



2025

PRODUCT
CATALOGUE

About Us



Celebrating 30+ Years Of Successful Innovative Product Development In The Railway Industry!

MRD Rail Technologies specialises in the design and manufacture of condition monitoring products.

The MRD team have passion and expertise for developing innovative products and solutions that change the way the railway industry monitors and assesses the condition of their assets. Our products make it simple for railway operators to remotely monitor the condition of their assets and obtain the information they need to make timely maintenance decisions based on condition.

We solve industry challenges using our engineering expertise to design, package and manufacture product solutions in-house. This gives us a lot of freedom to be creative and innovate, while controlling cost, quality and lead times.

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Ground Fault Monitoring

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The future of CONDITION MONITORING begins here...

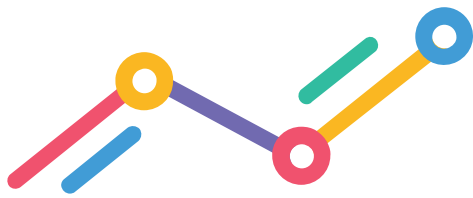
Introducing

THE FUTURE OF CONDITION MONITORING



TrackSense

Powered by MRD Rail Technologies



tracksense

TrackSense represents the next generation of remote condition monitoring, combining modular expansion units with industry-standard sensors and a powerful cloud server for seamless data storage and analysis. Designed for affordability and reliability, TrackSense offers a practical solution for asset maintenance management you can depend on.

TrackSense Modular Hardware

TrackSense is designed with your organisation in mind. Unlike expensive, rigid systems, it offers an affordable, modular solution compatible with off-the-shelf sensors, letting you choose the tools that best meet your needs. The DIN-mounted backbone design allows easy, cost-effective expansion, upgrades, and module replacement, future-proofing your investment. TrackSense provides lasting value and support long after purchase. It can monitor key performance data for any rail asset, including:



Point Machines



Power Supplies



Battery Banks



Level Crossings



Safety Signals



Track Circuits



Environmental

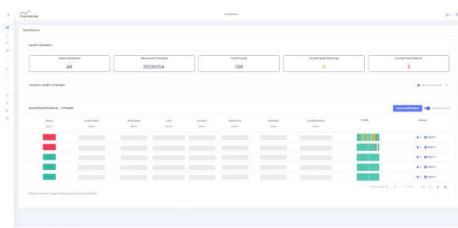


And More



TrackSense Cloud Platform

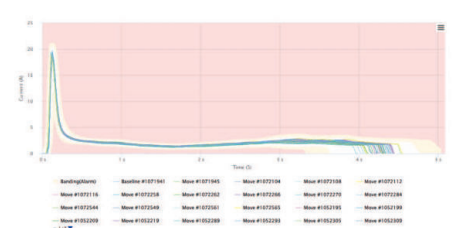
TrackSense enables real-time monitoring and predictive analysis of your network's assets from anywhere, offering flexible options for cloud or local processing and protection of your data with encryption and user credentials. You can streamline your workflow by integrating alerts into your existing maintenance platform, and daily email reports provide a comprehensive overview of your entire system, ensuring you always stay informed and in control.



TrackSense Cloud gives you oversight of your system's health/performance from anywhere



Asset trend view for predictive alerts and monitoring gradual performance degradation



View and compare individual movement's signatures for analytics, alerts and fault finding



Logger Module (TS-LOG)

The central module of each TrackSense system, providing power to and collecting data from all connected modules via the DIN-rail backbone connector. It buffers data through power or network outages, uploading to the cloud when available, and provides RS-485 connectivity for third-party Modbus sensors.

General Data

Dimensions (W x H x D)	22.6 × 113.7 × 99mm
Weight	< 100g
Operating Temperature	-25 to 70°C
Mounting	35mm DIN Rail, IEC60715
Enclosure Material	PA
IP Rating (Enclosure)	IP20
Flammability Rating (Enclosure)	UL 94 V-0
Climate Categories to IEC60721	Storage - 1K4 Transport - 2K3 Stationary Use - 3K5

Screw Terminals

Wire Size	24 AWG
Stripping Length	7mm
Tightening Torque	0.5Nm

Power

Supply Voltage	20-28V (24VDC)
Supply Current	85mA (24V)

Data

Storage Capacity	16GB SD Card
Ethernet	RJ-45, 10 Mbit/s or 100 Mbit/s
RS-485	MODBUS RTU

Modbus (RS-485) Communication

Cable Length (Shielded)	1Km Maximum
Identification	1-99
Parity	Odd, Even, None
Communication Speeds (kb/s)	2.4; 4.8; 9.6; 19.2; 38.4; 115.2



Analog Module (TS-ANA)

Each Analog Module expands the TrackSense system with six 4–20 mA inputs for connecting a wide range of off-the-shelf or third-party analog sensors such as current, voltage, pressure transducers, etc.

General Data

Dimensions (W x H x D)	22.6 × 113.7 × 99mm
Weight	< 100g
Operating Temperature	–25 to 70°C
Mounting	35mm DIN Rail, IEC60715
Enclosure Material	PA
IP Rating (Enclosure)	IP20
Flammability Rating (Enclosure)	UL 94 V-0
Climate Categories to IEC60721	Storage – 1K4 Transport – 2K3 Stationary Use – 3K5

Screw Terminals

Wire Size	24 AWG
Stripping Length	7mm
Tightening Torque	0.5Nm

Power

Supply Voltage	20–28V (24VDC)
Supply Current	35mA + Up to 150mA Per Channel (24V)

Inputs (6x 4–20mA Analog)

Input Supplied Voltage	24V
Input Supplied Current	Up to 50mA



Digital Module (TS-DIG)

Each Digital Module expands the TrackSense system with twelve digital inputs for monitoring switches, relays, correspondence contacts, status signals, alarms, and more, enabling fast and reliable detection of digital events for responsive condition monitoring.

General Data

Dimensions (W x H x D)	22.6 × 113.7 × 99mm
Weight	< 100g
Operating Temperature	-25 to 70°C
Mounting	35mm DIN Rail, IEC60715
Enclosure Material	PA
IP Rating (Enclosure)	IP20
Flammability Rating (Enclosure)	UL 94 V-0
Climate Categories to IEC60721	Storage - 1K4 Transport - 2K3 Stationary Use - 3K5

Screw Terminals

Wire Size	24 AWG
Stripping Length	7mm
Tightening Torque	0.5Nm

Power

Supply Voltage	20-28V (24VDC)
Supply Current	40mA + Up to 50mA Per Channel (24V)

Inputs (12x Digital)

On Activation Voltage	5V
Off Activation Voltage	3V
Maximum Digital Voltage	45V



Earth Leakage Detector Module (TS-ELD)

Each ELD Module expands the TrackSense system by adding earth-leakage detection for one busbar, monitoring voltage and insulation resistance to earth, providing early warning of earth-leakage or ground-fault conditions to keep systems safe and reliable.

General Data

Dimensions (W x H x D)	22.6 × 113.7 × 99mm
Weight	< 100g
Operating Temperature	-25 to 70°C
Mounting	35mm DIN Rail, IEC60715
Enclosure Material	PA
IP Rating (Enclosure)	IP20
Flammability Rating (Enclosure)	UL 94 V-0
Climate Categories to IEC60721	Storage - 1K4 Transport - 2K3 Stationary Use - 3K5

Screw Terminals

Wire Size	24 AWG
Stripping Length	7mm
Tightening Torque	0.5Nm

Inputs

Busbar Connection	1
Earth Connection	1
Relay Connections	2

Relays

Number, Assignable	2
Available States	N/O, N/C
Rated Voltage	250 VAC / 30 VDC
Maximum Switching Voltage	277 VAC / 125 VDC
Rated Current	3 A / 5 A
Limiting Continuous Current	3 A / 5 A
Breaking Capacity (Maximum)	750 VA (3 A), 1250 VA (5 A)

Relay Contact Ratings (IEC 61810)

AC	3 A, 250 VAC (resistive, $\cos \phi = 1$), +70 °C - 100 k cycles
DC	3 A, 30 VDC (resistive, L/R = 0 ms), +70 °C - 100 k cycles

Power

Supply Voltage	20-28V (24VDC)
Supply Current	80mA (24V)

Busbar

Earth Leakage Detection	0-999k Ω
Busbar Isolation	2kV
Busbar Rated Voltage	650V AC/DC

Measuring Circuit

Operating Mode	Continuous
Measuring Principle	Square-Wave Injection
Measuring Voltage U_m	± 24 V
Measuring Current I_m ($R_x = 0 \Omega$)	$\leq 170 \mu A$
Internal DC Resistance R_i	143 k Ω
Internal Impedance Z_i	143 k Ω
Permissible Extraneous DC Voltage U_e	750 V
System Leakage Capacitance C_e	$\leq 300 \mu F$

IT System

Rated voltage U_n	up to 650 V AC / 300 V DC
Rated frequency	DC, 50-60 Hz
Maximum rated voltage	750 V

EarthSense

The EarthSense insulation monitor has been designed to monitor insulation resistance in unearthed IT systems where high reliability of the supply is required, such as railway, industrial, marine and power applications.



Low-Cost Monitoring Of Power Feeds In Unearthed IT Systems

The EarthSense insulation monitor serves as an early warning system by providing notifications when the impedance between an active phase conductor and earth has dropped below user customisable warning and alarm thresholds. Advanced notification of faults allows time and cost-efficient deployment of service personnel, reducing the likelihood of equipment failure or damage.

Features

- Sunlight readable LCD display
- Modbus Protocol on RS485
- Scheduled self-test function
- Monitoring of AC or DC busbars
- Remote test and reset

Benefits

- Remote monitoring of earth insulation on IT systems
- Allows early detection and removal of faults before problems occur
- Small footprint



EarthSense

Earth Insulation Monitor

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Part Numbers

EarthSense Monitor (Universal AC Supply)	ESM1-A
EarthSense Monitor (DC Supply)	ESM1-B

Technical Specifications

Supply Circuit

Nominal supply voltage	Option A	85 – 264V AC
	Option B	9 – 36V DC
Frequency range AC		50 – 60Hz

Measuring Circuit

Operating Mode	continuous operation
Measuring principle	adaptive square wave injection
Nominal system voltage	0 – 650V AC / 0 – 650V DC
Maximum allowed system voltage	750V AC / 750V DC
Nominal Frequency	DC or 15 – 400Hz
System leakage capacitance	≤ 300uF
Response value (Alarm 1)	1 – 200KΩ
Response value (Alarm 2)	1 – 200KΩ
Relative uncertainty 1 – 50KΩ / 50 – 200KΩ	+1 KΩ / ±10%
Internal impedance at 50Hz	≥ 141KΩ
Internal DC resistance	≥ 141KΩ
Measuring voltage	±24V
Measuring current	0.17mA
Response time (0.5 x Ran and Ce = 1uF)	≤ 10s

Input Circuit

Control input (voltage free)	remote test / reset
Maximum current in control input	1mA
Maximum cable length	10m – 100pF/m
No-load voltage at the control input	3.3V DC

Output Circuit (Relay)

Relay configuration	2 x SPCO
Operating principle	open or closed circuit principle
Rated voltage	250V AC / 30V DC
Minimum contact rating	1mA at AC/DC ≥ 10V
Contact data (IEC 60947-5-1)	AC12 at 230V 4A
	AC15 at 230V 3A
	DC12 at 24V 4A
	DC13 at 24V 2A
Electrical endurance, number of cycles	10000

Environmental Data

Ambient temperature ranges	operation	-20 to +60°C
	storage	-30 to +80°C
	transport	-30 to +80°C
Climatic category (IEC/EN 60721-3-3)		3K5 (no ice, no cond.)
Damp heat, cyclic (IEC/EN 60068-2-30)		6x24h cycle, 70°C, 95% RH
Vibration, sinusoidal (IEC/EN 60255-21-1)		Class 2
Shock, half-sine (IEC/EN 60255-21-2)		Class 2

Insulation Data

Rated insulation voltage (EC/EN 60664-1)	600V
Rated impulse voltage (IEC/EN 60664-1)	6kV
Pollution degree (IEC/EN 60664-1)	III
Test Voltage (IEC 61010-1)	2.32KV, 50Hz, 2s

Approvals & Compliances

Product standard	EN/EC 61557-8, IEC 60947-5-1
Other standards	EN 50121-4
Low Voltage Directive	2014/35/EU
Electromagnetic Compatibility (EMC)	2006/95/EC

Electromagnetic Compatibility

Interference immunity to IEC/EN 61000-6-1, IEC/EN 61000-6-2, IEC/EN 61326-2-4
Radiated, radio-frequency, electromagnetic field IEC/EN 61000-4-3 Level 3, 10 V/m (1 GHz) / 3 V/m (2 GHz) / 1 V/m (2.7 GHz)
Surge IEC/EN 61000-4-5 Level 3, installation class 3, supply circuit and measuring circuit 1 kV L-L, 2 kV L-earth
Conducted disturbances, induced by radio-frequency fields IEC/EN 61000-4-6 Level 3, 10 V
Voltage dips, short interruptions and voltage variations IEC/EN 61000-4-11 Level 3
Electrostatic discharge IEC/EN 61000-4-2 Level 3, 6 kV 18 kV
Electrical fast transient/burst IEC/EN 61000-4-4 Level 3, 2 kV / 5 kHz
Harmonics IEC/EN 61000-4-13 Level 3
Interference emission IEC/EN 61000-6-3, IEC/EN 61000-6-4
High-frequency radiated IEC/CISPR 22, EN 55022 Class B
High-frequency conducted IEC/CISPR 22, EN 55022 Class B

General Data

Mean Time Before Failure	200,000 hrs
Duty time	100%
Dimensions (W x H x D)	36 × 90 x 60mm
Weight	0.250kg
Mounting	DIN
Degree of protection housing/terminal	IP30 / IP20

Earth Leakage Detector (ELD)

The interlocking circuits in railway signalling are often supplied from a battery in which neither of the poles are connected to earth. In the event of a single fault there is no danger, however, two or more faults occurring at the same time could create a dangerous situation. Therefore, it is vitally important to supervise the battery supply continuously to prevent this from happening.

Cables which run in parallel with AC electrified railways are subjected to induced voltages. If an earth leakage occurs in the cable, these voltages can disturb devices which are connected to both cables. When earth faults occur in both supply and return wires yet another hazardous condition is created.

These faults can be detected reliably with MRD's ELD.



Reliable Earth Leakage Detection

Despite all of the safety built into our electrical rail systems, failures can and do occur.

By providing constant monitoring and instant notifications of threshold breaches, MRD's Earth Leakage Detector (ELD) significantly reduces the likelihood of failure or accidents due to earth leakage faults.

Features

- Monitors AC and DC busbars
- Auto detects busbar voltage
- Fail-safe or non-fail-safe contact operation
- Operation and alarm LEDs
- Manual test and reset buttons
- Adjustable sensitivity and delay
- Displays fault level in K Ω
- Displays fault time
- DIN rail or panel mounting
- RS-485 communications

Benefits

- Compact size
- Remote interrogation via RS-485
- Remote test and reset
- Remove faults before problems occur
- Low cost



ELD

Earth Leakage Detector

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Part Numbers

AC Supply Version	ELDAC/DC-AUTO-110
DC Supply Version	ELDAC/DC-AUTO-12
Q-Style Panel Mount Bracket	ELDAC/DC-AUTO-PMB

Technical Specifications

General Data

Connection Type	4mm screw terminal
Mounting	DIN rail or screw mount
Panel Mounting	Q-Style panel mount bracket
Dimensions (H x W x D)	75 x 100 x 110mm
Weight	0.4kg
BUS/GND Isolation Resistance	>185 K Ω
Operating Temperature	-20 to 60°C
Storage Temperature	-20 to 80°C
Climate Class According to IEC 721	3K5 without condensation

AC Supply Voltage (AC Version)

Supply Voltage	85 - 264V AC
Frequency Range	50 - 60 Hz
Max. Power Consumption	3W

DC Supply Voltage (DC Version)

Supply Voltage	9 - 36V DC
Max. Power Consumption	3W

Monitoring Voltage Range

DC Busbar Voltage	9 - 150V DC
AC Busbar Voltage	0 - 650V AC

Protection Class

Internal Components	IP30
Terminals	IP20
Housing	Self extinguishing polycarbonate
Fault Contact Ratings	0.6A 125V AC 0.6A 110V DC 2.0A 30V DC
Trip Delay Range	Adjustable 2 sec - 10 sec
Trip Point	Adjustable 10 K Ω - 200 K Ω

Approvals & Compliances

Network Rail	Certificate Number PA05/05184
ARTC	Approval Number 08-08-10-078
MTM	Cert. Number 01-1201-0005_F_TA
V Line	Approval Number VLP-134
QR National	Certificate Number C0098
Rail Infrastructure Corporation	Approval Number Q03/0404

EarthLogger

EarthLogger provides comprehensive monitoring and logging of insulation resistance for unearthed IT systems, capable of handling up to four separate AC or DC busbar feeds at the same time. It facilitates long-distance, extended-time observation and management of electrical supply components, offering capabilities to observe, forecast, and avert possible issues. This enhances preventive measures, decreasing the chances of equipment malfunction.



4 Channel Remote Earth Insulation Logging

EarthLogger monitors and logs insulation resistance in unearthed IT systems of up to four independent AC or DC busbar feeds simultaneously. As an RCM device, EarthLogger enables off-site long-term trending and supervision of your power supply assets; allowing you to monitor, predict and prevent potential problems, reducing the likelihood of equipment failure or damage. Historical data can be viewed from anywhere via the embedded web server. No remote server required! Cables which run in parallel with AC electrified railways are subjected to induced voltages. If an earth leakage occurs in the cable, these voltages can disturb devices which are connected to both cables. When earth faults occur in both supply and return wires yet another hazardous condition is created. These faults can be detected reliably with MRD's ELD.

Features

- 4 Channels, AC or DC 0-650V RMS
- Trend View via embedded web server
- Logs insulation resistance and busbar voltage
- Sunlight readable OLED display
- Remote test and reset
- Scheduled self-test function
- GSM/GPRS modem and Ethernet port
- Email, SMS notifications
- SNMP Traps

Benefits

- Remote monitoring and logging of insulation resistance
- Allows detection and removal of faults before problems occur
- Data available in easy to interpret graphical format
- Identify the time and cause of fault using logs
- 4 Channels in one compact device



EarthLogger

4 Channel Earth Insulation Logger

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Part Numbers

4-CH EarthLogger

EL - 4

Technical Specifications

General Data

Connection	4mm screw terminal
Mounting Type	DIN rail or screw mount
Dimensions (H x W x D)	75 x 150 x 110mm
Weight	0.7kg
Operating Temperature	-25 to 70°C

AC Supply Voltage

Supply Voltage	100 – 240V AC
Frequency Range	50 – 60 Hz

DC Supply Voltage

Supply Voltage	120 – 370V DC
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Control Circuits

Control Inputs - Voltage Free

Remote reset

Output Circuits

Alarm Outputs

2 x Relays (SPDT)

Monitoring Voltage Range

AC Busbar Voltage	0 – 650V AC
DC Busbar Voltage	0 – 300V DC

Protection Class

Internal Components	IP30
Terminals	IP20
Fault Contact Ratings	1A at 250V AC
	1A at 110V DC
	2A at 30V DC

Approval & Compliances

ARTC

S 05-1508-173

RelayDoc

To provide you with an instant analysis of the state of condition of your assets, RelayDoc tests key performance indicators of your relays against the manufacturer's specification, such as:

- Coil Resistance
- Contact Resistance
- Contact Configuration
- Switch Time
- Operate and Release Voltage and Current



Know The Condition Of Your Relays

RelayDoc makes testing your relays easy. Simply plug in a relay and press test. No training required!

RelayDoc tests all of the important parameters of a relay against the manufacturer's specification. All tests and reports are viewable instantly on the touch screen and uploaded to the cloud server where they're hosted permanently for you.

Features

- Tests AC and DC relays
- Capacitive touchscreen
- 5" colour TFT display
- Code-pin detection
- LAN & USB
- Cloud database
- Wall mountable
- Barcode reader compatible

Benefits

- Fast and reliable automated relay testing
- Simple to use with no training required
- Stand-alone operation - no computer necessary
- Data is recorded and stored internally
- Displays test results in a simple pass/fail format
- Web server allows for easy remote data access
- Test reports can be transferred to an external USB
- Automatic relay type detection using code-pins
- Asset monitoring and preventative maintenance



RelayDoc

Automatic Relay Tester

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Part Numbers

RelayDoc RD-HV BR930

Technical Specifications

General Data

Mounting	Mounting holes on rear of case
Dimensions (W x H x D)	280 x 180 x 120mm
Weight	2.7kg
Operating Temperature	-20 to 60°C
IP rating	IP65

Test Range

Coil voltage	0 - 110V DC
Coil current	0 - 1000mA
Coil type	Single, Dual (Twin), Latch and Current
Contacts	Up to 16 contacts testable

Relay Test Parameters

Contact configuration check	
Max coil power	
Operate and release voltage and current	
Coil resistance:	0 - 5K, Tolerance +/-1% Resolution 1R
Contact resistance range:	0 - 500R, Tolerance +/-1% Resolution 0.001R
Contact switch time:	+/-0.01 sec Resolution 0.001s
Clean current:	100mA, Tolerance +/-1% Resolution 10mA
Coil voltage:	0 - 110V, Tolerance +/-1%, Resolution 0.1V

Approvals & Compliances

EN 50121	Report No. 160804
Network Rail	UKPA 05/07 703
ARTC	S 09-1609-194

Portable RelayDoc

The Portable RelayDoc is a portable relay testing system designed to assess the condition of your relays with ease and accuracy. Including an Android tablet preloaded with our RelayDoc app featuring a simple pass-or-fail test format, the RelayDoc is the perfect tool for your on-site maintenance needs.

Test reports are generated automatically and stored internally where they are then available for on-screen viewing and analysis.



On-The-Go Relay Testing

Now available in a portable version, RelayDoc makes on-the-go relay testing painless. Simply plug in a relay and press test. RelayDoc automatically performs numerous tests on your relays using key performance indicators to provide you with an instant state of condition report to help you find faults, and repair them quickly and easily.

Features

- Portable, anti-shock carry case
- Tests PNI50, PN250, B1, B2 and BR930 relay types
- Automatic relay-type detection using code-pins
- Simple user interface and test functionality in Android application
- Tablet provided with each unit
- Remote data access via web server
- LAN & USB
- Barcode reader compatible
- Displays test results in a simple pass/fail format

Benefits

- Fast and reliable asset monitoring
- Targeted maintenance management
- Remote access to recorded data
- No training required



Portable RelayDoc

Portable Relay Tester

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Part Numbers

Portable RelayDoc	PRD
Test Base BR930 Relays	PRD-TB-BR930
Test Base PN150 Relays	PRD-TB-PN150
Test Base PN250 Relays	PRD-TB-PN250
Test Base B1 Relays	RP-TB-B1
Test Base B2 Relays	RP-TB-B2

Technical Specifications

General Data

Dimensions (W x H x D)	300 x 304 x 194mm
Weight	5.4kg
Operating Temperature	-20 to 60°C

Test Range

Coil voltage	0 - 110V DC
Coil current	0 - 500mA
Coil type	Single, Dual (Twin), Latch and Current
Contacts	Up to 32 contacts testable

Relay Test Parameters

Contact configuration check	
Max coil power	
Operate and Release voltage and current	
Coil resistance:	0 - 5K, Tolerance +/-1% Resolution 1R
Contact resistance range:	0 - 500R, Tolerance +/-1% Resolution 0.001R
Contact switch time:	+/-0.01 sec Resolution 0.001s
Clean current:	100 - 3000mA, Tolerance +/-1% Resolution 10mA
Coil voltage:	0 - 50V, Tolerance +/-1%, Resolution 0.1V

RelayPro

RelayPro gives you a durable, mobile test kit for BR930, PN150, PN250, B1 and B2 relay types. Operating through the RelayPro software on a laptop or computer, RelayPro gives you the ability to change both operation values and specification parameters on the fly, making it simple and easy to manually test your relays however you need to.



Relay Testing Made Easy

RelayPro is a portable automatic relay tester that performs rapid testing and analysis of a relay's condition based on the manufacturer's specification. MRD's RelayPro identifies Pass/Fail status of relays automatically. Test results are displayed clearly in table and graphical format and PDF Reports are exported for easy record keeping.

Features

- Tests up to 110V Coil Relays
- Graphical user interface displays test results in bar graph and table format
- Generates comprehensive test report
- Contact cleaner controlled current burst removes oxidation layer
- Multiple relay types supported
- Case, reference modules and 1 x BR930 test base included
- English/Chinese language options

Benefits

- Know the condition of your relays
- Reduced maintenance costs
- Simple to operate
- Asset monitoring and preventative maintenance
- Fault finding



RelayPro

Relay Tester

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Part Numbers

RelayPro Automated Relay Tester:	RelayPro
Test Base BR930 Relays	RP-TB-BR930
Test Base PN150 Relays	RP-TB-PN150
Test Base PN250 Relays	RP-TB-PN250
Test Base NS1 Relays	RP-TB-NS1

Technical Specifications

General Data

Dimensions (W x H x D)	255 x 80 x 260mm
Weight	2.2kg
Operating Temperature	-20 to 60°C
IP rating	IP65

Test Range

Coil voltage	0 - 110V DC
Coil current	0 - 500mA
Coil type	Single, Dual (Twin), Latch and Current
Contacts	Up to 20 contacts testable

Relay Test Parameters

Contact configuration check	
Max coil power	
Operate and Release voltage and current	
Coil resistance:	0 - 5K, Tolerance +/-1% Resolution 1R
Contact resistance range:	0 - 500R, Tolerance +/-1% Resolution 0.001R
Contact switch time:	+/-0.01 sec Resolution 0.001s
Clean current:	100 - 3000mA, Tolerance +/-1% Resolution 10mA
Coil voltage:	0 - 50V, Tolerance +/-1%, Resolution 0.1V

Approvals & Compliance

Network Rail	Certificate Number PA05/05766
ARTC	Certificate Number S 09-1330-134

LP AWS

The equipment in the track consists of a protective ramp preceding a Permanent Inductor (AWS3) and an Electro Inductor (AWS1). The Permanent Inductor has its North Pole uppermost and this magnetic field by itself gives a "caution" indication to the driver. The Electro Inductor (AWS1), when energised, has its South Pole uppermost and this South Pole following the North Pole of the permanent inductor gives a "Clear" indication to the driver.

On bi-directional lines, special permanent inductors called Suppressor Inductors (AWS2) may be used to prevent a train receiving AWS indications at a signal for the opposite direction to which the train is travelling. These inductors have a permanent inductor and, in addition, a suppressing coil which, when energised, diverts the magnetic flux, suppressing any indication to the train.



Safety in All Conditions

The Automatic Warning System (AWS) is provided primarily to aid drivers in observing the fixed signals, particularly under adverse weather conditions. Used in conjunction with the on-board MagSense unit, the AWS helps to provide drivers with a secondary audible alert to confirm their primary visual observations of the fixed signals.

Features

- Low profile design suitable for installation on Slab Track/Sleepers
- High strength enclosure machined from solid aluminium block
- Replaceable vibration mounts
- UV stable cable sheath
- Watertight
- Water-proof sealant
- Powder coated
- Corrosion protected

Benefits

- No ballast removal required
- No post-production modifications required
- Low maintenance costs



LP AWS

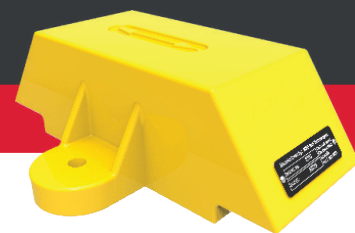
Automatic Warning System

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Part Numbers

Low Profile Electro Inductor	AWS1-LP
Low Profile Suppressor Inductor	AWS2-LP
Permanent Magnet	AWS3

Technical Specifications

Operating Values

AWS1 Electro Inductor

Nominal Coil Resistance	$27\Omega \pm 10\%$ @ 26°C
Nominal DC Current	888mA $\pm 10\%$
Nominal Volts	24V DC
Minimum Volts	22V DC
Maximum Volts	28V DC

AWS2 Suppressor Inductor

Nominal Coil Resistance	$17\Omega \pm 10\%$ @ 26°C
Nominal DC Current	1410mA $\pm 10\%$
Nominal Volts	24V DC
Minimum Volts	22V DC
Maximum Volts	28V DC

Approvals & Compliances

LP AWS Type 1/2

Queensland Rail	Doc No. C0125
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AWS Type 3

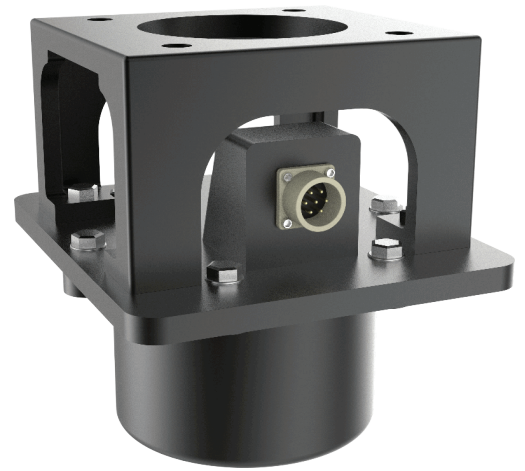
PTS SA	Doc No. PTS-009
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GENERAL DATA

LP AWS Type 1 Dimensions (H x W x D)	132 x 445 x 768mm
LP AWS Type 1 Weight	43kg
LP AWS Type 2 Dimensions (H x W x D)	132 x 445 x 768mm
LP AWS Type 2 Weight	53kg
LP AWS Type 3 Dimensions (H x W x D)	106 x 273 x 328mm
LP AWS Type 3 Weight	20kg

MagSense

MRD's MagSense track magnet receiver has been designed for maximum reliability in order to detect track magnets used in Station Protection, Automatic Power Control and Automatic Warning Systems. The detector's operation is easily configured and calibrated to latch at the specified field strengths using the provided calibration software. There is no need to open the enclosure to adjust pots. The mode of operation can also be customised to suit specific customer requirements.



Reliable Track Magnet Detection

MRD's MagSense track magnet receiver has been designed for maximum reliability in order to detect track magnets used in Station Protection, Automatic Power Control and Automatic Warning Systems.

Features

- Robust industrial design to suit harsh environments
- Circuitry encapsulated in polyurethane potting compound
- Vibration and moisture resistant
- Plug connections for easy installation and maintenance
- Programmable trip point from 1 - 35 Gauss
- Retrofit option available
- EN50155 / IEC 61373 compliant

Benefits

- Reduced vehicle unavailability and lower maintenance costs
- Overhaul requirements are reduced with maintenance limited to functional testing only



MagSense

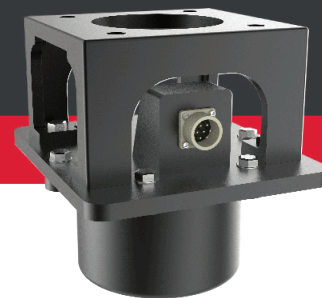
Track Magnet Detector

MRD Rail Technologies Pty Ltd

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Part Numbers

Magsense Retrofit with Cannon Connector	MagSense-RC
Magsense Retrofit with Marachel Connector	MagSense-RM
MagSense New with Cannon Connector	MagSense-C
MagSense New with Marachel Connector	MagSense-M

Technical Specifications

General Data

Casing	IP67 Protection, Anodised Aluminium Enclosure	
Dimensions (W x H x D)	157 x 157 x 113mm	
Weight	3kg	
Operating Temperature	-25 to 55°C (EN50155)	
Storage Temperature	-40 to 85°C	
Ambient Relative Humidity	5 to 95% (non-condensing)	

Power Circuit

Input	50 to 150V DC
Consumption	10W

Input Circuit

Reset Impedance	90 K Ω
Reset Voltage	45 to 150V DC

Output Circuit

Voltage	Within 5% of supply voltage
Maximum current	80mA

Sensitivity/Threshold

North Preset	22.5 $\pm$ 2.5 Gauss
South Preset	17.5 $\pm$ 2.5 Gauss

Approvals & Compliances

Transient and Surge Testing	EN50155
Vibration and Shock	EN61373
EMC	EN50121-3-2
MTBF	On request

Shunt Box

MRD's precision Shunt Box is designed to simulate track resistance in the testing and commissioning of track feed circuits. It is used to provide readings for the drop shunt, prevent shunt and pick-up shunt testing. Suitable for CSEE jeurmont, DC and AC tracks.



Quick, Precise And Easy Shunt Testing

MRD's precision Shunt Box is designed to simulate track resistance in the testing and commissioning of track feed circuits. It is used to provide readings for the drop shunt, prevent shunt and pick-up shunt testing. Suitable for CSEE jeurmont, DC and AC tracks.

Features

- High precision 5% tolerance resistors
- Resistance ranges from 0.05Ω – 9.95Ω in 0.05Ω increments
- Rated for 10W continuous current
- Quick range changes
- Make before break contacts
- High stability and low temperature co-efficient
- Non-inductive load suitable for high frequency track circuits

Benefits

- Makes testing and commissioning Track Circuits quick and easy
- 'Open Circuit' jumper allows for instant connection/disconnection
- Carry bag and 1.5m heavy duty crocodile clamps included
- Heavy duty enclosure



Shunt Box

Track Circuit Shunt Tester

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Part Numbers

Shunt Box with A-Clamp Style Clips	SB-100W-J-A
Shunt Box with G-Clamp Style Clips	SB-100W-J-G

Technical Specifications

General Data

Dimensions (H x W x D)	150 × 167 × 75mm
Weight	2.5 kg
Operating Temperature	-25 to 60°C

20K Shunt

MRD's precision shunts help to increase measurement accuracy by dampening low level noise and unwanted signals which would otherwise cause inaccurate readings. Shunts are useful when measuring leakage current to ground on isolated transformers, when testing and commissioning track circuits and any other application which relies on accurate electrical measurements.



Low Level Noise Reduction To Increase Measurement Accuracy

Shunts in a measurement circuit reduce load impedance, dampening low level noise and unwanted signals due to inductive/capacitive coupling which would otherwise cause inaccurate readings. Shunts are useful when measuring leakage current to ground on isolated transformers, during testing and commissioning of track circuits.

Features

- High precision resistor
- Safe, no touch design
- Great, long term stability
- Quick, easy connection

Benefits

- Reduced low level noise and signals
- High accuracy in measurements for testing and commissioning
- Lightweight, compact design



20K Shunt

Precision Measurement Resistor

MRD Rail Technologies Pty Ltd

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www.mrd.com.au



Part Numbers

20KQ Precision Shunt

PS-20K

Technical Specifications

General Data

Enclosure	ABS, touch proof design
Contact Type	4mm safety plug and socket
Contact Material	Brass/Nickel plated
Dimensions (W x H x D)	50 x 60 x 20mm
Weight	0.030kg

Electrical Data

Rated Voltage	600V CAT II
Resistor Tolerance	1%
Resistor Power Rating	3W at 25°C
Limiting Element Voltage	245V
Operating Temperature Range	-65 to 250°C
Temperature Coefficient Maximum	+/- 20ppm/C (-65 to +250°C)
No-Load Stability	+/- 25ppm/10,000 hours
Full Load Stability	10,000 hours <50ppm 26,000 hours <100ppm

BellMega

By performing continuity testing simultaneously with insulation leakage resistance testing, BellMega saves you time and effort. Each BellMega unit boasts a large capacity onboard battery which provides up to 8 hours of operation time and comes with high quality, long length leads and a portable carry bag providing everything needed for efficient point to point wiring verification.



Simultaneous Insulation And Continuity Testing

BellMega is a continuity tester for point to point wiring verification that saves time by performing continuity and insulation leakage resistance testing simultaneously. It even provides earth leakage detection for the wiring being tested. The high voltage DC source is regulated to provide a stable reference for insulation breakdown resistance detection.

Features

- Calibrated to NATA lab standards
- Sturdy reliable construction
- 8 metre reach between probes
- High quality HCK Probes Quality electronic design
- Protected against live circuit (up to 350V pk)
- Self-test function

Benefits

- Portable
- Saves time by doing two tests in one process
- Rechargeable battery operated or plug pack supply
- Carry bag, lead set and battery charger included



BellMega

Insulation and Continuity Tester

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Part Numbers

BellMega	BM-510
Bag	BM-510-Bag
Lead Set	BM-510-LS
Battery Charger	BM-510-BC

Technical Specifications

General Data

Dimensions (H x W x D)	184 x 116 x 90mm
Weight	2.3kg
Operating Temperature	0 to 60°C

Electrical Data

Insulation leakage trip	110M Ω
Insulation leakage trip response time	250ms @ 100M/100pf
Insulation voltage	500V DC + 10/-5% @ 10M
Insulation short circuit current	1.5mA Max
Continuity threshold	10 Ω
Continuity constant current	10mA +/- 1mA
Continuity applied voltage	5V DC +/- 2V (red=+)
Continuity response time	400ms +/- 100ms
Live circuit tolerance	250V AC/DC (350V Peak)
Low battery disable	5.5V
Operating current (battery)	75mA
Operation time (fully charged battery)	8 Hours (Approx.)
Plug pack type	9 - 24V @ 1A
Charge time	3 Hours (Min)
Insulation sound frequency low	1.7Khz +/- 100Hz
Continuity sound frequency high	2.2Khz +/- 100Hz
Switch mode cycle frequency	40 - 70Khz factory set



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