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Looking forward to an Isobus farming future

By Peter Hill

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This article set out to explain in the simplest terms what ISOBUS technology is and how farmers can use it. Potentially, it is a somewhat dry technical subject, so the Question & Answer approach was used to keep it a concise read in a form that reflects the queries farmers are likely to have about the technology.

It enables a lot of ground to be covered without the article becoming tedious or too complex.

Illustrations were chosen to highlight a typical application (seed drill), with the diversity of other applications available (sprayer, fertiliser spreader, forage wagon and combine harvester) highlighted by the displays shown on terminals produced by different types of manufacturer.

PRECISION FARMING SPECIAL

Edited by David Cousins 020 8652 4901

Getting to grips with Isobus p74 Budget GPS guidance p77

Looking forward to an Isobus farming future

Almost every farm machinery manufacturer now seems to use the term, yet what exactly does "Isobus-ready" mean? Peter Hill provides some answers

You may well not be familiar with the word Isobus right now, but the chances are that you soon will be. These high-tech tractor-implement control systems are bringing new features, bags of flexibility and – above all – the compatibility that farmers want when they're hooking one machine up to another.

Compatibility is one of the big bugbears of all electronic systems, so manufacturers are getting themselves organised. A new body called the Agricultural Industry Electronics Foundation (AEF) has brought together more than 100 tractor and equipment manufacturers, as well as electronics software specialists and technical organisations from across Europe, North America and Japan.

Their aim is to encourage the development of Isobus features useful to farmers, create a standard for Isobus device licensing and help manufacturers produce devices and software that are fully compatible with each other.

In fact a new website due to go live this year will include a database of all the Isobus devices available – tractors, implements, terminals and software.

Apart from providing a comprehensive buyers' guide, the site will help users check compatibility and determine whether software updates are available for their devices. It will also provide feedback on technical issues to help manufacturers refine software and devices, and assist service personnel in diagnosing faults.

WHAT IS THIS "ISOBUS" THEN?

It's the quick reference term that identifies ISO 11783, a worldwide standard covering all aspects of an integrated tractor and implement communication system.

WANT TO MORE? COME TO THE PRECISION FARMING EVENT

- ★ Where: East of England Showground, Peterborough PE2 6XE
- ★ When: Wednesday 7 March 2012
- ★ Cost: On the gate £15/ticket. In advance £10/ticket
- ★ Tickets and info: 0845 4900 142 or www.farm-smart.co.uk

WHY IS IT CALLED ISOBUS?

The "Iso" bit refers to the International Standards Organisation, while "bus" refers to a specialised wiring network that connects components within a vehicle and is designed for rapid exchange of data.

I'VE HEARD OF CANBUS – IS THAT THE SAME THING?

No, it's the name of a bus network designed according to a particular set of protocols. CAN (Controller Area Network) is the protocol most commonly used on agricultural vehicles because it's designed to cope with harsh environments.

WHY CONNECT VEHICLE COMPONENTS ELECTRONICALLY?

It allows the fingertip setting and control functions seen on an increasing number of tractors, harvesters and other farm vehicles.

It also allows automated features such as headland management, which can only work by linking sensors and actuators on such things as the diff locks, lift linkage andpto clutch to a computer on the tractor.

SO WHAT DOES ISOBUS DO?

The ISO 11783 standard provides a framework for manufacturers of farm vehicles and electronic



New tractor and implement control systems will mean one terminal can be used with lots of different implements.

devices to create data networks in a common format.

It covers physical matters such as the specification of cables, plugs and sockets, as well as for the sensing, control and display software.

WHAT'S AN "ISOBUS IMPLEMENT"?

An Isobus-ready implement carries a small computer containing all the data needed to operate its various functions electronically using an Isobus-compliant terminal in the tractor cab.

It lifts and lowers the pick-up on a baler or forage wagon, for example, or opens and closes the hopper on a fertiliser spreader.

I'VE ALREADY GOT A LITTLE SWITCH BOX FOR THE SPREADER...

And probably one for the sprayer as well; and for the potato planter or the feed wagon, and for the big mower and the baler!

With Isobus versions of these implements, one terminal will operate them all.

WON'T I NEED A DIFFERENT TERMINAL FOR DIFFERENT IMPLEMENTS?

The beauty of Isobus is that one terminal can operate any Isobus-ready implement. Plug in a fertiliser spreader and the display automatically shows the spreader functions; swap it for a baler and the display changes accordingly as it picks up the data from the implement's on-board computer.

AH, BUT WHAT IF I'VE GOT IMPLEMENTS FRONT AND BACK?

No problem; just toggle the display between the two on the same terminal.

IT MUST STILL BE CONFUSING HAVING DIFFERENT DISPLAYS.

That's why all Isobus terminals have a common format for the display screen – they use the same style to show an implement's settings, they are adjusted in the same way and the graphical representation of various functions has the same

layout and style on every terminal. Displays for a fertiliser spreader and a forage wagon obviously have different content but there are plenty of similarities to help operators find their way around.

I'LL NEED ENDLESS BITS OF CABLE TO MAKE A CONNECTION!

No you won't; the five-pin plug and socket are standardised and there's just one slim cable that carries power

I'LL NEED A NEW TRACTOR WITH ISOBUS BUILT-IN, THEN...

No, because you can fit an external socket connected to an Isobus universal terminal in the cab and operate implements quite independently, it is useful with machines like spreaders and sprayers to connect the terminal to the tractor's speed sensor, which may need a bit of extra wiring work.

SO WHAT'S THE POINT OF HAVING AN ISOBUS TRACTOR?

It makes it easier to connect a portable terminal and use the tractor's speed and other useful sensors and if there's a fixed terminal supplied with the tractor it will usually operate extra functions related to the tractor itself – such as guidance.

Not all portable terminals can do that. It also opens up possibilities for the implement to control the tractor – regulating its working speed, for example.

WILL I NEED A TERMINAL FOR EVERY TRACTOR, COMBINE AND EVERYTHING ELSE.

If they're all using Isobus features at the same time, then yes.

But if not, a portable terminal can be moved from one machine to another. Isobus isn't much use on a tractor pulling a trailer, so put the mobile terminal in the combine or forage harvester and move it back when the tractor goes drilling.

WHAT ELSE CAN THE TERMINAL BE USED FOR?

Some terminals are for implement control only but uses are expanding to include steering guidance, variable

rate application and section control using a GPS connection or the terminal's own GPS receiver if it has one. A remote camera video feed is also becoming more common.

ARE THEY ANY USE FOR FARM RECORDS?

An SD card or USB memory stick can be used to download job records, as well as a vehicle's movement when the terminal is used with a GPS feature, and then loaded into farm management software. Just check it supports the correct format.

WILL I HAVE TO KEEP BUYING NEW TERMINALS TO STAY UP-TO-DATE?

Not necessarily; it's the software that provides these functions so manufacturers should provide upgrades and new software programs as with any computer system.

ARE THERE MANY ISOBUS-READY IMPLEMENTS YET?

Most of the big equipment manufacturers are now producing Isobus-ready machines – from sprayers and fertiliser spreaders to potato harvesters, forage wagons, balers, bale wrappers, grass rakes, seed drills, and so on.

AND WHAT ABOUT TRACTORS?

It needs a lot of resources to develop these systems and integrate them into the manufacturing process so you're really looking at the top four or five manufacturers for a fully integrated Isobus system.

WHAT IF MY FAVOURITE TRACTOR MAKER DOESN'T DO ISOBUS YET?

You can buy a portable terminal and use that; it will just involve some extra wiring if you want to tap into speed sensors and the like – but there are kits available to do that fairly easily.

ISOBUS TERMINALS

- ★ Ag Leader: Integra; Versa
 - ★ Amazone: Amatron 3; Amapad
 - ★ Case IH: AFS Pro 300; AFS Pro 600
 - ★ Challenger: TMC Display
 - ★ Claas: Communicator
 - ★ Deutz-Fahr: AFIS; iMonitor
 - ★ Fendt: Varioterminal
 - ★ Hardi: HC 9500
 - ★ John Deere: GreenStar 1800 Display; GreenStar 2630 Display
 - ★ Krone: CCI 200
 - ★ Kuhn: VT 50*; CCI 100
 - ★ Kverneland: IsoMatch Tellus
 - ★ Lemken: Comfort-Terminal; CCI 200
 - ★ Massey Ferguson: Datatronic III Console
 - ★ Müller-Elektronik: Basic-Terminal; Basic-Terminal TOP; Comfort-Terminal; TouchME
 - ★ New Holland: IntelliView III
 - ★ Pöttinger: Artis; Artis+
 - ★ TeeJet: Matrix 570VT
 - ★ Topcon: X30
 - ★ Vicor: IsoMatch Tellus
 - ★ Valtra: Isobus terminal
- Note: * operates Kuhn Isobus-ready implements only.

DOES IT MATTER WHICH PORTABLE TERMINAL I GET?

There's a lot of choice – you can choose between small and large-screen designs, mono-colour or colour, and button-operated or touch-screen.

In one or two instances, there are terminals that can only be used with the manufacturer's own implements so be sure to get one with full Isobus conformity if you want to use it with machines from different manufacturers.

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ISOBUS ON SCREEN



TeeJet Matrix 570VT has sprayer control software options in addition to regular Isobus implement control.



Amazone Amapad is a multi-role terminal produced by the implement manufacturer and software specialist Topcon.



Portable terminals like this Case IH AFS Pro unit and other farm vehicles can be moved between different tractors.



New Holland IntelliView terminal showing combine harvester functions can also be used in a tractor.