

KFS Sensor

ANTI-SIGNAL CROSSING

Client: Vossloh Cogifer
Lines: Corsica
Numbers of items: 35
Year implemented: 2006

The KFS sensor is an onboard device for electrical and thermal railway systems (train/urban subways/RER/tramways ...).

It is usually assembled under the body of hauling elements at the level of the axle and is therefore subject to significant mechanical constraints (vibrations/shocks/accelerations) and climatic constraints (heat/humidity/corrosion/salt ...).

Its main objective is to detect two types of fields: one is magnetic from an electric magnet or permanent magnet, the other is low frequency electromagnetic from an antenna, generated by the RPS, KPVA or KFS1 track antennas assembled on the track between the train rails.

The KFS sensor sends the information it receives to the KFS block, which decodes it and transmits the information to the emergency brake system or the driver's alarm.



KFS Sensor



KFS Sensor assembled on a train



Internal view of an KFS Sensor

KFS Bloc or Rack

SIGNAL CROSSING PREVENTION

Client : Vossloh Cogifer
Lignes : Corsica
Number of copies : 35
Year implemented : 2006

The KFS block is an onboard device for electrical and thermal railway systems (train/urban subways/RER/tramways).

Its main objective is to:

- Decode information from the magnetic onboard KFS sensor, which is generated by the RPS, KPVA or KFSI track antenna installed on the track between the train's rails,
- And transmit the information to the emergency braking system (VACMA).

The KFS block receives two types of electrical signals from the magnetic sensor:

- One is transmitted from a detection stage of the constant magnetic field and produces binary information (R) in accordance with the existence or absence of a magnetic field generated by the ground track antenna (R = 0 (OV) if the field is present, R = 1 (10V) if it is absent).
- The second is the image of the sum of low frequency signals (F1:15,36 KHz, F3 :15.36 KHz, F3: 25.6 KHz) from the ground track antenna and received by an antenna set to the useful frequency band inside the magnetic sensor.

The decoding circuit can interpret the combination of signals transmitted in order to lower the corresponding outgoing relay for 160 ms. The following commands are therefore issued depending on whether the block decodes a magnetic field or not and detects the electromagnetic frequencies (F1: 15.36 KHz, F3: 25.6 KHz):

- Detection of a constant magnetic field and two F1 and F3 frequencies: *train passage*
- Detection of a single magnetic field; *train stoppage* command
- Detection of a magnetic field and F3: *vigilance* command
- All other cases: *train passage*

The KFS block can be mounted onto a European standard box or rack.

Specifications:

- 24V or 72V DC EN 50155 standard power
- EN 50121 standard electromagnetic compatibility
- Safety relay: NF F 62-002 standard
- Operates between -20°C and +85°C
- Box in anti-corrosive plate with epoxy paint.

KFS blocks guarantee full compatibility with BL.RC.SI blocks on the current equipment of the Parisian subway and RER systems.



Front view of an KFS Block



Back View of an KFS block



KFS block in its box



KFS block in its rack

KFSI Track Antenna

INTEGRATED SIGNAL CROSSING PREVENTION

Client : Vossloh Cogifer
Lines : Corsica
Number of copies : 70
Year Implemented : 2006

The analogical KFSI track antenna is an integrated autonomous device for electrical and thermal railway systems (train/urban subways/RER/tramway).

Its main function is to provide information on a crossing at a traffic signal (red light/green light). It is installed on a ballast between the tracks via the intermediary of an external chassis with anti-vibration resilience.

The electrical equipment attached to the traffic signal provides the track antenna with red light information (which is the same when there is no light) or green light information.

A permanent magnet creates a constant magnetic field. The presence of this magnetic field alone informs the onboard sensor and its treatment block that the track antenna, in other words the related traffic light (red light or no light), must not be crossed.

When the light is green, this magnetic field runs in parallel to the electro-magnetic emission of two F1 and F3 frequencies, informing the onboard sensor and its block of an authorization to pass.

Three track antennas are available:

- The KFS mp track antenna (anti-signal crossing prevention device for the Paris subway system) is a functional equivalent of the RPS permanent magnet track antenna used on the urban subway system in Paris.
- The KFS rp track antenna (anti-signal crossing prevention device for the Paris RER) is a functional equivalent of the RP electromagnet track antenna used on the RER system.
- The KFSI track antenna (integrated anti-signal crossing prevention device) is a functional equivalent of the RPS subway and RER track antennas, as well as their associated electronics.

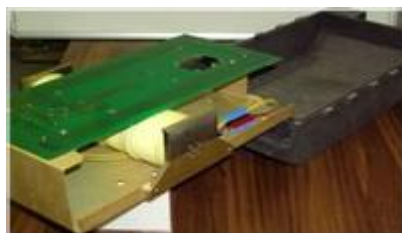
KFS – Anti-Signal Crossing



KFS track antenna (inside view)



KFS mp permanent magnet track antenna



KFS rp electromagnet track antenna



KFSI track antenna (inside view)



KFSI track antenna (inside view)



KFSI track antenna