AGD520 INDUCTIVE LOOP DETECTOR
Access Control

■ General

The AGD520 is a dual channel multiplexed boxed inductive loop detector operating in the 18 to 130KHz band and has been specifically designed for access control applications.

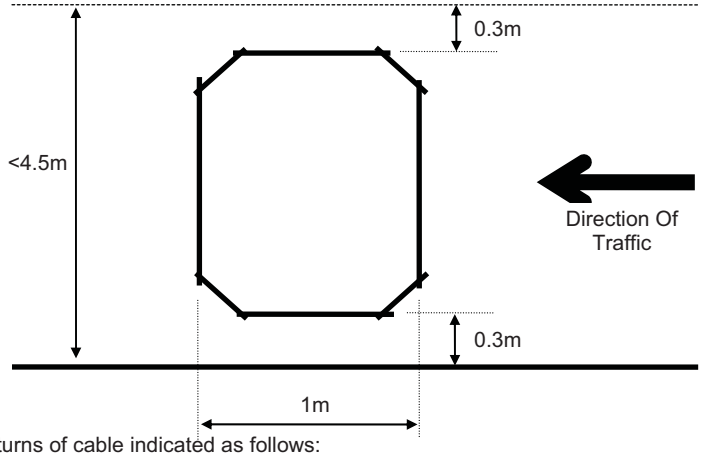
■ Electrical Connections

The detector is marked on the rear label with the voltage supply to be used and it is essential that the detector is connected to the correct power supply. Please check the voltage type on the rear label before applying power to the detector. Consideration must be given to the multiple grounding of supplies and to its effect on the whole system. The installation of this equipment should conform to the latest edition of the IEE Wiring Regulations (BS7671) as applicable.

Pin Number	Connection 230V or 12-24V Version
1	230V ac Live (or 12-24V ac/dc)
2	230V ac Neutral (or 12-24V ac/dc)
3	Sensing Loop CH 1
4	Sensing Loop CH 1
5	Sensing Loop CH 2
6	Sensing Loop CH 2
7	CH 2 Relay O/P NO (Low Impedance For Detect)
8	CH 2 Relay O/P Common
9	Earth
10	CH 1 Relay O/P NO (Low Impedance For Detect)
11	CH 1 Relay O/P Common

■ Installation

Correct installation of the sensing loop will give optimum detection performance. The sensing loop is to be installed in the surface of the carriageway at the point of desired detection. This is performed by slot cutting the carriageway surface of width 0.5mm greater than the diameter of sensing loop cable to be used and to a depth of n x cable diameter(in mm) +25mm minimum (where n is the number of turns 2, 3 or 4 which is dependent on the circumference of the sensing loop). The slots should be cut to the guidelines indicated below. Cutting the corners of the rectangle at 45° helps to meet the minimum bend radius limits for the cable used. The cable from the detector to the sensing loop (feeder) should be twisted at a rate exceeding 25 turns per metre. The feeder length should not exceed 75m.



The sensing loop consists of n turns of cable indicated as follows:

Number Of Turns (n)	Sensing Loop Circumference (m)
2	>10
3	5-10
4	<5

The cut slot should be back filled with quick-set epoxy or hot bitumen mastic. If a second sensing loop is to be installed in the same carriageway then the separation of adjacent edges is to be a minimum of 2m for adjacent edges of lengths up to 2.5m and an extra 0.5m separation for each additional 1m length thereafter. Care should be taken not to trap water in the slot during back filling as this may lead to unstable detection performance.

Two loops connected to an AGD520 are multiplexed which means only one sensing loop can be operational at a given instant. This operation virtually eliminates cross-talk between two sensing loops connected to the same detector and the guidelines on separation for loops from different detectors is not applicable in this instance. However, a separation of 300mm for each adjacent length of 1.5m should still be observed.

AGD520 CUSTOMER INFORMATION

■ Detector Operation

All functional selections are made by the setting of switches on the front panel of the detector. There are no selections available inside the detector. Special functions (where available) are to be accessed via the RS232 port located on the front panel (see separate information supplied with special adapter cable required for connection). The presence time of the detector is proportional to the size of signal generated by the target. The bigger the signal the longer the presence time. A typical car will produce a presence time of about 60mins. There is no adjustment to the presence time on this version.

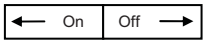
Frequency Selection (Switches 7 & 8) These two switches are used in combination to set four frequency bands appropriate for the inductive load presented by the sensing loop. When both switches are in the OFF position the frequency is at the lowest allowed by the load of the sensing loop. Selecting a combination of the switches as below changes the resonant frequency in increments. The magnitude of the shift in frequency is proportional to the load of the sensing loop connected to the detector. The operating frequency of adjacent sensing loops should be adjusted to be at least 15% apart in the absence of vehicles. The magnitude of the shift is indicated below and the frequency change is applied to both sensing loops;

-14% to -18%

-10% to -14%

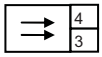
-6% to -10%

Highest Frequency (F)

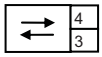


Sensitivity Selection (Switches 6, 5, 4 & 3) The detect sensitivity can be separately set for either channel and is set by a combination of switches 5 & 6 for Channel 1 and switches 4 & 3 for Channel 2. The sensitivity is expressed as δL/L, the minimum change in inductance required to cause a detection with 0.02% being the most sensitive setting. Settings are as follows for Channel 2. Substituting 6 for 4 and 5 for 3 gives the settings for Channel 1.

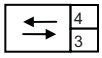
δL/L = 0.02%



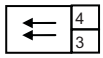
δL/L = 0.05%

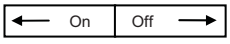


δL/L = 0.10%



δL/L = 0.50%





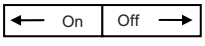
Relay Outputs (Switches 2 & 1) Switches 1 and 2 set the output format of the relays as shown below. CH1 relay is the output for CH1 loop.

CH1 & CH2 Presence Output

CH1 Presence & CH2 Pulse on Undetect

CH1 Presence & CH2 Pulse on Detect

CH1 & CH2 Pulse on Detect



■ Detector Direction Sensing Mode

Direction sensing mode is available in both Pulse or Presence settings. One relay is activated for a detect for the vehicles travelling in one direction and the other relay is activated for a detect for vehicles travelling in the other direction. This mode is enabled by first selecting the output version i.e. presence or pulse by selecting both switches 1 & 2 to ON or OFF as appropriate. Then setting of the sensitivity for BOTH channels to δL/L = 0.50% i.e. switches 3, 4, 5 & 6 to ON. This automatically implements Direction Sensing Mode at a sensitivity of δL/L = 0.50% if switches 1 & 2 are both ON or OFF.

For further information on direction logic please see relevant handbook.