



Indian Railways Commissions KAVACH 4.0 for the First Time on South Central Railway, Marking a Major Milestone in Railway Safety

KAVACH Upgraded from Version 3.2 to 4.0 on 108 Route Kilometres of Malkajgiri-Kamareddi Section in Hyderabad Division

Enhanced Location Accuracy, Improved Signal Information in Bigger Yards, Station-to-Station OFC Interface and Direct Electronic Interlocking Interface to Strengthen Safety and Reliability

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Indian Railways has achieved a significant milestone in railway safety with the successful commissioning of KAVACH Version 4.0 for the first time on South Central Railway (SCR). The upgradation from KAVACH Version 3.2 to Version 4.0 has been successfully completed over 108 Route Kilometres on the Malkajgiri-Kamareddi section of Hyderabad Division.

A new boost to rail safety!

KAVACH 4.0 now covers 108 Route Kilometres between Malkajgiri and Kamareddi rail section in Telangana enabling safer and seamless train operations across the region. #KAVACH4.0 #RailInfra4Telangana pic.twitter.com/C3JP6FLuid

— Ministry of Railways (@RailMinIndia) September 23, 2026

The latest version incorporates further technological improvements based on the experience gained from the deployment of KAVACH Version 3.2 over 1,465 Route Kilometres on South Central Railway. KAVACH 4.0 brings enhanced safety, advanced technology, higher reliability and safer train operations, and is planned for large-scale deployment across Indian Railways.



KAVACH 4.0 Brings Advanced Safety Features for India's Diverse Railway Network

KAVACH Version 4.0 has been developed, tested and is now being deployed by Indian Railways as an Automatic Train Protection (ATP) system. The latest version incorporates major improvements required to cater to the diverse operational and technological requirements of the Indian Railways network.

Key improvements in KAVACH 4.0 include:

- Increased location accuracy, enabling more precise train positioning.
- Improved information of signal aspects in bigger yards, strengthening situational awareness during train operations.
- Station-to-station KAVACH interface through Optical Fibre Cable (OFC) for enhanced communication and system integration.
- Direct interface with existing Electronic Interlocking Systems, enabling improved integration with existing signalling infrastructure.

These enhancements make KAVACH 4.0 a significant advancement in the country's indigenous Automatic Train Protection technology and provide a strong technological foundation for its large-scale deployment across Indian Railways.

Indigenously Developed KAVACH Enhances Train Safety

KAVACH is an indigenously developed Automatic Train Protection system designed to enhance operational safety. The system assists the Loco Pilot in maintaining trains within prescribed speed limits and can automatically apply brakes when required if the Loco Pilot fails to do so.

KAVACH is designed to help prevent Signal Passing at Danger (SPAD), control train speed in critical situations and reduce the risk of collisions. The system also supports safer train operations during inclement weather conditions.

As a highly technology-intensive safety system, KAVACH requires safety certification of the highest order, Safety Integrity Level-4 (SIL-4).

Comprehensive Infrastructure Required for KAVACH Deployment

Implementation of KAVACH involves deployment of multiple technological and communication components across railway sections. These include:

- Installation of Station KAVACH at stations and block sections.
- Installation of RFID tags throughout the track length.
- Installation of telecommunication towers throughout the section.
- Laying of Optical Fibre Cable along the track.
- Provision of Loco KAVACH on locomotives operating on Indian Railways.

The successful commissioning of KAVACH 4.0 on South Central Railway represents an important step towards strengthening indigenous railway safety technology and expanding advanced Automatic Train Protection capabilities across the Indian Railways network.

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