

RDS80001/RDS80002 Series High Speed Railwheel Sensors



Features

- High reliability proximity sensing
- Non polarised 2 wire output with short circuit, overvoltage and transient protection
- Developed to withstand track environment
- Current limited digital output variant
- Output high when no wheel present

Benefits

- Non contact detection of railwheel flanges at speeds up to 500 km/h
- Ease of installation, electrically robust
- Long life, low “in track” maintenance
- Supports extended lineside transmission distances
- Facilitates use in wheel detection systems and fault diagnosis

Description

The RDS80001 and RDS80002 railwheel sensors are 2 wire dc inductive proximity sensors, specifically designed and constructed for sensing railwheel flanges at speeds up to 500 km/h.

There are 2 types of output available.

RDS80001 - Sensor output current proportional to applied voltage. Designed to operate at a nominal 16 Vdc with a 1 kOhm load, which will result in an output of 8 mA with no wheel detected and 2 mA when a wheel is detected.

RDS80002 - Sensor output current is limited to 2/8 mA within sensor to allow use of voltage overdrive to counter interconnecting cable losses (10 km +) and still maintain 2/8 mA output without field adjustment.

Both types are available in both high and low frequency versions.

Operation

The oscillator has an open magnetic circuit. It produces an alternating current, which in turn generates an electromagnetic field. A metal target (i.e. railwheel flange*) entering the relevant airspace changes this field, damping the oscillator. This is internally converted to a digital change in output state. In addition the RDS80002 sensor has a current limited output.

* The field of flange detection is set such that when correctly mounted the sensor is designed to detect wheel flanges over their complete allowable lateral travel (UIC standards).

Typical applications

- Train detection (presence, direction, speed)
- Train direction detectors (refer to Honeywell)
- Train axle counters (refer to Honeywell)

WARNING

PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices, or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

WARNING

MISUSE OF DOCUMENTATION

- The information presented in this product sheet (or catalogue) is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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Technical information

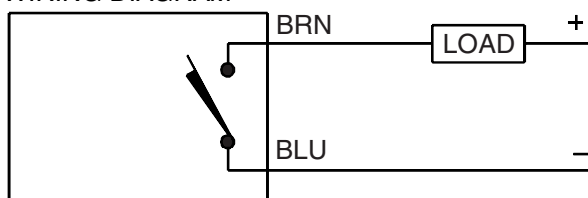
Electrical	RDS80001	RDS80002
Supply Voltage Range	10 to 30 Vdc	
Over-Voltage Protection	50 Vdc	
Output Current (unsensed)	See Figure 1	10mA
Output Current (sensed)	See Figure 2	2mA
Maximum Output Current	20mA	10mA
Protection Degree (BS EN 50124-1)	PD1	
Over-Voltage Category (BS EN 50124-1)	OV4	
Rated Impulse Voltage (U _i) (BS EN 50124-1)	3.1 kV ^[1]	
Rated Insulation Voltage (U _{Nm}) (BS EN 50124-1)	150 V ^[1]	
EMC		
Electrostatic Discharge Immunity	6 kV	
Fast Transient Immunity	2 kV	
Surge Immunity	2 kV common mode/1 kV differential mode	
Short Circuit Protection	Yes	
Mechanical		
Housing	Glass Reinforced Polyamide	
Degree of Protection	IP67	
Shock	500 g (half sine)	
Vibration	20 g (10 Hz to 2 kHz)	
Operating Temperature Range	-40 °C to 80 °C	
Storage Temperature Range	-40 °C to 85 °C	
Weight	820 g	
Termination	6 m [2 x 0,75 mm ²] polyurethane cable	
Sensing Characteristics^[2]		
Sensing Distance S _n @ 20 °C [Target – 90x50x1 mm St37 steel]	26,5 mm	
Variation in S _n @ 20 °C	± 4 %	
Variation in S _n over Temperature Range	± 10 %	
Hysteresis	< 20 %	
Error in Repeatability	< 1 %	
Maximum Switching Frequency	> 400 Hz	
Nominal Maximum Wheel Detection Speed		
Small wheels (Ø=0,33 m)	200 KPH	
Standard wheels (Ø=1,0 m)	325 KPH	
Large wheels (Ø=1,65 m)	450 KPH	

^[1] Insulation classified as reinforced under BS EN 50124-1

^[2] The sensing distance of 26,5 mm refers to the distance achieved with a standard steel plate target. When installed on track this can be extended to a maximum of 35 mm as a result of railhead bias. **Important please refer to “mounting to rail”.**

Wiring details

WIRING DIAGRAM



The sensor is polarity neutral - connection of both positive voltage and negative voltage can be made to either leadwire. For RDS80001 ensure that the load limits the maximum output current to 20 mA at all times.

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Output current

Figure 1

RDS80001 Series output current with no target present

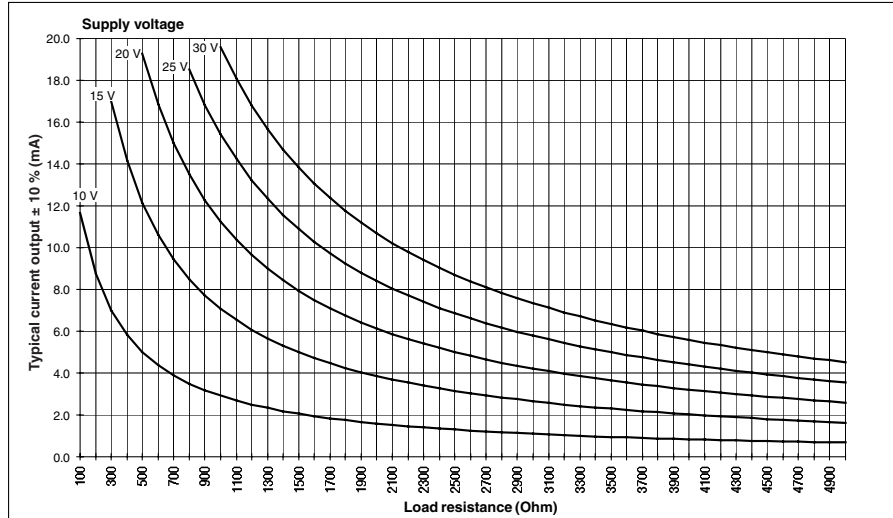
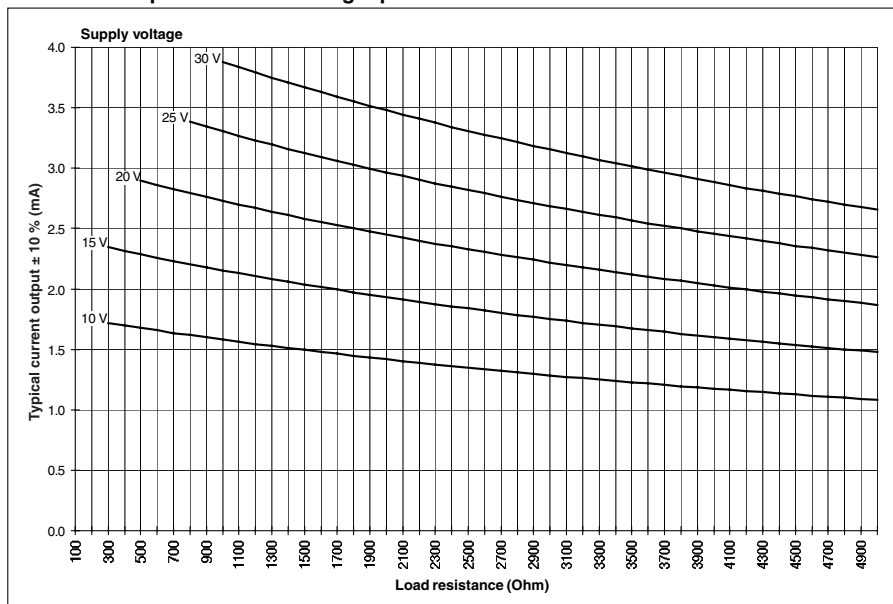


Figure 2

RDS80001 output current with target present



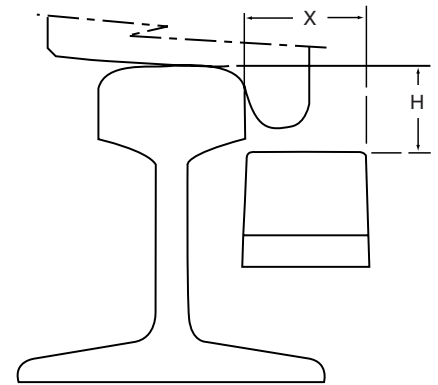
Mounting distances

Between sensors of the same oscillating frequency (e.g. H-H and L-L) > 0,25 m between centrelines of sensors.

Between sensors of different oscillating frequencies (e.g. H-L) > 0,125 m between centrelines of sensors. This distance corresponds to mounting the sensors as close as the enclosed mounting brackets will allow.

Note – Mounting sensors with different oscillating frequencies at the minimum separation distance of 0,125 m provides an overlapping of signals as the railwheel passes.

Mounting to rail



Dimensions H and X, the height below the rail and distance from the rail, will vary according to the track/wheel interface standard which applies to your application. Please contact Honeywell for further details.

Nominal setting

The sensor should be positioned such that the top face of the sensor is 1 mm below the deepest flange (this can be established based on data from the relevant rail authority or by empirical testing).

The sensor side face should be approx. 1–2 mm from the innermost point of the railhead.

If a sensor is to be mounted on a bend, it should be mounted on the inside of the bend.

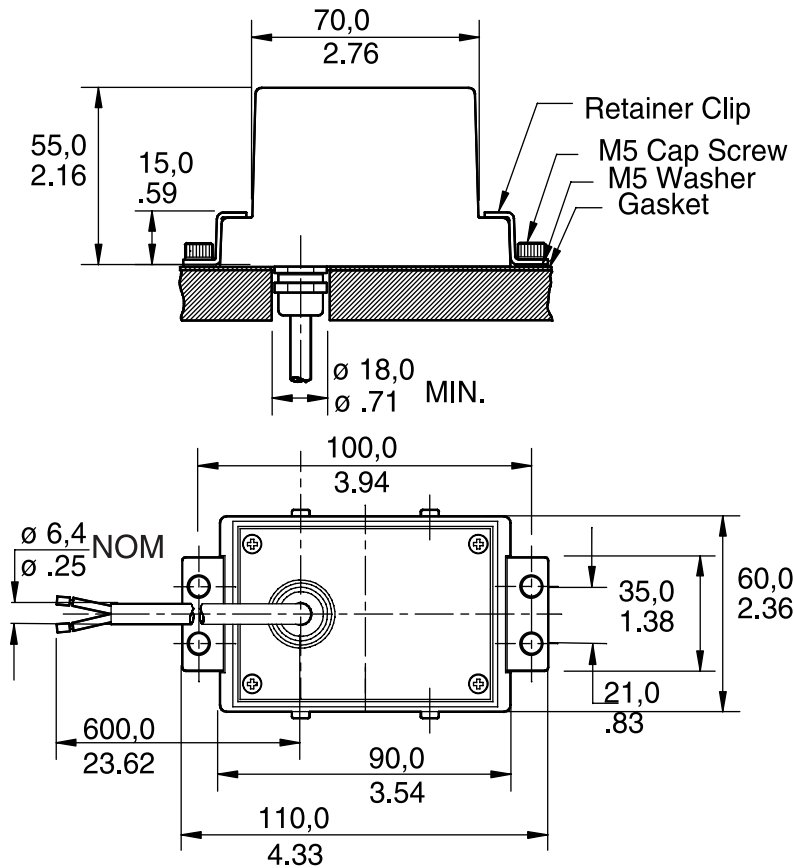
Maintenance checks

The setting of a sensor should be checked regularly based on the particular railways requirements, the wear rate of the rails and any safety requirement.

Mounting components supplied

- 2 Stainless steel retainer clips
- 4 M5 stainless steel cap screws with 4 mm hexagonal heads
- 4 M5 lock washers
- 1 Nitrile rubber gasket (to be installed under sensor as part of shock defence)

Mounting drawing in mm and (inches)



Warranty/Remedy

Honeywell warrants goods of its manufacture as being free of defective material and faulty workmanship. Contact your local sales office for warranty information. If warranted goods are returned to Honeywell during that period of coverage, Honeywell will repair or replace without charge those items it finds defective. The foregoing is Buyer's sole remedy and **is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose.**

While we provide application assistance, personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application.

Specifications may change at any time without notice. The information we supply is believed to be accurate and reliable as of this printing. However, we assume no responsibility for its use.

Sales and Service

Honeywell serves its customers through a worldwide network of sales offices and distributors. For application assistance, current specifications, pricing or name of the nearest Authorised Distributor, contact your local sales office or call:

Asia Pacific: +65 6355-2828

Europe: +45 39 55 54 03

USA: 1-800-537-6945

International: 1-815-235-6847

FAX:

Europe: +45 39 55 55 58

USA: 1-815-235-6545

INTERNET:

www.honeywell.com/sensing

E-MAIL: info.sc@honeywell.com

Available listings

Catalogue Listing	Oscillation Frequency
RDS80001-L	160 kHz \pm 10 %
RDS80001-H	230 kHz \pm 10 %
RDS80002-L	160 kHz \pm 10 %
RDS80002-H	230 kHz \pm 10 %

Previous Railwheel Sensors

The RDS80001 is a direct replacement for the 926FS30 Series sensors previously produced by Honeywell.

926FS30 Series listing	RDS Equivalent
926FS30-060-Z911-H	RDS80001-H
926FS30-060-Z911-L	RDS80001-L

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