The Radar Scanner is an automatic monitoring system for detection of objects which are located in the track area between closed barriers of a level crossing. The system provides a "crossing clear" or "crossing occupied" signal to the level crossing control system.

A laser range finder is used for object detection. This sensor is mounted on a rotating platform included in a robust weatherproof housing. The level crossing surveillance area between the closed barriers will be scanned in a defined height during each cycle. If an object is detected in the surveillance area a "crossing occupied" signal will be provided to the level crossing control system preventing clearance for the train passage. Radar reflectors are positioned at the corners of the surveillance area. On the one hand the reflectors are flagging the boundaries of the surveillance area, on the other hand they are reference objects for the Radar Scanner self test.

The Radar Scanner operates under all weather conditions, is certified according to EN 50 129 SIL 3 and is fully approved by the Federal German Railway Authority (EBA).

Advantages & Benefits

- Increases the safety for people and vehicles crossing the tracks, especially if they are trapped in full barrier level crossings
- Protects the rolling stock from accidents in level crossings
- Overcomes people operated surveillance, e.g. video monitoring
- Autonomous under all weather conditions
- 100% coverage of the observed area; no gaps
- EBA approved acc. EN 50 129 SIL 3
- In service at Deutsche Bahn AG
Obstacles to be detected
min. 0.5 m x 0.5 m x 1 m or intruding parts of it

Size of surveillance area
max. 20 x 40 m

Environmental conditions
Temperature -40°C to +70°C
Vibration/Shock: 1g

Safety-Requirements
EN 50129 – SIL 3

Power supply
YD156: 36 VDC nominal (+ 20%/-10%)
YD153: 48 VDC nominal (+ 20%/-10%)
for de-icing: 110 VDC, ~400W

Dimensions Radar Scanner
Ø 535 mm x 1.342 mm
on foundation

Operating frequency
24.125 GHz

Transmitter power
10 mWatts

Speed of rotation
1 s per rotation

Reliability
MTBF > 4 years

Level crossing interface
Relay interface, potential free,
inverting contacts (safety relays)

Serial data interface for installation/test
RS422

The system meets the following requirements:

Requirements for radio equipment:

- BAPT 211ZV031/2020 (4/97): qualification requirements for low power radio motion detectors
- I-ETS 300 440 (12/95): Radio Equipment and Systems (RES); Short range devices; Technical characteristics and test methods for radio equipment to be used in the 1 GHz to 25 GHz frequency range
- DIN 57848 Part 2 (7/84): Safety in electromagnetic fields; Protection of persons in the frequency range from 30 kHz to 300 GHz

ETS 300 683 (6/97):
- Radio Equipment and Systems (RES): Electromagnetic Compatibility (EMC) standard for Short Range Devices (SRD) operating on frequencies between 9 kHz and 25 GHz

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US patent 6,400,311 B1
Certifications:
DIN EN ISO 9001
DIN EN ISO 14001

Subject to change without notice.
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