatherproof cast aluminium polyurethane painted conforming to IP-65 as per IS:2147-1962.
  OR
  Flameproof cast aluminium polyurethane painted conforming to Gr. IIA & IIB as per IS:2148-1981.
  (For remotely mounted Transducer)
  Seperate weatherproof (IP-55) enclosures for electrode and transducer, cast aluminium polyurethane painted.
- ❒ Cable entry (1 No.) :
  3/4" UNF/ET (F) - standard
  1 1/2" NPT (F) - optional
- ❒ Cable between Transducer & Electrode :
  (For remotely mounted Transducer only)
  PTFE coaxial cable, 3 mtr. max. with suitable glands
- ❒ Process connection :
  As per the process connection in the "Electrode Selection Guide."

TRANSDUCER

- ❒ Packaging :
  Epoxy moulded
- ❒ Operating voltage :
  24 VDC from switch series 112/114
- ❒ Output :
  Voltage (DC) proportional to capacitance sensed
- ❒ Termination :
  Suitable for 2.5mm^2 conductor
- ❒ Operating conditions :
  Temperature - 0 to 65^{0}C max.
  Relative Humidity - 95% max. (non condensing)
- ❒ Transducer type :
  As per table below

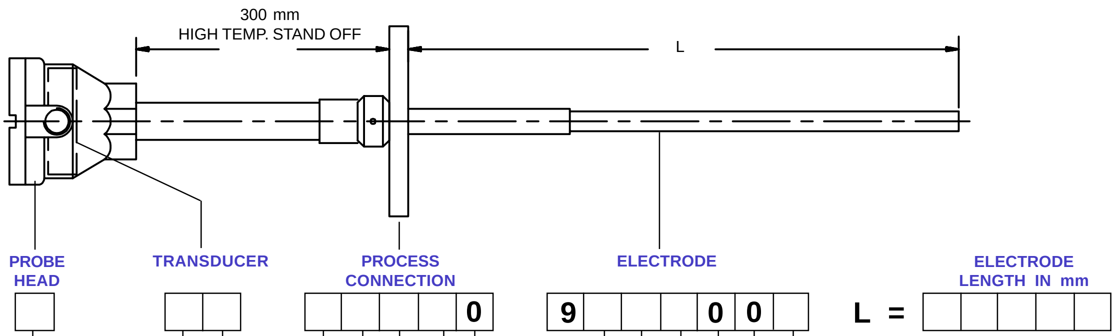
Type	Range (pf)	Op.freq. (KHz)	Function
T910	0-100,1000,3000	100	Standard
T910C	0-20000	20	High capacitance
T910H	0-100	100	High output
T910S	0-100,500	100	Intrinsically safe
T912D	0-100	450	Coat-safe

ELECTRODE SELECTION GUIDE

CODE NO.	ELECTRODE DESCRIPTION	PROCESS CONNECTION THD.	PROCESS CONNECTION INT. FLGD. MIN.	MATERIAL OF CONSTRUCTION SENSING ELECTRODE	MATERIAL OF CONSTRUCTION COUNTER WEIGHT	TRANS-DUCER	MTG. V H	ELECTRODE LENGTH (`L`mm) MIN.	ELECTRODE LENGTH (`L`mm) MAX.	HYS. mm. TYP.	OPERATING CONDITIONS TEMP. IN °C MAX.	OPERATING CONDITIONS PRES. IN Kg/cm² MAX.	SERVICE
14	RIGID PARTIALLY GROUNDED ϕ27mm PTFE INSULATED	01	-	4,6	0	T910	V H	350 350	3000 1000	50 -	180	ATM	DRY SOLIDS, NYLON / PVC CHIPS & PELLETS, FOOD GRAINS ETC.
25	FLEXIBLE GI WIRE ROPE BARE	-	2"	3	2	T910	V	400	6000	1% OF FS	180	ATM	DRY SOLIDS
24	FLEXIBLE GI WIRE ROPE BARE	-	4"	3	2	T910/ T910C	V	5000	20000	1% OF FS	180	ATM	DRY SOLIDS
27	RIGID PARTIALLY GROUNDED HIGH TEMP.ALUMINA INSULATED	01	-	4	0	T910	V H	350 350	3000 500	- -	600	ATM	DRY SOLIDS
34	RIGID BARE PARTIALLY PTFE INSULATED, ϕ12mm	01	1"	6	0	T910/ T910H	V H	200 200	3000 500	- -	180	10	DRY SOLIDS
92	COATSAFE PTFE INSULATED	01	1"	4,6	0	T912D	V/ H	300 450 600		- - -	180	10	WET SOLIDS, CEMENT, FLY ASH, BAG FILLER, ESP HOPPERS
94	COATSAFE HIGH TEMPERATURE ALUMINA INSULATED	02	1 1/2"	4	0	T912D	V/ H	300 450 500		- - -	300	ATM	FLY ASH, CLINKER

NOTES :
1) V/H indicates mounting orientation : V = Vertical; H = Horizontal.
2) Hysterisis varies as per process material being sensed.
3) These are commonly used electrodes, for special applications please contact factory.
4) High Temperature Stand Off (HTSO) is recommended for process temperature above 60°C.
   HTSO in SS316 : 60°C - 180°C
   HTSO in CS & SINDANO : 180°C - 300°C
   Remotely mounted transducer housing : 300°C - 600°C
5) For horizontally mounted electrodes, 15° downward angle of repose is recommended.

ORDERING CODE



PROBE HEAD
1 - Weatherproof (WP)
2 - WP with High Temperature Stand Off (HTSO) in CS & SINDANO
4 - WP with HTSO in SS316
5 - Flameproof (FLP)
9 - Remotely mounted

TRANSDUCER(Factory selected)
OO - T 910
OC - T 910C
OH - T 910 H
OS - T910S
2D - T912D

MOUNTING (NOTE 1)
T - Threaded
I - Integral flange
S - Slip on flange

PROCESS CONNECTION
01 - 1" BSP (M)
02 - 1 1/2" BSP (M)
XX - Flange as per flange table

FLANGE TABLE

Pressure rating = 150 # (10 Kg/cm²)

	ANSI	BS	DIN	IS
1"	11	12	13	14
1 1/2"	16	17	18	19
2"	21	22	23	24
2 1/2"	26	27	28	29
3"	31	32	33	34
4"	41	42	43	44
5"	51	52	53	54
6"	61	62	63	64

PROCESS CONNECTION MATERIAL
2 - MS (For flanges only)
4 - SS304
6 - SS316

COATING
0 - No coating

ELECTRODE CODE (NOTE 2)
XX - As per electrode selection guide

MATERIAL OF CONSTRUCTION
3 - GI
4 - SS304
6 - SS316

COATING / SHEATHING
0 - No coating / Sheathing

MATERIAL OF OUTER PIPE
0 - No outter pipe

COUNTER WEIGHT
0 - No counter weight
2 - CSCd plated

NOTE : 1) Slip on flange of appropriate size can be supplied for electrodes having threaded process connection.
2) All combinations are not possible. Please refer " Electrode Selection Guide ".

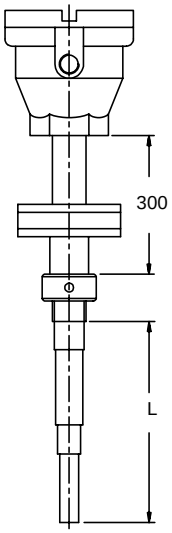
EXAMPLES :

1) 1-2D-T0140-9924000 L = 450 mm
Weatherproof probe head with Transducer T912D.
1" BSP threaded process connection in SS304.
Coatsafe PTFE insulated electrode in SS304, 450 mm long.

2) 4-00-I2160-9346000 L= 1000 mm
Weatherproof probe head with HTSO in SS316 and Transducer T910. Integral flange, 2" ANSI in SS316, Uncoated. Rigid bare partially PTFE insulated electrode in SS316, 1000 mm long.

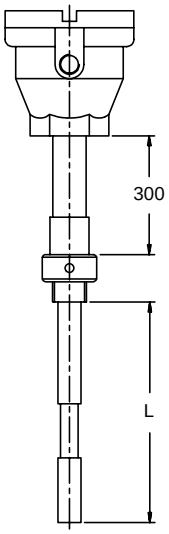
ELECTRODES

Coatsafe high temperature alumina insulated with HTSO in CS & SINDANO



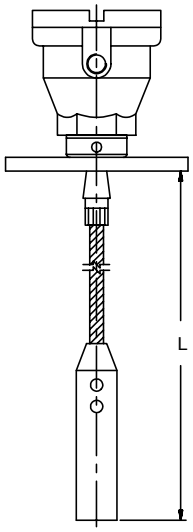
Electrode code 94

Rigid partially grounded ϕ27 PTFE insulated with HTSO in SS316



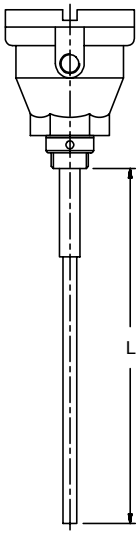
Electrode code 14

Flexible GI wire rope bare



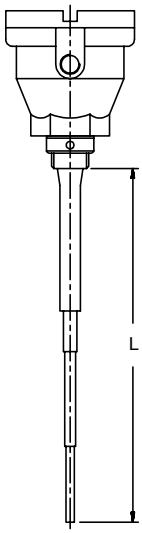
Electrode code 25

Rigid bare partially PTFE insulated ϕ12



Electrode code 34

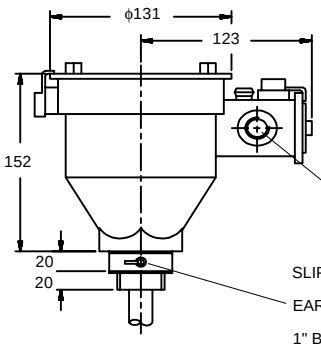
Coatsafe PTFE insulated



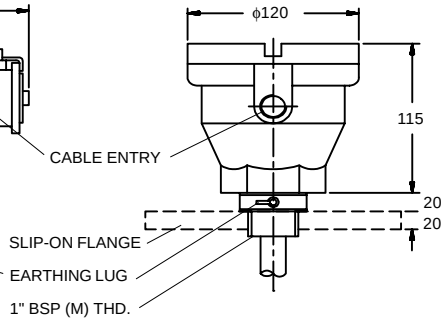
Electrode code 92

PROBE HEADS

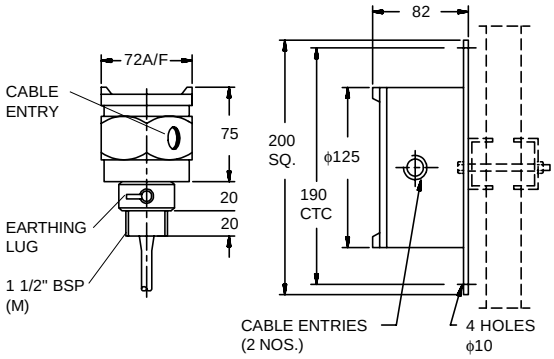
Flameproof



Weatherproof



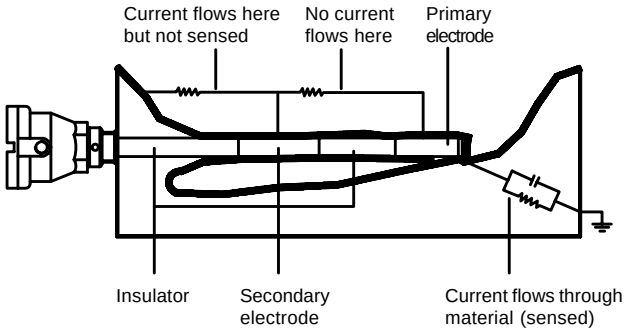
High Temperature Duty with Remotely Mounted Transducer Housing (with Pipe Mtg. Kit.)



`COAT-SAFE` PRINCIPLE

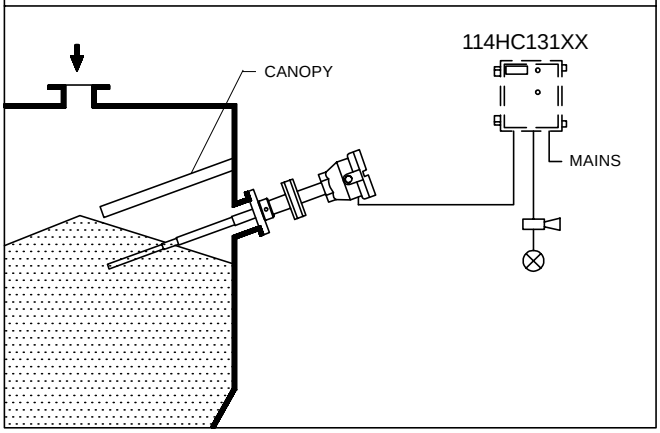
Normal probe may not perform satisfactorily if the process material builds up on the probe to a significant degree. The `coat-safe` electrode is designed to overcome this problem. In this type of electrode, in addition to the primary sensing electrode, a secondary `coat-shield` electrode, insulated from ground & primary electrode is used. This electrode is driven with signal of equal phase & amplitude as primary electrode. Hence when there is a coating / material buildup on electrode, no current flows between primary & secondary electrode. The electronic instrument measures the current that flows from primary electrode to ground. This means that build up is ignored.

Only when the product level in the vessel rises & covers the primary electrode, it causes a current to flow which is sensed, demodulated, amplified & causes the switch to changeover.

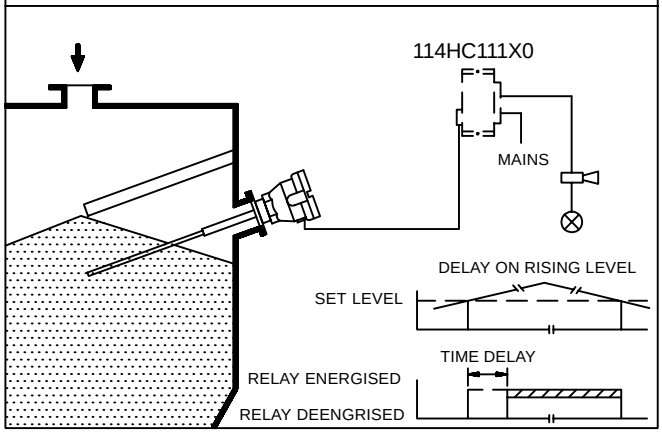


APPLICATIONS

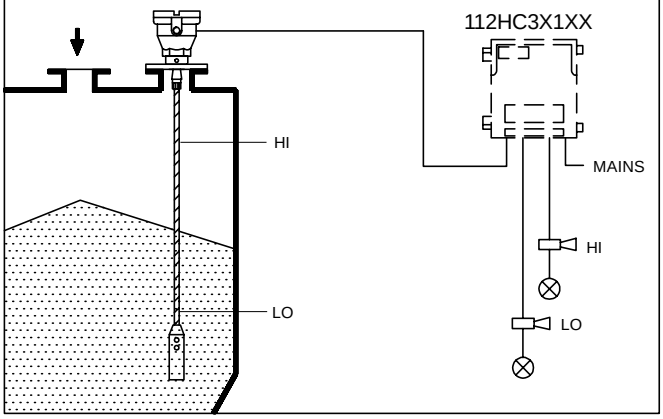
COATSAFE ELECTRODE FOR FLY ASH
(SINGLE POINT LEVEL SWITCH)



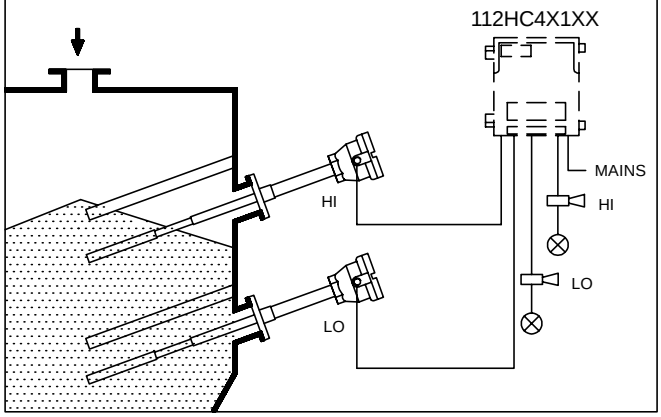
RIGID BARE PARTIALLY PTFE INSULATED ELECTRODE FOR
DRY SOLIDS (SINGLE POINT SWITCH WITH TIME DELAY)



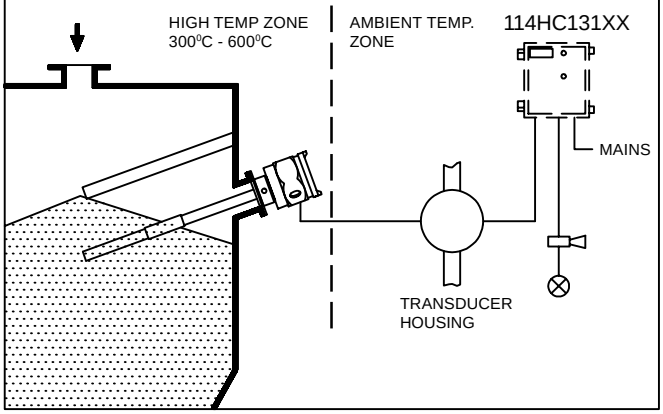
GI WIRE ROPE ELECTRODE FOR DRY SOLIDS
(TWO POINT LEVEL SWITCH)



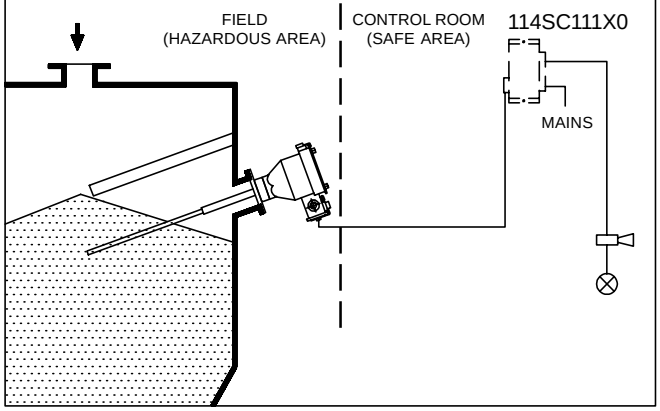
RIGID PARTIALLY GROUNDED ELECTRODE FOR NYLON
CHIPS / PELLETS (DUAL LEVEL SWITCH)



RIGID PARTIALLY GROUNDED HIGH TEMPERATURE
ALUMINA INSULATED ELECTRODE



RIGID BARE PATIALLY INSULATED ELECTRODE WITH FLP
PROBE HEAD (I.S. SINGLE POINT SWITCH)



*** Continuous developments may necessitate changes without notice.

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