The Merlin Mains Signalling Technology

Signalling via the mains wiring has a reputation for being a less-than-perfect solution to communicating information around a building, and the advent of switch-mode power supplies and thyristor controls justifiably added to this perception. Today the mains is extremely noisy. However, the implementation of the EMC directives for conducted noise is having a beneficial effect. At the same time the radio frequency spectrum is becoming more congested and will always be subject to a degree of unreliability due to interference.

Traditional technologies with relatively wide bandwidth, such as X10, were developed to try and live with the noise. However, the signalling range is typically limited to smaller buildings.

We have been working for several years in this field and have developed a solution to provide reliable, long range signalling in large multi-storey, three-phase buildings in the presence of large amounts of electrical noise.

To achieve this, our proprietary technology uses:

- very narrow bandwidth and a proprietary active crystal filter technique to give a 52db advantage over conventional circuitry.
- digital FM techniques giving a 19db improvement over AM methods
- a carrier frequency that matches and propagates well in the mains wiring

The total signal to noise improvement over the alternative mains-borne communications is an enormous 83db, which makes our technology not just feasible but entirely reliable.

The very narrow bandwidth means that it is suitable only for low data rates, typically 20 bits per second. This is perfectly adequate for simple data, such as an address and, say, sixteen status conditions, which can be sent in just over a second. It is ideal for a wide variety of applications, such as ON / OFF switching, alarm systems, temperature measurements, voltage monitoring, and automation etc.

Key advantages of the technology include:

- ❖ The mains is a hard-wired medium providing fail-safe circuits due to the use of ring-main wiring.
- ❖ The data path is entirely predictable, and not subject to unknown interference and propagation reflections.
- ❖ Installation can be as simple as plugging in the system components
- ❖ No aerial installation is required
- ❖ No frequency variation from country to country or licensing issues.

For more information on the Merlin technology and product range, please contact:

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