



Rowe Hankins Ltd.

- ⊕ Innovate
- ⊕ Design
- ⊕ Deliver

Product Guide

PROUD TO BE PART OF
**Railway Industry
Association**
The voice of the UK rail supply community



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Introduction

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Now under new ownership and management, Rowe Hankins specialise in innovative trainborne and wayside products and systems for the worlds railways. Working closely with rolling stock manufacturers, fleet operators, track owners and infrastructure contractors our experienced engineers have a long and successful track record of providing the highest level of service to rail projects worldwide.

For over thirty years and with a global reputation for quality, reliability and innovation, Rowe Hankins have been designing, manufacturing and supplying a diverse range of products including;

- Geartooth Tachometers & Speed Sensors
- Magnetic Encoders
- AC & DC Non-Intrusive Current Monitors
- RCBO's & Circuit Protection
- Intelligent Friction Modifier and Lubrication Systems

In addition, the UK manufacturing site has a dedicated repair and overhaul facility providing a high quality and cost effective service for a range of electro-mechanical and electronic products for high voltage, and high current AC & DC systems.



For more information contact:

+44 (0) 161 765 3000 | sales@rowehankins.com | www.rowehankins.com

Power House | Mason Street | Bury | Greater Manchester | BL9 0RH



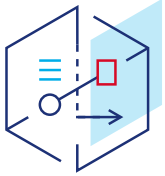


Our Services

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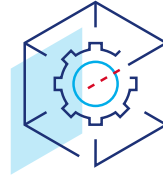
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Engineering & Consultancy

The Rowe Hankins engineering department has a team of professional engineers with electrical, electronic & mechanical principles who deliver all stages from conceptual design, product & system development to final build, test and commissioning.

Industry recognised project management and governance is observed with key milestones and deliverables reported to our customers throughout each stage of the project.



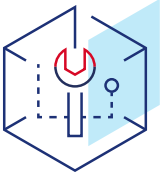
Electronic Servicing

The Rowe Hankins electronic service department specialises in service, repair and maintenance of various traction systems including OTMR's (On Train Monitor Recorder).

The diagnostic software/hardware is used to test a range of OTMR's, (e.g. 1500, 2200 series). Bespoke system test equipment to represent all OTMR interfaces can be designed, ensuring full functionality is tested before returning to the customer.

With capability to test/repair many other trainborne systems & components such as; 'Optical Pulse Generators' used for train speed measurement.





Electro-Mechanical Servicing

The electro-mechanical service department carries out a variety of work, specifically overhaul, service and repair of:



DC Circuit Breakers



Contactors



Overcurrent Relays



Pressure Switches



Delta Switches

For high current DC Circuit Breakers, final testing and calibration is carried out by using dedicated high current injection test equipment (up to 5000 Amps). Instantaneous, ramping and continuous currents can be given as an output from the test equipment. For every unit that is repaired, serviced or overhauled at Rowe Hankins, a detailed report is produced for traceability and for customer assurance & compliance documentation.

Overhaul contracts are regularly undertaken to customer service schedules, in low or high volumes.

Rowe Hankins can offer conditional assessment and overhaul capabilities for most electro-mechanical products including reverse engineering where obsolescence is a real world problem.

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Working with rolling stock manufacturers, train operating companies, track owners and infrastructure contractors, Rowe Hankins provides innovative trainborne and wayside electro-mechanical equipment for safer and more efficient operations.



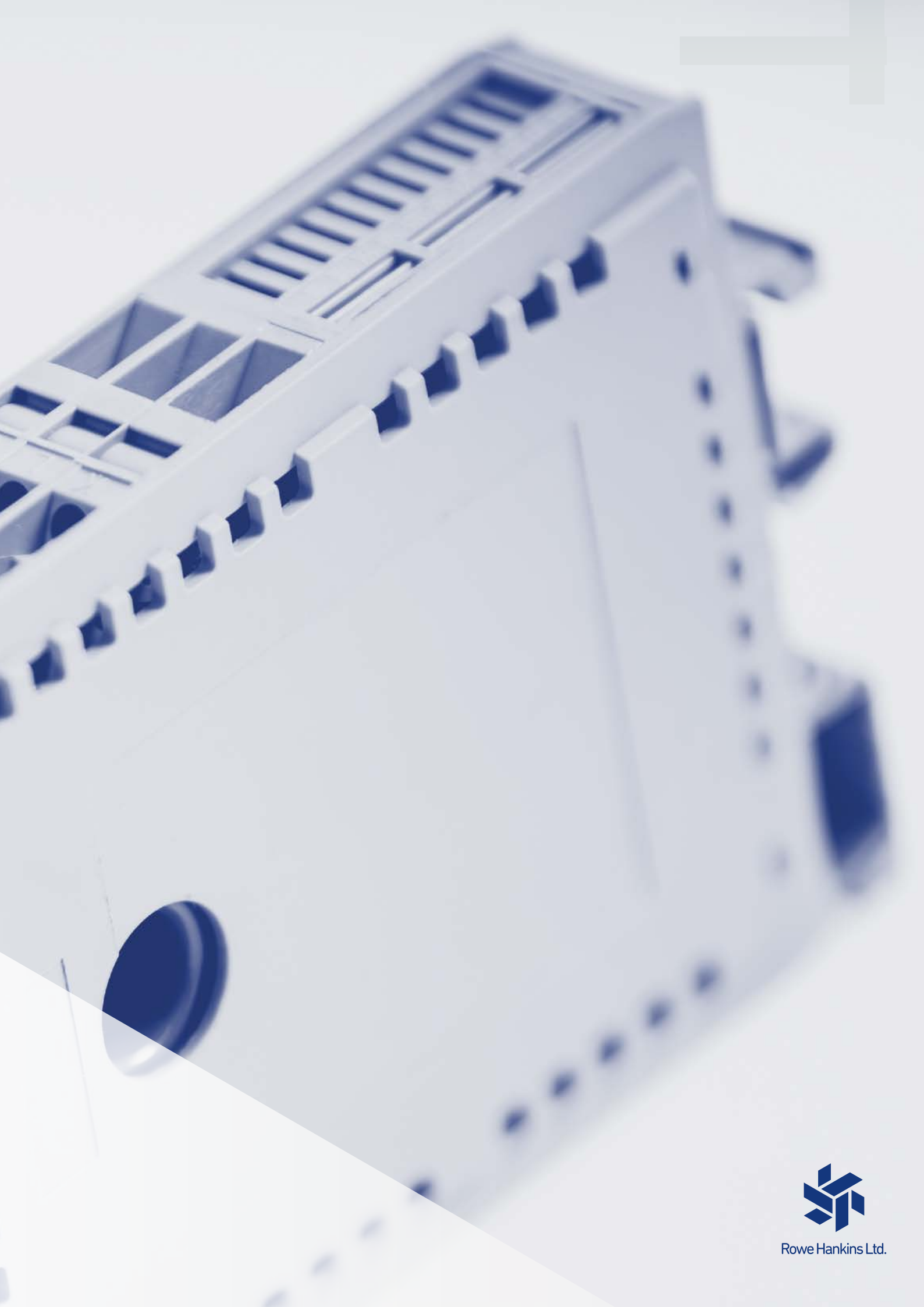
Our Products

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Rowe Hankins Ltd.

iWFL: Intelligent Wheel Flange Lubrication System



Rowe Hankins has supplied a UK Government-backed project on Crossrail with an intelligent wheel flange lubrication system that enables asset managers to extend the lifecycle of wheel wear & rail infrastructure that makes passenger journeys greener and quieter.

Lubrication serves to reduce abrasion wear of wheel flanges and railheads, which occurs especially on track curves and at track switch points. Rowe Hankins offers the Intelligent Wheel Flange Lubrication System (iWFL) as an innovative and cost effective trainborne solution.

The iWFL system is easy to integrate onto the bogie and the vehicle environment. The system incorporates a proven robust design that uses compressed air available either from the vehicle or can be supplied from a dedicated compressor.

We offer bespoke user configurations, to allow the end user to configure route spray parameters, using GPS or track data.

Lubrication consists of spraying a biodegradable lubricant from nozzles onto the wheels. The nozzles are located and are directed precisely.

The iWFL system improves infrastructure and rolling stock service life, as well as overall safety by reducing both wheel and track wear. The reduced wear of the wheels, means wheels need to re-profiled less frequently in addition to reducing friction on the track. As a result, the green iWFL System uses less energy and fuel to run the rail vehicle compared to without.

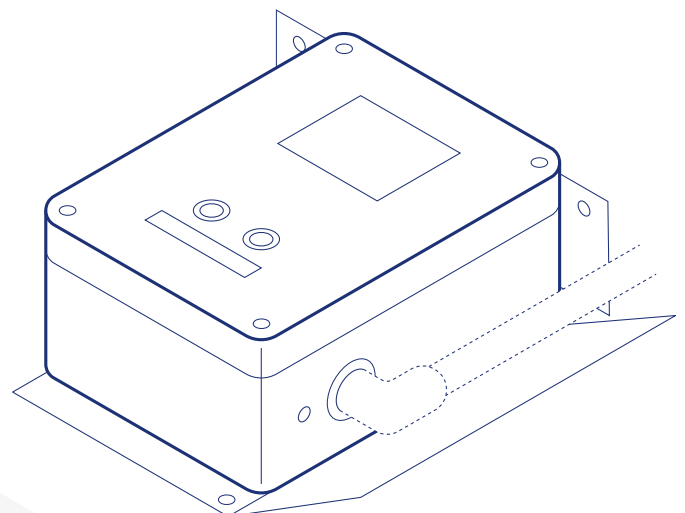
System design

The iWFL System consists of line replacement units:

- Fluid tank (typically 5L, 10L, up to 20L).
- Pneumatic Unit fitted with two or four outputs to the nozzles.
- Intelligent Controller (Falcon Unit).
- Nozzles.

With options such as

- Air compressor, should train air be unavailable.
- Independent GPS antenna or serial data link for track data from the train.



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Basic System Operation

The lubricant in the tank is not pressurised and is transferred to a pneumatic control unit by an air actuated hydraulic pump located inside the tank. The lubrication is then mixed with air in the pneumatic control unit to a predetermined consistency, which is then sent to the vehicles wheels via a dedicated spray nozzle. The complete process is intelligently controlled by a Flange Area Local Control unit (FALCON).



Each nozzle can be individually switched or activated and provides a targeted application of lubrication only to a wheel flange. This prevents wastage of the lubricant.

Whole spray operation is controlled and triggered by the programmable flange area lubrication control unit (Falcon).

The intelligent spray activation is possible in three ways:

- At intervals of time or distance. The spraying pulses are triggered after the programmable pause time or the travelled distance.
- The spray intervals are triggered by a specially designed sensor which detects when the vehicle is on a curved section of track.
- By GPS/Track Balise/TCMS signals allowing lubrication at specific predefined positions on the track.

Cost benefits of iWFL

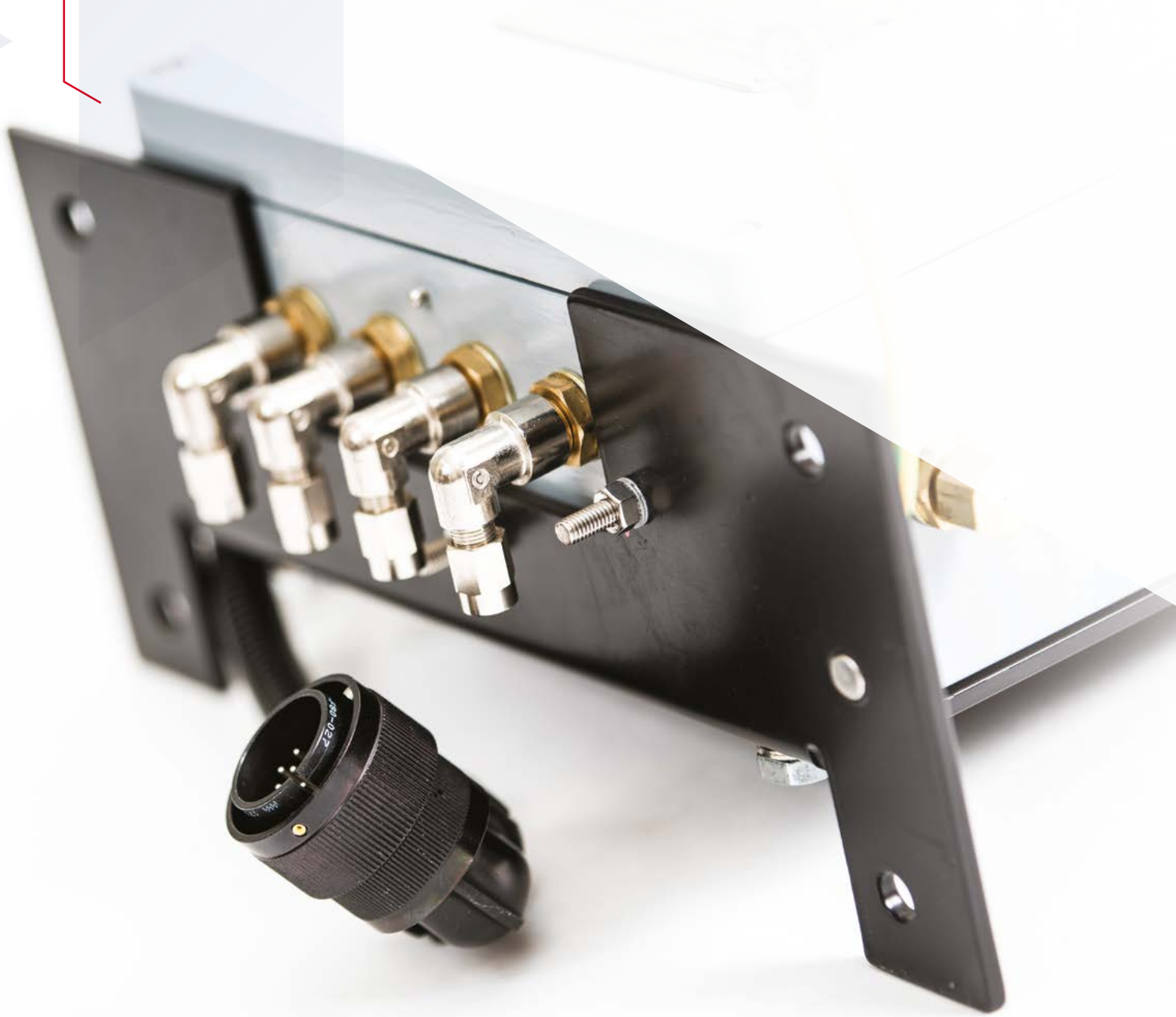
Description	Stick Lubrication	Rowe Hankins Ltd. iWFL
Frequency of refilling per year	25 to 30	6 to 9
Track and Wheel Benefits	Life x 2	Life x 2 plus*
Lubricant	Continuous Usage	Intelligent conditional dispensing

The lubricant produced by Rowe Hankins for the iWFL system is biodegradable.

**Track and Wheel benefits are subject to track layout and nature of operational service, including timetable schedules.*



ToRFM: Top of Rail Friction Modifier System



Top of Rail Friction Modifier is engineered to reduce vehicle noise through curved track sections and switches, and further reduce rail corrugation by the application of a friction modification lubricant to the top of the rail.

The application of Friction Modifier is achieved by a bespoke compressed air system which transfers the Friction Modifier to the top of the rail. The Friction Modifier is also subsequently picked up by other passing wheels.

The friction modifier reduces rail contact fatigue, making both the rail and wheel more durable and long-lasting. This reduction in contact fatigue improves the environmental impact due to the frequency of replacement materials required, which in turn decreases downtime and costs.

The Wheel-Rail interface is a critical, targetable cost driver for performance, cost of inspection, maintenance, deterioration and renewal, all highly dependent upon the frictional interfaces.

Cost effective management of this interface to extend rail and wheel life by intelligent dispensing of customised Friction Modifiers from trainborne systems gives assurance and improved financial performance to operators and asset owners.

Basic System Operation

The lubricant in the tank is not pressurised and is transferred to a pneumatic control unit by an air actuated hydraulic pump located inside the tank. The lubrication is then mixed with air in the pneumatic control unit to a predetermined consistency, which is then sent to the vehicles wheels via a dedicated spray nozzle. The complete process is intelligently controlled by a dual purpose Flange Area Local Control unit (FALCON) which incorporates Top of Rail Friction Modifier (ToRFM).

Reduced Noise in Vehicle and Operating Environment

- Active noise reduction for train / platform operatives, pedestrians and businesses located adjacent to the railway or tramway.
- Increased driver awareness of in-cab audible signals.
- Control of station approach curve noise exposure levels for platform staff and passengers.
- Improved intelligibility of public address systems at stations.

Reduced Vehicle and Track Maintenance Costs.

- Accurate spray profiles for any rail or tram route.
- Low lubrication consumption compared with stick lube and trackside applications.
- Selective wheel spraying - Flange / Back of Flange or ToRFM.
- Highly durable Friction Modifier developed for ToRFM.
- Extension of wheel inspection periods.
- Extension of wheel life.
- Reduced wear and vibration in propulsion drive transmission systems.

A close-up photograph of a speed sensor assembly mounted on a white car wheel hub. The sensor is a black cylindrical component with a white plastic cap. The background is a blurred white surface, likely the car's body.

Speed Sensors

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A wide range of non-contact, multi-channel Speed and direction Sensors, designed for safety critical systems to operate in harsh environments.









Our range of Speed Sensors use Hall Effect & GMR technology to achieve accurate speed and direction sensing. The maximum air gap is determined by the type of Sensor and the Target/Gear Wheel tooth profile.

Speed Sensors supplied with up to 4-galvanically isolated outputs, allowing for customer application flexibility in the number of channels required.

The 4 Channel Speed Sensor can be used to replace existing single and dual channel Speed Sensors, as the physical footprint is of the same form of sensors used in typical applications. This means fewer Speed Sensors per train, having a novel design that improves product cost, life expectancy and reliability.

Various output channel drive circuits are available such as: open collector, supply tracking, push-pull and current output. The Speed Sensors are suitable for generating phase-shifted square wave signals proportional to the rotational speed. Pulse generation can be guaranteed down to zero speed corresponding to a frequency of 0Hz.

Features & Benefits

-  Designed to be installed in the harsh rail environment.
-  Various signal output types are available.
-  Single, Dual or multi-channel outputs up to four channels.
-  Capable of measuring from 0Hz to 20kHz.
-  Reverse supply voltage polarity protected.
-  Stainless steel housing in various styles protecting against corrosion.
-  Various terminal connections or connectors.
-  High reliability.



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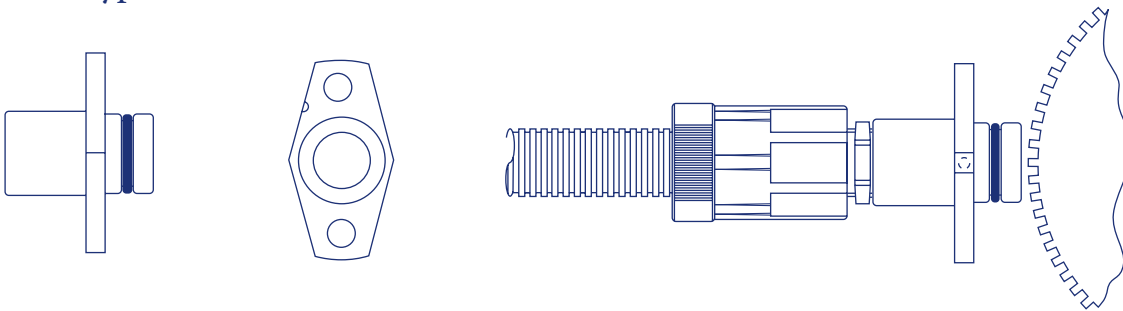
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All of our Speed Sensors are designed and manufactured as bespoke products to meet customer requirements.

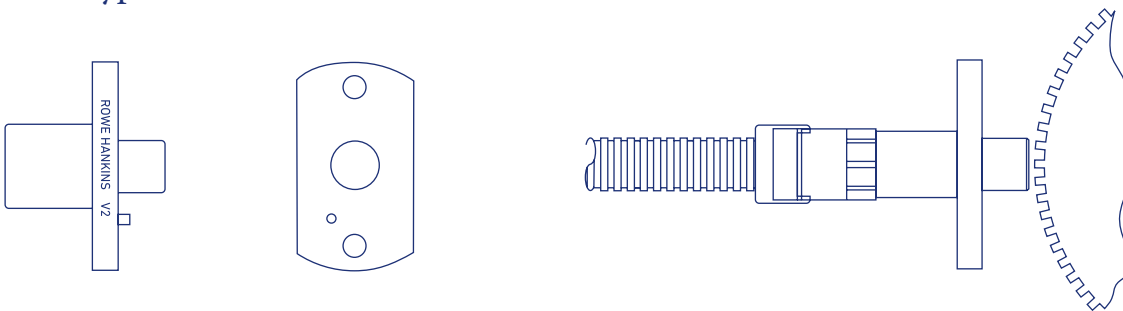
Rowe Hankins selection of standard sensor shell housing styles can be manufactured as shown below. Bespoke sensor shells can be designed also.

◊ Typical standard shell type examples: HW, AN and ST.

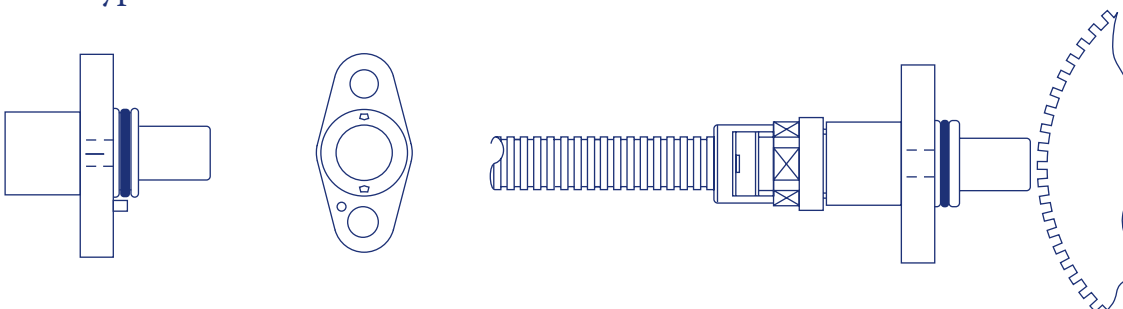
Shell Type HW



Shell Type AN



Shell Type ST

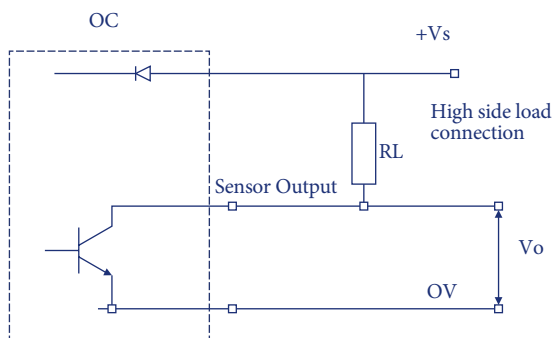


Variations of Speed Sensors.

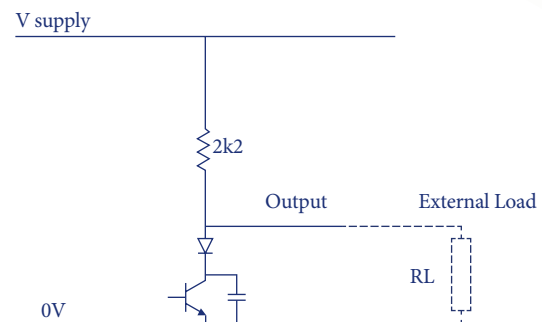
Industry standard / recognised Sensor electrical configurations are available in four different types; open collector, supply tracking, push pull and current output.

- Industry leading cable manufacturers are used, with bespoke customer specifications also available.
- Connector types are typically MIL-C 5015 bayonet or thread locking. AB, Amphenol, Harting, Souriau, or others on request.
- Cable protection as required - using PMA conduit as a standard or other types to meet the customers specification.

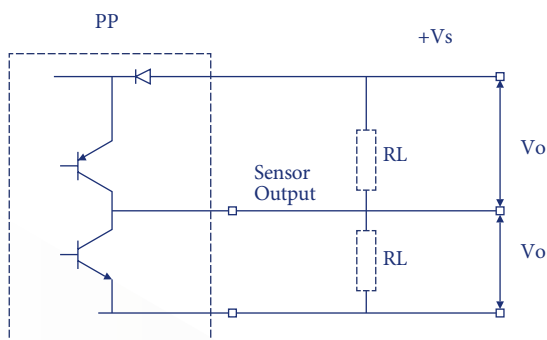
Open Collector



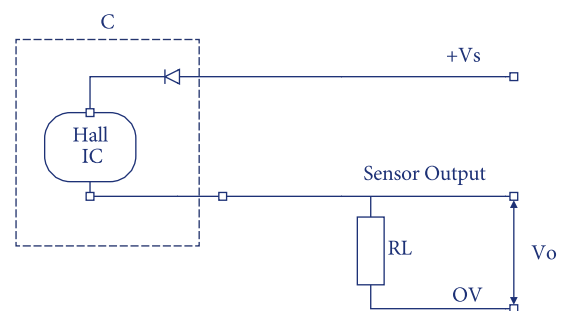
Supply Tracking



Push-Pull



Current Output



Mechanical

Air gap:	Typically $1.0 \pm 0.5\text{m}$ (target dependent)
Ambient temperature range:	-40°C to 120°C,
Thermal shock:	+/- 35°C over 30 seconds
Relative humidity:	0-98% condensing
Protection class (IEC60529):	IP67
Impervious to:	Oil mist, salt spray, conductive dust
Shock and vibration:	EN 61373 category 3
Sensor housing material:	Stainless steel, grade SAE 30303



Electrical

Sensor Output Type:	Open Collector	Supply Tracking	Push-Pull	2-wire
Power Supply (Vs):	10V-24V DC	10V-24V DC	10V-30V DC	10V-24V DC
Current consumption:	< 12mA for single channel, < 36mA for 2, < 65mA for 4 channels (without load)			
Insulation resistance and test:	Insulation resistance > 100MOhm Flash test @ 600Vrms, 50Hz			
Maximum output source current:	n/a	14mA @Vs=30V	20mA	16mA per channel
Maximum output sink current:	20mA	20mA	20mA	n/a
Number of signal outputs:	1 to 4			
Output waveform:	Square wave			
Signal output low voltage:	Vs <1.0V@ 20mA	Vs <1.0V@ 20mA	Vs <1.8V@ 20mA	n/a
Signal output high voltage:	Supply and load dependent	$(Vs/2k2+RL) * RL$	>Vs -2V @20mA	n/a
Signal output low current:	n/a	n/a	n/a	4-8.4mA
Signal output high current:	n/a	n/a	n/a	12-16mA
Signal output frequency:	0 to 20kHz	0-8kHz		
Phase displacement (2 signal pairs):	90° +/- 45° (target & alignment dependent)			
Duty Cycle:	30%-70% (target & alignment dependent)			
Electromagnetic compatibility:	EN 50121-3-2			
Cable screen termination at sensor end:	According to customer requirements			
Cable (screened):	2 to 8 core, Low smoke, Zero Halogen			
Conduit for cable protection (if required):	Low smoke, Zero Halogen			
Connector (if required):	Typically, MIL-C5015 Bayonet			



TACHO Units (axle end mounting)

The installation of the Speed Sensors is normally onto the vehicle axle box housing. Rowe Hankins also manufacture a complete Tacho Unit which comprises of a Speed Sensor/ Axle end housing and a Modular Gear or Magnetic Target Wheel.

The Speed Sensor is derived from the standard range of Sensors, typically a dual channel Sensor, that allows for detection of vehicle direction and operates down to zero speed. A steel toothed Target Wheel will typically have 60 to 100 teeth, which is bolted onto the axle end or may be magnetically attached.

An axle end housing, made from stainless steel, supports the mounting of the Speed Sensor, together with cable/ conduit strain relief if required. The housing with the Sensor is securely bolted onto the axle end.

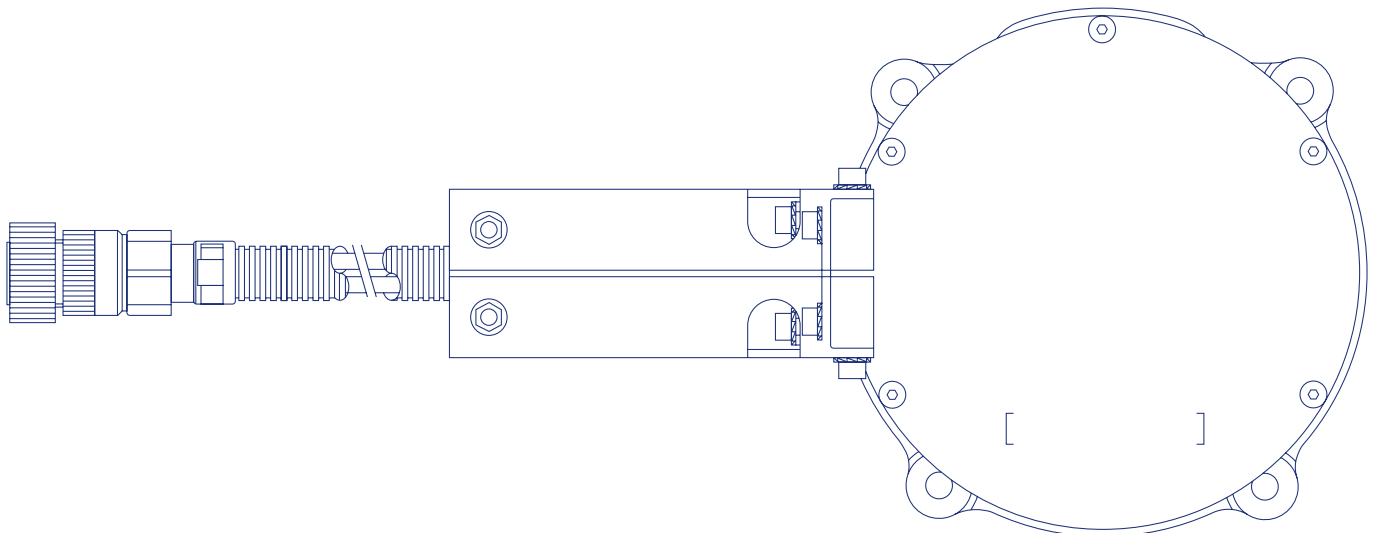
The benefit of Rowe Hankins supplying a Tacho Unit is that it is designed and tested as a subsystem ready to install onto the vehicle.

A complete Tacho Unit design meets mandatory and customer specific verification requirements which are governed by the following BS EN standards.

BS EN 50155 - Railway Applications.
Electronic equipment used on rolling stock.

BS EN 50121-3-2 - Railway Applications. Electromagnetic compatibility (pt3-2 Rolling stock - apparatus).

BS EN 61373 Category 3 - Axle mounted equipment.
Shock and Vibration.



Typical technical properties are listed below:

General

Number of pulses per revolution:	110
Number of output channels:	2
Air gap (between sensor and target):	1.0mm \pm 0.5
Ambient temperature range:	-25°C to 80°C
Thermal shock:	+/- 35°C (95°F) over 30 seconds
Relative humidity:	0-98% condensing
Protection class (BS EN 60529):	IP67
Shock and Vibration:	IEC 61373 category 3 - Axle mounted equipment
Cable & Conduit Type:	2 X 4 core screened cable, low smoke, zero halogen
Cable length:	~2m
Connector type:	10-way plug (MIL-C-5015)
Estimated mass:	Tacho housing & Sensor ~6kg. Target ~2.8kg

Electrical Properties

Power supply V_s :	Nominal in the range 15-24VDC
Current consumption:	Less than 60mA @ 24V
Number of Signal outputs:	Two
Output waveform:	Square wave
Signal output low voltage:	£0.03V at 6mA (sink current)
Signal output high voltage:	< $V_s * 0.7$ at 6mA (source current)
Signal output frequency:	0 to 3 kHz
Duty cycle:	50% \pm 15
Phasing between channel 1 & 2:	90° \pm 36°

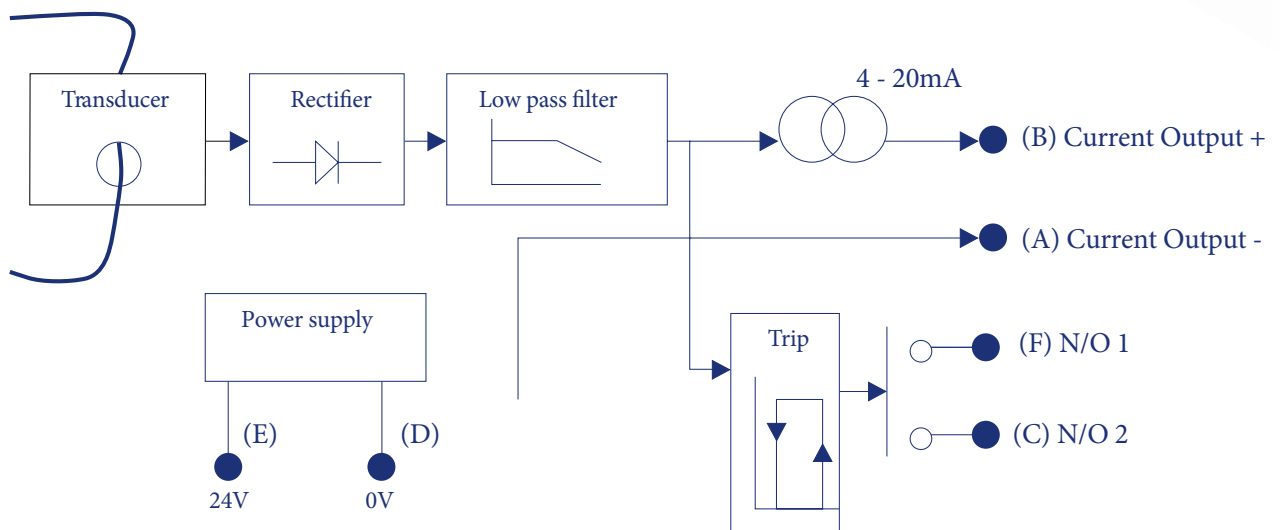


NIC: Non-Intrusive Current Monitoring Unit



Non-intrusive Current Monitors (NIC's) are used for wayside applications to assist in preventative maintenance in signalling AC and DC currents. Indicating signalling and other wayside equipment requires repair or replacement before failure. The NIC Unit has a 4-20ma current loop output and volt-free contacts which activate when the threshold of the device is reached.

Functional block diagram



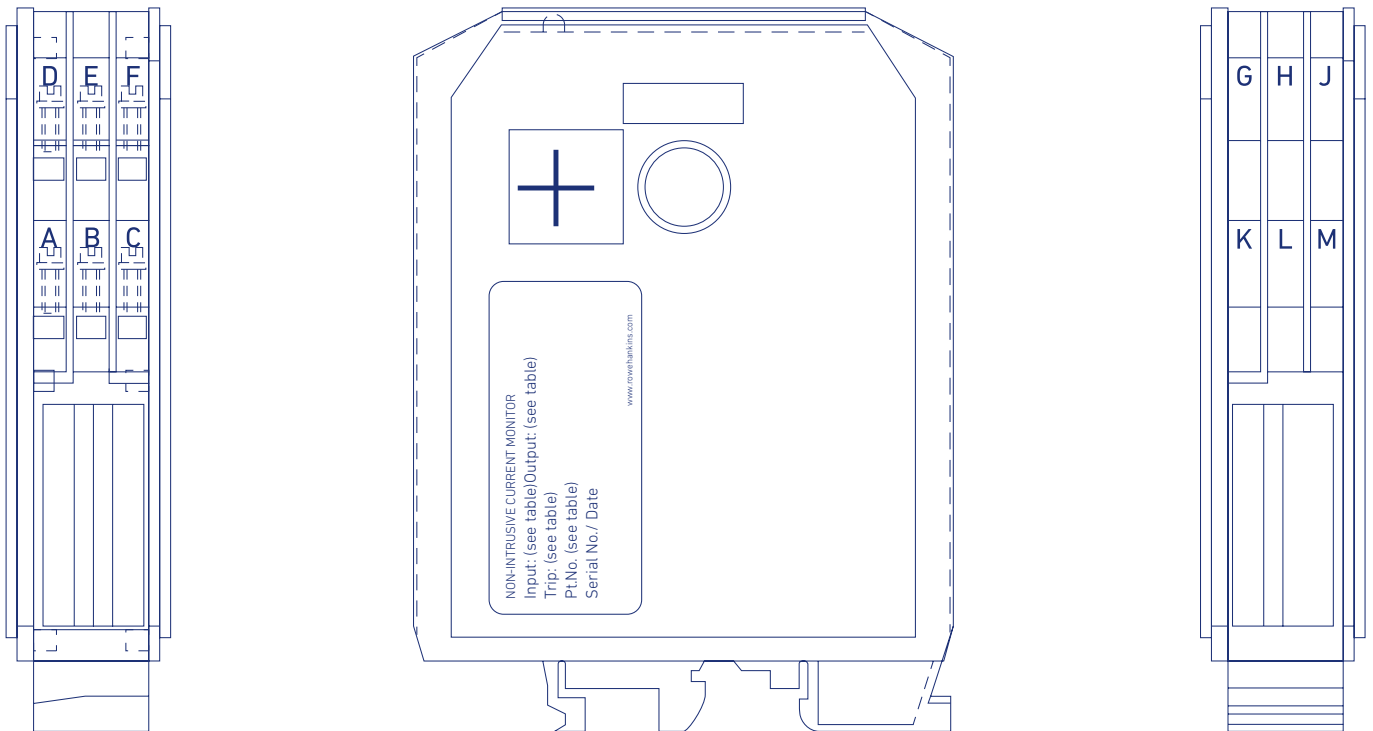
The current carrying conductor of the circuit that requires to be monitored is passed through the aperture of the NIC Unit, internally the conductor passes through a current transducer which provides a voltage proportional to the current being measured. The signal output is then passed through signal processing circuitry (amplification, full wave rectification and filtration) to then provide a 4-20mA current output proportional to the current range being measured.



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Features & Benefits



Intelligent infrastructure initiative for remote condition monitoring and proactive maintenance.



Ability for equipment to be 'fixed before failure'.



Enables significant reduction in manual routine inspections.



Non-contact measurement of DC currents up to $\pm 600\text{mA}$.



4 to 20mA current output.



Current trip with relay output.



LED trip level indicator.



24V DC power supply.



Reverse Supply Polarity protection.



DIN rail mounting.



Unipolar versions are also available.



Network Rail approved.



The product is RoHS and WEEE Compliant.

	Value	Units	Notes
Primary Current Ipmax	± 100	mA	Type 1
	± 200	mA	Type 2
	± 400	mA	Type 4
	± 600	mA	Type 6
	+ 600	mA	Type 6a. This is unipolar monitor.
Output Current			
at Ip=0	4	mA	
at Ip=Ipmax	20	mA	
Load resistance max	500	ohms	
Trip Level (Optional)	5 to 90% of Ipmax	%	Factory set
Hysteresis	30	%	
Trip LED	Red		
Relay Output (Optional)			Only available if trip level set
Voltage	110V dc max	V	
Current	500 mA max	mA	Resistive load
Power Supply			
Volts	24V dc ±10%	V	
Current	< 100mA	mA	@20mA load
Power on LED	Green		
Frequency Response	DC to 40Hz DC to 5Hz (Type 6a)	Hz	3dB
Step response	50 ms typical	ms	To 90%
Accuracy	± 2	%	
Operating temperature	-20 to +85	°C	

Electrical Connections

Signal	Terminal	Notes
+24V	E	
0V	D	
Output O/P+	B	
Output O/P-	A	
Relay Output N/O1	F	Connections only available if unit has trip setting
Relay Output N/O2	C	
Primary Current	N/A	Cable passed through side hole

Mechanical Data

Case - DIN Rail	Value	Units	Notes
Width	22.5	mm	
Depth	60.5	mm	
Height	98	mm	
Primary cable hole diameter	11	mm	
Material	Polyamide		
Mass	110	g	Maximum

AC & DC Earth Leakage Unit

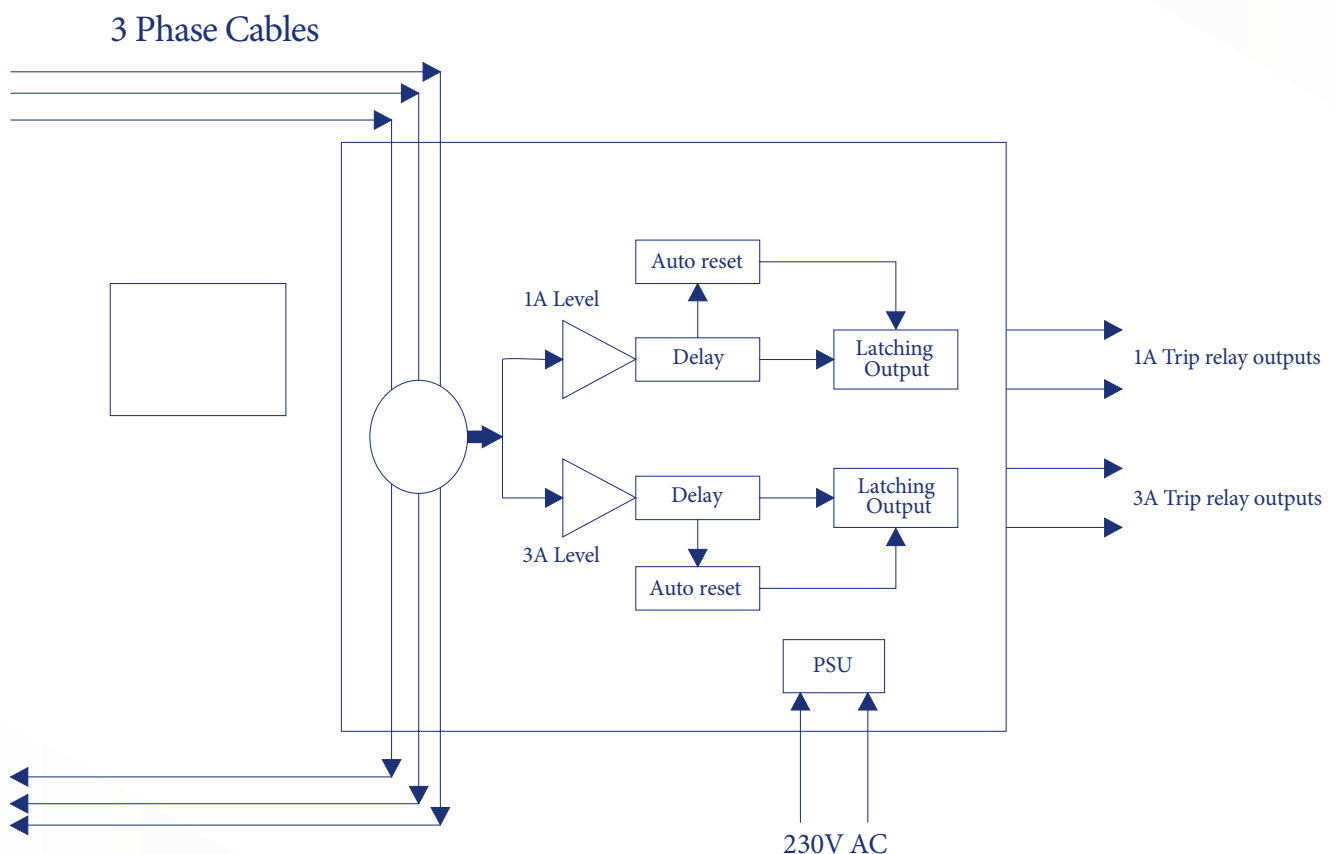
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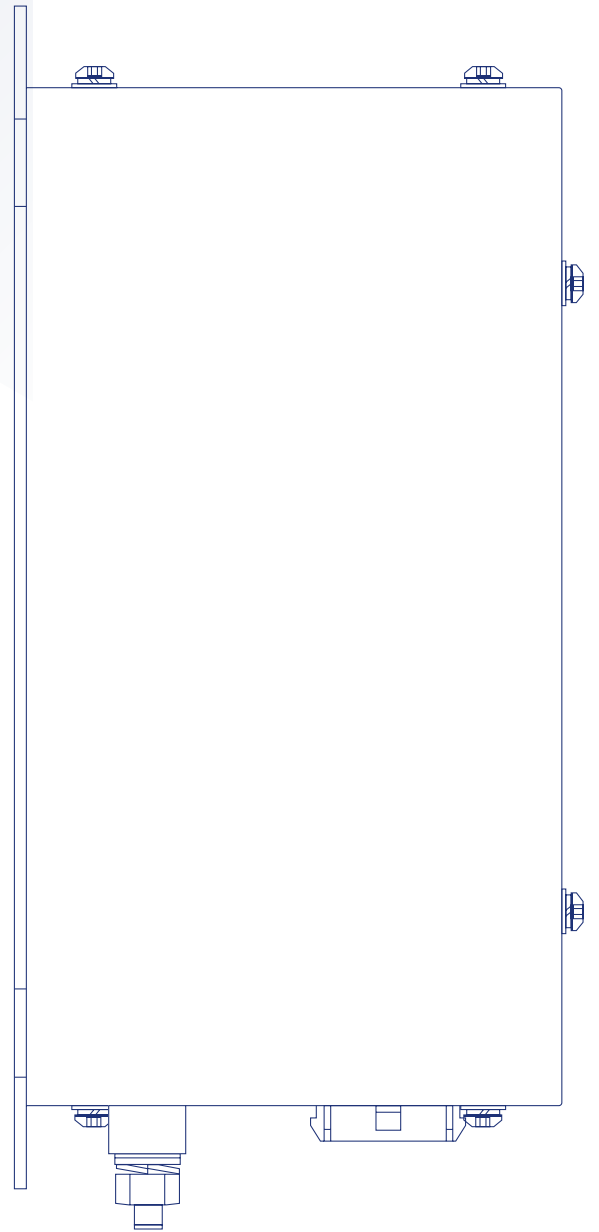
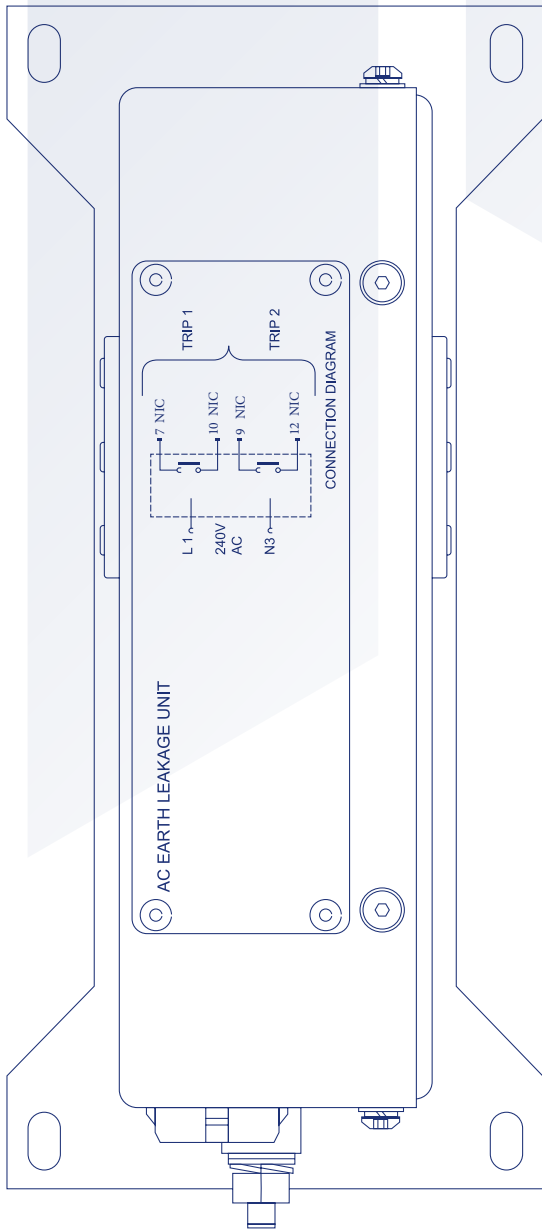
An Earth Leakage Unit detects current imbalance or earth leakage in AC or DC power supply circuits. This allows disconnection of supply in a specified time period at a specified leakage current.



The primary conductors of the system are passed through a current transformer or transducer allowing any imbalance or leakage to be detected. Any detected current signal is filtered and processed, and if it exceeds a set limit for a set time, a fault signal is generated. Output fault signals can take the form of voltage free relay contacts.

The fault state may be latched, requiring unit power-up reset or fault is reset automatically after a specified time if no current imbalance is detected.


Rowe Hankins new dual trip AC Earth Leakage Unit is digitally programmed and is the next evolution of current imbalance detection.



Features & Benefits

 For protection of AC/DC power supply circuits.


 Locked fault output requiring active reset.

 Compact IP20 rated steel enclosure
~(Length:252mm, Height: 117mm, Width: 100mm).

 Cable aperture is ~ 14mm in diameter.

 Bespoke settings for customer requirements.

 Compact steel IP20 rated enclosure.

 Compliant to Standards:
BSEN 50155:2007, BSEN 60529:1992,
BSEN 50121-3-2:2006, BSEN 61373:2010.

Circuit Breakers



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Precise, nuisance-free circuit protection

Hydraulic magnetic circuit breakers offer high performance with high current applications. They provide precision protection and offer great advantages, such as elimination of nuisance tripping and continuous operation at 100% of current. The circuit breakers are immediately resettable and are temperature independent. They are available with a choice of non-delayed or time-delayed trip characteristics.



Rowe Hankins supply two main ranges of Circuit Breakers, the RH and the MRH range to suit a wide application range. With current ratings up to 100A (for specific applications) employing the use of hydraulic magnetic technology.

Features & Benefits



Continuous operation at 100% rated current at temperatures between -40°C and +85°C.



Low smoke and zero halogen.



Resistant to corrosion.



1-6 poles are available with multiple poles internally coupled; series or relay configuration with auxiliary contacts.



The range has a minimum of 10,000 switching operations.



DC, 50/60Hz, AC/DC and 400Hz options.



A simple On/Off toggle switch, this signage enables the Circuit Breaker to be fitted in either standard or reverse orientation.



Increased shock and vibration parameters.



Available with M5 M6 or UNC stud terminals.



There is a choice of various trip curves available, instant, motor start and high inrush.

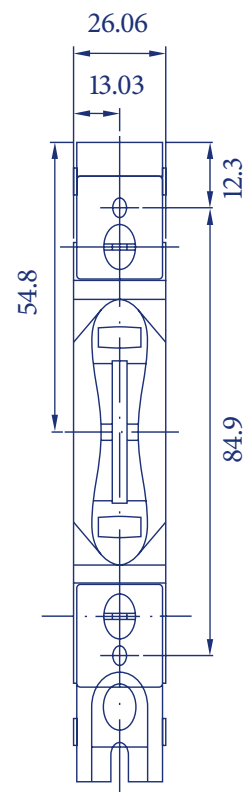
The RH Range

The RH Circuit Breaker family is available from single pole units up to 6 poles. Each pole can be independently configured in terms of terminal type and trip configuration to suit any application requirement.

The RH Circuit Breaker is designed to protect systems that in particular may have high inrush current present upon start up, without the sacrifice of functionality or longevity of the products lifespan. Also, for systems that may be susceptible to a high interrupt capacity.

Terminal configuration

The RH range of Circuit Breakers can be supplied with a variety of different terminal configurations; screw terminals, stud terminals or solderless connections. The choice of stud terminals is available with rear connections. Alternatively, screw terminals or solderless connections are available with front connections.



All dimensions are in millimeters

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Mounting

The RH Circuit Breaker mounting is achieved with the use of M4 mounting inserts.

Description	Single or Multi-pole general purpose medium current Circuit Breaker. Compact E-Frame configuration. Wide choice of trip delays; remote off, shunt trip, auxiliary switch, relay trip & high inrush.
Handle colour and marking	White toggle as standard with Black I/O identification.
Current & Voltage Rating	100A at 600V, 20 to 60Hz from a sinusoidal supply, or 125VDC. The contact is capable of rupturing short-circuit currents of up to 7,500A under certain conditions.
Operating Temperature and Environmental conditions	-40°C to +85°C. Relative Humidity: 0-100%. Atmosphere: Saline.
Auxiliary Contacts	NO / NC contacts activated by the function of the Circuit Breaker. The maximum rating of the auxiliary contacts is 10A, 250Vac, 50/60Hz.
Insulation	Circuit Breaker withstands voltage ratings. Test conditions; (AC, RMS, 50Hz for 1 minute). Main Contacts - mounting points 3,100V Main Contacts - auxiliary contacts 3,100V Auxiliary Contacts - mounting point 2,500V
Terminal configuration and Torque settings	M6 45mm terminals are standard. Maximum torque on main terminals studs are 34-40Nm.
Approvals	EN 45545-2 EN 60934 EN 60947-2 EN 60529 EN 50125-1 EN 61373 EN 600628-2-38 EN 60068-2-11 UL recognised CSA certified VDE approved CE compliant CC approved NF F62-001 NF F16-101 REACH ROHS

Trip curve data sheet, available on request.

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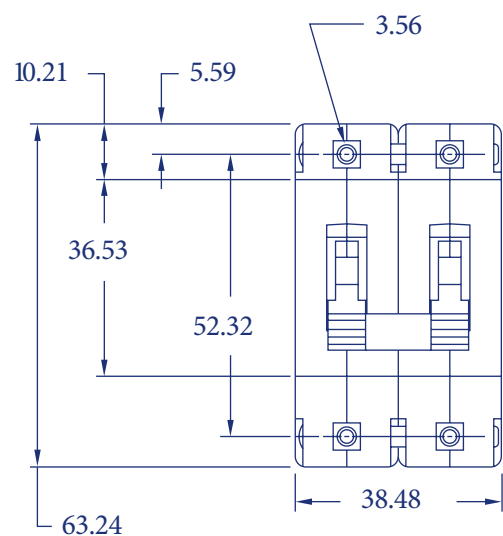
The MRH Range

The MRH Circuit Breaker family is available from single pole up to 4 poles as standard, for 5 and 6 poles units are subject to availability. Each pole can be independently configured in terms of terminal type and trip configuration.

The MRH Circuit Breaker is designed to protect systems that in particular may have a linear inrush current present upon start. Also, for systems that may be susceptible to high interrupt capacity, typically up to and including 5KA.

Terminal configuration

The MRH range of Circuit Breakers can be supplied with a variety of different terminal configuration; stud terminals, (M6, ¼-20, M5, 10-32) screw terminals, clip terminals and bullet terminals. All terminal variants are available with the rear connection.



All dimensions are in millimeters

Mounting

Circuit Breaker mounting is achieved by M3 mounting inserts.

Description	Single or Multi-pole general, with current monitoring capabilities of up to 100A for 24Vac systems and 50A for 425Vac systems. A Wide choice of trip delays; remote off, shunt trip, auxiliary switch, relay trip & high inrush.
Handle colour and marking	Black toggle as standard with black I/O marking.
Current & Voltage Rating	5-100A, 110VDC to 240Vac 5-100A 240Vac 50/60Hz 5-50A 415Vac 50/60Hz Units rated for 240/415Vac and above 50A. Not suitable for across the line motor starting.
Operating Temperature and Environmental conditions	-40°C to +85°C. Relative Humidity: 0-100%. Atmosphere: Saline.
Auxiliary Contacts	Non VDE approved switches have a maximum UL rating of 10A, 250 Vac, 50/60Hz: 3A, 50Volts DC. The maximum VDE ratings are 1A, 125 Volts, 60Hz and 0.1A, 125 Volts, 60Hz. Connection achieved via 2.8mm quick connect terminals.
Insulation Dielectric strength	The MRH Range protectors withstand 3750Vac, 60Hz for 60 seconds between all electrically isolated terminals. The auxiliary switch terminals shall withstand 600Vac, 60Hz. Four terminal dual coil and relay construction will withstand 1500Vac.
Terminals	M5 terminals are standard unless the current rating is 80A or over in which case M6 terminals are used. Maximum torque settings are 2mm, 3mm and 4mm respectively.
Approvals	EN 45545-2 EN 60934 EN 60947-2 EN 60529 EN 50125-1 EN 61373 EN 600628-2-38 EN 60068-2-11 UL recognised CSA certified VDE approved CE compliant CC approved NF F62-001 NF F16-101 REACH ROHS

RCBO: Residual Current Breaker Overload

The RCBO is a hydraulic magnetic Circuit Breaker with the added benefit of residual current protection, the RCBO family is available in both 2 pole and 4 pole configurations.

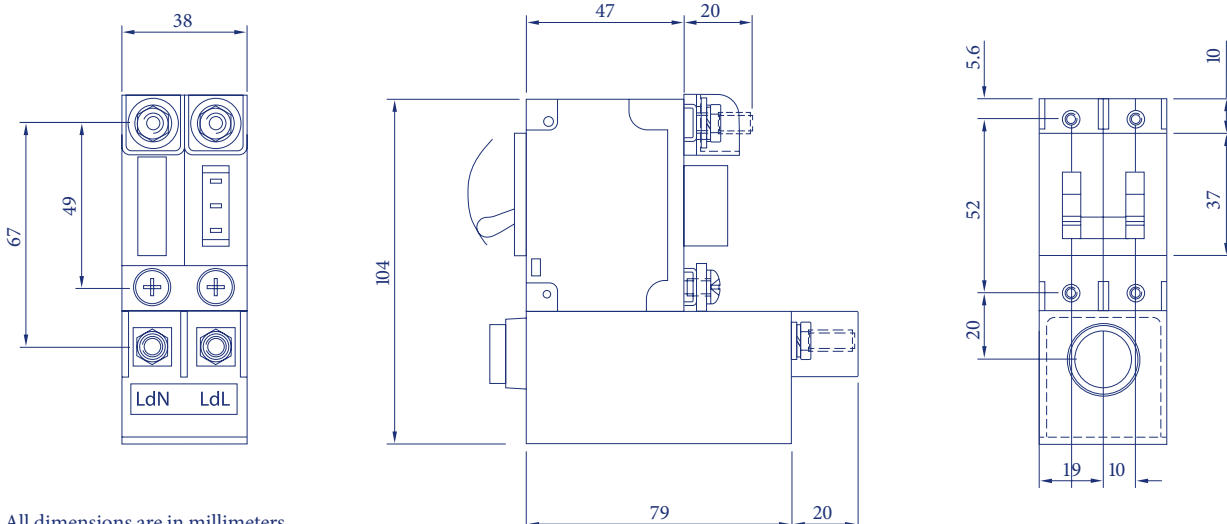
The time delay of the RCBO can be chosen for either fixed or inverse time delay according to customer specifications, typically 80ms or 100ms fixed time delay. Current imbalance trip levels range from 5mA up to 300mA depending again on the customer requirements, typical trip levels are 30mA, 100mA and 300mA.

The functionality and the operation of the RCBO can be verified in situ with the use of a test button. A test signal is injected into the internal circuitry, thus verifying the mechanical and electrical functionality of the RCBO.

Terminal configuration:

Electrical connections to the units are achieved via M6 stud terminals as standard. M5 terminals are also available upon request including UNC imperial sizes.

N/O and N/C auxiliary contact are supplied with the RCBO as standard, allowing the state of the Circuit Breaker to be continuously monitored.



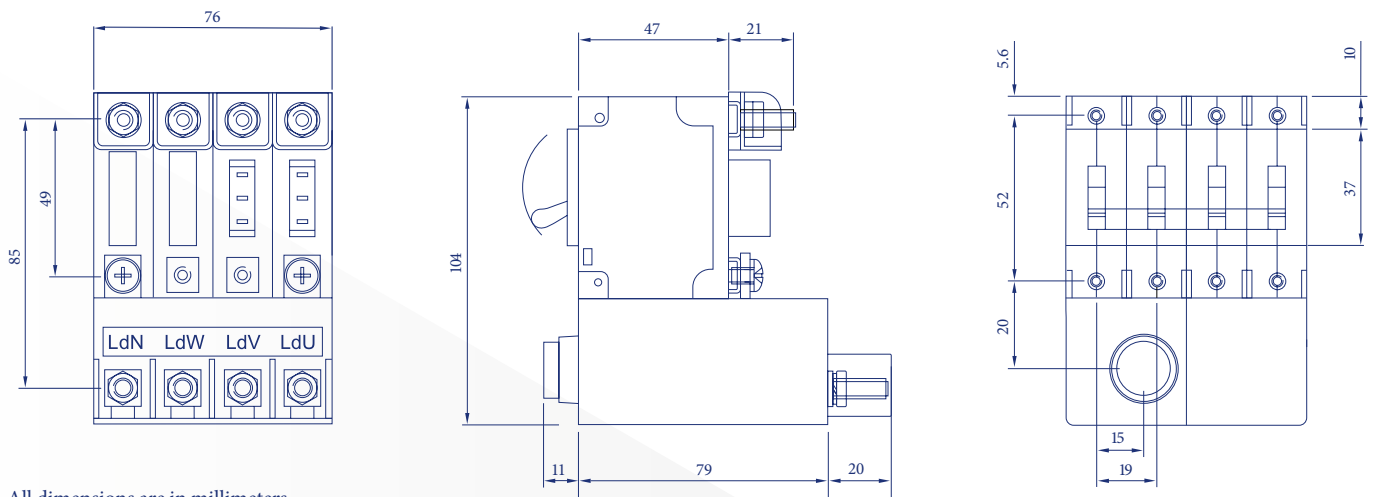
All dimensions are in millimeters

Mounting

The Circuit Breaker mounting is achieved by M3 mounting inserts.

Description	2 and 4 pole configurations are available to protect 24Vac systems and 415Vac systems with current ratings up to 50A.		
Handle colour and marking	Black toggle as standard with black I/O marking.		
Current & Voltage Rating	5-50A	240Vac	50/60Hz
	5-50A	415Vac	50/60Hz
	Units rated for 240/415Vac up to and including 50A.		
Operating Temperature and Environmental conditions	-40°C to +85°C. Relative Humidity: 0-100%. Atmosphere: Saline.		
Auxiliary Contacts	Non VDE approved switches have a maximum UL rating of 10A, 250 Vac, 50/60Hz: 3A. 50Volts DC. The maximum VDE ratings are 1A, 125 Volts, 60Hz and 0.1A, 125 Volts, 60Hz. Connection achieved via 2.8mm quick connect terminals.		
Terminals	M6 stud terminals as standard, M5 stud terminals available upon request.		
Approvals	EN 45545-2 EN 60947-2 EN 50125-1 EN 600628-2-38 UL recognised VDE approved CC approved NF F16-101 ROHS	EN 60934 EN 60529 EN 61373 EN 60068-2-11 CSA certified CE compliant NF F62-001 REACH	

Trip curve data sheet, available on request.



All dimensions are in millimeters



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For more information contact:

+44 (0) 161 765 3000 | sales@rowehankins.com | www.rowehankins.com

Power House | Mason Street | Bury | Greater Manchester | BL9 0RH



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Circuit Breakers

Nuisance Free Circuit Protection

Hydraulic-magnetic circuit breakers offer precise, specification assured, nuisance free circuit protection resistant to extreme ambient temperature levels.

Key Features:

-  **Trip Free**
Will trip open on overload, even when forcibly held on. This prevents operator from damaging the circuit by holding handle in the ON position.
-  **Shock**
Shall not trip when tested per MIL-STD-202, method 213, test condition 1 with 100% rated current applied to delayed units, except 90% current in plane 4, (i.e. handle down). Instantaneous units shall have 80% rated current applied in all planes.
-  **Vibration**
Shall not trip when vibrated per MIL-STD-202, method 204, test condition A with 100% rated current applied to delayed units and 80% rated current to instantaneous units.
-  Available from single pole up to 4 poles as standard, for 5 and 6 poles units are subject to availability. [From Design to Manufacture](#)



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CASE STUDY - NEWS

High Current DC Testing

Track Impedance Bond

Due to our experience working in the DC Traction Sector, Rowe Hankins were approached to carry out a detailed high current testing of a Track Circuit Impedance Bond.

The bond was connected to our high current DC source controller for a defined period of time, lasting several days.

The programme of tests were completed by driving over 1500Amps DC continuous in set of scheduled controlled tests, whilst measuring that the electrical, temperature and insulation properties were maintained within functional operational limits.

At our facility, we offer a facility to measure up to 2000Amps DC continuously, for a range of applications and products, such as Contactors, Relays, Circuit Breakers, Bonds and Traction Current Carrying Conductors.

A "world class" report of the process and testing data was provided to our client upon completion.

Please contact us using the details below for more information on our Testing and Workshop Services.

CASE
STUDY



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Design & Engineering Service

Over 100+ Years of combined engineering experience in the development of rail products and systems

Our professional engineers have a wealth of global railway knowledge and experience. By growing their experience in the rail industry for many years, our engineering team have the expertise to meet the requirements demanded by the industry standards, our customers and the Safety Approval Authority.

By developing new systems and products from design concept through to in-service maintenance; our engineers work closely with, and help guide our customers throughout the development life cycle.

Rowe Hankins Ltd. is committed to continual improvement, development and growth with a complete understanding of their customer, end-user and future rail market requirements.

This can assist with obsolescence replacements, upgrades or a totally new product. From concept, design, test to manufacture, Rowe Hankins can be your design partner.



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Earth Leakage & Stray Current Detection Units

What do AC/DC Earth Leakage and DC Stray Current Detection units do?

Our AC and DC Earth Leakage Units are residual current detection devices which maybe powered from the vehicle's battery, AC supply or trackside supply and measures the sum of the current in the 'supply and return' conductors passing through its aperture to any powered 3rd party device.

During normal operation when there is no fault or imbalance current present in the system, the current in the conductors cancel each other out so no fault is triggered.

The measured residual current signal is filtered and rectified before it is fed into a detection circuit. If the current is greater than a set detection level, then a fault is signalled via volt-free relay contacts. The fault output may reset after a delay if residual current falls below the desired detection level or remain latched in the fault state until the unit is powered off and on again.

Rowe Hankins' has developed a new dual trip AC Earth Leakage Unit that is digitally programmable and forms the next evolution of current imbalance detection products and systems.



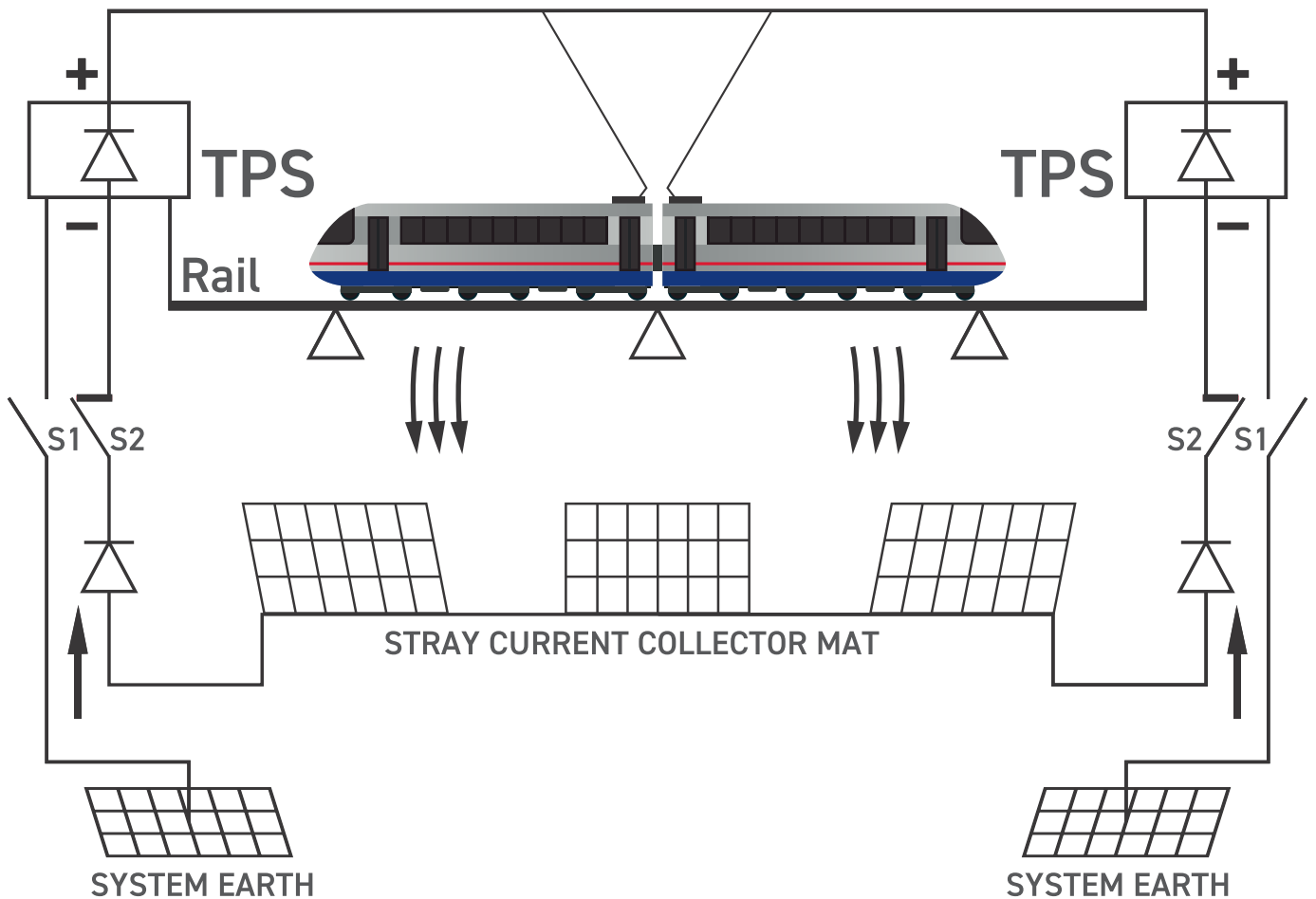


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Our DC Stray Current Devices are designed to detect the levels of DC current flowing in the trackbed stray current collection system back to the feeding substation. This allows the infrastructure asset owner to continuously measure the current levels in the stray current collection system, and further take action when levels are beyond standard operational limits or before levels that may result in an unsafe infrastructure environment or damage to other buried services.

Available for new OEM & Retrofit applications.



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Earth Leakage Units

What do AC/DC Earth Leakage units do?

The AC / DC Earth Leakage Unit is a residual current detection unit which is powered from the vehicle's battery or AC supply and measures the sum of the current in the primary 'supply and return' conductors passing through its aperture.

During normal operation when there is no earth fault or imbalance present in the system, the current in the conductors cancel each other out so no fault is triggered.

The measured residual current signal is filtered and rectified before it is fed into a comparator circuit. If the current is greater than a set detection level, then a fault is signalled via volt-free relay contacts. The fault output may reset after a delay if residual current falls below the desired detection level or remain latched in the fault state until the unit is powered off and on again.

Rowe Hankins' has developed a new dual trip AC Earth Leakage Unit that is digitally programmable and forms the next evolution of current imbalance detection products and systems.

Available for OEM & Retrofit applications

Features



Protection

For the protection of AC/DC power supply circuits & equipment.



Locked

Locked fault output.



Certification

Certified for rail applications.



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Wheel Flange Lubrication & Top Of Rail Friction Modifier

WFL

Rowe Hankins Intelligent & Sensory Wheel Flange Lubrication systems, are a trainborne dispensing system, designed to help improve rail safety whilst reducing wheel wear & noise, saving time, money and service affecting failures.

As fitted on the Class 345 (Elizabeth Line Fleet)

ToRFM

Top of Rail Friction Modifier is engineered to reduce curve squeal noise and short pitch corrugation by the application of a Friction Modification grease to the top of the rail track. This reduction in friction reduces wheel and the track wear and noise. The application of Friction Modifier (RHC-TG1) is achieved by a bespoke compressed air system which transfers the Friction Modifier to the top of rail. The Friction Modifier is also subsequently picked up by other passing wheels.

Both OEM & Retrofit Applications.

Features

-  **Interfaces**
Interfaces to train management systems, track balises and GPS antenna.
-  **Maintenance & cost reduction**
Wheel and track wear are greatly reduced, extending service and maintenance intervals, reducing down-time and costs.
-  **Dispensing**
Dispensed to the top of rail or back of flange in a controlled manner.
-  **Modes**
Standalone / fall-back inertial (YAW, acceleration and distance) based operation mode.
-  **Control**
Control via a dedicated flange area lubrication controller (Falcon).
-  **Safety**
No impairment of braking safety. Helps with rail and wheel fatigue.



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Light Station

Battery Powered LED Case Floodlight 20K/40K

Designed for instant, temporary area lighting anywhere. Battery powered with no messy cables, extremely high brightness at 20,000 or 40,000 lumens and rugged outdoor rated design.

The Light Station is designed for very fast setup in seconds to quickly light large work areas, car parks, roads and pathways and is based around a rugged wheeled carry case which is sturdy with no further arms or supports. It has a 100-240V input cable to charge batteries using its built-in charger. The heads sit on a mountable pole up to 2m. Each head can be tilted through 360° and the whole head unit in 4 positions horizontally through 360°. The runtime is set on the menu as a 'Set and Forget' feature.

Key Features:

- > 20,000 or 40,000 lumens
- > Over 2 to 40 hours battery life
- > Mobile simplicity of an incredibly powerful 20/40K lumen floodlight self-contained including charger and all accessories within one case
- > Rugged box construction and pole for industrial applications with the case as self-contained ballast
- > Ultra high brightness: 2 units lights up an area 50m x 30m (1500 sqm) (15,000sqft)
- > No trailing mains connection wires for a safer environment
- > Railway maintenance work, void work, public safety, event lighting & more

Operational features

- > Over 2 hrs or 4.5hrs lifespan full brightness, lengthened by adjusting brightness to over 45hrs
- > Electricity consumption 1/8th traditional halogen area lighting
- > Ultra-high brightness: 4 units lights up an area 50m x 30m (1500sqm)(15,000sqft)

Portability & Simplicity

- > Simple built-in charging will also run from 110V supplies.
- > Push height up to 2m (6ft)
- > Very fast mechanical deployment with only one pole to insert
- > Simple menu to step through different brightness/life settings



Multiple Uses from a single unit

- > Instant lighting for area safety and work task lighting has multiple applications across many sectors:
- > Public access safety, trackway, path lighting
- > Wide area task lighting, loading/unloading vehicles
- > Utilities and facilities management



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Light Head

- > 1 or 2 White LED Head— highest quality Cree ultra-brightness LED chips, Neutral White 4000K CCT
- > LED output 20,000/40,000 lumens providing an intense brightness at only 120W/240W consumption
- > 2m sturdy aluminium extendable pole
- > 90° LED wide beam.
- > Convection cooled – no fan minimising noise & maintenance.
- > Cool head for LED Life>50,000hrs

Power Source

- > Operate from battery power or charges from mains 110-240 Vac 50/60 Hz
- > Charge time 6-7 hours

Two battery options for sgl/dbl:

1. 2 to 20hr lifespan (26Ah/52Ah)
 2. 4 to 35hr lifespan (52Ah/104Ah)
- > Operating temperature -20 to +50°C. Charging temperature 0 to +40°C

Mechanical & Accessories

- > Rugged powder coat painted aluminium head and pole. Thick case walls, sturdy handles and wheels
- > Rugged & simple push/pull head connectors
- > IP67 Waterproof for all weather
- > Internal weatherproof tray in case of lid left open
- > Extra protection that lid remains closed when pole/head attached.
- > Dims 540 (l) x 405 (w) x 245 (h)
- > Weight 17Kg (sgl), 23Kg (dbl)



Single Head Light Station - 52AH battery

Light Output	20,000	10,000	4,000
Range	63m	45m	29m
Run Time	4.5hrs	9hrs	24hrs

Double Head Light Station - 104AH battery

Light Output	40,000	20,000	8,000
Range	88m	63m	41m
Run Time	4.5hrs	9hrs	24hrs

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NICs

Non-Intrusive Current Transducers for Industrial and Rail applications

The NIC (Non-Intrusive Current Monitor) is used as part of the preventative maintenance systems on wayside / Rail Infrastructure applications.

The DIN rail mounted NIC units are designed to measure AC/DC currents, using "Fluxgate Technology", up to +/-600mA when the primary cable is passed through the hole on the side of the unit.

The NIC provides a scaled 4-20mA current output to the end users' equipment. This may take the form of a data logger which stores the raw data that can then be remotely downloaded for analysis.

Data analysis allows for trends to be visualised for equipment that might show degradation, i.e. current variations outside normal limit, thus allowing targeted maintenance to be carried out before actual failure.

Features



Non-Contact

Non-contact measurement of DC currents up to $\pm 600\text{mA}$.



24V DC

24V DC power supply.



Various output

4 to 20mA current output.



LED indicator

LED trip indicator.



Protection

Reverse Polarity protection.



Relay output

Current trip with relay output.



Mounting

DIN rail mounting.



Versions

Unipolar versions also available.



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Trainborne Systems

Rowe Hankins provide a whole range of advanced solutions and electronic devices for train control and on-board communications systems for rail vehicles.

Our expertise

- TCN (WTB, MVB, ETH, CAN)
- Train Subsystems Integration
- Train Control
- Train Management

Intelligent On Board Systems inc:

- On-Board Event Recorder
- Consist & Train Backbone Ethernet Switch
- Crash Protected Memory
- TCN Gateways
- Vehicle Control Units

Advantages

- High level of flexibility, modularity and scalability
- Open environment
- Easy integration with existing systems
- Data exchange for diagnostic and monitoring
- Cost reduction (single devices and complete systems)

Full 'First in Class' on site installation & training Systems designed for OEM & Retrofit Upgrades.

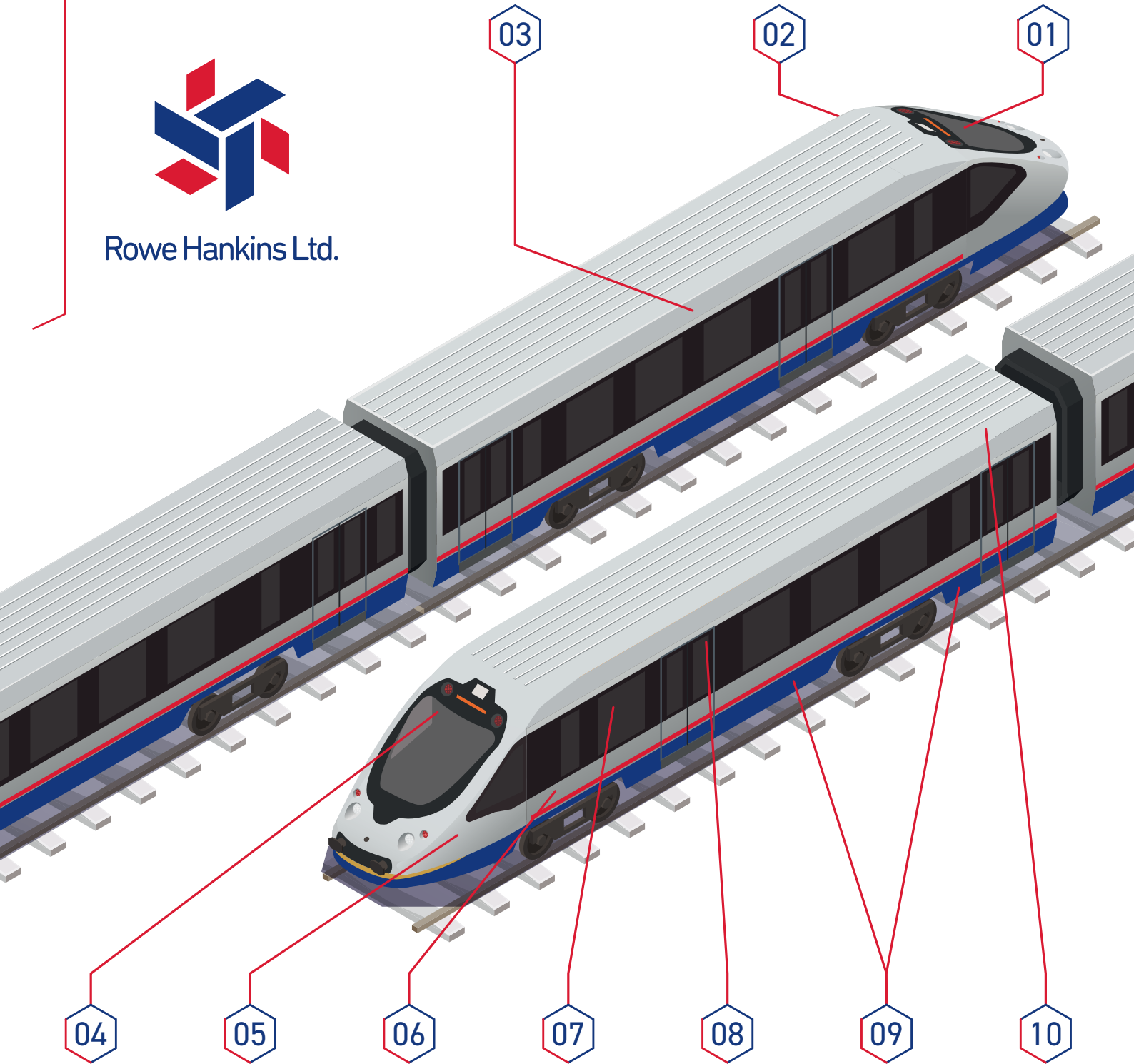


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- 01 TRAIN TO GROUND COMMUNICATION
- 02 EVENT RECORDER
- 03 TRAIN COMMUNICATION NETWORK

- 04 CRASH MEMORY
- 05 HMI
- 06 REMOTE I/O
- 07 PROTOCOL CONVERTORS

- 08 DOOR CONTROL
- 09 VEHICLE CONTROL UNIT
- 10 LIGHT

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Trainborne & Trackside Product & Systems

Rowe Hankins specialise in innovative Trainborne & Trackside Product & Systems for the worlds railways.

Based in the Northern Power House of the UK and working closely with rolling stock manufacturers, fleet operators, track owners and infrastructure contractors our experienced engineers have a long and proven record of success, providing the highest level of products & service to rail projects worldwide.

Products & Services

- Geartooth Tachometers & Speed Sensors
- Magnetic Encoders
- Signalling Approved Non-Intrusive Current Monitors
- RCBO's & Circuit Protection
- Intelligent Friction Modifier and Lubrication Systems
- AC & DC Earth Leakage Units
- Product & Project Design and Consultancy Services
- OTDR (On Train Data Recorder)
- Earth Grounding Return Units
- Engineering Design Facilities
- High Current DC Testing & Overhaul Services



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RCBOs

Residual current breaker with overload

Designed for harsh environments in the traction and rail infrastructure, Rowe Hankins offers a range of residual current breaker overload products.

Residual Circuit Breaker Overload products (RCBOs) have two main functions:



To measure AC residual leakage current and cause a trip operation when above levels are deemed unsafe for the type of installation.



To trip on circuit overload.



The RCBOs are available in 2 and 4-pole configurations.

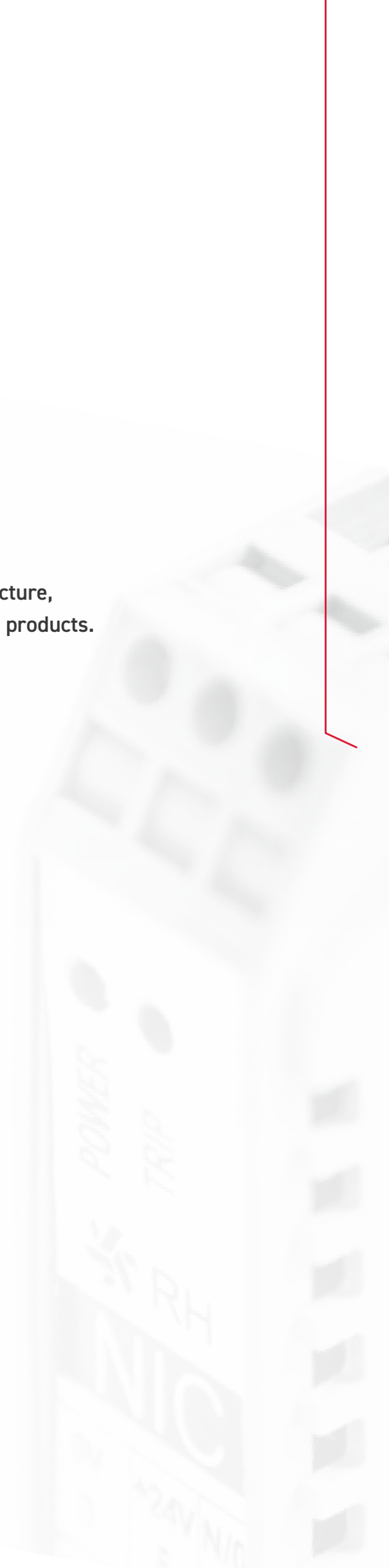


Additionally, these 2 and 4-pole versions are available at MCB ratings of up to 50 amps with different residual current trip levels and timings.

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LED Searchlight

XP30R Rechargeable

An absolute powerhouse, this searchlight will astound with a brightness up to 34,000 lumens for a beam distance of 2.2 kilometres.

Key Features:

- > Up to 34,000 lumens
- > With a beam distance up 2.2km
- > Up to 16 hours battery life



One of the
brightest
hand torches
in the World!



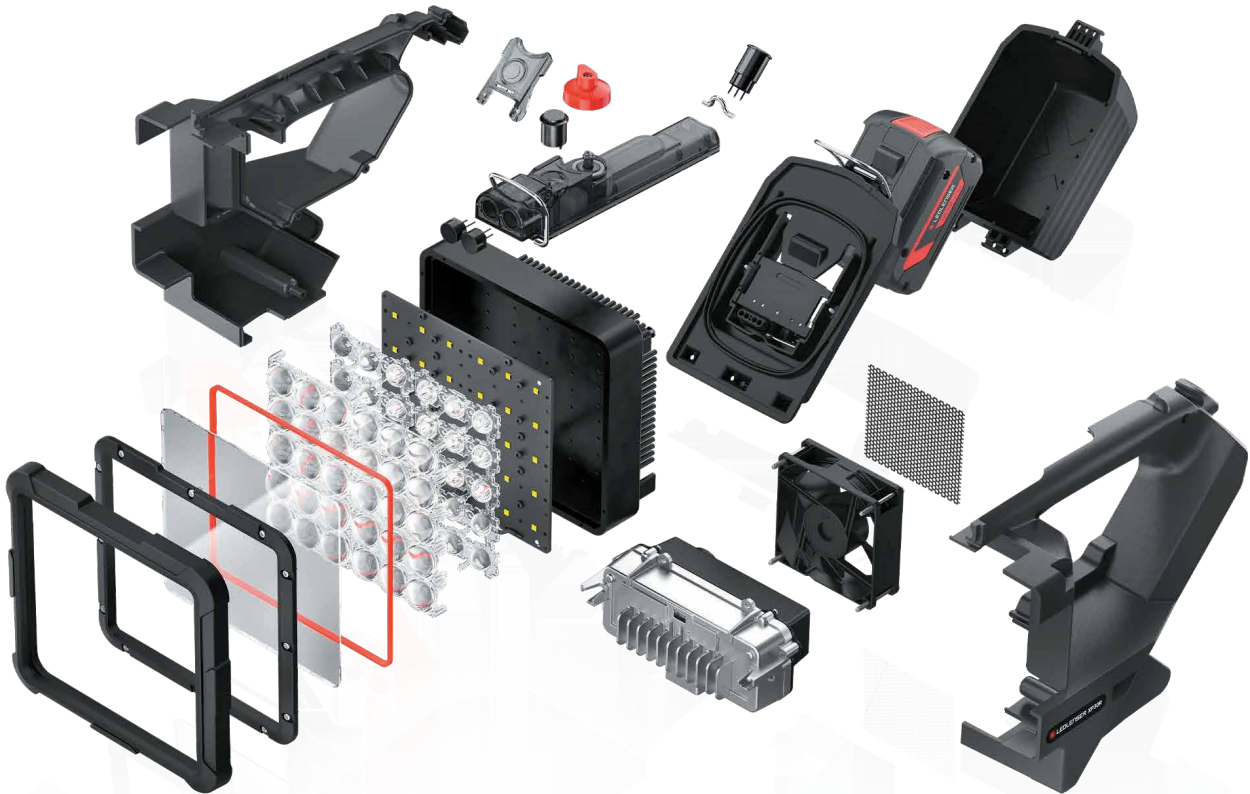


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Specification						
Luminous Flux (lm)	34,000	25,000	16,000	8500	4000	500
Beam Distance (m)	2200	1900	1500	1100	750	250
Run Time (h)	-	0,5	0,75	1,25	2,5	16

Key Features

- > 1 High-end portable searchlight delivering 25,000 lumens without power drop and 34,000 lumens in boost mode
- > Extreme Search Beam – 30 powerful automotive LEDs combined with unique optics for extreme long-range vision without glare at close range
- > Active Cooling Technology – powerful fan for maximum light output over a long period of time
- > Ultrasonic Distance Control – Ultrasonic power control sensor for maximum safety
- > Bosch Professional 18V system with fast charging function: worldleading battery technology
- > Compact dimensions and perfect weight distribution for optimal handling and single-handed operation

- > Encoder switch for setting the light intensity
- > Bluetooth remote control with up to 200 m range
- > Extremely robust due to protective elements and SCHOTT front glass
- > Screw thread for tripod mounting
- > Made in Germany - Development and manufacturing in Germany meeting the highest quality standards

What's included

- > Hard carry case
- > 2x Bosch Professional 18V Battery
- > Battery Charger
- > Carrying Strap
- > Bluetooth Remote Control



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Speed Sensors & Tachometer Systems

Multi-channel Sensors for safety critical systems

Rowe Hankins designs & manufactures a wide range of non-contact, multi-channel Speed and direction Sensors, designed for safety critical systems to operate in harsh environments.

Speed Sensors can have single, dual or multiple output channels. In turn, we can isolate a specific channel or channels to receive power from a different power supply. They can be designed and manufactured bespoke to customer requirements using Hall Effect & GMR technology.

Our new innovative 4 Channel Speed Sensor can be used to replace existing single and dual channel Speed Sensors as the physical footprint is of the same form of sensors used in typical applications. This means fewer Speed Sensors per train, having a novel design that improves the EMC immunity and improving product life expectancy and reliability.

Features



Harsh environment
Designed to meet the harsh rail environment.



Output types
Various signal output types are available.



Single, dual, multi
Single, dual or multi-pair outputs.



Measurement range
Capable of measuring from 0 to 20kHz.



Polarity protection
Reverse polarity protected.



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Workshop & Overhaul

Rowe Hankins undertake the overhaul and service of trainborne electro mechanical equipment, such as high-current AC / DC circuit breakers and contactors. Our workshop offers extensive test and overhaul facilities, with the ability to test high current DC.

Electro-Mechanical Servicing

The electro-mechanical service department carries out a variety of work, specifically overhaul, service and repair of:



DC Circuit
Breakers



Contactors



Overcurrent
Relays



Pressure
Switches



Delta
Switches

For high current DC Circuit Breakers, final testing and calibration is carried out by using dedicated high current injection test equipment (up to 5000 Amps).

Instantaneous, ramping and continuous currents can be given as an output from the test equipment. For every unit that is repaired, serviced, or overhauled at Rowe Hankins, a detailed report is produced for traceability and for customer assurance & compliance documentation.

Overhaul contracts are regularly undertaken to customer service schedules, in low or high volumes. Rowe Hankins can offer conditional assessment and overhaul capabilities for most electro-mechanical products including reverse engineering where obsolescence is a real world problem.

By developing new systems and products from design concept through to in-service maintenance; our engineers work closely with, and help guide our customers throughout the development life cycle.

Rowe Hankins Ltd. is committed to continual improvement, development and growth with a complete understanding of their customer, end-user and future rail market requirements.



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