



the Brainware company

DEJAMM-R

DEtection of JAMMING in Railway networks

The **DEJAMM-R** sentinels are autonomous devices that continuously monitor all the downlink and uplink GSM-R bands, which are used for ETCS Level 2 signalling in high-speed rail systems.

Each sentinel includes a wideband signal receiver and analyzer and runs real-time Digital Signal Processing (DSP) algorithms to perform wireless channel measurements and to detect interferences, both accidental and deliberate.

Alarms are promptly detected (< 1 second reaction time) and indicated via SMS

messages (or other) to a remote centre, via either the GSM or the GSM-R bands. Periodic status reports are also issued to constantly monitor the GSM-R network health.

For maximum coverage and security, the **DEJAMM-R** devices should be installed along the railway tracks of high-speed lines with a typical distance of a few kilometres between two consecutive sites. To reduce the installation costs, solar panels can be used to power the devices. Since the **DEJAMM-R** sentinels are autonomous, no ordinary maintenance is needed.

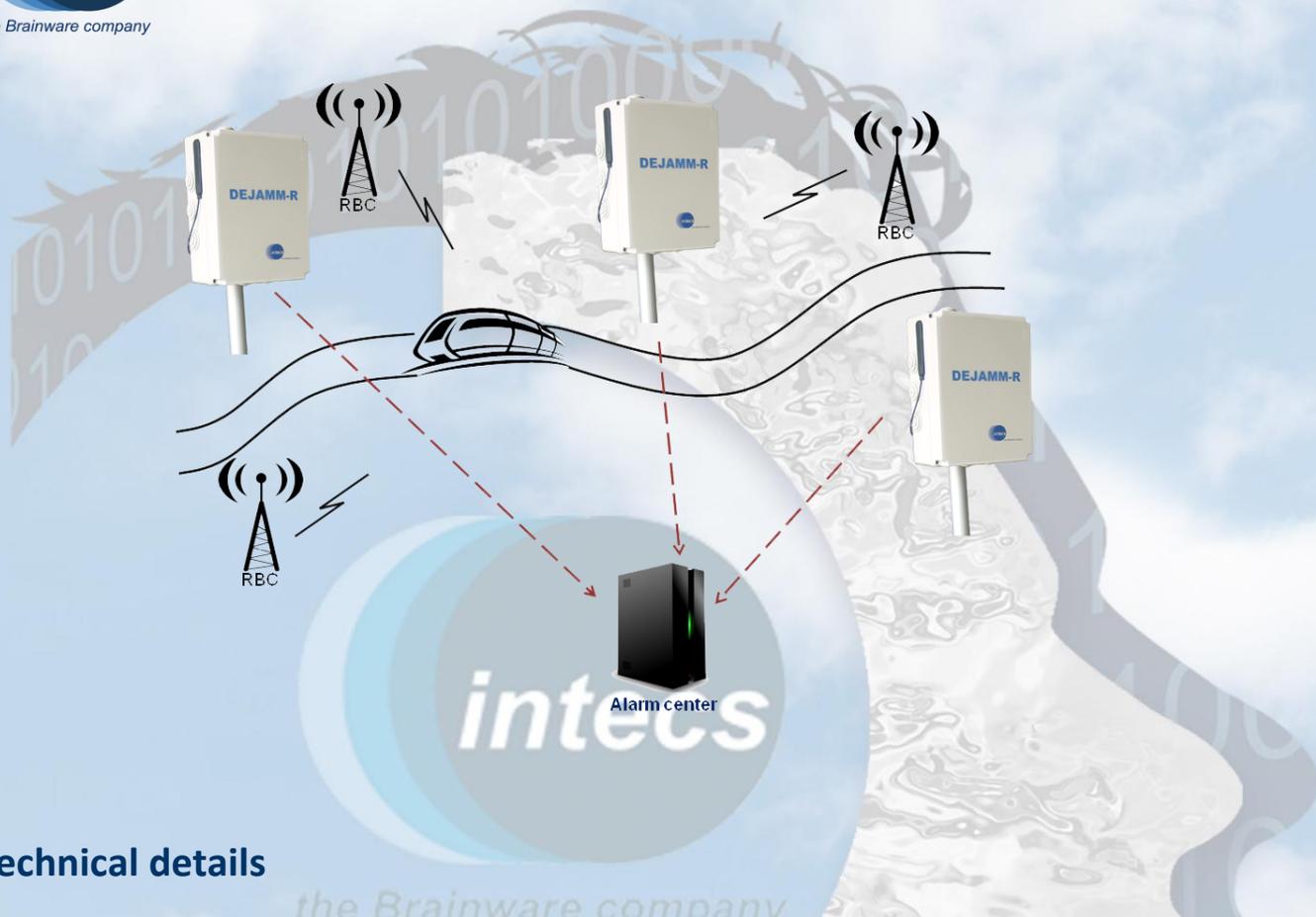
Main Features

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| - Downlink (from RBC) and uplink (from train) SINR estimation |
| - Status report of all GSM-R channels in < 1 second |
| - Interference and jamming detection |
| - Remote alarm generation via SMS in GSM/GSM-R bands |
| - Can be solar-powered to reduce installation costs |



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Technical details

Environmental conditions	Temperature -25°C to $+70^{\circ}\text{C}$
Scanning frequency	876-880 MHz, 921-925 MHz
Detection time	< 1 s
Reliability	MTBF > 4 years
Interface for installation/maintenance	IEEE 802.11a/b/g/n
Interface for remote monitoring	GSM, GSM-R
Power consumption	60 W
Power supply	- Unregulated AC 230/120 V - Regulated DC 12 V - Solar power (external panel and batteries required)
Weight	10 kg (includes 6 kg backup battery)
Dimensions (unit: mm)	220 (L) x 130 (W) x 300 (H)

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