

Process Division



Lee-Dickens Ltd

80 SERIES TELSTOR™

# ADVANCE

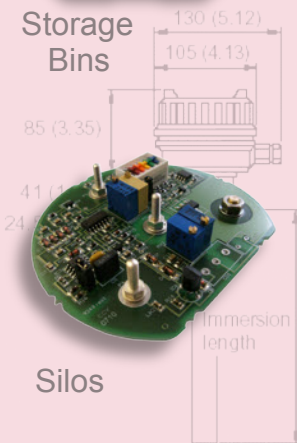
Capacitance Based Level Transmitter



Petrol Interceptors



Storage Bins



Silos



**“ A robust and reliable non-processor based probe and transmitter that offers you a wide range of cost effective level measurement solutions”**

### 80 Series family

The 80 Series family are capacitance based sensors aimed at applications ranging from solids handling to process control. The probes offer considerable customisation potential in terms of materials, length and size. Various Rigid and Flexible electrodes are available in Stainless Steel, full or part insulated with either PTFE, Polypropylene or PVDF.

### Telstor ADVANCE

The 80 Series Telstor ADVANCE capacitance level probe is a two-wire 4-20mA device used for continuous level measurement over the range of 160mm to 25m. It is suitable for use with liquids, slurries, powders and granular solids. It is especially accurate for foams, hydrocarbons, liquid gases and other liquids with a low di-electric constant. The ADVANCE electronics is backwardly-compatible with existing 80 Series probes.

### Industrial Design

The Telstor ADVANCE electronics are mounted in the aluminium alloy head of the probe. The probe housing offers protection to IP56 standard. The operating range of the sensor electronics is -10°C to 50°C. The transmitter electronics are mounted on a plug-in circuit board protected by a tough, moulded plastic cover. The transmitter unit plugs into a second board fastened inside the probes aluminium head. The wires linking the transmitter with the outside world are connected on three large terminals mounted on the second board. This arrangement permits the use of heavy conductors such as armoured cables and simplifies both installation and servicing. As standard the probe comes with a 1" BSP 316 stainless steel boss with nut and washer. Other options available upon request.

### Technical Specifications

**Loop Power Supply:** 9 to 30 Volt DC

**Output:** 4 to 20mA

**Load Capability:**  $R_{load} = V_{supply} - 9 / 0.02$  ohms max.

i.e. For a 24 Volt DC supply the 4 to 20mA will drive into 750 ohms max. And for 12 Volt DC supply the 4 to 20mA will drive 150 ohms max.

**Operating temperature limits of sensor head:**

-10°C to +50°C

**Operating temperature limits of electrode:**

PTFE / PVDF insulated -40 to 180°C (-40 to 356°F)

Polypropylene insulated -40 to 110°C (-40 to 230°F)

**Operating Humidity Limits:**

0-90% RH non-condensing

**Maximum working Pressure:**

Straight Rigid Electrode Only

40bar (580psi) at 20°C (68°F)

**Electrode type (Rigid):**

Stainless steel rod 12mm dia, full or part insulated by PTFE, Polypropylene or PVDF.

**Electrode type (Flexible):**

3.5mm or 6.0mm bare stainless steel or galvanised steel rope covered with polypropylene or FEP.

**Electrode Structure:**

Standard or with Stand-Off options.

**Electrode Mounting:**

Stainless steel Boss 1" BSP with nut and washer. Other options available upon request

**O-Ring Materials** (in contact with measured variable):

Viton as Standard, options include Silicone, Nitrile Rubber or PTFE.

**Electrode Length (Rigid):**

Straight or bent from 160mm to 4000mm.

**Electrode Length (Flexible):**

From 240mm to 25000mm

**Electrode Fixing Options (Flexible Probe only):**

- (1) None.
- (2) Electrically live, or dead, bare stainless steel weight.
- (3) Mild steel weight covered with PTFE.
- (4) Nylon thimble, stainless steel "D" shackle and "U" clamps.

**Electrode Head:**

Die cast aluminium alloy weatherproof with silicone rubber "O"-ring and Walkerite gasket.

**Protection:** IP65

**Electrical Connection to sensor:** 20mm conduit entry

**Weight of Sensor:**

Typically 2.0kg for 500mm rigid electrode




The 80 Series family

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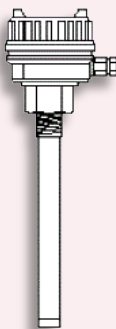
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# 80 Series Telstor ADVANCE Probe Types

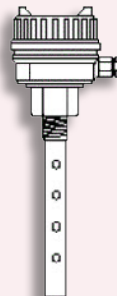


## Rigid Electrodes



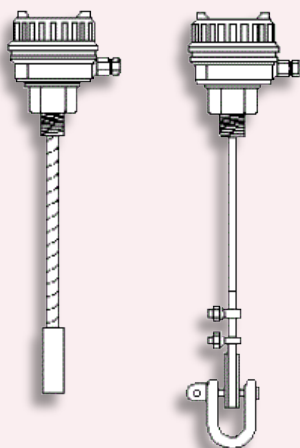
The rod of the standard rigid electrode is made of stainless steel and, depending upon the application, may be covered, or part covered with PTFE, PVD or Polypropylene.

## Concentric Electrodes



For hydrocarbons, liquid gases and other liquids of low dielectric constant, a concentric electrode is recommended. An earth tube surrounding the electrode rod acts in place of the walls of the vessel in the capacitance system, with resultant increases in sensitivity and accuracy.

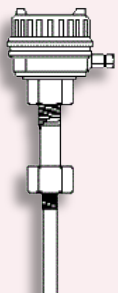
## Flexible Electrodes



Flexible rope electrodes are used in systems where the electrode length exceeds 4.0m (13.2 ft) and in applications involving solid materials such as coal or rock, which could damage a rigid electrode. There are two basic types of flexible electrode: one comprises a steel rope with an electrically "live" or "dead" stainless steel weight; while the other consists of a steel rope with an insulated "D" shackle, for fixing to the sides of the container. The flexible rope electrode may be installed at an angle to the vertical to prevent *rat-holing* in certain materials and may be doubled-up to obtain greater capacitance change.



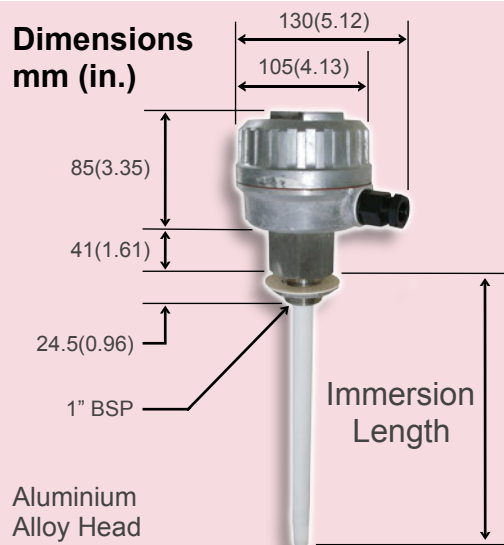
## High Temperature Operation



The maximum operating temperature of the sensor electronics is 50°C. Where a sensor is to be fitted to hot vessels, there are two means of reducing the temperature at the electronics to within their operating range; either using a stainless steel stand-off or a separate transducer containing the electronics.



## Dimensions mm (in.)







# Order Guide



## 80 Series Telstor ADVANCE - Rigid and Flexible Probes

Telstor Electrodes	80L	X	X/	XX	X	XX	X/	XXXXX
<b>Sensor Type</b>								
Sensor		S						
Transducer		T						
<b>Sensor Operation</b>								
Plug-in 4 to 20mA 2 wire transmitter electronics (Both normal or Extended range)			L					
<b>Electrode Type - Rigid</b> * Note: not suitable for Alkaline Solutions								
Straight standard part PVDF insulation*				10				
Concentric part PVDF insulation*				12				
Straight standard part Polypropylene insulation				20				
Straight standard full PTFE insulation				30				
Straight standard full PVDF insulation*				50				
Special fully insulated concentric				SP				
<b>Electrode Type - Flexible</b>								
6mm dia. bare stainless steel rope				61				
6mm dia. galvanised, polypropylene covered s/s rope				71				
3.5mm dia. FEP covered stainless steel rope				75				
<b>Electrode Material - Rigid</b>								
Stainless Steel					B			
<b>Electrode Termination - Flexible</b>								
S/S weight, bare, live (types 61 & 71 only)					N			
S/S weight, bare, dead (types 61 & 71 only)					P			
S/S weight, bare, dead with galvanised eye-bolt (types 61 & 71 only)					Q			
PTFE covered mild steel weight, live (type 75 only)					R			
Nylon thimble, stainless steel shackle & clamp (types 61 & 71 only)					V			
<b>Electrode Structure</b>								
No-stand-off						00		
Stand-off 100mm (3.93 in.) length						10		
Stand-off 200mm (7.87 in.) length						20		
Stand-off 300mm (11.81 in.) length						30		
<b>Electrode Mounting</b>								
1 in. BSP 316 stainless steel boss with nut & washer							B	
Non-standard (specify in order/enquiry text the desired mounting)							X	
<b>Electrode Length - Rigid</b>								
Minimum 160mm (6.3 in.)								00160
↓								↓
Minimum 4000mm (13.1 ft.)								04000
<b>Bent Electrode - Rigid</b>								or
Rigid types 10, 20 or 30 only								
Lengths L1, L2 and angle "A" to be given in written description								000BBB
Normal limits are L1 + L2 = 40000mm (13.1 ft) max								
L1 or L2 = 160mm (6.3 in.) minimum								
Angle "A" = 0 to 90°								
<b>Electrode Length - Flexible</b>								
Minimum 240mm (9.45 in.)								00240
↓								↓
Minimum 25000mm (82 ft.)								25000