



CrossGuard

Crossing Monitoring and Detection System

CrossGuard is a non-intrusive, standalone system that monitors level crossings to detect a trapped vehicle and other obstacles and allow safe passage of trains. Based on μ wave radar technology and vital electronics, CrossGuard maintains a constant horizontal area scan directly above track level. When a trapped vehicle or other obstacle is detected within the scanned area, an alarm is transmitted to the level crossing or the interlocking system. The microprocessor-based vital electronics are easily interfaced with signaling systems.

CrossGuard's certified failsafe design utilizes vital SIL-4 technology. There is no need for lighting, closed circuit TV, or human observation of the level crossing. CrossGuard functions under all weather conditions (rain, fog, snow), dirt and electromagnetic noise, and is able to detect a vehicle trapped in the crossing area independent of its material (iron, wood, etc.).

CrossGuard is easy to install and features very low power emission (5 mW), low maintenance costs, with a virtually vandal-proof design.





System Architecture

The CrossGuard system is made up of the following main functional blocks:

- Input for barrier closure end
- Vital output to level crossing or interlocking system
- μ wave radar detector of level crossing area (two or more microwave barriers)
- Logic control unit, implemented with failsafe dual microprocessors

Barriers consist of one or more pairs of TX-RX, parabolas or horn antennas. The sensors are non intrusive; a possible fault does not affect the normal level crossing functionality and operation.

The carrier frequency of 10 GHz range is selected to increase immunity to snow, rain, or other environmental conditions.

The output circuit for the free/occupied information is designed to be failsafe. The safety assessment was carried out using hazard analysis and tolerable hazard rate (THR).

All electronic circuits perform regular self-diagnostics and the inputs/outputs are periodically checked by the microprocessors during the self-diagnostic test.

CrossGuard is compliant with standards EN50125-3, EN50126, EN50128, and EN50129.

