

AEF Certified

ISO BUS



UT	TECU	AUX-N
TC-BAS	TC-GEO	TC-SC
...

www.aef-isobus-database.org



180-1-D/EN 10/2015



ISOBUS in Functionalities

ISOBUS and AEF

Electronics increase the safety, effectiveness, precision and efficiency of agricultural equipment. In the past, however, every manufacturer used their own proprietary solutions, which required special adaption for every combination of tractor and implements. ISOBUS will simplify this by offering a plug and play solution for the future: only one terminal for a large selection of implements, regardless of the manufacturer.

All signals, such as speed, position of the lower links, power take-off RPM, etc. are

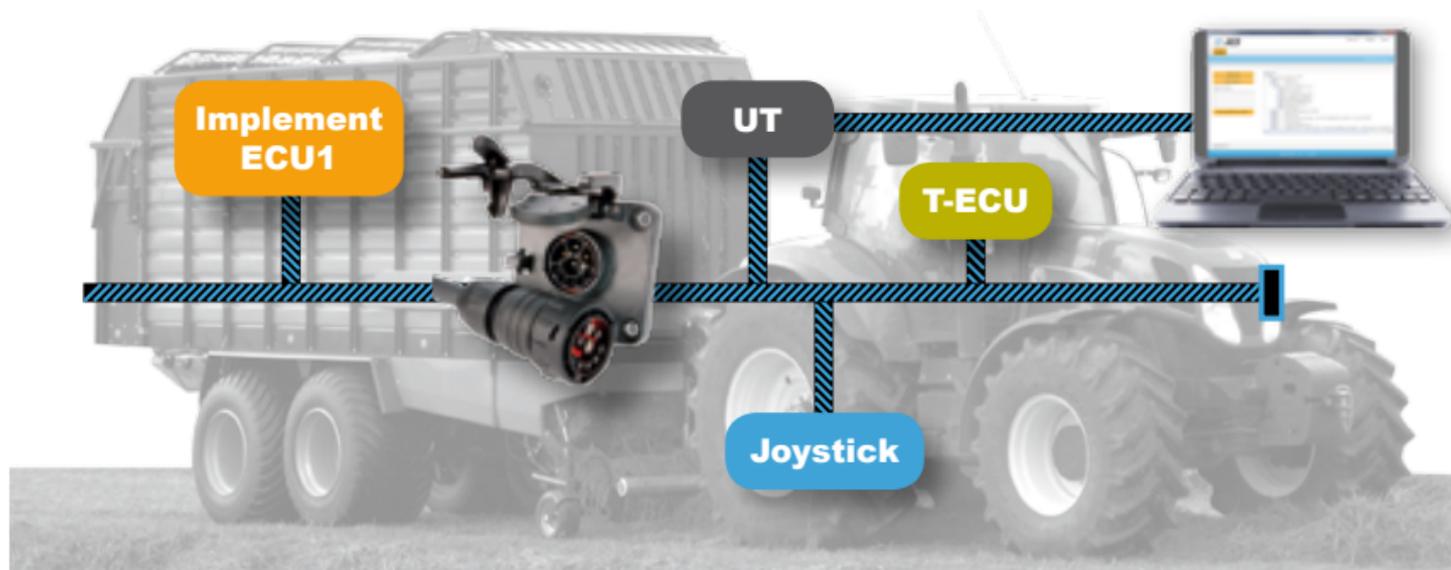
available in standardized form for each implement. The communication between the implement and the farm management system is also standardized and simplified through the use of ISO-XML. ISOBUS is a core task for the AEF.



What makes an ISOBUS System?

A modern ISOBUS system consists of various components, including the tractor, terminal and implement. It is always a question of the performance of the terminal and implement

– and, eventually, of the installed options. For increased transparency functionalities have been defined.



AEF ISOBUS Functionalities

An ISOBUS functionality is a product which can be explained to the end user as a separate “module” on the ISOBUS. One or more functionalities can be bundled together into a retail product intended to interconnect with other products that contain AEF functionalities.

In an ISOBUS system only the least common denominator of functionalities can be used. Only functionalities supported by all components involved are available. And only then the famous “plug and play” will work.

The description of the functionalities provided here is of course highly condensed. Details can be found in the relevant AEF publications.

UT – Universal Terminal

The capability of operating an implement with any terminal; also, the capability of using one terminal for operating different implements.



Auxiliary Control

AUX-O – Auxiliary Control “old”

AUX-N – Auxiliary Control “new”

Additional control elements that facilitate the operation of complex equipment, such as a joystick; also, the capability of controlling implement functions by means of an additional control element.

There are an “old” and a “new” auxiliary control which are not compatible. Implements and functions certified according to AUX-N cannot be operated with input devices certified according to AUX-O and vice versa.



TC-BAS – Task Controller basic (totals)

Describes the documentation of total values that are relevant for the work performed. The implement provides the values. For the exchange of data between farm management system and Task Controller the ISO-XML data format is used. Jobs can easily be imported to the task controller and/or the finished documentation can be exported later.

The logo for TC-BAS consists of the text "TC-BAS" in a bold, blue, sans-serif font, centered within a blue rounded square border.

TC-BAS

TC-GEO – Task Controller geo-based (variables)

Additional capability of acquiring location-based data – or planning of location-based jobs, as for example by means of application maps.



TC-SC – Task Controller Section Control

Automatic switching of sections, as with a plant protection sprayer, seed drill or fertilizer spreader, based on GPS position and desired degree of overlap.



TECU – Basic Tractor ECU

The tractor ECU is the tractor's "job calculator". This provides information, such as speed, power take-off RPM, etc. For the certification of this functionality, a connector on the back of the tractor and a terminal outlet in the cab are needed.



TIM – Tractor Implement Management

While the communication with TECU is uni-directional, i. e. the tractor provides certain information, TIM features the capability of bi-directional communication. The Tractor-Implement-Management-System (TIM) allows an implement to automatically control specific functions, such as the forward speed or the remote valves of a tractor. By letting the implement optimize its operation the overall system can achieve higher levels of productivity with less operator fatigue.”



LOG – Logging of device values independent of the task

Describes the logging of device (tractor, implement, etc.) values that can be collected independent of a task. These values could be totals, for example total area or total harvest mass, etc. or in fact any other data which the device can send. LOG data can be exported as an ISOXML file (similar to the Task Controller data). This function can be used for products such as telematics loggers.



ISB – ISOBUS Shortcut Button

ISB makes it possible to deactivate functions of an implement that were activated by means of an ISOBUS terminal. This is necessary when the implement in question is not currently in the foreground, for example when several implements are being controlled by a single ISOBUS terminal. Which functions an ISB is able to deactivate on an implement can vary widely and must be defined by the respective manufacturer.



AEF Conformance Test and AEF Certification

The AEF conformance test project team has developed an automated ISOBUS test tool for assurance of conformance of ISOBUS components with the ISO 11783 standard. The tool will test functionalities exceeding the standard, such as section control, which were defined in the AEF Functionality Guidelines. The aim is a clearer description of the effectiveness of a manufacturer-independent ISOBUS system and increased operational reliability for the farmer. The tool is also available for the development

departments of AEF members, to enable continuous checking for compliance with the standard during the development phase of their own ISOBUS products.

Furthermore, independent international and regional test institutes commissioned by the AEF will use the same AEF test tool worldwide to test ISOBUS products in a manufacturer-independent environment against the standard and the AEF Guidelines.



This certification process is obligatory for AEF members in order to make data for certified components available in the AEF database as well as to make it accessible and well-known to the general public.

This is supported by the newly developed AEF certification label. It confirms that the product tested complies with the ISO 11783 standard and furthermore with the supplementary AEF ISOBUS Guidelines.



In conjunction with the AEF ISOBUS database, the user can find out whether the chosen combination of ISOBUS products is

compatible, and which of their functionalities can be shared.

The following AEF ISOBUS testing laboratories undertake the certification of ISOBUS products for the AEF



Centre de test
et organisme de
formation ISOBUS,
KEREVAL, France
kereval.com



DLG Test Center
Technology and Farm
Inputs,
Germany
dlg.org



Reggio Emilia
Innovazione (REI),
Italy
reinnova.it



Nebraska Tractor Test
Laboratory (NTTL),
USA
tractortestlab.unl.edu



ISOBUS Test Center,
Germany
isobus-test.com





But as the ISO 11783 standard is constantly being expanded and revised the coming AEF conformance test will be undergoing constant development as well.

The result

Besides the fact that the product complies with the ISO 11783 standard the user will also know which functionalities it supports.

The AEF Certification Label

The new AEF certification label shows that ISOBUS components comply with the ISO 11783 standard and also with the supplementary AEF guidelines. The product successfully completed the newly developed AEF certification process. Six abbreviations in small squares symbolize functions, three squares with three dots each indicate that the system is open and expandable. Detailed information on the certified product can be found in the AEF database www.aef-isobus-database.org.

For the use of multiple components within the same ISOBUS system the functionality icons can be compared within the database to identify the lowest common denominator. Only functionalities which are supported by all components involved can be used jointly.



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AEF ISOBUS Database

Who is responsible if components do not work together: the manufacturer of the tractor or of the implement? How do I find a fully ISOBUS-compatible implement for my ISOBUS tractor, in order to make use of the enormous advantages of the system? Is my existing implement perhaps ISOBUS-certified and compatible with the new ISOBUS tractor to be purchased? And if so, which functionalities can I use with the combination?

These and many other questions are now answered by the AEF ISOBUS Database www.aef-isobus-database.org.

It contains all relevant information on all ISOBUS-certified machines and equipment. After selecting a combination of tractor and implements with a few mouse clicks, the user can see immediately if the selected combination is compatible and which Functionalities it is equipped with. Alternatives can also be compared with each other. If an implement cannot be found in the database, it is not certified.

The database helps retailers in advising their customers and also facilitates trouble-



The screenshot displays the AEF web application interface. At the top, there is a navigation bar with the AEF logo and a menu containing 'Home', 'Dashboard', 'Tools', 'Settings', 'Help', 'About', and 'Logout'. Below the navigation bar, a 'Project Overview' section is visible, featuring a table with the following columns: 'Name', 'Status', 'Created/Updated', 'Last Modified', and 'Actions'. The table lists several projects, each with a unique ID and a status of 'Completed'. The 'Actions' column for each row contains icons for 'View', 'Edit', and 'Delete'. A yellow bar at the bottom of the table indicates '1 of 10 items'. The overall interface is clean and professional, with a blue and yellow color scheme.

Name	Status	Created/Updated	Last Modified	Actions
Project 1	Completed	2023-10-26 10:30	2023-10-26 10:30	View Edit Delete
Project 2	Completed	2023-10-26 10:30	2023-10-26 10:30	View Edit Delete
Project 3	Completed	2023-10-26 10:30	2023-10-26 10:30	View Edit Delete
Project 4	Completed	2023-10-26 10:30	2023-10-26 10:30	View Edit Delete



shooting by the after sales service. This can significantly reduce downtime.

Also, the industry collects reports on problems in the database and this information remains available in the form of an ISOBUS knowledge base. It can also be used by the retailer's after sales service department for faster on-site diagnosis and troubleshooting. At the same time companies can use the database to simplify the processes for conformity tests and certifications.

The database is updated continuously, since it is also used for determining the conformance of machines and implements with the ISOBUS standard as well as the certification of this conformance.



Links

Everything about ISOBUS and AEF:

www.aef-online.org

www.aef-isobus-database.org

Literature

AEF ISOBUS Guidelines etc.



AGRICULTURAL INDUSTRY
ELECTRONICS FOUNDATION