

Diablo by Forematic



Mini-loops owe their success to a new technology brought to market in an elegant, simple to install package. As usual, it is the software that turns an idea into a solid reliable product.

Mini-loops cannot be used for presence

Module options

The module gives an opening pulse when ferrous objects approach the probe position. Modules fit inside a gate or barrier control panel. They wire into all control panel power and safety inputs. A two core probe cable runs from the road to the module.

There are 3 module options and two compatible probe options. They use the same sensor algorithm, but have different control options.

VD909 has a basic module, no adjustment, low standby power ideal for solar powered systems

VD908 module has sensitivity adjustment, and settings for conventional loops such as fail safe / fail secure.

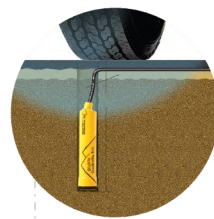
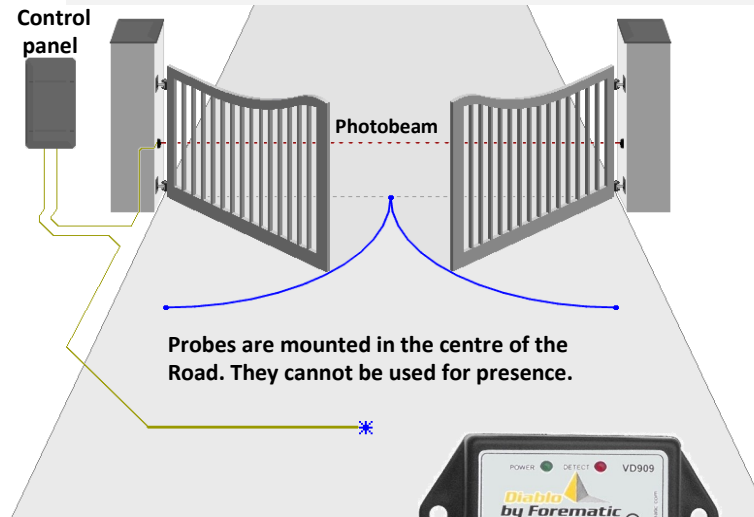
VD955 is a fully adjustable card fitted to an interface. Can work probes or loops, with diagnostics and delay setting

Range depends on the vehicle's ferrous mass and module sensitivity setting. Detection radius is 400mm. The VD908 and VD955i modules have 9 sensitivity settings, Setting 5 is about the same as VD909 fixed setting. It is possible to reduce sensitivity by wiring an inductor across the "LOOP" terminals as well as the sensor. Ask your retailer for an inductor pack, It contains 3 colour coded components.

VD908 & VD909 Exit Sensor

QPT08a v1.5

Installation



Contacts
Power +



Contacts
Power +

Connections

Modules accept a wide AC or DC supply voltage range. Be sure to observe polarity when using DC. There is a form C relay contact. The diagram above uses the N/O contact normal for activation. The N/C contact may be used for controllers without an open only input.

The sensor input is isolated. Cable can be shortened. For longer distances back to the controller, the module can be mounted in a junction box beside the road. You will need at least a 4 core cable to the junction box.

The detector calibrates to ambient conditions on power up. Be sure to clear all objects from the detection area before switching on the power.

VD908 & VD909 specification

Power	10-30V ac/dc
I quiescent	$I_q = 3\text{mA}$ $I_{max} = 25\text{mA}$
Op. Cond'ns	-35° C to 74° C IP65
Module	25 x 39 x 52mm (excl conn)
Relay	1A @ 30Vdc isolated
Sensitivity	2m ² /s (approx 1m)

Tuning and sensitivity

The relay pulses 0.3s when reluctance drops below the long term mean. A green power LED blinks to conserve power, The red detect LED pulses once as a vehicle is detected and provides sensor fault diagnosis. The red LED flashes at 2Hz if the sensor fails open circuit, or 10Hz if it is shorted.

VD909 sensitivity is fixed. It is possible to reduce sensitivity by wiring an inductor across the "LOOP" terminals as well as the sensor. Ask your retailer for an inductor pack, It contains 3 colour coded components. The module is fail secure, meaning the output remains in the undetect state should there be a loop fault or an operation fault in the module.

VD909 inductor selection

White component	33% de-sensitised
Blue component	50% de-sensitised
Red component	60% de-sensitised

VD908 has the same functions as VD909, with some notable additions. There is a rotary sensitivity adjustment on positions '1-9'. Sensitivity 5 is the same as VD909. Higher sensitivities (6-9) are used when the sensor is set at the side of the road. Rotary setting '0' is for fault diagnosis. The four DIP switches give additional tuning functions in the table below.

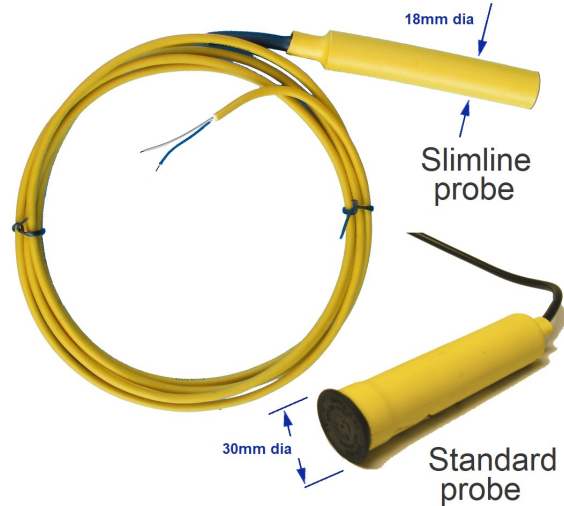
VD908 DIP switch setting

DIP1	OFF = hi frequency	ON = lo frequency
DIP2	OFF = normal loop	ON = sensor probe
DIP3	OFF = boost off	ON = Sens boost
DIP4	OFF = Fail safe	ON = Fail secure

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VD955i & VD959 Roadside Exit Sensor

QPT08b v1.5



Probe installation

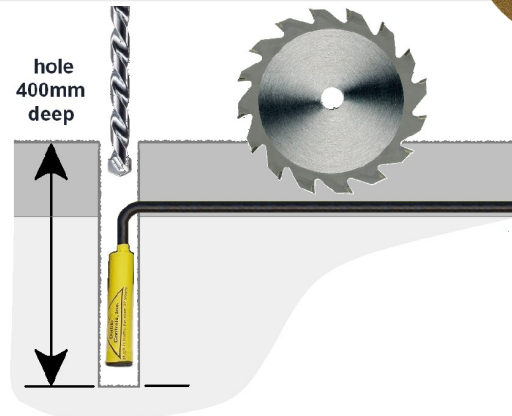
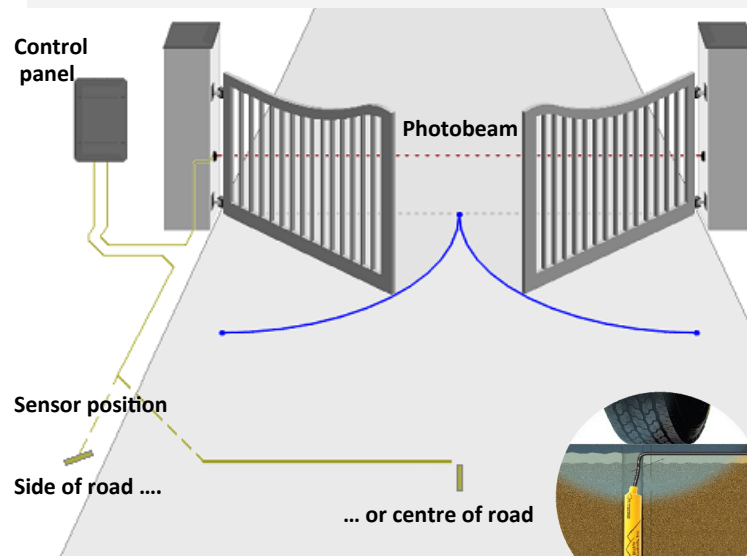
There are two versions of the probe. The standard probe is 30mm diameter with a 22m black cable. The slimline version is 18mm diameter with a 15m yellow cable. For long distances between probe and control panel, the module can be mounted in a waterproof junction box beside the road. You will need at least a 4 core cable back to the controller.

Choose a road position at least 3m back from the gate line. Avoid steel man-hole covers and drains. Drilled holes are ideal for tarmac and concrete road surfaces. The sensor fits down a 300mm deep hole, either 20mm or 32mm diameter. Use a vertical PVC liner in gravel or hardcore.

Insert the sensor at least 250mm below surface. Back fill to the sensor top with sand. Check the sensor resistance is 2-5Ω before sealing the road surface. Cut a cable slot across concrete or blacktop for the lead, or bury a plastic duct in gravel or hardcore. The cable is robust enough to be laid directly in non-compacted ground.

The probe can be mounted the side of the road at about 25° off horizontal. An application note can be downloaded from the website (see app QW102). We recommend using VD959 or VD908 with increased sensitivity to reach the vehicle. Wide roads can have 2 sensors wired to the same module. Sensitivity is shared equally between the two sensors (see app QW103).

Installation

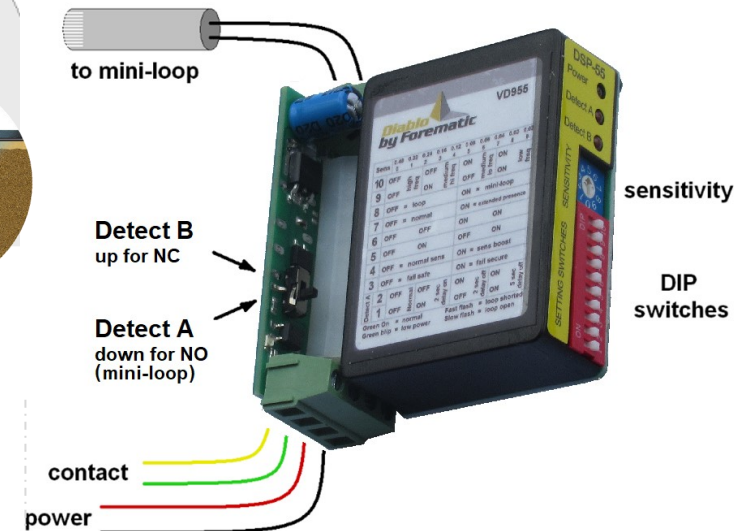


VD955 DIP switch settings

- 1&2 output A timing. Set these two OFF.
- 3 sets fail safe or fail secure. Set 3 to ON (fail secure).
- 4 is sensitivity boost. Set 4 to OFF to disable.
- 5&6 set output B, which is not used in mini-loop mode.
- 7 extends presence holding (not used with mini-loop)
- 8 must be set ON for use with a mini-loop.
- 9&10 frequency. Use different settings for each loops



VD955i specification	
Power	12-25Vac 12-30Vdc
I quiescent	I _{max} = 33mA @ 14V
Op. Cond'ns	-35° C to 74° C
Module	24 x 61 x 63mm (inc conn)
Relay	Solid state isolated 100mA
Sensitivity	2m ² /s (approx.' 1.5m max)



Tuning and adjustment

For probe operation, DIP switch 8 must be 'ON', all the others 'OFF'. A rotary switch gives 10 sensitivity settings. Set interface card switch down.

Clear the area of all steel objects from before powering up. The detector will null whatever is left. Any sensitivity or DIP changes also triggers calibration. 'Detect A' red LED pulses once as a vehicle is detected.

Trouble shooting

With DIP3 'ON' (fail secure) the gate will remain closed if there is a probe or loop fault. With DIP3 'OFF', the gate will open if there is a fault.

Green LED is normally on. If the mini-loop is disconnected the green LED will flash at 2Hz. If the mini-loop is short circuit, the green LED will flash at 10Hz. The probe resistance can be checked. Normal is 2-5 Ω.