
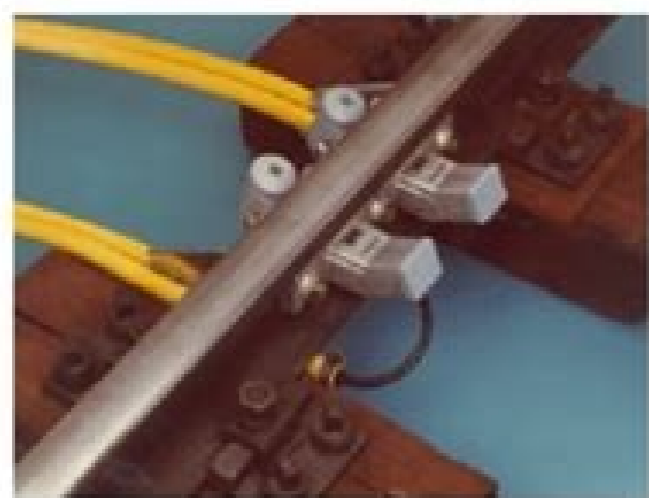


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Part – 1
MSDAC (Alcatel / Thales)
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S-27
TRAIN DETECTION DEVICES
AXLE COUNTERS – ANALOG & DIGITAL



INDIAN RAILWAYS INSTITUTE OF
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SECUNDERABAD - 500 017
INDIA
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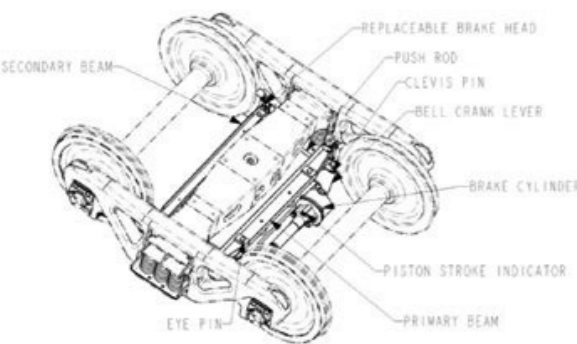
Instruction Bulletin No. RDSO/2010/WD/WMI - 03
Revised Scheme of BMBs (Single Mounted Brake System)

This scheme is contained with technical aspects with relevant drawings and specifications so that a self contained instruction Bulletin is generated, which can be readily used by RCO/DFM Workshops and maintenance Depots for re-assembly of BMBs.

1. SCOPE: This scheme covers the requirements of the re-assembly of BMBs in BOCN, BOCNWS and BOCNW wagons.

2. GENERAL DESCRIPTION OF BMBs

The equipment consists of a transversely mounted pneumatic actuator (Stroke Cylinder) with a self-contained, double acting slack adjuster, two brake beams, two bell crank levers and interconnecting push-rods. The hand brake arrangement is available as a mechanical model with two flexible handbrake cables. The pneumatic actuator is 107 mm diameter for application on high friction brake shoe (R type) on coach bog bogies. The system consists of a unique design with two pneumatic actuators to deliver reliable braking performance and is light in weight. It fits into any standard BS coach bogie and uses Shimrock brake shoes.



Among them, the Frauscher Configuration Tool FCT or the Frauscher Diagnostics System FDS. The information that Frauscher Axle Counters supply to higher-level systems far exceed the standard data for train detection: Clear/occupied notifications (SIL 4) Direction of travel (SIL 4) Number of axles Speed Wheel diameter Diagnostics data Innovative tools are available for various tasks during installation or commissioning of the axle counters. What's more: highest flexibility in regard to its configuration for various requirements. Convenient: Besides train detection, the axle counter generates a variety of additional diagnostic information and data in a wide range of applications. Benefits of the Frauscher Advanced Counter FAdCi: Easy and flexible configuration Software interface Flexible system architecture Low maintenance requirements Easy project management. Four axle counting systems for optimum results Frauscher offers customised solutions for all functional, operative and infrastructure-related requirements. Contact us right away and find out how Frauscher Axle Counters can optimise the operation of your railway system! It was specially developed for the use in marshalling yards, industrial facilities and local public transit. What does that mean? Thank you for using our services. Moreover, the Frauscher Diagnostic System FDS continuously supplies current diagnostics data, which can be accessed even on mobile devices. Benefits of the Frauscher Advanced Counter FAdC: Easy and flexible configuration Software interface Flexible system architecture Low maintenance requirements Easy project management The system architecture of the ACS2000 is simple: Every detection point and every track section has an assigned safe evaluation board. Savings on required space, energy use and investment costs increase with project scale thanks to state-of-the-art communication technologies. Connection to high-performance electronic interlockings can be implemented either via a customer-specific interface or the Frauscher Safe Ethernet FSE protocol. Two Power Supplies plus batteries Plug Coupled Cables Local Maintainers Concerns Output from HAZIDs Testers Feedback Implementation 25 Location Case Design Perspex Rain Shield added Implementation 26 Typical FAdC Rack Implementation 27 FAdC to FAdC Communications FAdC 1 FAdC 2 Implementation 28 Ethernet Ethernet HSDSL FAdC to FAdC Communications Maximum 5km 29 FAdC to FAdC Communications 30 FAdC Diagnostics FTN sr:Table Of Content With its tailor-made axle counting solutions, Frauscher offers reliable and cost-effective train detection systems. Customised Systems for Worldwide Use Axle Counting Systems by Frauscher are comprised of two parts: The trackside equipment consists of two highly reliable wheel sensors mounted onto the track. In addition, it was designed for use at maximum traversing speeds of 80 kilometres per hour. To keep our site running, we need your help to cover our server cost (about \$500/m), a small donation will help us a lot. Go to product overview! You'd rather have a personal conversation with us? By way of a rail claw, they're quickly and easily mounted onto the track without having to drill holes into it. The evaluation of the sensor signal takes place right on track. Via a specially created bus system, digitalised data are transmitted right from the trackside SDP to the SPU housed in the indoor equipment. It represents the latest generation of train detection against the background of increasing digitalisation in the railway industry. Benefits of SENSIS: Reduced need for cabling material Optional upgrades and updates available Valuable additional information Reduced need for space and energy Easy installation The FAdCi is a particularly cost-effective version of the FAdC axle counter. 6 109 Track Circuits! Why Frauscher? High-performance Frauscher evaluation boards then carry out the evaluation of the information provided by the sensor as well as the counting of axles. The sensor acts as a smart trackside device. Implementation Challenges Issues Geography of the Project 3 N Scope 4 Equipment Type Quantity Equipment Type Quantity Westlock Interlockings 8 (exact configuration to be confirmed) Point Ends 290 (includes new, existing and plug coupler harnesses) GETs MCS with Signallers Assist (ARS) 3 workstations plus Supervisors Desk Locations Cases 313 (in 172 Location areas) TIF Areas 19 REBs 27 16 TFM's 703 Axle Counter Evaluation Areas 53 (Thales AZLM) 59 (Frauscher FAdC) Main Aspect Signals 266 (includes 136 lightweight signals) Axle Counter Detection Points Approx 700 Routes 838 Track Circuits 109 FSPs 100 Level Crossings 3 complete Renewals 2 re-controlled PSPs 6 Level Crossing CCTV Cameras 4 sites ASPs 4 Hot Axle Box Detectors 2 New 5 re-controlled Power Cable 154km affected 116km is new Recoveries 620 Loc Areas/Relay Rooms Commissioning Phases 5 Why Frauscher? Since the individual boards are preconfigured, later adaptations are exclusively made via the hardware. At the same time, it boasts all benefits and functions offered by the basic model: functional modularity, easy scalability in conjunction with the optional software or hardware interface. In addition, the sensor collects data about temperature and vibrations. The axle counter of the future: As a full-service package, the SENSIS system by Frauscher opens up a wealth of possibilities. 8 AvON in Use Cardiff West Axle Counters Why Frauscher? We need your help to maintenance and improve this website. Via state-of-the-art software and widely used hardware interfaces, the latter are quickly and efficiently integrated into existing signalling technology systems. Highly Available Wheel Sensors as the Basis The trackside equipment consists of the sensor, mounted onto the track, the trackside connection box and the cables which connect the two. In addition, clusters spread out along the rail line can also be connected via Ethernet to establish a decentralised architecture. Good to know: Intelligent functions such as Supervisor Track Sections STS or Counting Head Control CHC additionally improve the system's availability. Among them: interlockings, level crossings, signalling equipment and other applications. This ensures that higher-level applications are supplied with all relevant functional and diagnostic data. The clear/occupied status is transmitted via potential-free relay contacts, while additionally generated information and data can be transmitted via opto-couplers. Benefits of the Axle Counting System ACS2000: Extremely high availability Low maintenance requirements Automated adaptation processes simplify commissioning Easy configuration via the hardware With the inductive wheel sensor SENSIS Detection Point SDP and the smart evaluation board SENSIS Processing Unit SPU, this system combines time-proven technology with state-of-the-art functionalities. A multitude of preconfigured boards facilitates the implementation of customer-specific requirements. Via open and universal hardware interfaces, the ACS2000 can be easily and reliably integrated into various applications. 9 Cardiff West S&C 9208A&B Points Implementation 10 Phase 1 Vale of Glamorgan Original Arrangement Bridgend Station To Barry Jcn Aberthaw SB DN Barry Loop Aberthaw Cement Works Fords Sidings Cowbridge Road SB To South Wales Main Line Rhose LC (MCB) Llantwit Major Station = Mechanically Controlled Areas with Track Circuits = SSI with Thales AZLM (Aberthaw SB) = SSI with Track Circuits (Port Talbot East) Implementation 11 Phase 1 Vale of Glamorgan Original Arrangement Bridgend Station To Barry Jcn Aberthaw SB DN Barry Loop Aberthaw Cement Works Fords Sidings Cowbridge Road SB To South Wales Main Line Rhose LC (MCB) Llantwit Major Station = Mechanically Controlled Areas = SSI with Thales AZLM (Aberthaw SB) = SSI with Track Circuits (Port Talbot East) Implementation 12 Phase 1 Vale of Glamorgan GRIP 4 Proposal Bridgend Station To Barry Jcn DN Barry Loop Aberthaw Cement Works Fords Sidings Aberthaw SB Cowbridge Road SB To South Wales Main Line Rhose LC (MCB) Llantwit Major Station Aberthaw AZLM ACE Llantwit Major AZLM ACE Controlled from Wales Regional Operations Centre (WROC) Implementation 13 Phase 1 Vale of Glamorgan GRIP 5 Frauscher Bridgend Station To Barry Jcn DN Barry Loop To South Wales Main Line Aberthaw Cement Works Fords Sidings Rhose LC (MCB) Llantwit Major Station Portkerry Locations Llantwit Major REB Rhose Xing REB Aberthaw Locations Ewenny Locations UP UP UP DN DN DN DN Frauscher FAdC Schematic 14 BSI Outdoor Indoor BSI BSI AEB AEB IO-EXB AA AB TFM AA AB CAN-bus Quad Cable Wheel Sensor Indoor Equipment PSC 15 Indoor Equipment COM-AdC Communications Board 16 Indoor Equipment AEB Advanced Evaluation Board 17 Indoor Equipment IO-EXB Extension Board 18 Indoor Equipment BSI005 Module 19 Used with RSR123 Wheel Sensor Protects Indoor Equipment from: Lightning Interference Voltages OHLE External Equipment RSR123 and SK150 rail claw 20 1.1 RSR123 1.2 Star Quad Cable 1.3 Protective tube 1.4 SK150 1.5 Connector Flange External Equipment 21 RSR123 Wheel Sensor External Equipment Arrangement of star quad wires and maximum cable lengths 22 FAdC Configuration Data 23 Implementation 24 Location Case Design 5 Iterations of design to get it right! Where to locate Reset/Restore Relays? This reduces the amount of time that work crews spend in a hazardous area to a minimum. Benefits of the trackside equipment by Frauscher: Highly available wheel sensors Easy installation via rail claws Equipment from a single provider Maintenance-free operation High-Performance Electronics The data from the sensor is transmitted to the indoor equipment of the axle counting system. No wonder that many railway operators around the globe already put their trust in axle counters by Frauscher as a reliable and cost-effective track vacancy detection system. That way no specific knowledge or software tools are needed for putting the system into operation. Among them: interlockings, level crossings and signalling equipment. 1 Application of Frauscher Axle Counters Cardiff Area Signalling Renewal (CASR) Paul Carney Engineering Manager, Atkins REP Cardiff Area Signalling Renewal (CASR) 2 Outline of CASR Project Why Frauscher? In addition, integration into existing systems is possible via opto-couplers and relays. Benefits of the interfaces by Frauscher: Flexible, universally applicable interfaces Vital data transmission Option for wireless communication Fast integration Easy handling Reliable and Cost-Effective Track Vacancy Detection Systems Our axle counters are structured in a way that makes them modular and freely scalable. 7 Aerial View of the Network - AvON Why Frauscher? Alternatively, customer-specific protocols can also be implemented with ease. They ensure that our systems can be easily configured, commissioned, maintained and adapted by system integrators and railway operators. When using the FAdC, its functional modularity, flexible scalability and an Ethernet-based software interface permit a wide range of configuration options. The possibility of creating ring architectures reduces the length of cable needed and thus significantly reduces material expenses. Individual support and comprehensive customer service are among our guiding principles. The FAdCi meets all requirements in accordance with the CENELEC standards up to SIL 3. As with all Frauscher Axle Counting Systems, Wheel Sensors RSR180 or RSR123 form the basis for highly available and fail-safe train detection. We are a non-profit group that run this service to share documents. This allows them to fulfil numerous project-specific requirements. The thus generated data is made available to higher-level systems via various interfaces. Benefits of the indoor equipment by Frauscher: Extremely high availability Built-to-match components Flexible configuration options Option for a decentralised architecture Minimal space requirements Fast integration and Easy Handling Universally applicable hardware interfaces and high-performance software interfaces enable the fast integration of our axle counters in various applications. System integrators can implement the Frauscher Safe Ethernet FSE without having to use their own software protocol. The flexible and space-saving indoor equipment houses innovative electronics boards. Please help us to share our service with your friends. This allows for the operation of both small, centralised systems as well as complex, large-scale ones.

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