CAPACITIVE LEVEL SWITCH

Limit sensing of liquids and bulk-solid materials in containers, silos, vessels, tanks, sumps and reservoirs.

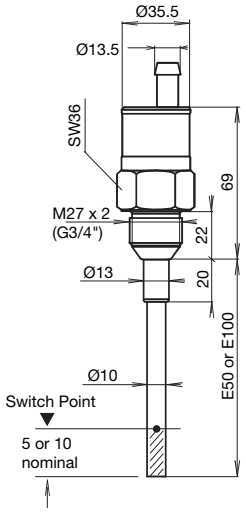
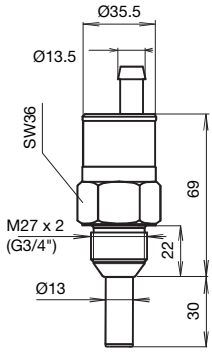
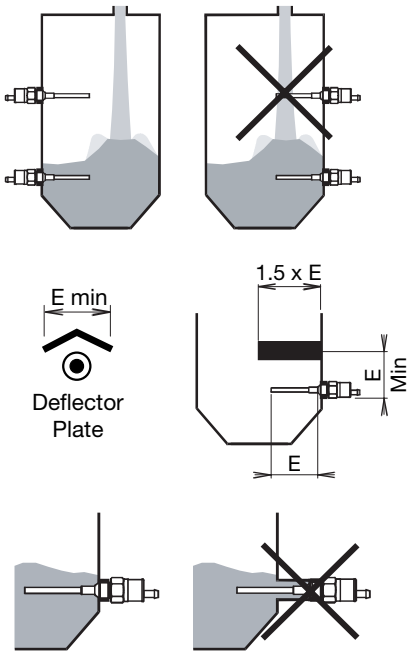
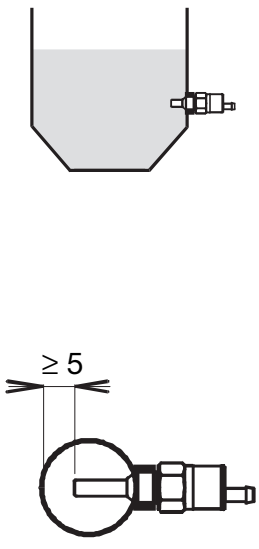
FEATURES

- Choice of NPN/PNP output switches or NAMUR standard output for hazardous areas.
- Adjustable sensitivity control and hysteresis band.
- Compact and robust stainless steel housing.
- Choice of cable connection or plug and socket connector.
- Wide ambient temperature range up to –20°C...60°C.
- Certified intrinsically safe for use in hazardous areas.
- Choice of process connection; M27 x 2, G3/4".

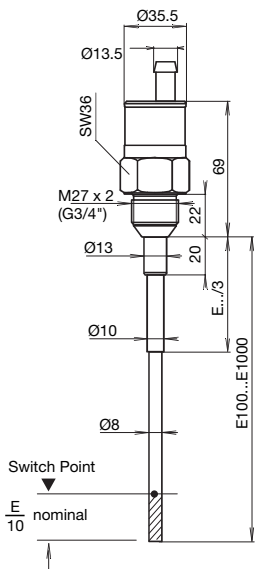
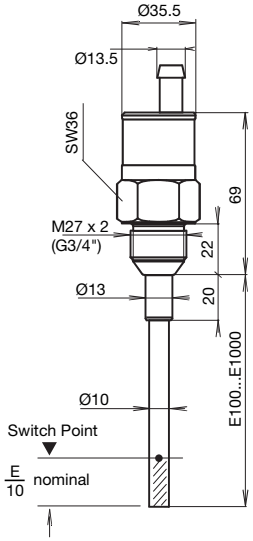
TECHNICAL details

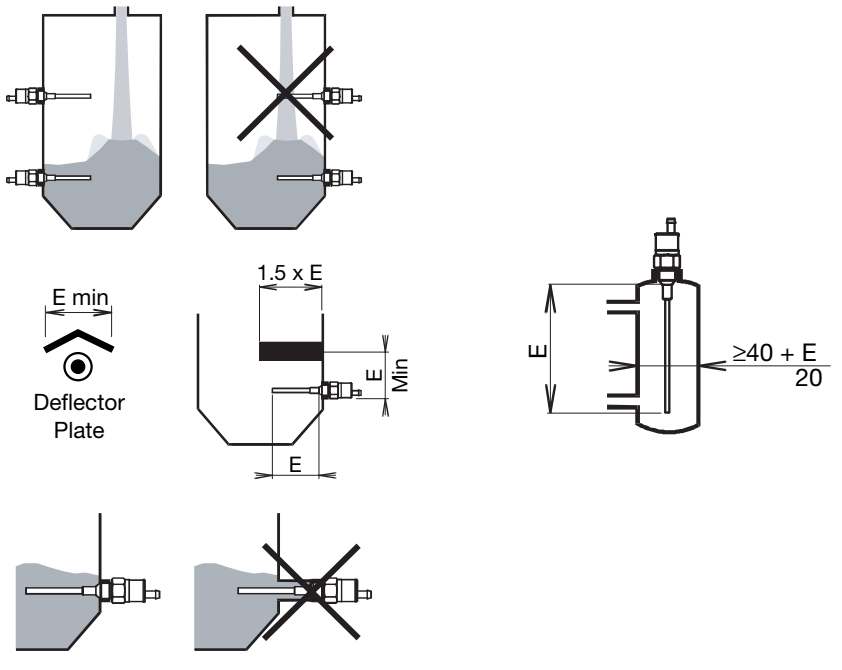
Protection Classification:	Dust and waterproof to IP67.
Electrical Connections:	• 2m x 3 core. 0.5mm² PVC insulated. • Waterproof 3 pin plug and socket connector.
Nett Weight (including cable):	0.4kg nominal.
Housing Insulation:	1M ohms at 1kV ac.
Sensitivity Adjustment:	Internal adjustment potentiometer to compensate for individual installation conditions.
Hysteresis Adjustment:	Internal adjustment potentiometer of hysteresis band width to sent process variables.
State Indicator:	Red LED indicator.
Output Signal:	• NPN solid state switch. • PNP solid state switch. • NAMUR standard (Ex versions).
Signal Mode Options:	• HIGH sensing. • LOW sensing.
Housing Material:	Stainless steel.
Coated Electrodes:	Stainless steel/PTFE.
Ambient Temperature:	General Purpose: –20°C...80°C. Ex: –20°C...60°C.
Maximum Static Pressure:	3 bar.
Process Fitting:	• M27 x 2. • G3/4".

DIMENSIONS
in mm.

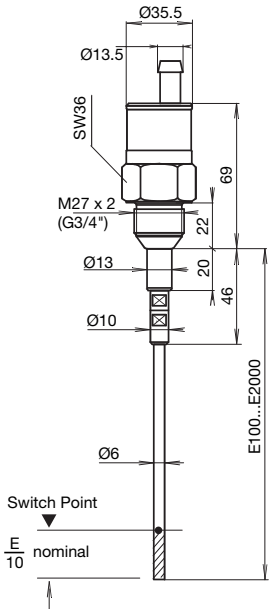
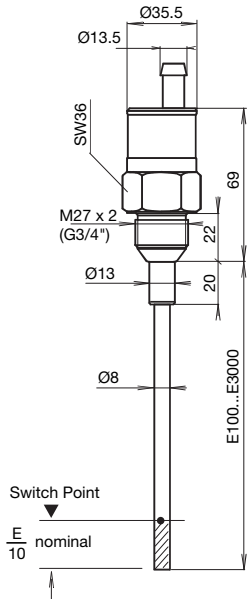
DLS.27.10	DLS.27.11
	
• Non-conductive liquids. Fuel oil, lube oil, etc. (50mm length version). • Non adhesive bulk solids with 100mm electrode. Granules, sand, sugar, etc. (100mm length version). • Horizontal mounting.	• PTFE coated. • Electrically conductive liquids. Water solutions. • Discriminates between water/oil interfaces. • Horizontal mounting. Sensor reacts on full immersion.
	

DIMENSIONS in mm.

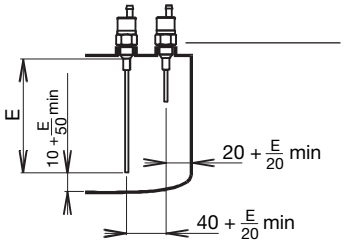
DLS.27.20	DLS.27.21
	
• Materials with variable moisture content; light bulk solids and powders, granules, powder, flour, cement, feeds and sawdust, etc. • Non conductive fluids. • Horizontal mounting up to E400. • Vertical mounting.	• PTFE coated electrode. • Conductive liquids and water solutions. • Horizontal mounting up to E400. • Vertical mounting.



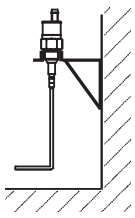
DIMENSIONS in mm.

DLS.27.30	DLS.27.31
	
• Light bulk solids and powder materials. • Non-conductive and conductive liquids. • Vertical mounting. • Open vessels only.	• PTFE coated electrode. • Conductive liquids and water solutions. • Vertical mounting. • Can be mounted in closed vessels.

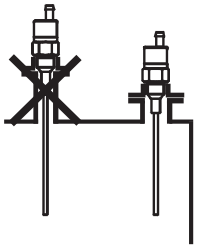
Vertical Mounted Sensors



NB
The sensor should be mounted on a metal plate having an area of at least 500cm2 when using the device with low permitivity media or on non-conductive vessels.

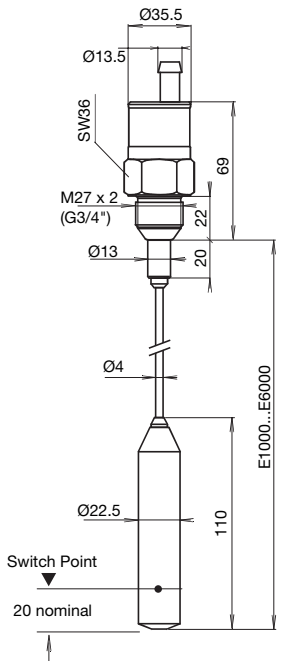


Increasing sensitivity in insulated vessels.



DIMENSIONS
in mm.

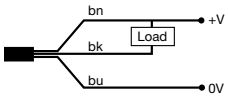
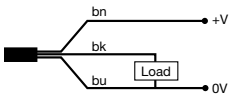
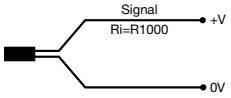
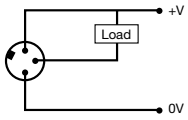
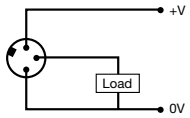
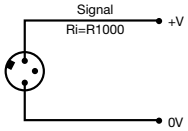
DLS.27.40



- Polyolefine coated steel rope.
- Stainless steel weight.
- Bulk solid and powder materials.
- Conductive and non-conductive liquids.
- Open vessels only.

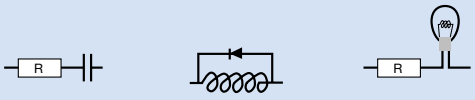
ELECTRICAL details

Output	NPN Switch (G.P.)	PNP Switch (G.P.)	NAMUR Switch (Ex)
Maximum Load	200mA	200mA	-------
Supply Voltage (+V)	7...36V dc	7...36V dc	8...12V dc
Supply Current	7mA	7mA	OFF: 0.6mA ON: 2.3mA
Output Delay	0.2 secs	0.2 secs	0.2 secs

	NPN Switch	PNP Switch	NAMUR Switch
Flexible Cable 			
Plug and Socket Connector 			

CHECK POINT

- All output circuit options are provided with reverse polarity protection.
- PNP and NPN output circuit options are provided with automatic short circuit protection.
- The output circuit is suitable for small resistive loads.
  Inductive, loads, incandescent indicator lamps and capacitive loads will require appropriate surge protection.



- Connecting cables to the sensor should not be routed in close proximity to power cables to avoid electromagnetic interference. Armoured or screened cables are recommended for maximum electrical noise rejection.

FAIL SAFE SIGNAL MODE

The LED and the output signal response can be set during manufacture for HIGH level sensing or LOW level sensing failsafe mode.

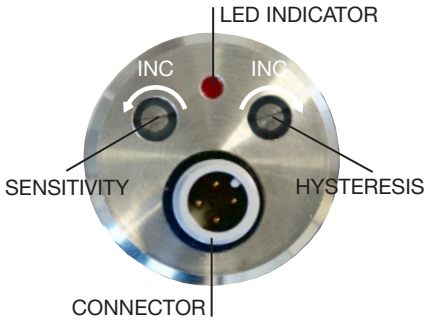
		LED	Output
HIGH Sensing		☼	ON (Conducting)
		●	OFF (Non-conducting)
LOW Sensing		☼	ON (Conducting)
		●	OFF (Non-conducting)

SENSITIVITY AND HYSTERESIS

The sensor is set during manufacture to normal SENSITIVITY and HYSTERESIS values which should be suitable for most general applications.

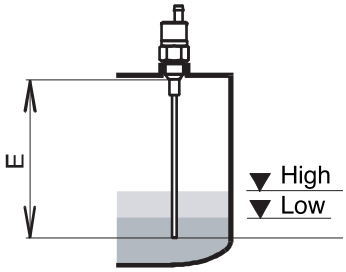
ADJUSTING THE SENSITIVITY

- **Remove the two protective cover screws.**
- **Insert the electrode into the process material until the LED changes state.**
- **Turn the sensitivity control CLOCKWISE until the LED *just* changes its state again, then apply about one turn ANTI-CLOCKWISE.**
- **Check the function of the sensor.**



ADJUSTING THE HYSTERESIS

- **Turn the hysteresis control CLOCKWISE to increase the hysteresis band.**
  The optimal setting for most general applications is about half of the number of turns applied to the adjacent *sensitivity* control.
- **A wide hysteresis band may be used for pump ON/OFF control.**



ORDER REFERENCE

DLS.27.10	**CAPACITIVE LEVEL SWITCH.**	(Uncoated • Horizontal)
DLS.27.11	**CAPACITIVE LEVEL SWITCH.**	(Coated • Horizontal)
DLS.27.20	**CAPACITIVE LEVEL SWITCH.**	(Uncoated • Double Insulated)
DLS.27.21	**CAPACITIVE LEVEL SWITCH.**	(Coated • Double Insulated)
DLS.27.30	**CAPACITIVE LEVEL SWITCH.**	(Uncoated • Vertical)
DLS.27.31	**CAPACITIVE LEVEL SWITCH.**	(Coated • Vertical)
DLS.27.40	**CAPACITIVE LEVEL SWITCH.**	(Wire rope)

Please specify additional information:

- General Purpose Application (.03)
- Group II Ex Application (.02)

- Length E of electrode (mm)

- Cable Connection (2m)
- Plug and Socket connector
- Non standard cable length (m)

- PNP Output Signal
- NPN Output Signal
- NAMUR Output Signal • Ex (.02)

- HIGH Signal Mode
- LOW Signal Mode

- M27 x 2 Process Connection
- G3/4" Process Connection

CERTIFICATION & APPROVAL

Group II Zone 0: II 1 GD T 76°C EExia IIB T6
II 1/2 GD T 76°C EExia IIB T6

Must be powered by a SNSU-811 or DNSU-822 Supply unit.

CE Designed to comply with the requirements of the EC directive:

- ATEX directive 94/9/EEC
- EMC directive 89/336/EEC

HIGH TEMPERATURE VERSION

Special version with a thermal separator tube can be supplied to specification.

Housing Material:	Stainless steel
Ambient Temperature:	–20°C...75°C
Process Temperature:	–30°C...120°C (.21, .31, .40) –30°C...200°C (.10, .11, .20, .30)
Maximum Static Pressure:	0.6bar up to 1bar