











APP & GO®



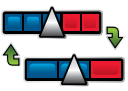








Terminals for precision farming



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APP & GO®

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APP	Parallel guidance systems	
	TRACK-Guide II	TRACK-Guide III
 ISOBUS-UT	<input type="radio"/>	<input type="radio"/>
 ISOBUS-TC*1	<input type="radio"/>	<input type="radio"/>
 MULTI-Control	—	<input type="radio"/>
 TRACK-Leader	<input checked="" type="radio"/>	<input checked="" type="radio"/>
 TRACK-Leader AUTO®*2	—	<input type="radio"/>
 SECTION-Control*2	<input type="radio"/>	<input type="radio"/>
 ASD*3	<input type="radio"/>	<input type="radio"/>
 TRAMLIN-Management*2	—	<input type="radio"/>
 VRC*2	<input type="radio"/>	—
 ME ODI®*5	—	<input type="radio"/>
 agricon*4	—	<input type="radio"/>

All information about the company and the products can be found here:



www.mueller-elektronik.de



shop.mueller-elektronik.de



www.facebook.com/me.salzkotten

* 1 ISOBUS-UT is required for this app





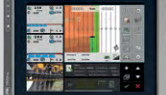
* 2 TRACK-Leader is required for this app

* 3 This app requires:
- ISOBUS-TC for target rate transfer only
- TRACK-Leader and SECTION-Control for automatic section control

* 4 Sold exclusively by Agricon

* 5 ISOBUS-TC is required for this app

ISOBUS terminals

 SMART430®	 BASIC-Terminal	 COMFORT-Terminal	 TOUCH800®	 TOUCH1200®
●	●	●	●	●
—	○	●	○	●
—	—	—	○	○
—	○	○	○	○
—	—	—	○	○
—	○	○	○	○
—	○	○	○	○
—	—	—	○	○
—	○	○	—	—
—	—	—	○	○
—	—	—	○	○

The overview shows the standard apps that are found on the different terminals

- = Default app
- = Optional app
- = Not possible

Functionalities to suit all requirements

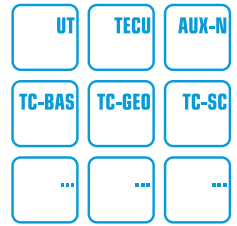
Unbeatable advantages of APP & GO® include flexibility and guaranteed future. In the first step, each user selects a terminal that corresponds to their requirements, for example, the TRACK-Guide II for parallel guidance. In addition to the pre-installed standard apps, other apps can be unlocked as required.

ME terminals comply with ISOBUS standard 11783 and are AEF-certified. You can find the current state of the certified functionalities* in the AEF database.

* subject to change

AEF Certified

ISOBUS



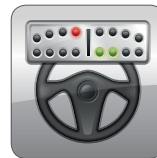
www.aef-isobus-database.org

TRACK-Guide II



TRACK-Guide II is a high performance guidance system with a lot of upgrade options. Among others, SECTION-Control and ISOBUS are available. Moreover, an external lightbar or cameras can be connected. The software TRACK-Guide Desktop allows you to visualize, evaluate and store the field data recorded by the terminal.

Default app: TRACK-Leader



TRACK-Guide III



TRACK-Guide III is a parallel guidance system of the latest generation. It is equipped with an 8" display and a capacitive touch screen to guarantee easy and intuitive operation. TRACK-Guide III can also be upgraded in many ways, e.g. for automatic steering systems or also as a full-fledged ISOBUS terminal with task management and automatic section control.

Default app: TRACK-Leader



ME terminals

SMART⁴³⁰[®]

SMART⁴³⁰ is the clever entry in the ISOBUS world. The terminal is equipped with the ISOBUS-UT app as a standard. The 4.3" colour screen clearly displays simple implement applications. SMART⁴³⁰ fulfils the requirements for protection class IP69 and is therefore also suitable for use outside of the tractor cab.

Default app: ISOBUS-UT



BASIC-Terminal

The BASIC-Terminal is the ideal entry-level solution for ISOBUS technology. With the ISOBUS-UT (Universal Terminal) app, the unit complies with the ISOBUS standard and can be used on all ISOBUS implements, regardless of the manufacturer. The BASIC-Terminal appeals with its attractive entry-level price and numerous optional add-ons, such as ISOBUS task processing or parallel guidance and SECTION-Control.

Default app: ISOBUS-UT



ME terminals comply with ISOBUS standard 11783 and are AEF-certified. You can find the current state of the certified functionalities* in the AEF database.

* subject to change

AEF Certified

ISOBUS

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

www.aef-isobus-database.org

COMFORT-Terminal



The COMFORT-Terminal is ISOBUS-compatible and meets the highest precision farming demands. The 10.4" screen shows all relevant details at a glance. Its standard equipment includes the apps ISOBUS-UT and ISOBUS-TC (Task Controller), enabling task management and prescription map processing in ISO-XML format.

Default app: ISOBUS-UT . ISOBUS-TC



TOUCH₈₀₀[®]



TOUCH₈₀₀[®] is THE ISOBUS terminal on the market. It impresses with state-of-the-art technology and an unsurpassed variety of functions. With the 8" display and capacitive touch screen, ideal operation is guaranteed. Like usual, the functions can be shown in a main window and in a header. Equipped with MULTI-Control, the TOUCH₈₀₀[®] and the TOUCH₁₂₀₀[®] are superior to other ISOBUS terminals. In addition, the TOUCH₈₀₀[®] offers many upgrade options by a great variety, including apps and automatic steering.

Default app: ISOBUS-UT



ME terminals

TOUCH₁₂₀₀[®]



Default app: ISOBUS-UT . ISOBUS-TC



The TOUCH₁₂₀₀[®] is the ISOBUS terminal offering the most functions – unbeatable in terms of flexibility and user friendliness. TOUCH₁₂₀₀[®] can be used both in portrait and in landscape format. Up to five precision farming functionalities can be displayed simultaneously in different layouts and control interfaces. It also features a capacitive touch screen, making this technology ideal for rough, practical use. Equipped with MULTI-Control, the TOUCH₈₀₀[®] and the TOUCH₁₂₀₀[®] are superior to other ISOBUS terminals.

ISOBUS

What is ISOBUS?

Agricultural technology manufacturers around the world have agreed upon ISOBUS as the "language and transmission technology", the so-called protocol for communication between implements and tractors as well as PCs.

ISOBUS data technology standardises the communication primarily between tractors and implements, but also data transfer between these mobile systems and the farm office software, making everything compatible.

The basis is the international standard ISO 11783 "Tractors and machinery for agriculture and forestry – Serial control and communications data network".

ISOBUS functionalities provide clarity

An ISOBUS functionality can be explained as an independent "module" on the ISOBUS. In an ISOBUS system, the "smallest common denominator" of the functionalities of the implement and e.g. the terminal determines whether they work or not. Only functionalities that are supported by all of the connected components can be used together.

And only then does the desired "Plug and Play" work properly.

Universal Terminal



Enables the operation of an ISOBUS implement with any terminal (UT) and of various implements with one terminal. An ISOBUS universal terminal can therefore replace a multitude of implement-specific terminals on the tractor.

Basic Tractor ECU



Tractor-ECU is the tractor's "job computer". It provides basic information, such as the speed and PTO speed. In addition, certification of this function requires an implement socket at the rear of the tractor and a terminal socket in the tractor cab.

Auxiliary Control



AUX-O - Auxiliary Control (old)
AUX-N - Auxiliary Control (new)

Provides additional controls that facilitate the operation of complex implements, such as a joystick or on the implement side, the option of controlling functions using an additional control element.

Task-Controller basic (totals)



Responsible for the documentation of cumulative values that are meaningful with regards to the performed work. The implement provides the values for this. The data is exchanged between the Farm Management Information System and the Task Controller (TC-BAS) using the ISO-XML data format. This enables convenient importing of tasks in the Task Controller and/or exporting the finished documentation afterwards.

Task Controller geo-based (variables)



Offers the additional option of collecting location-based data or planning location-based tasks, e.g. using prescription maps.

Task Controller Section Control

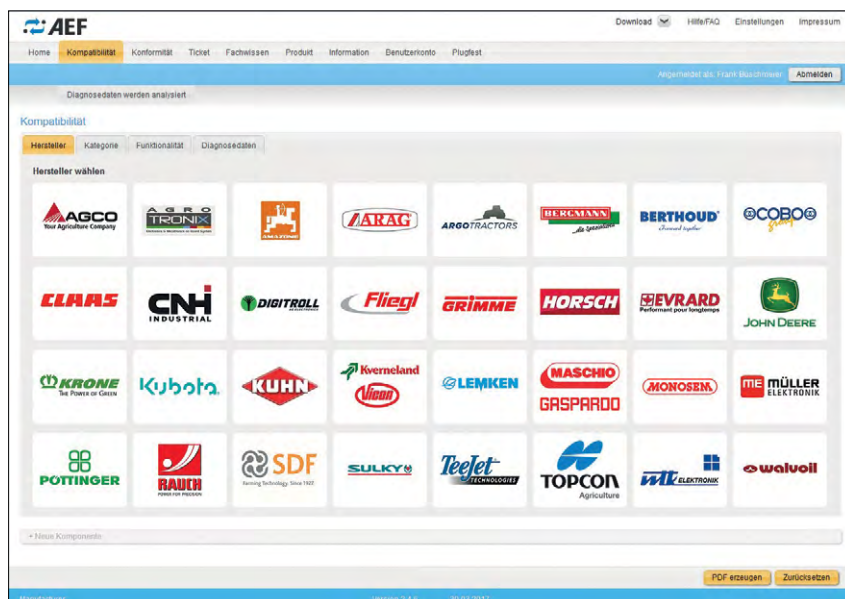
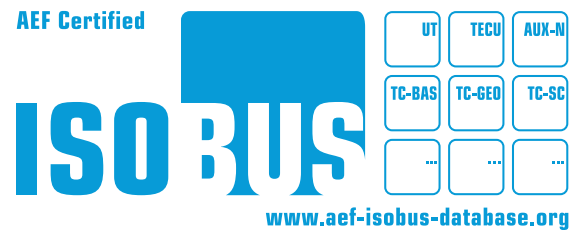


Is responsible for the automatic section control, e.g. for sprayers, as a function of the GPS position and the required degree of overlap.



The AEF ISOBUS certification label

The new AEF certification label states that the ISOBUS components comply with the standard ISO 11783. The product successfully withstood testing according to the newly developed AEF certification procedure. Detailed information on the certified product can be found in the AEF database at www.aef-isobus-database.org. In addition to the fact that a product complies with the standard ISO 11783, the database also informs the user about the supported functionalities.



The AEF-ISOBUS database

Who is responsible if something is not compatible, the tractor manufacturer or the implement producer? How do I find a fully ISOBUS-compatible implement for my ISOBUS tractor so that I can profit from the huge benefits? Is my already existing implement perhaps ISOBUS certified and compatible with the new ISOBUS tractor to be purchased? And if so, which functionalities can I use with both?

The AEF ISOBUS database answers these and many other questions at www.aef-isobus-database.org. The database contains all important information on all implements and devices that have been ISOBUS-certified until now. With just a few mouse clicks, the user can configure his tractor-implement combination and immediately see whether this combination is compatible and which functionalities are then available. It is also possible to compare alternatives. If an implement cannot be found in the database, it is not certified.



ISOBUS-UT

APP PREREQUISITES:

none

This app activates the ISOBUS implement controls. The corresponding terminal, such as the TRACK-Guide II, therefore complies with the ISOBUS standard. It can be used as an Universal Terminal (UT) to control any implement that complies with the standard, regardless of the manufacturer.

ISOBUS Precision Farming mit APP & GO®

APP & GO enables Precision Farming in perfection. It involves methods for the location-based cultivation of arable land. The objective is to take account of the differences in the soil and plants and the potential yield within the field. Precision Farming also guarantees economical and efficient use of resources. The ISOBUS standard (ISO 11783) ensures seamless data exchange between different implements, regardless of their manufacturers. The prescription maps designed on the farm PC are transferred to the ISOBUS terminal via USB memory device or ME-ODI®.

ISOBUS puts an end to isolated solutions

ISOBUS standardizes the communication, provides compatibility and enables manufacturer-independent operation of machines and implements. In practice, this means that: One single ISOBUS terminal on the tractor replaces multiple implement-specific terminals. But ISOBUS can do much more: The technology also controls the documentation of the work stages on the field and manages data exchange with the farm PC.

One technology – many benefits

- Only one terminal to control multiple machines and implements, regardless of the manufacturer.
- ISOBUS standardizes the control settings, reduces set-up times and minimizes assembly and interface problems. No more calibration, increased user-friendliness.
- Thanks to the standardized 9-pin plug, it is extremely easy to connect all the different components.
- The purchase of only one terminal saves costs.
- The driver can enjoy an unobstructed view in the cabin, increasing safety.
- Thanks to the data exchange between the farm PC and the terminal, ISOBUS improves business efficiency and streamlines time processes.
- ISOBUS is a prerequisite for faultless documentation and precision farming.



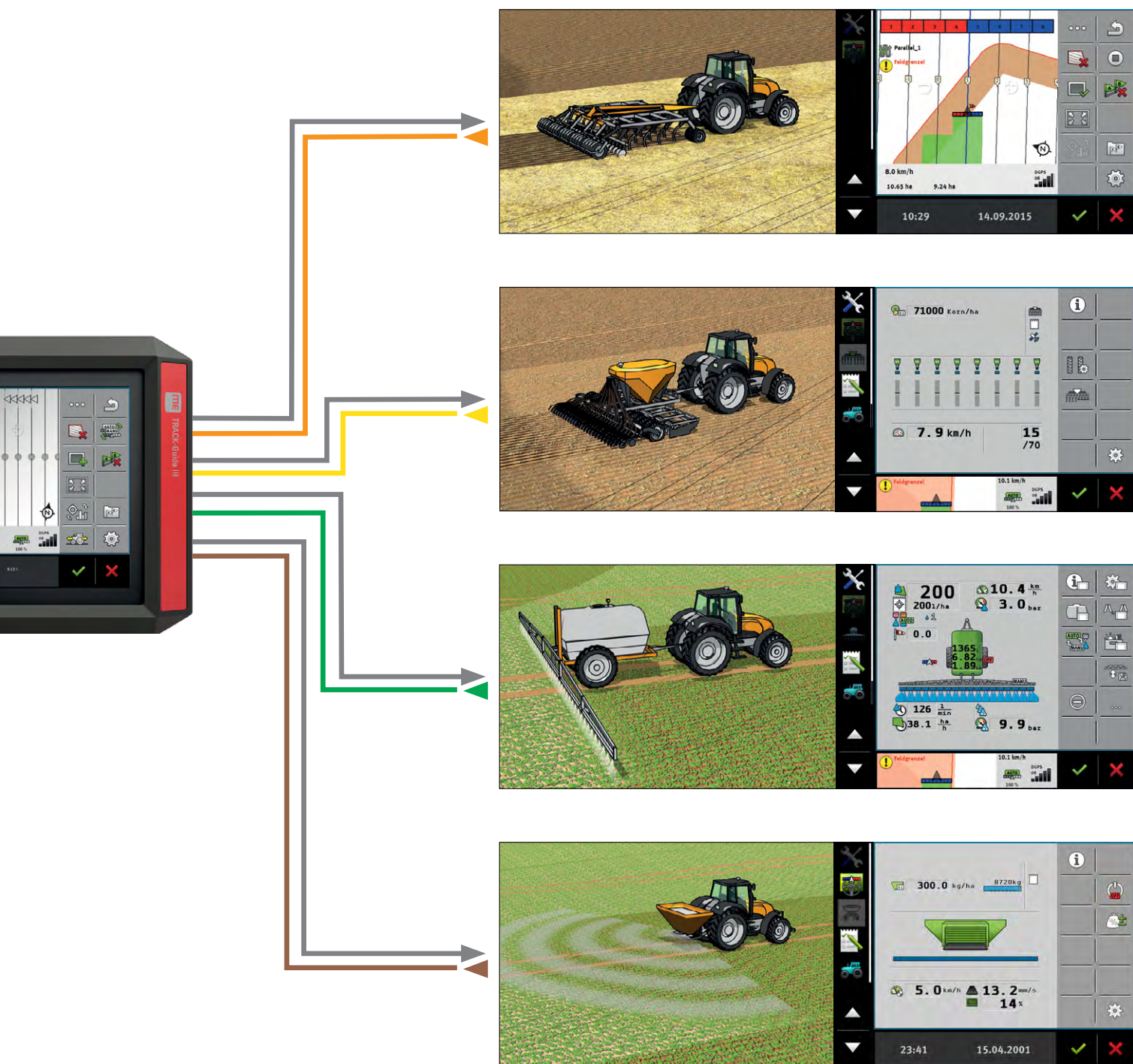
Robert Fraune

Müller-Elektronik,
Head of Sales & Service

"From the very beginning, Müller-Elektronik was an important contributor to the development of ISOBUS technology. Over the years, we have developed ISOBUS technology for almost every type of implement. Our ISOBUS terminals have proven their worth in the field since more than ten years."

The planned quantity, as defined by the user, is applied on the field according to the position. The actual applied quantity is also transmitted to the Farm Management Information System (FMIS), where they are documented. In addition, ISOBUS ensures maximum flexibility because the technology is independent of the FMIS and the tractor, terminal or vehicle manufacturer. Thanks to ISOBUS, communication flows between all the components, regardless of the manufacturer.

One terminal for all implements and every application





ISOBUS-TC

APP PREREQUISITES: ISOBUS-UT

This app activates the Task Controller (ISOBUS-TC) and therefore ISOBUS task management. It is the link between the Farm Management Information Software (FMIS) at the workplace and the control system on the implement.

In addition to classic task management, the app also offers the option of importing field data in shape format.

	Pflanzenschutz(agroXML) Quellend TSK30101	
	Kunde ---	
	Hof Müller	
	Feld Quellendorf, 1-00	
	Geräte ME-Tractor-ECU	
	Sollwerte 178.97 l/ha	

Convenient documentation

The use of ISOBUS task management together with a Farm Management Information System (FMIS) offers clear advantages. Tasks can be easily planned in advance and resources can be optimally managed. In addition to the planning, for example, implement parameters are automatically recorded. This ensures reliable and transparent documentation.

Location based application

In addition to the location based application of operating materials using prescription maps, the field boundaries and guidance lines can be centrally and conveniently managed with the ISOBUS Task-Controller. If a Farm Management Information System (FMIS) is not available, individual field data from different data sources can be assigned to the respective fields directly on the terminal.

Extended functions: One app – two formats

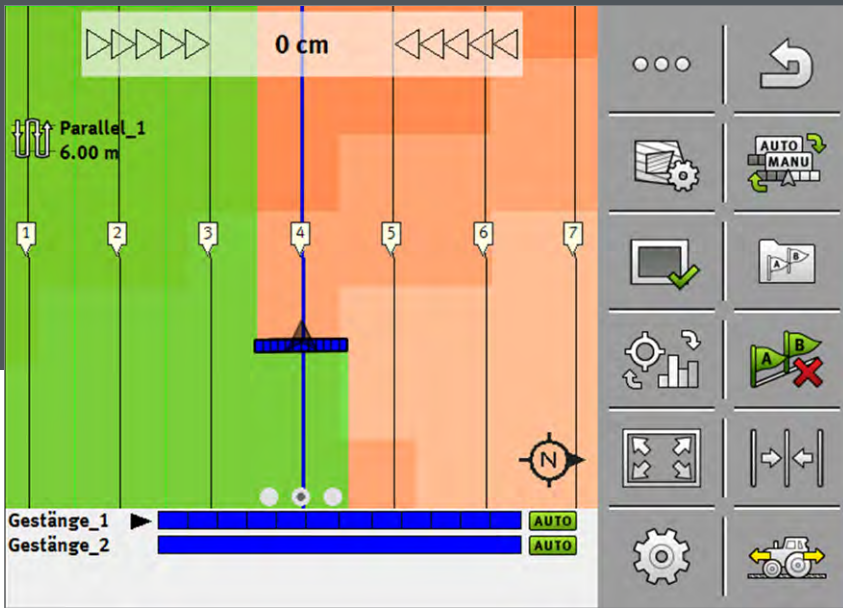
No matter if the field data is in ISO-XML or shape format – the ISOBUS-TC app now supports both formats, regardless of the manufacturer, for fertilizer spreaders, seeders as well as field sprayers. With the new Task Controller, the VARIABLE RATE-Control app (VRC) is no longer required.

Advantages of ISOBUS-TC

- Documentation of work and implement counters
- Structured work thanks to task management
- Saving of resources and operating materials

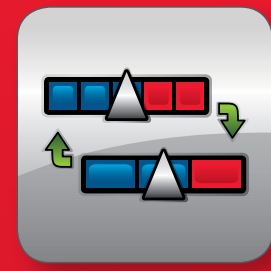
NEW

- Processing of ISO-XML and shape
- Can be extended with the MULTI-Control



MULTI SECTION-Control

MULTI SECTION-Control enables precise section control on seeders with two metering units and different drop points for fertilizer and seed. This reduces overlap to a minimum and also protects the environment.

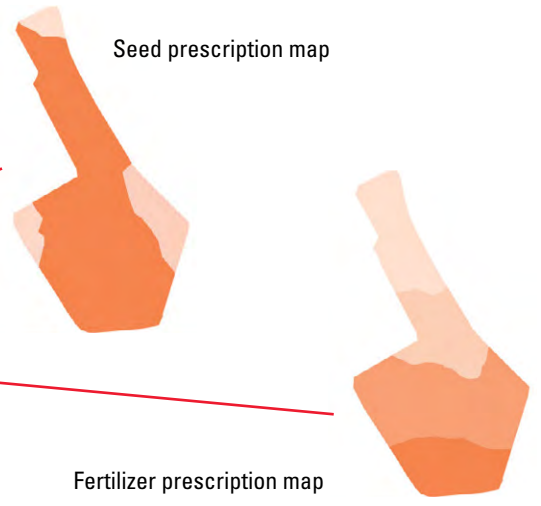
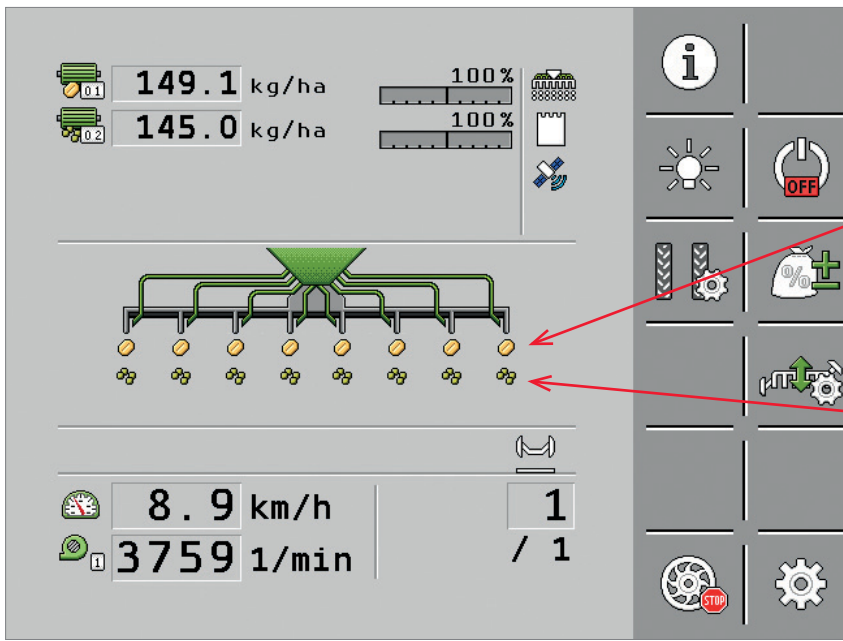


MULTI-Control

APP PREREQUISITES:
ISOBUS-UT, ISOBUS-TC
(SECTION-Control)

Modern agricultural implements are becoming increasingly complex. Seeders apply seed and fertilizers simultaneously in one operation, and fertilizer spreaders using multiple prescription maps are capable of applying up to four individual nutrients in one field pass.

The MULTI-Control app is the perfect complement for this complex situation. This app allows the assignment of prescription maps to each part of the implement as required. Together with the included MULTI SECTION-Control, state-of-the-art precision farming is guaranteed.



MULTI-Product

MULTI-Product allows the assignment of a prescription map to each metering unit. This reduces the risk of over- or under-dosing. This function can also be combined using agronomic sensors.

Advantages of MULTI-Control

- Processing of multiple prescription maps
- For implement combinations such as seeders with fertilizer unit
- Easy handling of highly complex implements



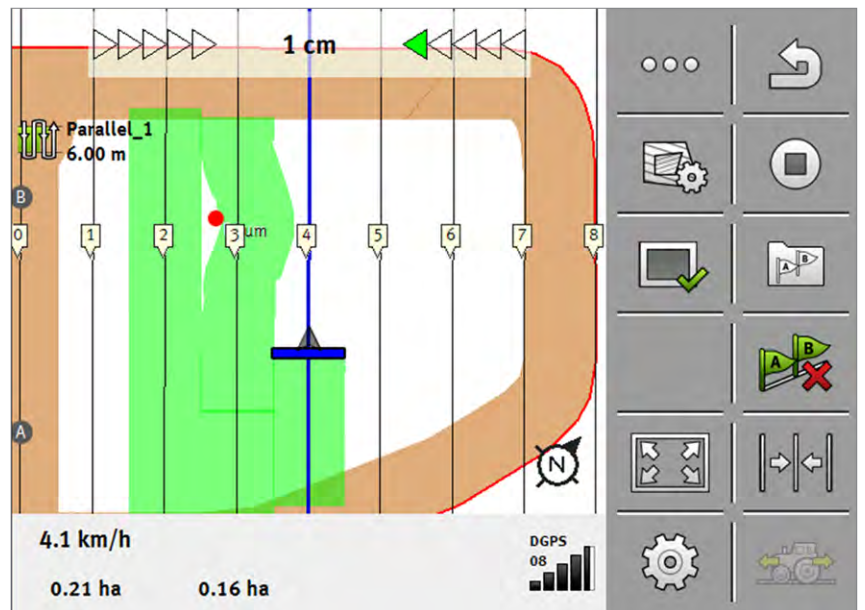
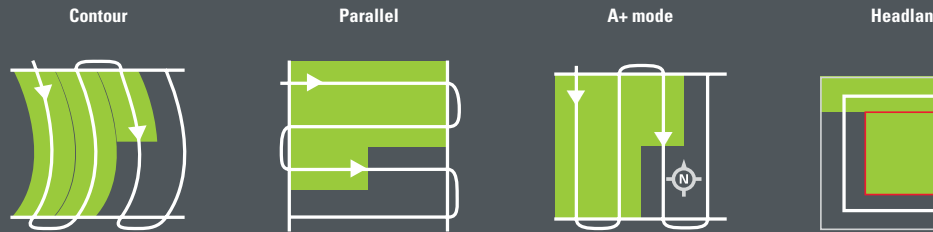
TRACK-Leader

APP PREREQUISITES:

none

If connected to a DGPS receiver, this app enables precise driving in parallel tracks in A/B-, A+, headland or contour mode as well as in poor visibility. Obstacles can be marked and saved with field data such as boundaries and guidance lines. Interrupted work processes can be saved and restored at any given time.

GUIDANCE



Product advantages

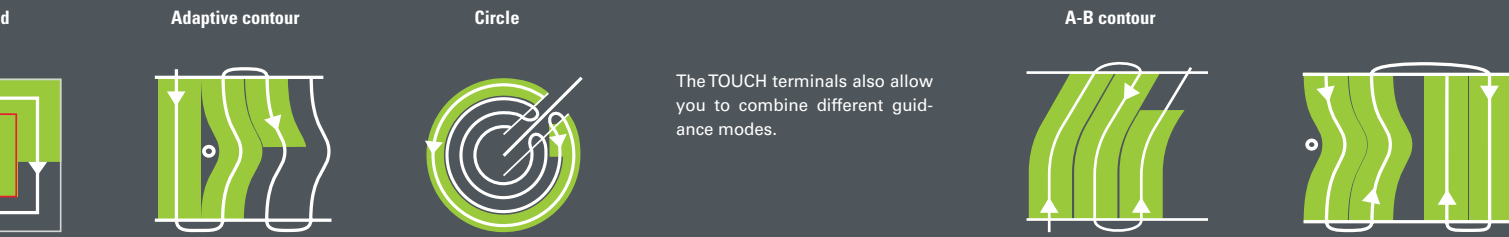
- Fewer overlaps
- Fewer skips
- Timely obstacle warnings
- Enables work even at night and in poor visibility
- Pattern interval selection

Advantages of TRACK-Leader

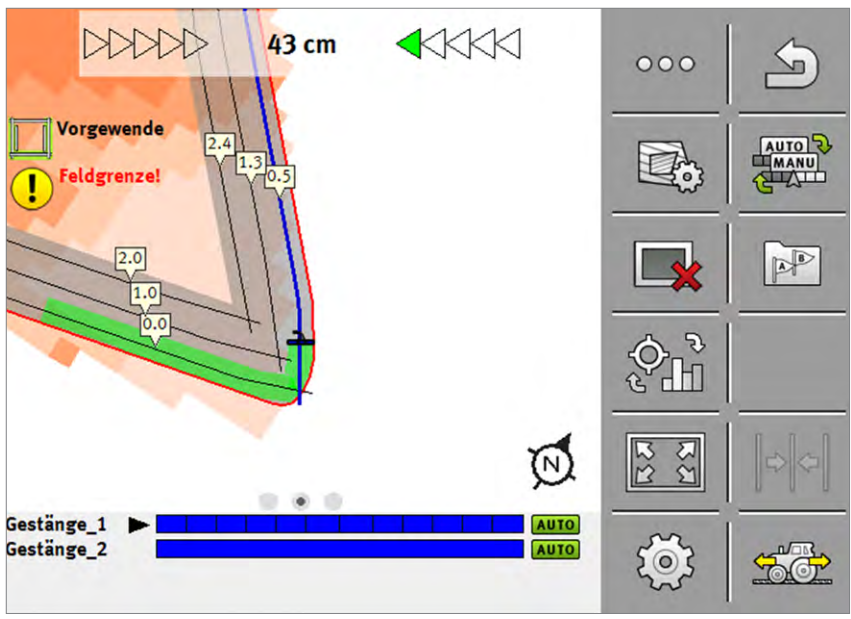
- Savings of resources and fuel
- Reduced yield losses
- Prevention of expensive consequential damage
- Increased production and performance
- Reduction of turning times

Layout

The display shown above shows the implement following a guidance line. In the top section, the header displays the different configuration options. This way, the steering instructions can be shown on the on-screen lightbar or as text. The header can also be used in SECTION-View mode for manual section control, so that the driver can see when sections should be switched on or off. Also, arrows on the screen indicate the steering direction and steering angle. As an option, the on-screen lightbar can be supplemented with an external lightbar that brings the steering recommendations into the driver's view. In the bottom area, the implement counters such as the speed/target rate and the area are shown.



The TOUCH terminals also allow you to combine different guidance modes.



HEADLAND-Management®

HEADLAND-Management® is ideal for spraying and seeding. The function allows you to define a headland area on which implements are automatically switched on and off via SECTION-Control at the inner headland line. The headland is visually displayed on the terminal based on the field boundary and the adjustable working width. In combination with TRACK-Leader AUTO®, the tracks on the headland can be followed automatically.

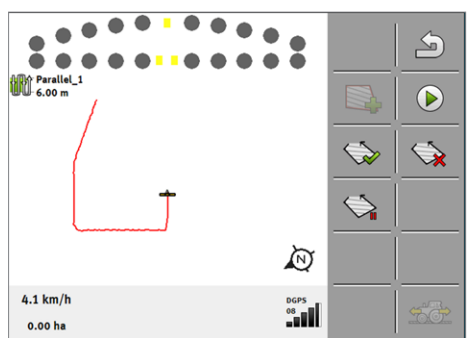
Creation of field boundaries / restricted areas

To create field boundaries, a special menu also supports driving around an area without active work position. The recording point can be selected to make a recording corresponding to left-justified, right-justified or centered to the working width. During turning operations, the recording can be interrupted and continued appropriately. If the driving route has not been carried out completely, it can be completed automatically by pressing a button.

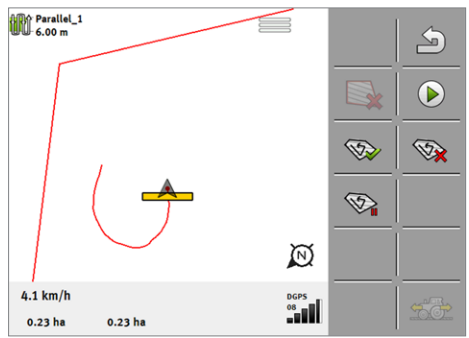
The calculation of a field boundary from the recordings of a completed driving route while in work position is still supported.

The creation of restricted areas within a defined field is also supported by the new menu. The areas determined by driving around without work position are deducted from the total area of the field. SECTION-Control treats this areas as restricted areas and automatically switches off the sections in these areas.

From a minimum size that matches the current working width, the restricted areas are included in the headland calculation.



Restricted area



Field boundary



TRACK-Leader AUTO®

APP PREREQUISITES:
TRACK-Leader

This app activates the steering system. It enables precise operation under any light and weather conditions. The system works very precisely, so that overlaps and skips are prevented. This reduces the resources used and relieves the driver of fatigue-free work.

Advantages of automatic steering

- Keeps the vehicle precisely on track even under difficult conditions
- Reduces diesel consumption
- Decreases crop damage and soil compaction
- Eliminates fatigue and improves work efficiency, even at night or in poor visibility

TRACK-Leader AUTO® eSteer

- High accuracy at a low price
- Easy and quick installation
- Universal and flexible use

TRACK-Leader AUTO® Iso

- Maximum accuracy and repeatability
- Easy and quick installation

TRACK-Leader AUTO® Pro

- Maximum accuracy and repeatability
- Can be retrofitted on almost any implement

3D slope compensation

To achieve the very best results even on difficult terrain, TRACK-Leader AUTO® uses sensors that detect any irregularities. This guarantees a perfect track and maximum accuracy.



PITCH

TRACK-Leader AUTO® eSteer Mechanical drive unit

TRACK-Leader AUTO® eSteer enables automatic steering at an affordable price. The steering wheel motor is a simple conversion solution, which can be used flexibly on several machines, regardless of the manufacturer. The mechanical drive unit is installed in the existing steering wheel. Here, the compact electric motor acts directly on the steering.



TRACK-Leader AUTO® Iso Hydraulic steering via CAN

TRACK-Leader AUTO® Iso is the precise hydraulic steering system for steer-ready implements. Only the steering job computer and the terminal must be connected to the tractor. Communication between the steering components takes place via CAN or ISOBUS. The assembly effort for the steering system is therefore minimal.



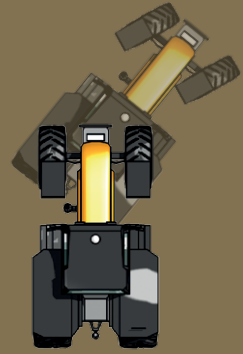
TRACK-Leader AUTO® Pro Integrated hydraulic steering

TRACK-Leader AUTO® Pro is the most precise solution for automatic steering. The system has direct access to the hydraulic steering system and can thus accurately steer to keep the implement on track. If the vehicle deviates from the ideal line, the system automatically corrects the direction. In this way, TRACK-Leader AUTO® Pro combines maximum precision and productivity.





ROLL



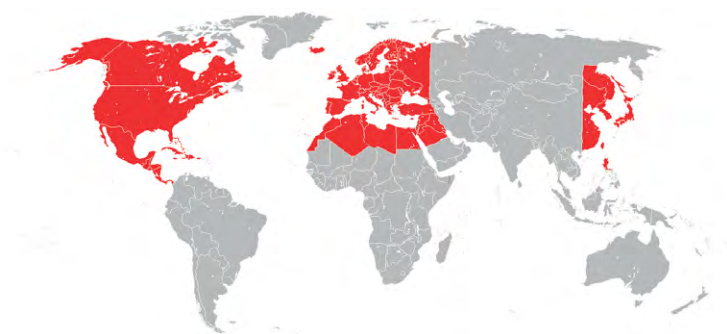
YAW



GPS & RTK systems

Müller-Elektronik offers high-performance GPS systems that impress with maximum accuracy, repeatability and reliability. Whether it be EGNOS, WAAS, GLONASS, TerraStar or RTK, you have access to the right degree of precision for each of your applications. Müller-Elektronik offers the ideal one-source solution for virtually all modern farming requirements.

Availability of EGNOS/WAAS



Availability of GLIDE/TerraStar



Transmission



Accuracy

Path to path
<25 cm

EGNOS/WAAS

EGNOS is a free correction signal that is transmitted by satellite. It is mainly available in European countries and is used for more simple field work.

No transmission

Accuracy

Path to path
< 30 cm

GLIDE

GLIDE is an internal calculation method for the correction of satellite information and the determination of the current position. GLIDE can be used separately, e.g. in areas where no other correction signal is available. In addition, GLIDE can also be used in combination with other correction signals. This further increases the accuracy and also the availability of the correction. It can be used worldwide.

Transmission



Absolute accuracy

C: 4 cm
L: 40 cm

TerraStar-C und L

TerraStar is a correction method that is based on Precise Point Positioning technology (PPP). The correction signal is transmitted via satellite and is available almost worldwide. TerraStar provides correction for both GPS and GLONASS, and therefore achieves very high availability. A two-channel receiver like the SMART-6L with the corresponding activation is required to receive the correction data.

Correction signal	Transmission	Accuracy	Range	Fees
EGNOS/WAAS	Satellite	<25 cm (path-to-path)	Europe, USA	Free of charge
GLIDE	No transmission	<30 cm (path-to-path)	Worldwide	Free of charge
TerraStar-C	Satellite	4 cm (absolute)	Worldwide	Licence fees
TerraStar-L	Satellite	40 cm (absolute)	Worldwide	Licence fees
RTK radio	Radio	2.5 cm (absolute)	15 – 50 km	Free of charge
RTK GSM	GSM modem	2.5 cm (absolute)	Mobile phone network dependent	Licence fees

RTK radio and GSM (Ntrip)

An RTK correction signal produces both the best possible accuracy of 2 cm and maximum repeatability. These signals can be received either through radio or mobile phone networks. The mobile phone variation is ideal for users who work in a large area, because there are virtually no range limitations. However, the availability of the signal depends on the availability of the mobile phone network.

For the use of existing RTK networks, annual licence fees for the correction signal must be paid for each implement. In this case, an independent base station often pays for itself within a short time.

Transmission



Absolute accuracy

2.5 cm

Transmission



Absolute accuracy

2.5 cm

Fixed radio base station

The firmly installed radio base station provides an accuracy of 2 cm for highly precise applications and is available in 2 different transmission levels. The smaller radio base station has 5 Watt and a range of up to 15 km, and the big one has a transmission power of 25 Watt and therefore a range of up to 50 km. Such a station is ideal for farms and applications in a defined area where several implements use the RTK signal. The base station with 25 Watt transmission power is not approved in Europe.

Transmission power

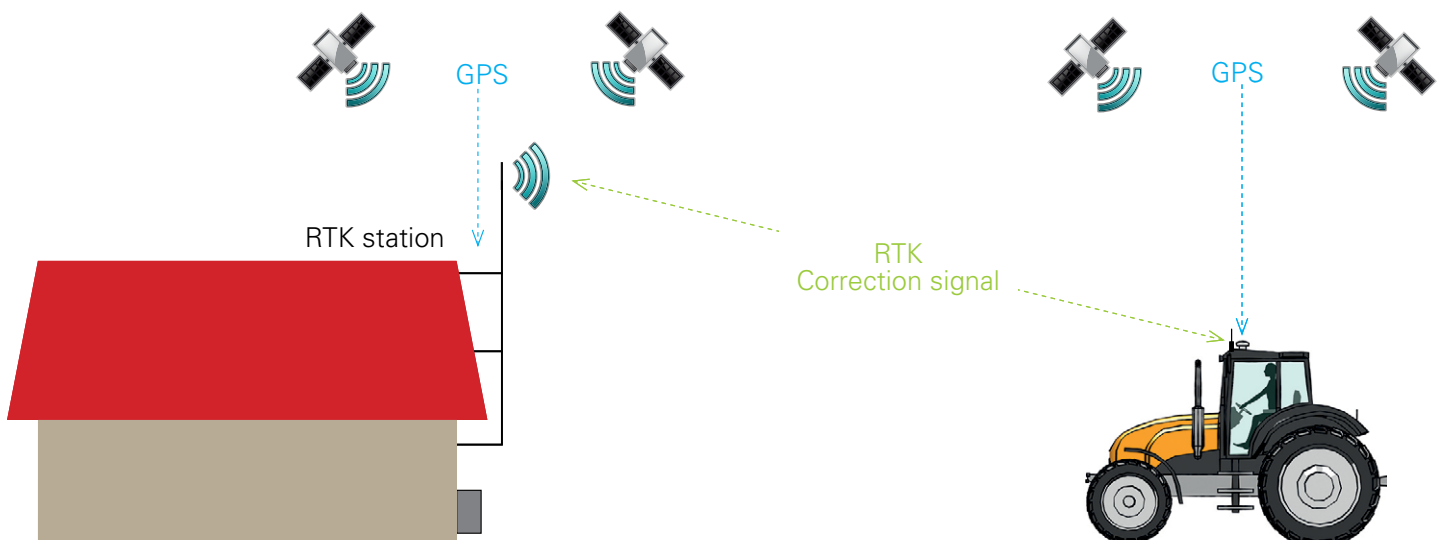
5 Watt

25 Watt

Range

15 km

50 km



GPS tech-

Function and application overview

	A101	AG-Star	SMART-6L	DUAL antenna
Frequency	L1	L1	L1/L2	L1/L2
EGNOS/WAAS	●	●	●	-
GLONASS	-	●	●	-
GLIDE	-	●	●	-
Steadyline	-	-	●	●
RTK-Assist	-	-	●	●
TerraStar-C	-	-	●	-
TerraStar-L	-	-	●	-
RTK radio	-	-	●	●
RTK GSM	-	-	●*	●
Fields of application				
Soil tillage	●	●	●	●
Seeding	-	-	●	●
Strip till	-	-	●	●
Fertilizer spreading	●	●	●	●
Spraying	●	●	●	●
Slurry application	●	●	●	●
Harvest	●	●	●	●

● = available/suitable. - = not possible/not suitable

* RTK signal



A101

The A101 is a high-performance (10 Hz) DGPS receiver that works with the free EGNOS or WAAS correction signal. It is ideal both for recording position-related data and for parallel guidance, and is also suitable for automatic section control.



AG-STAR

The AG-STAR is a (10 Hz) DGPS receiver that offers GLONASS and GLIDE functionalities in addition to EGNOS and WAAS. The additional GLONASS satellites increase the availability and stability of the satellite signal. GLIDE is an internal calculation method for correcting the position. The AG-STAR receiver can therefore be used worldwide.



SMART-6L

The SMART-6L is the absolute high-end receiver and RTK-Rover (20 Hz) manufactured by Müller-Elektronik. As a two-channel receiver, it enables utmost accuracy and repeatability. SMART-6L offers the same basic functionality as the AG-STAR, however, it can be upgraded to an RTK-Rover and other correction services like TerraStar.

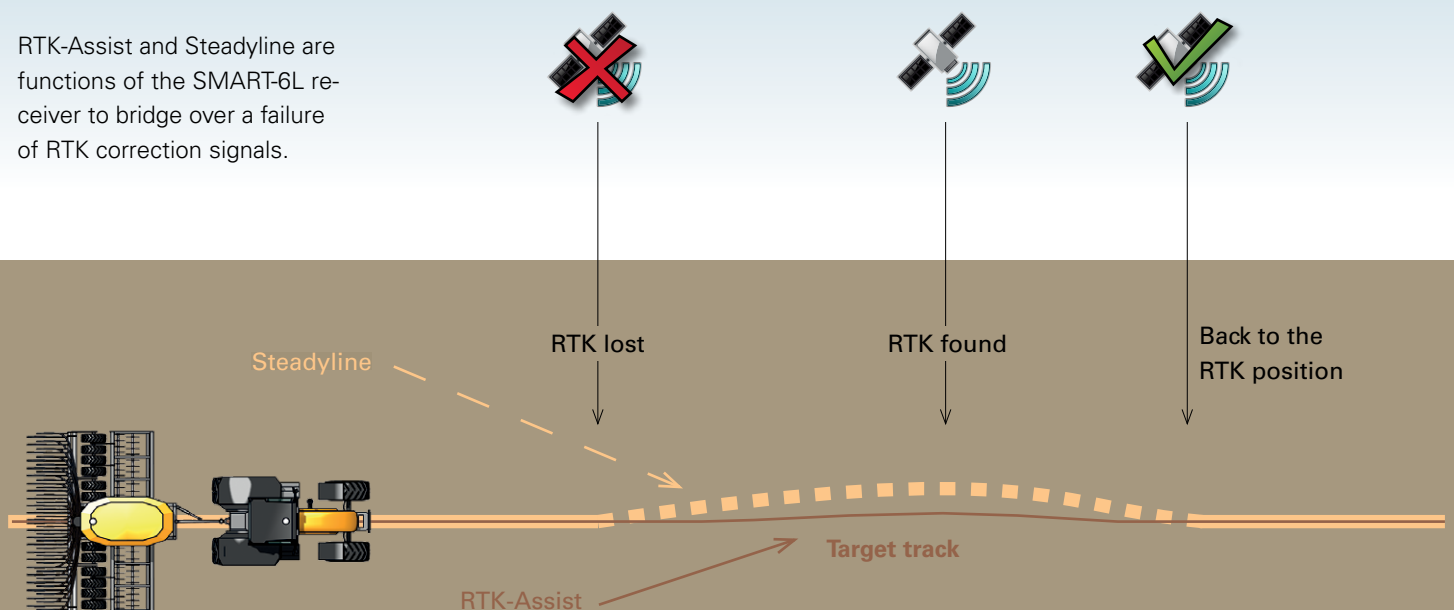
DUAL antenna

The DUAL antenna solution enables extremely slow forward and working speeds with an RTK accuracy of up to ± 2 cm. Thanks to the second GNSS receiver, work can be performed at a speed of 80 m per hour, which is required particularly in vegetables and special crops. The DUAL antenna solution is available for the hydraulic versions of TRACK-Leader AUTO® Pro and Iso.



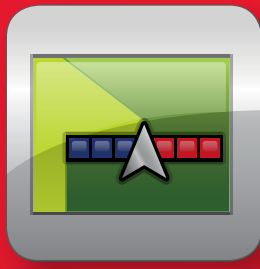
RTK-Assist and Steadyline

RTK-Assist and Steadyline are functions of the SMART-6L receiver to bridge over a failure of RTK correction signals.



RTK-Assist is the optional premium solution to reduce losses of accuracy in cases of RTK failure. RTK-Assist bridges over RTK failures using the precise TerraStar satellite correction data for a period of up to 20 minutes.

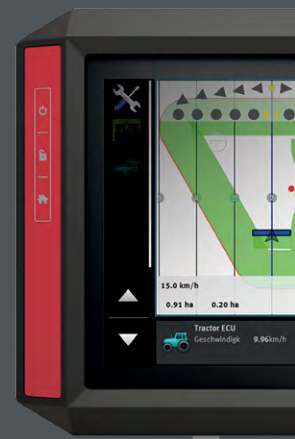
Steadyline is the free standard function of the receiver to counteract losses of accuracy in cases of RTK failure. In contrast to RTK-Assist, only internal calculations are used to bridge over the failure. This can result in small deviations relative to the target track. Compensation takes place slowly so that strong jumps in the steering system are avoided.



SECTION-Control

APP PREREQUISITES: TRACK-Leader

This app provides GPS-controlled activation and deactivation of implements, implement sections or single nozzles. SECTION-Control can control up to 256 sections or single nozzle. The app complies with the ISOBUS standard and can be used to control any implement that fulfils the standard, regardless of the manufacturer. Therefore, one single app can be used to precisely control the sections of a sprayer, seeder, precision planter and fertilizer spreader.



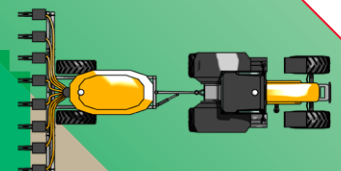
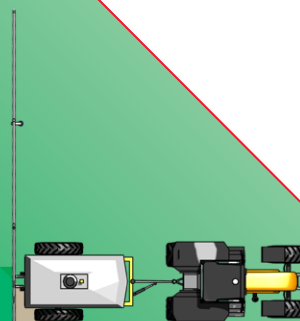
SECTION-Control with Amatron+ and Amatron 3

In combination with the apps ISOBUS-UT and TRACK-Leader, ISOBUS implements as well as implements with Amabus technology can be easily extended with the automatic section control function.

In contrast to other solutions, this does not require any changes to the cabling. The existing Amatron+/ Amatron 3 is simply connected with a special adapter cable and the terminal*. The actual implement controls remain on the AMAZONE terminal.

Advantages of SECTION-Control

- Less overlaps and skips
- Enables working at night and in poor visibility
- Saving of operating materials
- Reduction of yield losses
- Relieves the driver



* TRACK-Guide III, TOUCH₈₀₀[®], TOUCH₁₂₀₀[®]



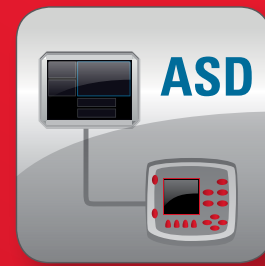
ASD APP

The ASD app can be used in different constellations.

On the one hand, the ASD app can be used to retrofit automatic section control on non-ISOBUS implements with simple control units, e.g. a Müller-Elektronik SPRAYLIGHT. Here, only the section status is transmitted serially from the ME terminal to the SPRAYLIGHT using an adapter cable. Such retrofitting is also possible on fertilizer spreaders manufactured by Rauch that are equipped with a QUANTRON E or E2.

Furthermore, the ASD interface can also be used to transmit target rates from a prescription map. To do so, the ISOBUS-TC app must be activated.

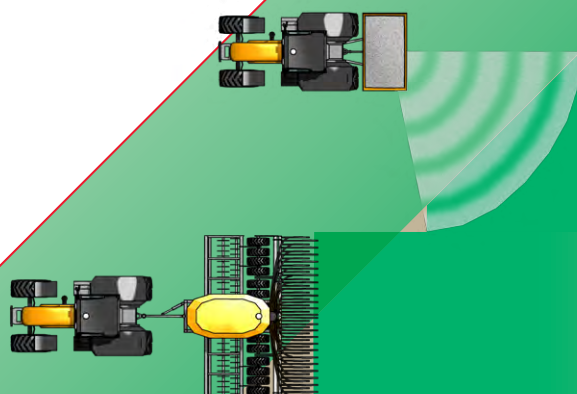
More information and a corresponding compatibility list can be found on our homepage.



ASD

APP PREREQUISITES: SECTION-Control

Licensing of the ASD app activates a serial interface with the ASD protocol. This interface can be used to transmit target rates and also section statuses between terminals and other control units. To do so, both devices must support the ASD protocol. To be able to use automatic section control, the SECTION-Control app must also be activated on the terminal.



Advantages of ASD

- Inexpensive retrofitting of non-ISOBUS implements:
 - For using SECTION-Control
 - For using prescription maps
- Easy to operate
- Rapid installation
- Saving of resources

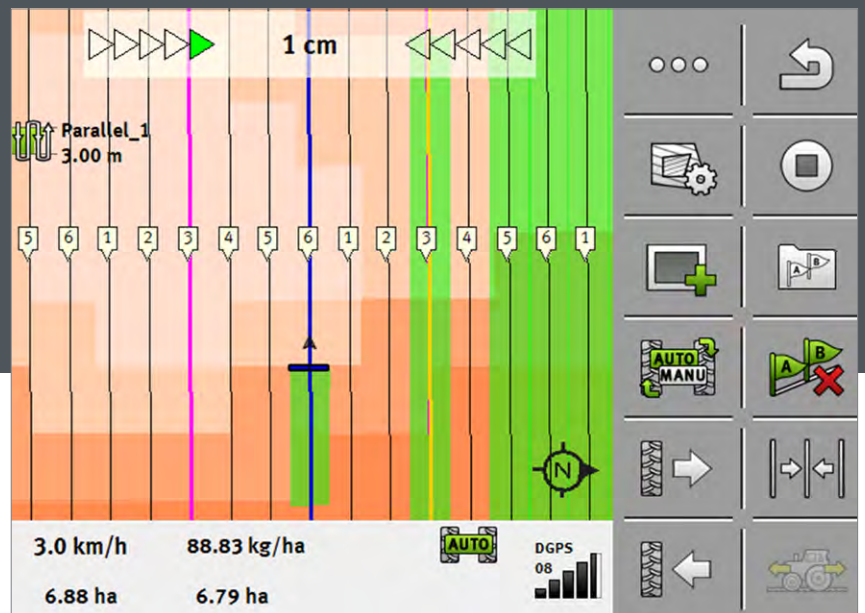


TRAMLINE-Management

APP PREREQUISITES:
ISOBUS-UT and TRACK-Leader

TRAMLINE-Management* displays the tramline rhythm selected by the driver on the TRACK-Leader screen. This allows the driver to work in pattern intervals, which eliminates the need for manoeuvring at the headlands to drive the adjacent guidance line.

The seeder connected via the ISOBUS must support the TRAMLINE-Management functionality so that the data of the tramline rhythm stored in the seeder can be visualized with TRACK-Leader.



TRAMLINE-Management

The integrated TRAMLINE-Management* extends TRACK-Leader with a GPS-supported tramline control.

Due to the position-dependent track number transmitted to the seeder there is no need to drive track by track any more and maneuvering in the headlands can be minimized or avoided. The seeder recognizes by means of the transmitted track number whether and which tramline flap has to be activated. The classic bout marker is therefore a thing of the past. The tramlines to be created for the later work with the maintenance vehicle are displayed on the user interface. When using an asymmetrical tramline rhythm, the required direction of travel for correct activation of the tramline flaps is indicated by a direction arrow on the guidance line.

TRAMLINE-Management can be used both in the headland and in the field. Rhythms with half width switching during the first track are supported.

Advantages of TRAMLINE-Management

- Automatic switching of tramline flaps
- Free selection of the next track
- Support to comply with the required direction
- Visualization of the tramline rhythm directly in the display of the map

* Compatible with selected machines.



VARIABLE RATE-Control

The objective is location-based field management – regardless of the format or prescription map. The shape prescription map can be imported directly via TRACK-Leader. It is displayed in different shades of brown depending on the target rate. The pre-defined target rates for the zones can be adjusted both independently and for all zones at once.



ISO-XML vs. SHAPE

The main difference: In ISO-XML format, tasks contain master and implement data. This means that in addition to the application, the actual values and implement counter data such as work time, area, and diesel and fertilizer consumption can be documented. The prescription maps are displayed on the ME terminals in different ways. Maps in ISO-XML format are displayed as square colourful grids as defined in the ISOBUS standard, while maps in the .shape format are displayed with rounded brown areas.



VARIABLE RATE-Control (VRC)

APP PREREQUISITES:
ISOBUS-UT and TRACK-Leader

This app enables the use of prescription maps in shape format, which define the location-based target rates for the field sprayer. For the application of fertilizers, for example, it enables working with several fertilizers and prescription maps at the same time. Each fertilizer or nutrient has its own specific prescription map. This saves resources and also increases yields.

VARIABLE RATE-Control can only be activated on non-touch terminals from Müller-Elektronik.

Advantages of prescription maps

- Saving of resources
- Higher yields
- Improved product quality
- Soil and environment are protected



agricon

APP PREREQUISITES: AGRIBOX

This app enables operation of the Precision Farming Box (PF-Box) on all ME terminals. The software contains all of the agronomic applications required for location based cropping methods with YARA N-Sensors and P3-Sensors from Agricon. The current scope of use includes sensor-supported N fertilizing in all important crops, variable growth regulator and fungicide applications in cereals and rapeseed as well as desiccation in potatoes.

Sold exclusively by Agricon.

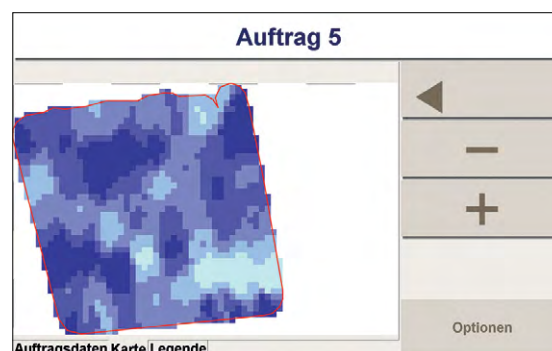


Measurement

YARA N-Sensors and P3-Sensors from Agricon support farmers by detecting differences in the crops early on, allowing them to take immediate targeted action. While driving over the field, the sensors measure the light reflected by the crop on the right and left of the tramline. The ME terminal then directly displays the absolute N absorption by the crop.

Calculation

The Precision Farming Box (PF-Box) software contains all of the agronomic regulation algorithms for sensor-supported fertilizer application. From the measured N absorption, it immediately interprets the optimal fertilizer quantity or crop protection dose, depending on the scope of application and the module used. The PF-Box currently contains 808 regulation functions.



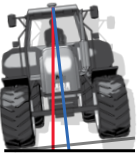
Regulation

Each recommendation is directly transmitted to the implement that is applying the respective product. YARA N-Sensors and P3-Sensors from Agricon can be used with all electronically regulated fertilizer spreaders and field sprayers. The applied quantities are automatically documented.

Advantages of Agricon

- Operating resources are applied according to the current plant requirements
- Saving of fertilizer thanks to avoiding unnecessary applications
- Reliable during operation
- Reduced workload for the employees
- Legal requirements are automatically fulfilled
- Contributes to more environmental protection
- Automatic documentation of the applied quantities

PRECISION FARMING ACCESSORIES



Tilt module

The tilt module completes the functionality of TRACK-GUIDE II and TRACK-Guide III for position data correction. This is necessary when travelling parallel in uneven terrain in order to compensate the offset of the GPS position, which is caused by the inclination of the vehicle cab or the GPS receiver.



Camera

The analogue compact camera is protected against weather conditions with a die-cast aluminium casing. The high shock and vibration resistance enables use under the most difficult conditions. Moreover, it features automatic brightness adjustment and therefore ensures clear, high-contrast images under changing light conditions.



External Lightbar

This is the perfect addition to the TRACK-Leader app, as the external lightbar mirrors the steering instructions of the on-screen lightbar on the display. The screen can be installed in the driver's field of vision, directly above the steering wheel on the windscreen.



ISOBUS Weather Station

The Müller-Elektronik weather station is the first ISOBUS weather station on the market. The sensor informs you immediately about changes in the wind speed and direction, air humidity and pressure, temperature and evaporation rates (Delta T). The weather conditions can also be saved by the ISOBUS Task-Controller for documentation purposes if required.



ISOBUS joysticks

The ISOBUS joystick is a "must" as optional equipment for any implement control unit. It facilitates operation so the driver can concentrate on production processes. The joystick can be retrofitted on almost any tractor and is easy to install. Thanks to the AUX-N functionality, the buttons can be individually assigned. In addition to the functions provided by the ISOBUS joystick, the ISOBUS joystick PRO is also mobile and can be controlled via two proportional axes. This considerably facilitates the control of certain functions, such as, for example, the adjustment of the filling arm when filling a slurry tanker. The ISOBUS joystick PRO complies with the AUX-N standard of the ISOBUS standard and supports the corresponding functions of the machine.



S-BOX

The S-Box is an additional module for sprayer control. It can be installed directly under the terminal and facilitates the manual switching of individual sections. Ideal for localized treatment and available for implements with up to 18 sections.



Agronomic sensors

Agronomic sensors play an important role in precision farming. ISOBUS sensors, such as the CLAAS CROP sensor, are easy to handle because they login to the BUS system and can be controlled. Non-ISOBUS sensors, like the YARA N sensor, can be connected to the Müller-Elektronik control terminals either through (its own) integration or the serial interface.



SECTION-Control BOX

The SECTION-Control BOX is the perfect retrofit solution for automatic section control to upgrade basic control systems like the SPRAYDOS.

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