



SBS-1 Virtual Radar for Enthusiasts and Professionals

Kinetic Avionic Products Ltd

www.kinetic-avionics.co.uk

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The October 2005 issue is on sale from all good newsagents.

A new product on the market enables anyone to have a virtual radar picture of aircraft arriving and departing from airports – plus those in transit – displayed on their desktop or laptop computer. Tony Dixon Reports.

It is not often that something totally new becomes available to aviation/orientated people – whether they be enthusiasts or professional people within the industry. The SBS-1 Real-time Virtual Radar receiver brings Air Traffic Control (ATC) information to anyone with a desktop or laptop computer. The system provides a ‘picture’ of all aircraft that are fitted with a Mode S/ADS-B (Automatic Dependent Surveillance Radar) system within a line of site distance from the aerial that is provided. This can be over 200 miles (300km) for high-flying aircraft.

Received signals currently come from (in the UK) all General Air Traffic (GAT), i.e. airliners, executive jets and turboprops, with a Civil Aviation Authority (CAA) requirement for all categories of aircraft by March 2008.

The hardware is produced by Kinetic Avionics Products Limited, which specialises in the design, development and deployment of innovative products for the aviation community. David Goodman, the company’s Chief Executive Officer jointly-conceived the SBS-1 receiver with colleagues, Keith Frewin and Derek row, They had been talking about the mid/air collision of a helicopter and a microlight near Elstree aerodrome to the north of London in which two microlight pilots died. The three colleagues thought that if the air traffic controller at Elstree had been able to use a system, such as the SBS-1, he may have been able to warn the aircraft involved.



“As well as being professionals in the fields of hardware and software, the three of us are private pilots with a long interest in aviation,” said David. “It was whilst discussing global Mode-S projects that we realised there was a niche market for a cost-effective Mode-S receiver.”

Mode-S transmissions consist of a unique six-digit, 24-bit number for each aircraft- rather like the aircraft's registration – and with the ADS-B – provide position, heading, height and speed information as well. The signal can be interrogated from the ground and produces a hexadecimal number code.

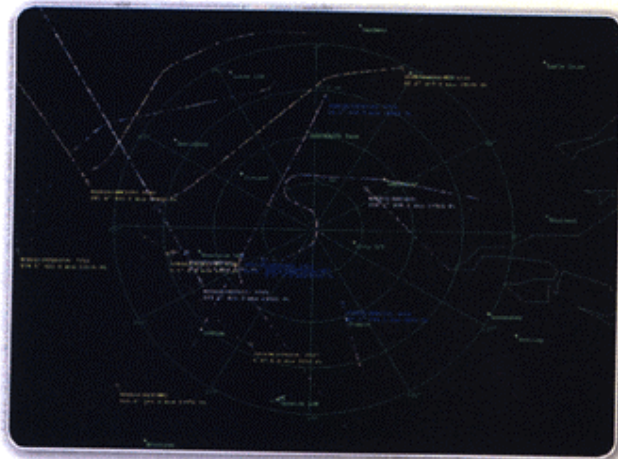
The SBS-1 actually has a wide variety of possible uses within the aviation industry. To the enthusiast, it provides details of what aircraft can be seen from his or her location, and what is arriving and departing at a local airport. If the unit and aerial is located in the London area for instance, most of the inbounds and outbounds for all the main London airports can be tracked to the point of touchdown and even taking on the ground if line-of-sight is available. For instance, the author sat in the company's offices at Elstree aerodrome and watched aircraft landing at Gatwick on the screen using a remote aerial link from a unit in the Biggin Hill area. From August 19, all users of the SBS-1 have been able to link up to other base stations. It is even possible to watch aircraft picked up by a unit in the USA from a computer and Basestation in the UK, all in real-time!

It is not just the enthusiast who will benefit however. When installed on all aircraft, ATC at smaller airfields with no 'real' radar can use an SBS-1 linked via a laptop to advise aircraft of possible conflicts. Flying schools can use the system to 'watch' students on solo flights or on navigation exercises to ensure that they do not get lost. John Houlder of Elstree Aerodrome, said: "This equipment will be a blessing to all the operators of the small aerodromes that cannot support a full-blown radar installation. It will enable them to check that the aircraft in their vicinity are flying the correct routes which have been approved for noise abatement reasons, as well as to assist aircraft wishing to land."

Many airliners, already have a readout of their aircraft's position transmitted to their operations room and therefore know where the aircraft are. However the use of a SBS-1 unit at one of the airline's outstations of offices would give an immediate update of an aircraft's position and therefore an accurate arrival time. Even environmentalists, concerned about aircraft maintaining the appropriate airport departure route, can monitor all the aircraft's positions. Various members of the CAA and the National Air Traffic Control System (NATS) have already purchased units in varying capacities for their use and analysis.

PRACTICAL USE

Kinetic Avionic kindly provided *Airliner World* with the use of a system for analysis. The box is about the size of a video cassette (and about the same weight) and the package comes with an aerial plus all the leads (with UK and continental adapters) required. Installation to a computer – via a CD Rom – is simple and a real-time picture of aircraft transmissions soon filled the screen.



A range and bearing grid is superimposed on the screen and this has to be told the geographic location of the box – via Lat and Long. The left-hand side of the screen shows the tracks, with waypoints (navigational beacons) and airfields/airports highlighted. This can of course be customised for individual needs. The right-hand screen provides a table of aircraft

information including the aircraft's Mode S code, nationality, flight number, heading, height and speed.

Unfortunately, from the Airliner World offices in deepest Lincolnshire, the nearest airways are some 20 miles (35km) away and Nottingham East Midlands Airport some 35 miles (60km). With terrain in the way, this meant that with the aerial provided, movements at East Midlands could not be monitored, but aircraft on the main airways system could. A larger aerial would produce better reception. However, most of the potential users of the SBS-1 would probably live closer to an airport and have better reception.



You will need access to a database to decode the hexadecimal number and convert it to a registration. One is provided on the CDROM with over 16,000 aircraft – mainly from the USA/CANADA and the UK – and the website G-INFO gives the registrations for all UK-registered aircraft. There are also other websites with the information, but on a subscription basis.

The Basestation is currently being produced at a cost of around £500, which may sound like a lot of money for an individual, but with the cost of a high-quality airband scanner in excess of £200, perhaps not as expensive as it seems. For operators of flying clubs and small airfields, the potential improvements to safety and for airlines, the ability to provide passengers with up-to-date arrival information far outweighs the relatively small outlay.

Martin Lynch, founder of ML&S – a leading supplier of communication and ‘ham’ radio equipment said. “This product will be of huge interest to spotters worldwide, enabling them to identify aircraft at distances they’ve previously only dreamed of. The SBS-1, combined with conventional spotting from the comfort of the spotter’s own home. This product has the potential to revolutionise the hobby.

“This is an exciting and versatile products that can play a role across many market segments, of which we will initially be targeting the small to medium-sized airfield sector and the aviation enthusiast community,” added Kinetic Avionics’ CEO David Goodman.

To find out more about the SBS-1 system and its accompanying Basestation software, contact Mark Maurice on 020 8953 8855 or visit www.kinetic-avionics.co.uk. On the website is a fully-interactive forum with users’ comments and questions, which are quickly answered by Kinetic’s staff.