



## Bender UK RS4 Rail Signal Power Protection

*Proven, compliant, retrofit and replace solutions for intelligent rail monitoring and maintenance*

### Bender UK at Railtex 19

Next generation Rail Signal Power Protection with increased sensitivity for first fault location and compliance with Network Rail's Insulation Monitoring and Fault Location requirements is the focus of Bender UK Stand H91 at Railtex 19.

Bender UK's Rail Signalling Protection System - RS4 - delivers multiple-tier smart cable insulation monitoring that Network Rail needs to reduce rail downtime and improve operations. The new RS4 steps up the performance of Bender's already proven systems to provide a holistic picture of cable health, along with a rich data set that meets the requirements of standard NR/L2/ SIGELP/27725.

The new system employs tried and trusted Bender measuring technology offering increased sensitivity with improved feeder first fault location from the 20kΩ pre-warning level to 100kΩ and higher, depending on system capacitance.

### Proven history and track record

Bender UK's advanced intelligent insulation monitoring equipment has a proven track record with more than 1,000 systems installed across the UK's rail networks over the last two decades. It is an efficient and affordable tool for safeguarding signal power systems and other critical power supplies.

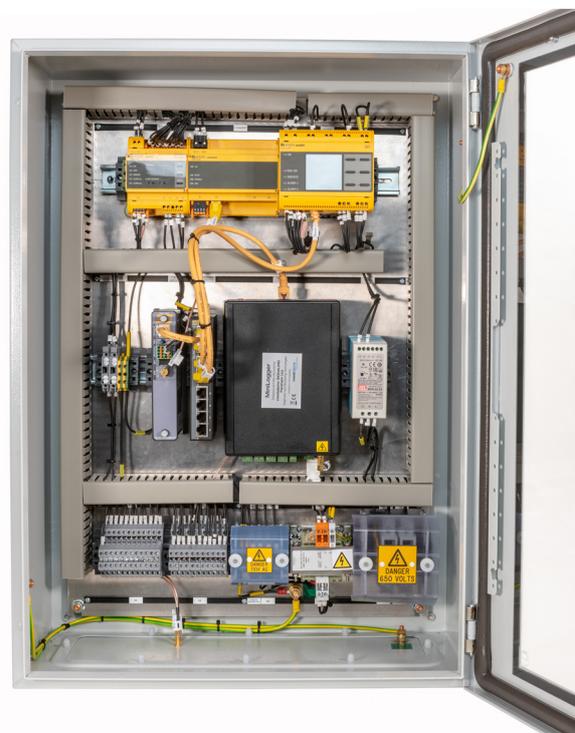
Every day Bender equipment plays a vital role in the predictive maintenance and cost-effective fault-finding that is essential to minimise disruption and aid the smooth running of rail services. New RS4 Tier 3 and Tier 2 solutions are already in trial on several key Network Rail routes in the south of England.

The retrofitable solution can upgrade existing RS2/RS3 installations in minutes without disconnection. It offers cost-effective continuation for legacy equipment that is compatible with existing Intelligent Infrastructure remote

condition monitoring through GSM enabled data loggers.

### Tier 1, 2 and 3 Solutions

The Tier 2 solution provides full insulation resistance levels of individual feeders with increased system visibility at minimal extra cost over Tier 3 technology, and is



fully upgradeable to deliver a Tier 1 solution.

Bender UK's RS4 solution for Tier 1 requirements provides full insulation resistance levels of individual cable subsections and within FSP's (Functional Supply Points). It also offers the flexibility to deliver tailor-made solutions on a project-by-project basis.

### Specific bespoke solutions

The RS4 Tier 1 solution is fully retrofittable and compact for utilisation within SIN119 remedial works. It does not require a 650V or earth reference connection for FSP installations making the Bender Tier 1 solution fully class 2.

Bespoke customised data and communication options can be achieved and can be tailored to specific projects - fully integrated with existing Intelligent Infrastructure.

Trackside equipment can be fully integrated into existing FSP architecture and the Tier 1 solution offers remote fault location to FSP or cable length, with precise manual fault finding at 100KΩ.

### Rapid and Precise Fault Finding

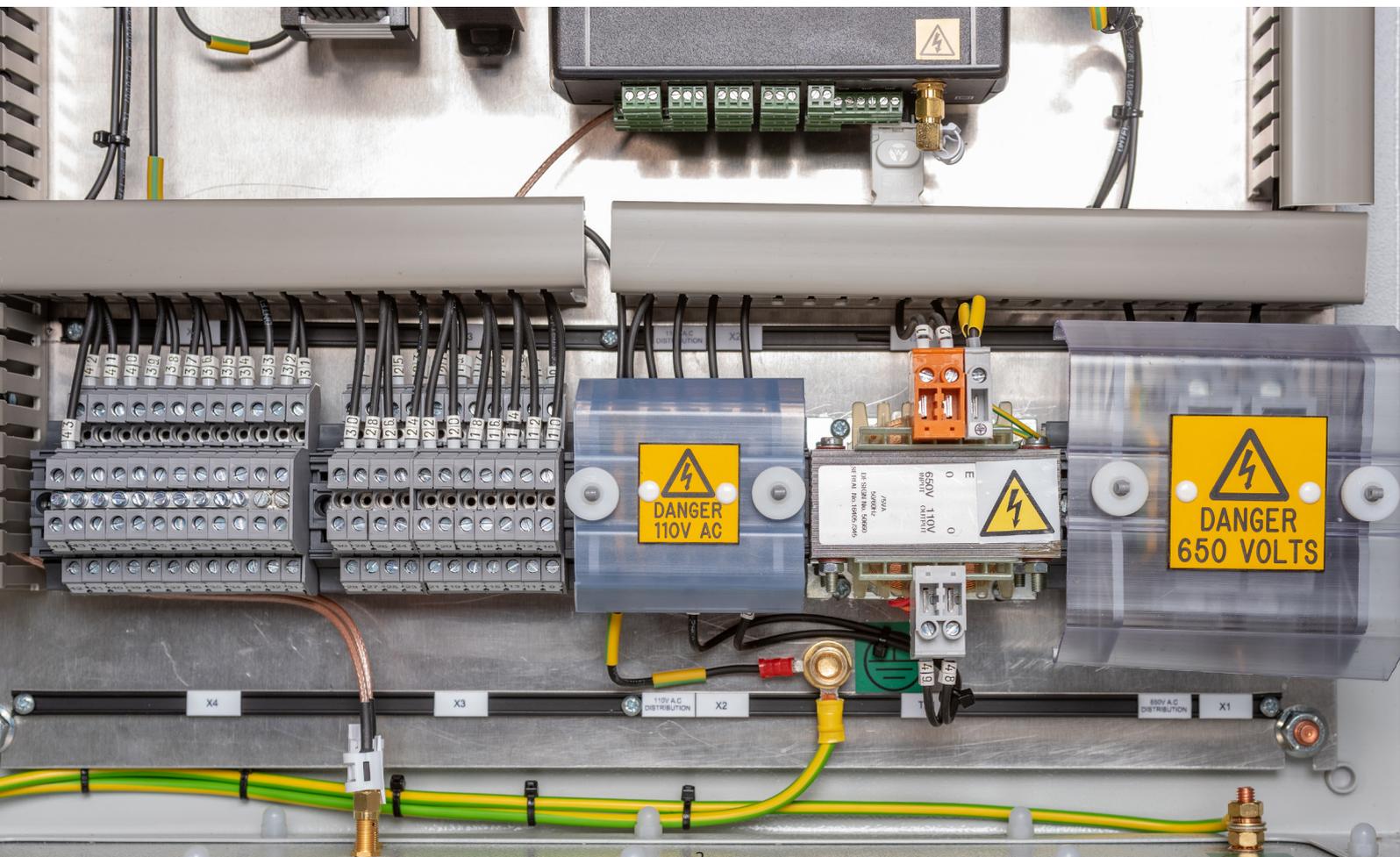
The advanced RS4 device builds on the technology already proven in use across Network Rail with many Bender rail signalling protection systems already delivering vital information on the status of power supplies every day.

Alongside enhanced sensitivity for 'first fault' location (100KΩ) RS4 measures capacitance, voltage and frequency delivering data within the standard display options to provide more information to help assess the health of the system.

The ability of RS4 to locate faults more precisely means maintenance teams can respond more quickly, enhancing safety and reducing downtime costs. Bender UK's RS4 system continually monitors insulation values to show real-time status of the power system. When the insulation value (IR) drops, the system records the fault and the Bender units put a test current signal or pulse into the system which is pulled to earth at the point where the fault exists.

### Portable Technology

A portable Bender RS-PELI device can be used trackside for measuring and analysing a specific section of the power network to prioritise installation programmes. The unit is self-powered through connection to the trackside signal electrical network and delivers live monitoring of the system status. The RS-PELI unit can also be used to provide independent verification of the RS system performance.





## Client Testimonial

Abdul Rehman Savant (CEng, MIET) is a Senior Electrical Engineer (E&P CRE) with Amey Consulting, Birmingham, and in an article on CPD (continuous professional development) and collaboration with Bender UK, he explains that when they talk about reliability, it means 'to provide a solution that will give maximum operability and provide a real-time, accurate condition status of the system in place. A solution that allows the maintainer of the network to be informed, locate and rectify any problems in advance of a failure

or power outage that can result in train services being delayed.'

Resilience of the system is defined as 'ensuring the rail network can be brought back to its normal state as swiftly and safely as possible'.

Mr Savant writes: "Amey Consulting have been collaborating with suppliers such as Bender UK to collectively solve the reliability and resilience issues faced on the rail network and developing the systems in place to provide a digital railway. We have looked at options to provide solutions using the Bender RS3 or upgrade to a Bender RS4 which can provide up to a Tier 1 solution and also be backwards compatible.

"Replacement of assets on the railway is now being reduced, with an active industry movement towards asset life extension which is far more cost-effective, future compatible and sustainable. No longer do large budgets come to mind when faced with words like 'life expired', 'degraded', 'corrosion' etc... Retrofit comes to mind.

Bender UK have provided Amey

**ameyconsulting**

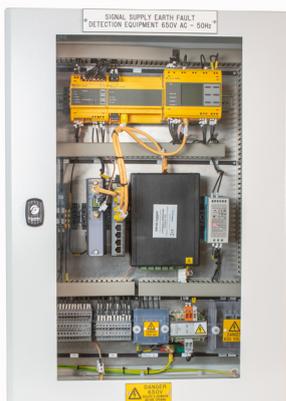
Consulting with options such as the RS4 retrofit solution and the Bender IMD Fault Location Unit to minimise costs on projects and maximise improvements on reliability and resilience by introducing their retrofit solutions which are compatible and practical.

"As part of our collaboration with Bender UK, we have had in-depth technical sessions where our staff have been given the opportunity to simulate faults on the Bender demo training kit and rectify the faults as a comparison to a real-life situation.

"Bender UK have delivered practical demos with technical theory on the benefits of Tier 1, 2 and 3 Insulation Monitoring and Insulation Fault Location. The practical demos provided and engineering discussions we have had with our suppliers such as Bender UK have helped us live up to our values to create better solutions and provide innovative designs that improve the world we live in."

Significant improvements have been made to the portable insulation fault case EDS3090/- with more sensitive clamps and receiver technology to enhance exact fault location accuracy to up to 100kΩ.

Bender UK Managing Director Gareth Brunton explains: "With the support of our expert research and development team in Grunberg, Germany, we have created an affordable and cost-effective multi-tier RS4 monitoring solution.



**"It is a response to the new standards set by Network Rail and enables our customers to plan their intervention around their business needs, employing intelligent monitoring to deliver intelligent maintenance and minimise rail disruption. At Bender UK we continually strive to upgrade the performance of our products and services to respond dynamically to the changing needs of our customer, helping them to comply with the latest regulations."**

The RS4 intelligent insulation and earth fault monitoring system is part of the Bender UK range of rail system protection products that includes monitoring of rail switch points heating units and motors, and control voltage network monitoring for railway crossings.

**Collectively solving reliability and resilience issues on the rail network**

Amey Consulting is working closely

with Bender UK on several large Signalling Power projects with the focus on improving the reliability and resilience of electrical supplies on the railway.

An acknowledged leader in asset management, engineering design and operational delivery Amey Consulting has a long working relationship with Network Rail. More than 100,000 rail assets have been inspected as part of its Civil Examinations Framework Agreement contract, and 9,300m of plain line track replaced.

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