

RELIABLE RELAYS FOR ROLLING STOCK

Mors Smitt's high quality products and excellent customer service set it out as a leader in the field

Reliability is key to railway operations. While electromechanical relay technology is sometimes regarded as old and outdated, it remains a proven solution for day-to-day applications in rail vehicles.

Relays and breakers (MCBs) are therefore still a vital part of rolling stock. They allow OEMs and train builders the opportunity to problem solve and fix in a way that software-based systems do not. A further advantage of relays that don't contain software is that this eliminates any associated security risk or danger of hacking.

Mors Smitt is the number one global relay provider to the railway and power markets and has an unparalleled installed base of more than 10 million relays worldwide. The company offers the widest range of relays of any supplier, with thousands of variants, providing

the highest reliability to fit all applications, including the harshest environments. Relays types include instantaneous, latching, safety critical, timers, flashing, one shot, two shot, tailored/specific time diagram, monitoring voltage or current levels.

WORLD LEADER

Mors Smitt began life in the UK in 1851 as Tyer, making token-ring signalling equipment. Adding the Dutch and French factories to those in the UK has produced the world leader in railway relays and systems, spanning rolling stock, signalling and infrastructure.

The company's long history gives it unparalleled experience, combined with its comprehensive engineering skills base. It is for these reasons that Mors Smitt products are fitted to almost every class of train in the UK. The Mors Smitt philosophy is that products should quietly and

reliably go about their business with minimum intervention. The company works closely with OEMs, operators and maintainers to continuously improve the performance of its relays with the view to meeting the lifetime of the train and not just seeing out a warranty period.

Mors Smitt's range is wide, and also includes Miniature Circuit Breakers (MCBs), transducers, hall-effect sensors, ground and insulation fault detection, cab desk gauges, indicators and speedometers. Its portfolio continues to evolve to meet the changing needs of the industry.


Mors Smitt also provides trainborne systems for Energy Measurement and Train Protection. Its latest generation of the Automatic Warning System (AWS) / Train Protection and Warning System (TPWS) can be deployed as a standalone system or integrated

with European Train Control System (ETCS) via a simple hard wire interface or via its built-in Specific Transmission Module (STM), which is fully compliant with the UNISIG standards. This has been very well received by the industry, with over 1,000 systems entering service over the next three years.

RELIABILITY

Mors Smitt strives to maintain the highest level of reliability for its products at all times. With its relays commonly providing lifetimes in the many millions of operations, interruption in relay availability is at the lowest of levels together with unrivalled low lifecycle cost.

When construction of the Class 390 Pendolinos began in the year 2001, Alstom chose Mors Smitt relays. Each of the 57 trainsets is fitted with over 200 relays. In 2015 Alstom and Mors Smitt worked



Mors Smitt relays fitted to Virgin Trains Pendolinos have proved highly reliable. No 390046 races through Berkswell with a Birmingham New Street to London Euston service on 18 July 2018. Fraser Pitthie

together to perform a health assessment on the installed relays as the fleet was at approximately half-life. The conclusion was that there was no real justification for a wholesale fleet change-out of the relays. This is some feat when you consider some relays are operating 100,000 times per year in the harsh rolling stock environment.

Benefiting from the same high reliability figures are London Underground's 1996 stock on the Jubilee Line, 1995 stock on the Northern Line and 2009 stock on the Victoria Line, and Hitachi's Class 395 Javelin trains used to operate Southeastern high-speed services. All these trains and customers alike benefit from the quality and long life and reliability of the Mors Smitt relays for high intensity passenger operations.

MODS

In addition, to the company's products being chosen during new-build construction of trains, Mors Smitt is the relay provider of choice for modifications (mods) of existing rolling stock.

Examples of when Mors Smitt products are fitted to existing rolling stock in addition to existing systems include:

- PRM-TSI compliance, eg new visual and audio indication provided to doorways;
- Wi-Fi addition;
- new lighting;
- new forced ventilation in cab and/or passenger saloon;
- battery monitoring modified to allow better train battery duration and load shedding; and
- time delay to allow sensitive equipment to turn on after larger electrically disruptive equipment has settled down.

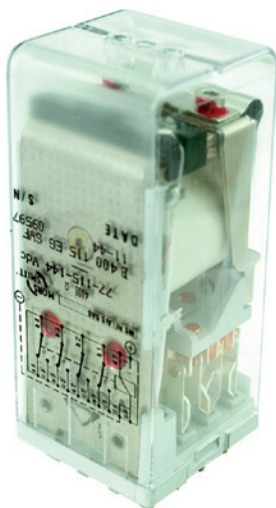
BANISHING OBSOLESCENCE

Mors Smitt has extensive experience in replacement of old and obsolete relays, such as Square D, PED, BLP, Dialight, Enbray, Siemens, GEC and English Electric. In the same vein, Mors Smitt is the company of choice where an improvement in reliability is required from a relay or device from another supplier.

Mors Smitt knows its clients want relays to be available for the life of a train, or finite contractual figures such as 30 years. To assist with forming a reciprocal relationship the company avoids allowing any of its products to become obsolete. It therefore continues to make relays which first started production decades ago, some as long ago as the 1960s, demonstrating the



Key supplier to LU: 1996 stock on the Jubilee Line arrives at Canning Town on 25 June 2018. Philip Sherratt



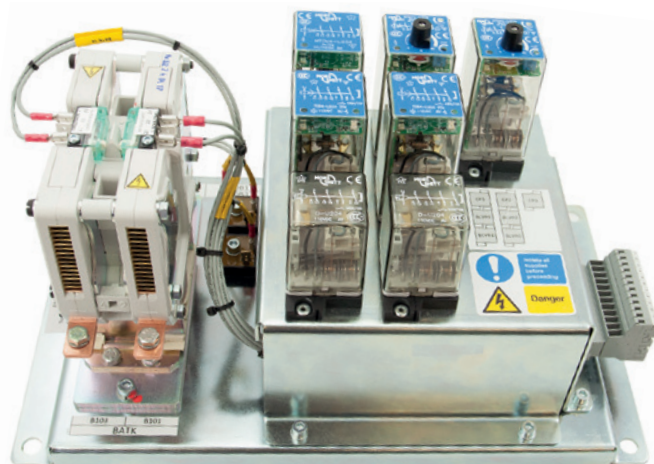
Mors Smitt B 400 relay.

company's understanding that replacing obsolete parts or circuits on a train with something different is an expensive, time-sapping process for engineers, operators and owners.

This problem-solving ethos is a key aspect of the company's philosophy. Mors Smitt loves to solve problems other manufacturers have left behind, often through lack of interest or where a commercial decision has been made to completely remove the availability of devices installed on the train, OEMs becoming the victims of the indiscriminate swinging scythe of obsolescence. To that end, Mors Smitt has resurrected products previously made by other manufacturers who had terminated production of particular ranges. The company has the know-how to reverse engineer, produce, test and deliver parts made by others.

SUPPORT

While offering the scale and scope of a global company, Mors



Wide product range: Mors Smitt Battery Control Module.



Mors Smitt High Density Relay Module.

Smitt also has a dedicated UK relay factory at Burton-on-Trent, meaning support is close at hand.

A key Mors Smitt commitment is provision of lifetime support for all its products, and the company's facilities include its own investigation laboratory. If a customer is having issues with a circuit, Mors Smitt can make its engineers and laboratory

available to look into the issue. Relays, which may be many years old, can be returned and the device is forensically examined to look for tell-tale signs of what is happening electrically on the train. The findings are then reported on and advice provided, often leading to improvements in the train circuitry design and further increases in lifetime and reliability. 