

# Quickstart

## Gladiator Admittance Smart Switch Series



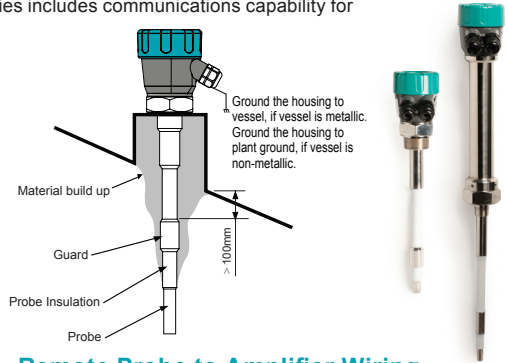
The probe of the Admittance Switch forms one plate of a capacitance circuit, with the vessel wall making the second plate. The dielectric constant of the product between the probe and the vessel wall will cause a capacitive change as the level approaches the probe, and the output will switch in response. A special circuit is used to ignore product build-up between the sensing probe (active element) and guard, and also between the guard and vessel wall. The output has adjustable hysteresis and delays for 'on' or 'off' switching. A test function is available to remotely confirm the probe integrity by switching the relay contacts. The Gladiator Smart Switch Series includes communications capability for remote adjustment, control and monitoring.

### Principle of Operation

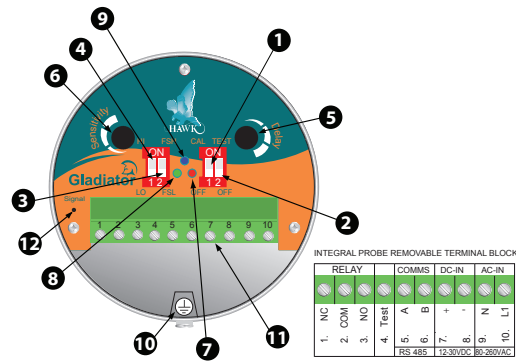
The dielectric constant of the material in the vessel will be different to that of air.

When the material comes near or in contact with the probe an admittance change will occur. The resonant frequency of the internal oscillator will then change.

The relay will switch when the frequency reaches the user selected Switch Point value.



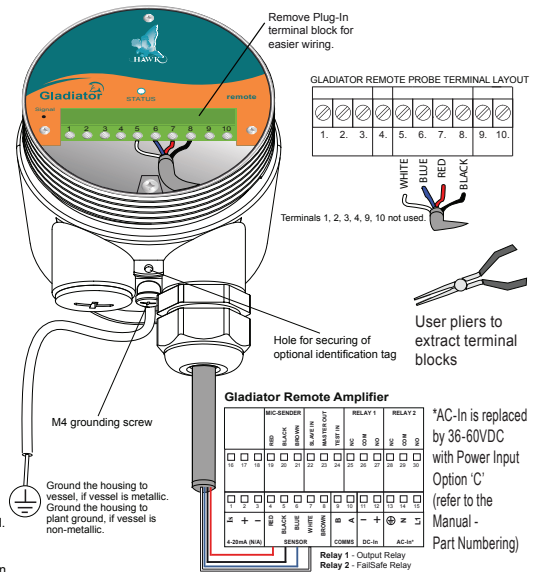
### Integral Probe Functionality Layout



### Functionality Description (bold is default)

1. Mounting Calibration switch CAL/OFF
2. Test input function select TEST/OFF
3. Relay action selection switch  
FSH - FailSafe High  
FSL - FailSafe Low
4. HI / LO sensitivity switch
5. Delay Potentiometer (0-20 sec)  
(Default 0 sec. at minimum position)
6. Sensitivity Potentiometer  
Default 50% = 12 o'clock
7. RED LED: Relay status  
ON when relay coil is energised
8. GREEN LED: Power / Status  
Blinks to indicate the functioning is correct and no media is detected. Continuously ON when media is detected.
9. BLUE LED:  
Blinking indicates calibration failed is on. Continuously ON indicates failed calibration.
10. AC Ground - must be used for AC powered installations
11. Removable terminal block - plug in type
12. Signal voltage test point  
- Not used in Gladiator Admittance products

### Remote Probe to Amplifier Wiring



### Cable type between Amplifier and Probe

- 4 conductor shielded twisted pair instrument cable
- Conductor size dependent on cable length
- BELDEN 3084A, DEKORON or equivalent
- Max: BELDEN 3084A = 500m (1640ft)
- Max: DEKORON IED183AA002 = 350m (1150ft).



## Smart Probe Version

### 1. Mount the unit in its actual position.

Make sure that external ground wire is connected between the outside ground screw on the Gladiator housing and the roof/wall/side of the silo/tank/vessel/chute. (For non metallic tanks make sure that external ground wire is connected between the same outside ground screw on the housing and the general plant ground potential).

### 2. Check where the actual level is relative to the probe.

Make sure that product is not touching the probe - ideally it needs to be > 500mm away. (If the silo/vessel/tank/chute is very small you must ensure that the material is as far away as possible - it must not be touching the probe).

### 3. Turn the power on.

The green LED will either stay on for 2 seconds then begin flashing or stay on permanently to indicate operation.

### 4. Select the required relay contact action.

The Relay can switch 'ON' or 'OFF' as the product approaches the probe and switch 'ON' or 'OFF' in response to an instrument failure. Set the relay action selection switch position (FSL or FSH) depending on your requirements.

### 5. Cancel influence of mounting and/or build up.

Do not proceed with this step unless the product is not touching the probe. Ideally the level needs to be > 500mm away.

Switch the Mounting Calibration switch to 'CAL' (ON) position. The Blue LED will blink to indicate that mounting calibration is now in progress.

Wait for at least 10 sec. then switch the mounting

calibration switch to 'OFF' position. The blue LED should turn off after a short time. The Blue LED will stay on if there was a calibration error. If this is the case please check that the probe is not touching the product or the mounting, then try the calibration again. If mounting calibration was successful the blue LED should be off and the Green LED should blink every 2 sec.

Unit is now able to cancel influence of mounting and/or build-up and probe history has been cleared.

### 6. Select the sensitivity.

There are two adjustments controlling the sensitivity of the switch point:  
 6.1. The 'HI/LO' sensitivity switch is used to set your unit depending on the dielectric properties of the product to be measured. This switch sets the range of adjustment possible with the sensitivity potentiometer.

If the material to be detected has a lower dielectric constant than 10 - set the switch to 'HI' (ON) - default. If material to be detected has a higher dielectric constant than 10 - set switch to 'LO'. If you are not aware of your material dielectric constant - set the switch to 'HI' (ON) - default.

6.2 The sensitivity potentiometer. Set the potentiometer according to your requirements. A 12 o'clock setting (50%) - default, will cover the majority of instances - for the remaining instances, turning the potentiometer anti clockwise will decrease sensitivity. Switch point will then occur with the material nearer to the

probe or more in contact with the probe than before. The reverse is also true.

### 7. Select the time delay.

Set the required delay using the Delay potentiometer. (Default is 0 sec. at minimum position) Turn the potentiometer clockwise if any delay is required. Maximum rotation is ¾ of a revolution. Max delay is 20 sec. The selected delay will be used for both an ON delay and an OFF delay.\*

'TEST' (ON) Position: Test function is selected. Test terminal (terminal number 4 of Smart probe) is used as an input to the unit. The test function allows you to check the functionality of the unit. Applying a ground wire to the Test terminal will change the state of the relay. It will hold this state until the ground is removed, then it will change back to the standard running mode. If the unit was in a Fail mode then the relay will not change status.

'OFF' (Default) Position: Fail safe output function is selected. Test terminal (terminal number 4 of Smart probe) will function as an open drain drive. This can be used to drive a relay or an active low PLC input to detect a Fail condition. In normal operation mode the Test terminal will output Zero Volts (Short to GND). In Fail or unpowered mode the Test terminal will be open circuit.

\*See the manual for further information.

## Wiring

### Relay Functions

#### Level Switch Contact Action

#### Relay 1 - for Remote Version

It is possible for the Gladiator to switch state before actual product contact with the probe. State 2 represents product being detected by the probe, even if it occurs without contact.

	Relay Action	
	FailSafe Low FSL	FailSafe High FSH (default)
<p>State 1 RISING LEVEL (not detected)</p>	<p>NC COM NO</p>	<p>NC COM NO</p>
<p>State 2 RISING LEVEL (detected)</p>	<p>NC COM NO</p>	<p>NC COM NO</p>
<p>State 1 CONTACT LEVEL (detected)</p>	<p>NC COM NO</p>	<p>NC COM NO</p>
<p>State 2 FALLING LEVEL (not detected)</p>	<p>NC COM NO</p>	<p>NC COM NO</p>
<p>State 1 POWER FAILURE</p>	<p>NC COM NO</p>	<p>NC COM NO</p>
<p>State 2 INTERNAL FAILURE</p>	<p>NC COM NO</p>	<p>NC COM NO</p>
<p>State 1 SYSTEM OPERATING NORMALLY</p>	<p>NC COM NO</p>	<p>NC COM NO</p>

#### FailSafe Switch Contact Action

#### Relay 2 - Remote version only.

For Smart Probes the Test terminal can act as a solid state output with a similar function.

## Mounting

