

RFID



Real Time Train Monitoring for the Model Electronics Railway Group

RFID adds realism to model railway systems

The world of railway modelling reaches from children's toy trains through to highly accurate models that closely resemble the prototype. Modellers want to find ways to make the operation of their railway as realistic as possible. Sometimes that means solving the problem that the position of trains on the layout cannot always be seen.

Complex model layouts often incorporate electronics. On some layouts the electronics beneath the baseboard are as intricate and as carefully thought out as the detailed modelling of track layout, buildings, scenery, locomotives and rolling stock on top.

The Model Electronics Railway Group (MERC) promotes electronics in railway modelling. It helps members by sourcing components for particular modelling applications. MERC spotted that there were ways to use radio frequency identification (RFID) for model railways and chose CoreRFID to provide the components for their kits.

Automatic Train Identification

In the real world the locations of particular trains are communicated to the signalling centre by track circuits or axle counters which provide evidence of the presence of a train. On some railroads in the USA coded tags placed on locomotives and rolling stock are read by trackside detectors. Hitherto the modelling community has many similar detection aids for model railways but nothing to establish the precise identity of a passing train. With their RFID solution, MERC is able to reproduce this aspect of railway operations in miniature.

The MERC approach uses low cost, 12mm, electronic tags that can be mounted under a model locomotive, truck or carriage. Each tag carries a unique identity. A reading device, mounted under the railway base board can then detect the presence of a locomotive, truck or entire train and pass this information to a computer.

The information collected by the computer can be used for a number of purposes including producing an informative display of which train has just arrived at which location. For exhibition display layouts, such a system can increase the information that can be provided to exhibition visitors. The RFID facility can be used independently of the way the layout is controlled.

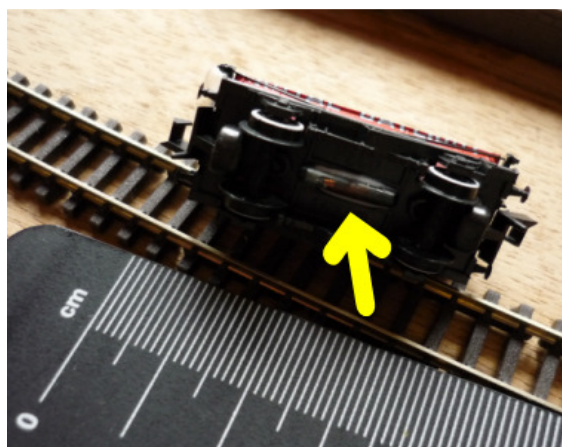


Some model train layouts need the operator to know which trains are in hidden sidings behind the scenes. .

"CoreRFID is being a great help in supporting our range of RFID kits and supplying the components." Martin Perry, MERG Kitmaster

RFID allows real-time loco & stock identification

Although there are many systems available for model railways that detect that a train is at a particular location most do not provide information about which locomotive or what rolling stock is there. On a large layout with hidden sidings or track that runs through tunnels, it can be a problem for the operator to know just which train is where. Putting RFID tags on rolling stock solves that problem. It also solves the problem that a locomotive may be used for several different trains; it could be pulling the 9:30 passenger train on the branch line at one point, and later has shunted on some trucks or is running a mixed train down to the branch terminus at the end of the day. Both trains would have their own tags with their own unique identities that can be detected by the readers.



A 12mm tag in place beneath an N gauge truck shows how easy it is to tag small scale models .

The tags are very small (only 12mm in length) and light and so can be used even on very small scale models. A typical N gauge (2mm = 1 foot) model wagon is only 35mm long but can accommodate a tag very easily. The tags are also relatively inexpensive at around £2.50 each. This is important when a layout may have dozens of different trains to keep track of. Because the tags need no power, RFID can be used with all types of model train control systems and installation is simple – tags can simply be glued in place.

MERG have packaged up their chosen components in a number of kits. Modellers that are members of MERG can buy a simple starter kit with tags, a reader and the connectors to link it to a computer. Other kits are available with additional tags, a kit for mounting additional readers (CoreRFID provide the additional readers directly through the CoreRFID on-line shop) and the necessary connecting system to allow one computer to collect data from multiple readers.

The Benefits

MERG's RFID based train detection system provides:

- Automatic detection of a trucks, coaches or locomotives at specific locations on the layout.
- Identification of specific, individual, rolling stock items.
- Simple installation of tags and readers on most layouts.
- Feed-back of information to train control systems or to train information displays.
- Alternative to optical or magnetic based train detection.

About MERG

MERG is a friendly, informal, group of over 1000 railway modellers worldwide that share their experiences of putting electronics to work on their layouts. Model electronics can be used for everything from accurate signalling to control trains and points, through to lighting in carriages, sound systems and scenic effects. MERG provides training, produces guides, runs an information exchange web site for members and sources components to make available to members as kits. MERG goes to great trouble to ensure that the components it selects will work well in the environments where they are intended to be used. MERG can be contacted at www.merg.org.uk.

About CoreRFID

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