

Train detection

PINTSCH BAMAG Train Detection FSP

Induction loops and single loop detection module ESD for train detection

Use

The induction loop FSP (vehicle sensor type PINTSCH) is used for train detection. Strike-in (activation) and strike-out (deactivation) of the level crossing are controlled automatically via the induction loop whenever a rail-bound vehicle approaches or leaves a level crossing. Each loop is connected to an electrical unit (single loop detector module ESD) which processes if the loop is occupied or clear.

Function

The induction loop installed in the track belongs to a free-running oscillator. The oscillating circuit is damped whenever a rail vehicle (as electrically conductive material) approaches the induction loop. This causes the frequency to increase and the detector registers that the loop is occupied.

Mechanical design

The induction loop extends across 2 x 5 sleeper intervals in shape of an "8". It is protected by massive plastic tubing. Due to its arrangement it is protected against damaging by track laying work (resistant to tamping machines).

Strike-in (activation)

The presence of a vehicle at the strike-in location of a level crossing system can be reliably detected by a single induction loop. Additionally, the direction of a vehicle can be detected by a second (or by a third - dependent on application) induction loop installed in the track. The signalling system is activated for the direction in which the vehicle is moving. A continuous self-test of the vehicle sensor system guarantees unrestricted operation even if a vehicle remains at a standstill for an unlimited period of time, a train laminates when the brakes are released, or a vehicle changes its direction while occupying the strike-in (activation) location.

The single loop detector module ESD with oscillator, self-test capability and output for transmitting data to the level crossing is installed in a line side box beside the track at the strike-in loop. A 3-wire cable is used to connect a single loop strike-in location with the level crossing control device up to 2.5km away. For a double loop strike-in location a 4-wire cable is sufficient.



installed induction loop



single loop detector ESD in a line side box

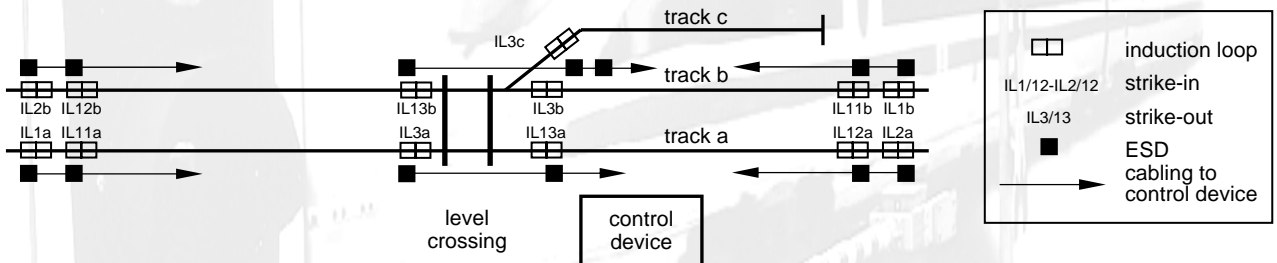
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Strike-out (deactivation)

The induction loops installed on both sides of the level crossing ensure reliable strike-out of the level crossing protection without necessitating further track related elements like insulated rail or treadles. As with the strike-in, a safe state is ensured by a continuous self-test. The clearance is signalled and the level crossing signalling system deactivated when both strike-out (deactivation) induction loops have been occupied and then be cleared by the train.

The single loop detector module ESD required for this purpose is located beside each loop. Dependent on the customer requirements the modules can be accommodated in the housing of the level crossing control device.

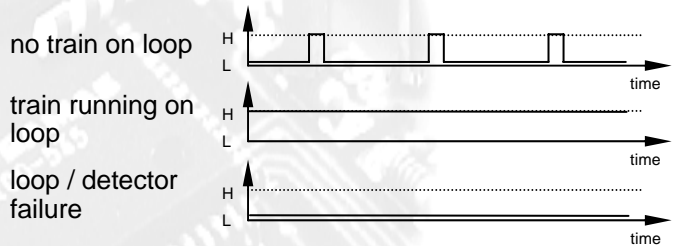
Layout level crossing (example)



Specification

- Supply voltage : 18V-36V DC
- Current consumption : ca 60mA (18V)
- : ca 35mA (36V)
- Oscillator voltage : 4.5-6.3V_{eff}
- Operating frequencies : 22kHz / 35kHz
- Switching threshold : ON: +5.0‰ / -5.0‰
- (Standard) OFF: (in) +2.6‰ / -2.6‰
- OFF: (out) +3.4‰ / -3.4‰
- Operating temperature : -25°C to +75°C

Output signals



Interface (strike in – 2 loops)

