

**SIEMENS**

WSD E Double Wheel Detector

Sensors with State-of-the-Art Technology

Efficiency in the Rail Services

In addition to high availability, flexibility and economic efficiency they are also of great importance for signalling systems. The WSD E Electronic Double Wheel Detector from Siemens Transportation Systems is a state-of-the-art product and suitable for use in private railways, light rail transport, industrial and branch services.

The WSD E Double Wheel Detector is a track vacancy detection component. On account of its standardized NAMUR-interface however, the double wheel detector can be connected to systems of other vendors without any modification to the existing evaluation units.

Structure and principle of operation

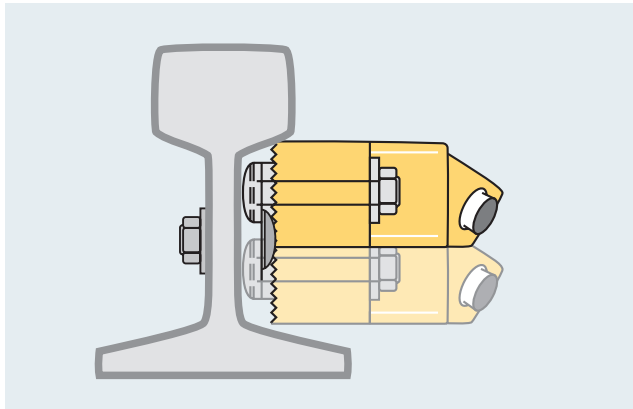
The WSD E (Wheel Sensor Double EOP, electrically operated points) Double Wheel Detector is an electronic switch which responds contactlessly to wheel flanges. This type of wheel detector is mainly used in track vacancy detection equipment and for switching and indication functions in track-bound traffic.



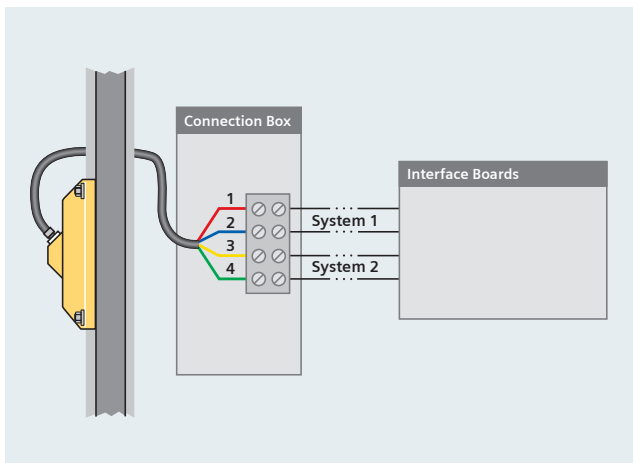
usa.siemens.com/rail-automation

Customer Benefits

- Maintenance-free; readjustment is dependent on the degree of wear of the rail
- Compatible with existing wheel detectors and track-installed switching devices for switching and indication functions via a NAMUR interface
- No mechanical adjustments necessary
- No electrical adjustments necessary (intelligent automatic balancing)
- No trackside connection box required
- Mounting-compatible with other wheel detector attachments (same drilling dimensions)
- Rail web or rail base attachment
- Rail web attachment possible over a tie
- No interference from conventional magnetic brakes
- Max. traversal speed of 80 km/h (50 mph)
- Development and assessment to Cenelec standards



WSD E - Adjustable for Height



Electronic connection of the WSD E Wheel Detector

The below components are required for these functions:

- WSD E Double Wheel Detector with rail web attachment (drill holes in the rail web) or optional: rail base attachment (clamp attachment without drill holes)
- Evaluation board with NAMUR-interface

Constructional Details

The electronics of the WSD E Double Wheel Detector is accommodated in a plastic housing. The fixing plate between the wheel detector and rail web is bolted to the rail web through two drill holes 13 mm in diameter. Existing drill holes in the rail web, which are 145 mm or 270 mm apart, can be used alternatively.

The wheel detector housing is fastened to the fixing plate by additional bolts. Notches in the bearing surfaces of the wheel detector housing and fixing plate allow a fine adjustment of the mounting height below the top of the rail.

Alternatively, the wheel detector can be fixed using a clamp at the rail base. No holes need to be drilled into the rail for this purpose.

Connection

The double wheel detector has an integral connecting cable with four cores. An additional pre-mounted flexible tube protects the cable against physical damage. The cores of the connecting cable are terminated at the terminal block of the trackside connection box or cable distribution box. The cores of the outgoing cable are also connected at the terminal block to the relevant wires of the WSD E Wheel Detector.

Electronic Connection of the WSD E Wheel Detector

The standardized NAMUR-interface board is the link between the wheel detector and the series-connected evaluation unit (electronic interlocking or EOP S7 decentralized electric points).

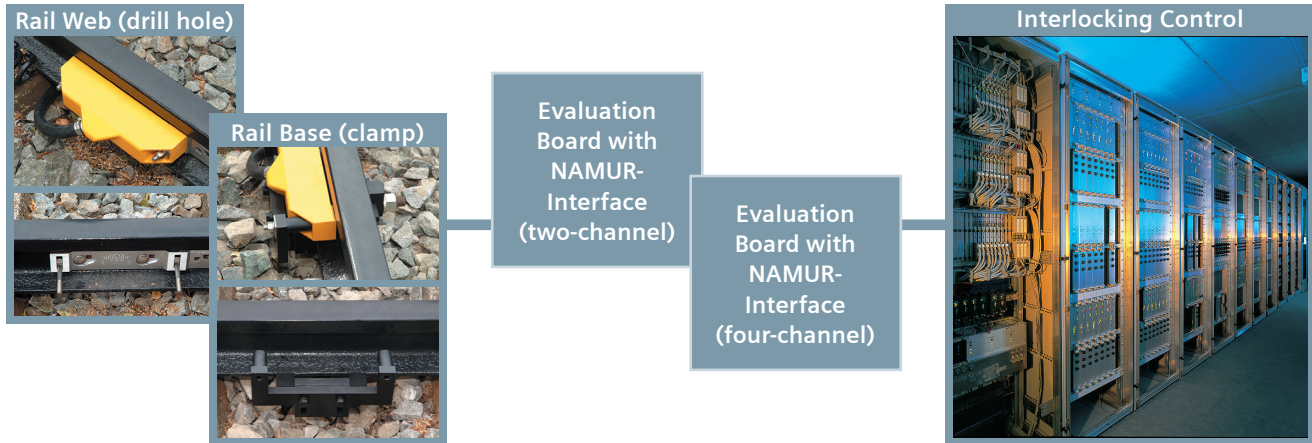
Either one or two wheel detectors can be connected to the interface board depending on the type. The NAMUR (German instrumentation and control standards association) specifications must be observed for connection of the wheel detector.

The suitable interface board is selected in accordance with the series-connection evaluation unit.

The switching stages of the interface board can be used to control ohmic as well as inductive loads (relays, contactors) or capacitive loads directly.

The interface board provides for transmission of indications from the wheel detector to the evaluation unit and power supply of the detection equipment of the WSD E Wheel Detector.

Configuration Principle



Technical Data

Train Operation

Detection:	wheel flange
Rail profiles:	all common profiles, e.g. S33, S49, S54, UIC60; optional on request: channel rails with cutout, see Guidelines
Wheel diameter:	300 mm to 2,100 mm
Wheel flange	25 mm to 38 mm below top of rail in accordance with EBO; optional heights upon request
Lateral wheel offset:	up to 65 mm
Traversal speed:	≤ 80 km/h (50 mph)
Rail current immunity:	≤ 3.000 A with AC traction (16.7 Hz und 50 Hz) ≤ 10.000 A with DC traction; reducing plates optional

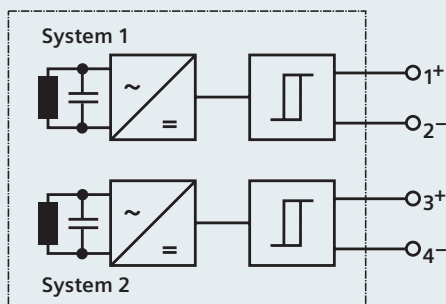
Static Switching Behavior

Switching state:	continuous occupied state for stationary wheel per system
------------------	-----------------------------------------------------------

System offset:	120 mm ± 2 mm
----------------	---------------

Dynamic Switching Behavior

Output signals:	pulse length proportional to speed
-----------------	------------------------------------



Electrical Data

Outputs:

use in accordance with NAMUR Cabling	
– Cable cores:	4 cores (2 cores per system)
– Cable capacitance:	≤ 400 nF
– Line resistance:	NAMUR: RLmax ≤ 50 ohms
Lightning Protection:	Varistor/suppressor diode with current compensation (> 1.5 kW/1ms)
Generic immunity:	CE-compliant, EN 50121

Mechanical Data

Housing

Material:	fiber-glass reinforced plastic
Color:	yellow
Connecting cable:	4 x 0.75 Teflon (shielded) 5.20 m (standard length) with flexible tube
Weight:	1.75 kg

Mounting

Fixing:	drill holes in the rail web rail base clamp optional
Mounting site:	45 mm ± 1 mm below the top of the rail height adjustment within the track by checker plate in steps of 1.5 mm
Mounting stroke:	≤ 55 mm if not limited by the rail profile

Environmental Data

Operating temperature:	–40 bis +85 °C
Humidity class:	IP67

Siemens Industry, Inc.
Rail Automation
2400 Nelson Miller Parkway
Louisville, KY 40223
Tel: +1 800 793 7233
www.siemens.com/rail-automation

© All Copy Rights Reserved to
Siemens Industry, Inc., 2015
Subject to change without prior notice. 9/15