Trimble GPS, guidance and precision agriculture solutions for all seasons, all crops, all terrains, all vehicles

Fall 2010 Trimble Agriculture Product Portfolio

Trimble

Trimble Agriculture. The line everyone follows.

TRIMBLE PRECISION AGRICULTURE
THE LINE EVERYONE FOLLOWS

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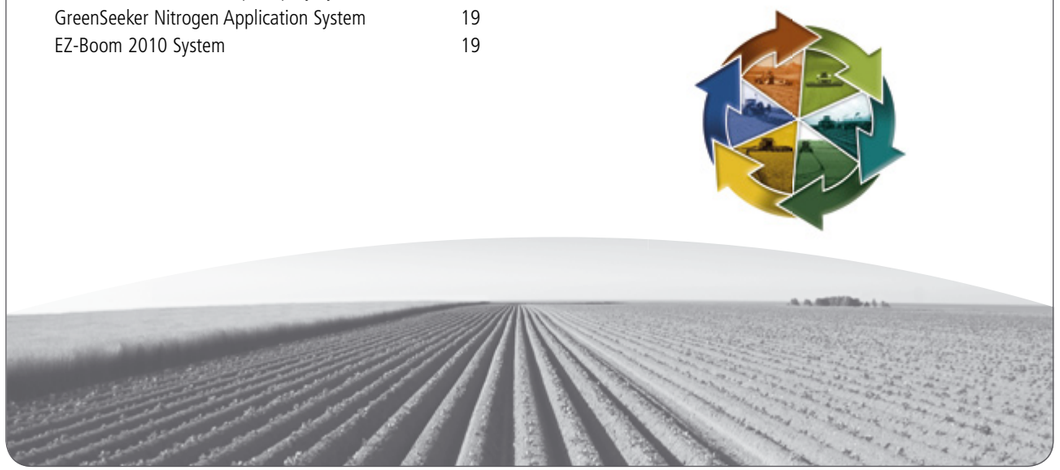


INTRODUCTION TO GPS

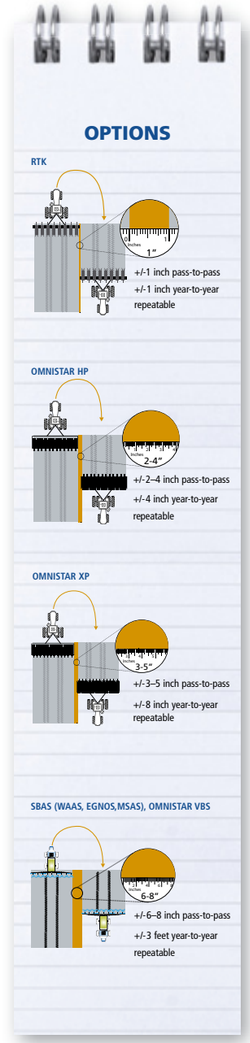
You have no doubt heard how the use of GPS technology is revolutionizing the agriculture industry by helping growers do things such as navigate through a field, spray their crops without foam markers, and precisely map the elevation of their farms. But what exactly is GPS and why do you need it on your farm?

What is GPS?

The Global Positioning System (GPS) is actually part of a larger system called the Global Navigation Satellite System (GNSS). GNSS is the term for all the satellite constellation systems that provide positioning data. Currently only GPS and GLONASS fall under the GNSS umbrella. GLONASS is operated by the Russian Federation and GPS is operated by the US Department of Defense, but both are available to users worldwide. The Global Positioning System has been in existence longer, so its acronym has gained greater visibility and recognition. In fact, one could argue that GPS has become the common term for all satellite constellation systems, similar to the way we refer to Kleenex™ when we mean 'tissue'.

GPS is a space-based navigation system formed from a constellation of 24 satellites and their ground stations. GPS uses these satellites as reference points to calculate positions accurate to a matter of inches. In fact, with advanced forms of GPS you can take measurements down to less than an inch. In a sense, it's like giving every square inch on the planet—or on your farm—a unique address.

The signals generated by GPS alone are not accurate enough for use in agriculture. Therefore, corrections must be made to GPS signals to improve their accuracy. There are three main correction services available today—SBAS, RTK and the VRS™ network.



SBAS (SPACED BASED AUGMENTATION SYSTEM)

SBAS is also known as DGPS (Differential GPS). SBAS or DGPS corrections can be obtained through a number of free satellite systems operated by various governments throughout the world. These free systems include WAAS (US), EGNOS (Europe) and MSAS (Japan). SBAS uses L-band satellite corrections to provide submeter accuracy from +/- 6–8 inches. There are also a variety of subscription correction services that provide satellite based SBAS corrections as accurate as +/- 2–5 inches. Two such options are the OmniSTAR HP and the OmniSTAR XP subscription services.

Many broadacre crop farms can benefit greatly from the submeter accuracy provided by SBAS signals. However, for certain precision agriculture applications such as row crop bed preparation and planting or topographic map generation; submeter SBAS accuracy is not enough. In these applications, RTK corrections can provide sub-inch accuracy, as well as huge savings in time and money.

INTRODUCTION TO GPS

RTK (REAL-TIME KINEMATIC)

Trimble pioneered RTK in the early 1990's as a means of delivering high accuracy corrections for field applications. In the two decades since, RTK has become the industry leading methodology for sub-inch positioning. RTK uses either radio or cellular communications to provide corrections. When using RTK with radio communications, you need access to a base station located within a seven-mile radius (approximately) from your farm. An RTK base station sends corrections via a radio transmitter to the mobile receivers attached to your vehicle. Base stations can be purchased for individual farming operations, or utilized through a subscription service from an established network.

Subscription services are often operated by precision agriculture equipment dealers, such as Trimble dealers, that have erected single or multiple stations within a network area. RTK networks are being added throughout the world at a rapid pace, so RTK coverage is improving all the time. Trimble Ag RTK networks currently cover over 400 million acres of farmland in the United States, and several more million outside of the USA.

A cellular communication modem may also be used instead of a radio to provide RTK corrections. These cellular networks are referred to as Continuously Operating Reference Stations (CORS). CORS uses a single GPS/GNSS reference station to transmit RTK corrections to the cellular modem on a tractor. This reference station may be located a long distance from the grower's modem, making it a popular option in areas with spotty RTK radio tower coverage.

RTK is useful for all crop types and provides enhanced accuracy throughout the crop cycle beginning with land preparation activities and ending with harvesting. Farmers growing row crops generally see the largest payback from using RTK systems because they are able to pinpoint the location of their seeding, spraying, irrigation and harvesting activities directly over each plant. No-till and strip-till farmers find RTK irreplaceable due to their need for extremely precise accuracy and repeatability.

Terrain and soil types of all varieties benefit from RTK applications, especially when using precision ag equipment designed to make greater improvements on this type of land. For instance, farmers using RTK guidance on their tractor and implement with products such as the Trimble® TrueGuide™ implement guidance system can see yields improve up to 50% over guiding the tractor alone.

VRS (VIRTUAL REFERENCE STATION)

VRS™ is a Trimble trademark that refers to an integrated system of multiple GPS/GNSS reference stations spread out over a large area, typically 30–45 miles (50–70 km) apart, and a central server that uses Trimble proprietary software to create a correction map for the region covered by the network. GPS/GNSS rovers communicate using a cellular modem with this VRS server and receive RTK-type corrections. Because the VRS system uses multiple base stations to create a position, its accuracy is extremely reliable.

VRS corrections are valuable in areas with natural obstructions such as trees and hilly terrain due to the fact that corrections are obtained by a cellular modem, rather than through the line-of-sight signals provided by an RTK tower. The VRS system also provides a sub-inch GPS correction solution for farms located in areas without an existing RTK tower network.

WHY USE GPS?

Using GPS in agriculture can be beneficial by saving costs, time and energy. For instance, when GPS is utilized for spraying, the amount of chemicals needed is dramatically decreased. The GPS position tells your planter to shut off individual rows when it is traveling over an area that has already been planted. GPS also tells your sprayer to turn off when it is covering plants that have already been sprayed. Similarly, harvesting a difficult to navigate crop such as peanuts is made easier when the seeds are planted using RTK corrections. When the peanut digger goes back to harvest the crop, it knows precisely where the peanuts are located underneath the vines.

Perhaps the biggest benefit of using GPS on your farm is measured in the savings of time and energy a grower achieves by using such systems. When Jerry Heilig of Moses Lake, WA was asked what he likes most about using his Trimble EZ-Steer® assisted steering system, he said "My guys comment about this a lot. They're more refreshed at the end of the day when they don't have to concentrate on driving a vehicle all the way through the field. It's that simple."

Trimble's guidance products help you complete field applications faster and more productively, accurately, safely and comfortably with less operator fatigue. The complete line of Trimble guidance display options, including the EZ-Guide® 250 system, CFX-750™ display and FmX® integrated display, offer an array of functionalities and a range of price points from entry-level to high-end. Trimble's guidance displays can be used with a variety of field patterns, crops, geographic locations, correction types, and vehicles. Selecting a display option that best fits your farming needs allows you to utilize a single display in your vehicle.

	EZ-GUIDE 250 SYSTEM	CFX-750 DISPLAY	FmX DISPLAY
Size of color screen	4.3"	8.0"	12.1"
Touchscreen		√	√
Video camera inputs		√ √	√ √ √ √
Built-in GPS receiver	√	√	√ √
Submeter accuracy	√	√	√
OmniSTAR 2–5" accuracy		√	√
Sub-inch RTK accuracy		√	√
GLONASS compatibility		√	√
Assisted steering compatibility	√	√	√
Automated steering compatibility		√	√
Implement control capability			√
Flow & Application control compatibility		√	√
On-the-go VRA with GreenSeeker® sensors			√
Water Management compatability			√
Office software compatibility	√	√	√

EZ-GUIDE 250 SYSTEM

Following the leader just got easier. And more affordable.

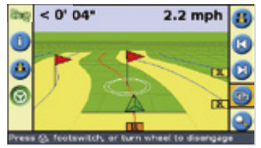
The EZ-Guide® 250 system offers high-quality, entry-level guidance capabilities at an entry-level price. You can upgrade from manual to assisted steering by adding the EZ-Steer® assisted steering system, delivering a total package priced far less than the competition. The EZ-Guide 250 system is well-suited for broadacre crop applications that can be accomplished with sub-meter accuracy. The color screen and multiple guidance patterns make your work easier to perform. Plus, NightMode allows you to work around the clock when fieldwork must be completed. At the end of the work day, transfer your data from the EZ-Guide 250 system to your desktop computer using a USB flash drive for use in printing coverage maps and reports.

15 bright guidance LEDs give you quick on-line visual feedback to keep you on track

The FreeForm™ guidance pattern offers the ultimate in guidance flexibility, allowing you to work in different patterns and shapes that best fit the layout and contours of your field

The built-in GPS receiver provides submeter DGPS accuracy, or upgrade to 6–8" pass-to-pass accuracy with the optional AG15 antenna

NEW! Boundary mapping, point, line and area feature mapping



LB25 external lightbar can be mounted anywhere in your vehicle to measure off-line distance, regardless of where your display is located

The 4.3" color screen allows you to see at a glance where you are, where you've been and what you have been doing

Available accuracies for the EZ-Guide 250 system:

SBAS (WAAS) 6-8 inch accuracy · EGNOS Submeter accuracy · MSAS Submeter accuracy

Available satellite constellations for the EZ-Guide 250 system:

GPS

NEW! CFX-750 DISPLAY

The newest touchscreen display from Trimble offering affordable guidance, steering and precision agriculture capabilities.

The built-in, dual-frequency receiver is compatible with all accuracy levels and satellite constellations, including GLONASS, meaning that the CFX-750™ display is the perfect solution for almost any crop type, field shape or soil type. Upgrading from manual guidance to assisted or automated steering is easy when you add the EZ-Steer system or Autopilot™ automated steering system. Precise application control with single-product variable rate application is available by adding the Field-IQ™ crop input control system.

SECTION CONTROL
Save seed and input costs by controlling up to 48 individual rows with the Field-IQ crop input control system and easy to install Tru Count clutches

RATE CONTROL
Control your rate when planting, spraying, spreading and strip tilling with the Field-IQ crop input control system and Rawson™ variable rate drive

GLONASS
Upgrade to receive GLONASS satellites and increase your satellite availability to extend your operating hours

VISUAL GUIDANCE
27 bright LED lights give you quick on-line visual feedback in any light conditions

TOUCHSCREEN
Easy to use 8" color touchscreen

CAMERA COMPATIBILITY
View up to two live video images on screen and monitor parts of your implement that are not visible from the cab

VARIABLE RATE APPLICATION
Import field prescriptions for precise VRA control in order to more accurately apply crop inputs

REPORTING
Transfer your day's coverage to your computer using the built-in USB port or wirelessly using Connected Farm™ from Farm Works

Available accuracies for the CFX-750 display:

SBAS (WAAS) 6-8 inch accuracy · OmniSTAR XP 3-5 inch accuracy · OmniSTAR HP 2-4 inch accuracy · RTK 1 inch accuracy

Available satellite constellations for the CFX-750 display:

GPS · GLONASS

NEW! EZ-Remote joystick

Connect the EZ-Remote joystick to your Trimble display to eliminate wasteful reaches across the cab and comfortably work longer hours.

FmX INTEGRATED DISPLAY

What precision ag functions do you want to control?

With industry leading performance and reliability, the FmX® integrated display can handle all your precision ag needs. From guidance to steering, rate control to yield monitoring; the FmX integrated display has you covered. The versatility of the FmX integrated display makes it the affordable choice to adopt as technology changes.

LB25 lightbars can be attached to the display or mounted separately

Two GPS+GLONASS receivers provide precision with the vehicle, as well as the working implement behind the tractor—where you really need it

Transfer your day's coverage to your computer using the built-in USB port or wirelessly using Connected Farm™ from Farm Works

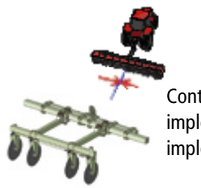
Control up to 48 individual rows with the Field-IQ™ crop input control system and easy to install Tru Count clutches

Accurately monitor and map harvested crop yield and moisture with yield monitoring

Deliver the correct amount of fertilizer real-time with the GreenSeeker® nitrogen sensor

Control your rate when planting, seeding, spraying, spreading and strip tilling with the FmX integrated display and Rawson™ variable rate drive

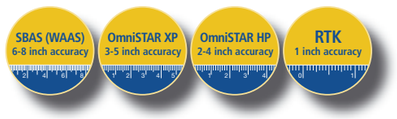
Easily perform prescription based rate control



Control your implement with the TrueGuide™ implement guidance and TrueTracker™ implement steering systems

Manage field leveling and field drainage with the FieldLevel II system.

Available accuracies for the FmX display:



Available satellite constellations for the FmX display:

Steering Options

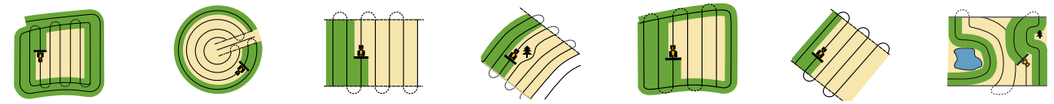
In addition to the manual guidance available with any of the Trimble guidance displays, Trimble offers assisted steering and automated steering options for use on your farming vehicles. The EZ-Steer® system is an assisted steering system that can be used on over 1000 vehicle models—old and new. It is mounted to your steering column and uses a friction wheel and motor to turn the wheel for you. The Autopilot™ automated steering system can be used on virtually any newer vehicle. The Autopilot system is connected directly to a vehicle's hydraulic system and can deliver sub-inch repeatable steering using RTK corrected signals, delivered via radio from an RTK base station or via cellular modem from a VRS network.

	EZ-STEER SYSTEM	AUTOPILOT SYSTEM
Assisted steering	√	
Automated steering		√
EZ-Guide® 250 system compatibility	√	
EZ-Guide 500 system compatibility	√	√
CFX-750™ display compatibility	√	√
FmX display compatibility	√	√
Guidance ready vehicle compatibility		√

Implement Control Options

Implement control is available from Trimble with both the TrueGuide implement guidance system and TrueTracker implement steering system. The TrueGuide system is a passive guidance system. It reduces the uncontrolled drift of the implement by moving the tractor to keep the implement online. The TrueTracker system instantly communicates guidance information between the implement and the display in the tractor, adjusting the implement to follow directly in the path of the tractor.

	TRUEGUIDE SYSTEM	TRUETRACKER SYSTEM
Requires Autopilot	√	√
FmX compatibility	√	√
Works on hilly, rolling or sloped terrain	√	√
Works in variable soil conditions	√	√
Active steering technology		√



EZ-STEER ASSISTED STEERING SYSTEM

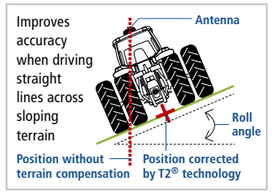
Simple, portable hands-free farming for over 1000 vehicle models—old and new.

The Trimble® EZ-Steer® assisted steering system turns the steering wheel for you by combining a friction wheel and a motor with GPS guidance from the EZ-Guide® 250 system, EZ-Guide 500 system, CFX-750™ display, or FmX® integrated display. While the EZ-Steer system keeps your vehicle on line, you can relax and focus on other tasks in the tractor cab.

RTK UPGRADE

Upgrade the EZ-Steer system to RTK for repeatable one-inch GPS positioning accuracy. This option requires the use of the CFX-750 display or FmX integrated display.

T2 TERRAIN COMPENSATION TECHNOLOGY



DISPLAY OPTIONS

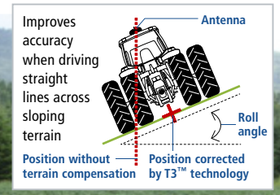
EZ-GUIDE 250 LIGHTBAR	EZ-GUIDE 500 LIGHTBAR	CFX-750 DISPLAY	FmX INTEGRATED DISPLAY
			

AUTOPILOT AUTOMATED STEERING SYSTEM

Integrated high accuracy steering for more than 700 vehicle makes and models.

The Trimble Autopilot™ automated steering system provides one-inch repeatability from plant to harvest with any field pattern, and extends your operating hours with incredible precision.

T3 TERRAIN COMPENSATION TECHNOLOGY



FULL STEERING INTEGRATION

DISPLAY OPTIONS

EZ-GUIDE 500 LIGHTBAR	CFX-750 DISPLAY	FmX INTEGRATED DISPLAY
		

BENEFITS OF THE AUTOPILOT SYSTEM:

- √ Provides one-inch repeatability with each pass
- √ Reduces operator fatigue and extends your operating hours
- √ Works with the FmX integrated display, the CFX-750 display, and the EZ-Guide 500 system
- √ Eliminates overlaps and reduces input costs
- √ Supports accuracy levels from WAAS to RTK

TRUEGUIDE IMPLEMENT GUIDANCE SYSTEM

LARGE IMPLEMENTS

Control your large implements and minimize the effects of draft with no additional steering hardware.

CONTOURS AND TERRACES

The TrueGuide system can guide the implement to the line, even in the most difficult field patterns.

ROLLING TERRAIN

Rolling terrain creates unpredictable implement movements. Control the effects of rolling terrain on the implement by adjusting on the go.

HILLSIDES

Minimize the effect of downdraft on severe hillsides. Let your Autopilot system pull the implement up the hill and hold the line.

EASILY ADD IMPLEMENT CONTROL

The TrueGuide™ implement guidance system uses the existing Autopilot™ system to improve implement accuracy. There is no need to hang additional steering equipment on the implement just to get better control. Let the tractor guide the implement

CONTROL WHERE IT COUNTS

If the implement is moving, how effective is the automated steering? Control the point that is doing all the work—the implement

USE THE SECOND BUILT-IN RECEIVER

Open up the power of the FmX® integrated display by activating the built-in second receiver, and adding the TrueGuide system to the guidance controls

Control where it counts.

- The TrueGuide system is a "passive" guidance system that controls the implement using the Autopilot automated steering system to move the tractor and keep the implement on line
- More control over your implement means more precision in seed and fertilizer placement, and consistent guess rows
- Adding the TrueGuide system to the Autopilot system typically reduces the uncontrolled drift of the implement by more than 50% over guiding the tractor alone
- Supports accuracy levels from WAAS to RTK

TRUETRACKER IMPLEMENT STEERING SYSTEM

TAKE FULL CONTROL OF YOUR IMPLEMENT

The TrueTracker™ system is an independent navigation system that works with the Autopilot system to provide you the highest level of accuracy. The TrueTracker system independently steers the implement using one of many hydraulic solutions

TRIMBLE CORRECTION SERVICES

Use Trimble RTK or VRS™ corrections for +/- 1 inch repeatable accuracy with both the implement and tractor

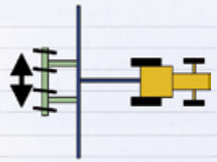
ONE DISPLAY—COMPLETE CONTROL

The FmX integrated display in the tractor communicates guidance information to the TrueTracker system, instantly adjusting implements such as tillage tools, strip till, planters, cultivators and harvesters to follow directly in the path of the tractor

Take full control of your implement.

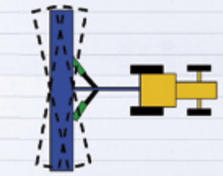
- In the fall, place your fertilizer within an inch of where you will plant your seed in the spring
- Improve seedbed and nutrient placement to enhance crop stand and yields
- The TrueTracker system steers the implement on a repeatable path even on extreme slopes and variable soils
- Maintain accuracy on rolling terrain using T3™ terrain compensation technology mounted on the implement

STEERING COULTERS



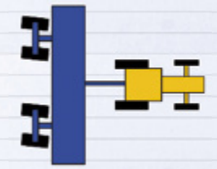
Use steel coulters to steer.

TONGUE STEER



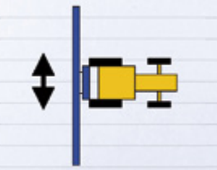
Steer the tongue to change the implement path.

LOAD BEARING WHEEL



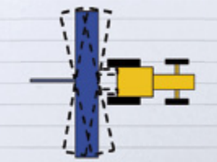
Steer the implement wheels.

SIDESHIFT



Shift the 3-point laterally.

ARTICULATING THREE POINT



Rotate the 3-point to change the direction.

FLOW AND APPLICATION CONTROL

PLANTING/DRILLING | AIR SEEDING | SPREADING | STRIP TILL/ANHYDROUS | SPRAYING





FIELD-IQ CROP INPUT CONTROL SYSTEM

The Field-IQ™ crop input control system is a section control and variable rate application control system that is simple to install and use. It prevents seed and fertilizer overlap and controls the rate of seed, liquid, NH3 anhydrous or granular materials. The Field-IQ system runs on both the NEW! CFX-750™ display and FmX® integrated display.

Prevent Seed and Fertilizer Overlap with Field-IQ Section Control

- Automatically control up to 48 rows individually for maximum savings in seed and increased yields
- Eliminate seed overlap in your headlands and point rows with Tru Count Meter Mount™ air clutches
- Eliminate fertilizer overlap with the new Tru Count LiquiBlock™ valves that easily connect to clutch air lines

Vary Seed Population in Your Field with Field-IQ Variable Rate Control

- Adjust your seed population manually or using a prescription created using Farm Works® office software
- Apply a high population to fertile or well irrigated soils to maximize yield potential while reducing the rate on less fertile or poorly irrigated soils

Vary the Rate of Fertilizer or Lime, Using Field-IQ Variable Rate Control and Rawson Drives

- Use GreenSeeker® sensors and apply the correct amount of fertilizer the plants need, or load a Variable Rate Application prescription created using Farm Works office software
- Apply the correct amount of lime to manage your soil's PH in every location

DISPLAY OPTIONS

CFX-750 DISPLAY	FmX INTEGRATED DISPLAY
	

TRU APPLICATION CONTROL SYSTEM

The Tru Application Control™ system provides complete automation of planting, seeding, spreading, spraying and strip-till operations. The system features multiple material variable rate control, seed monitoring and section control of up to 24 rows. It works on seed, liquid, granular and anhydrous materials. The Tru Application Control system is compatible with the FmX integrated display.

Manage up to Four Inputs Simultaneously

- Control seed, liquid, granular and anhydrous application rates and fine tune what you're putting in and on the ground
- Monitor seed populations on up to 144 rows, in many cases using the sensors already installed in the planter

Planting Row Shutoff with Tru Application Control and Tru Count Air Clutches

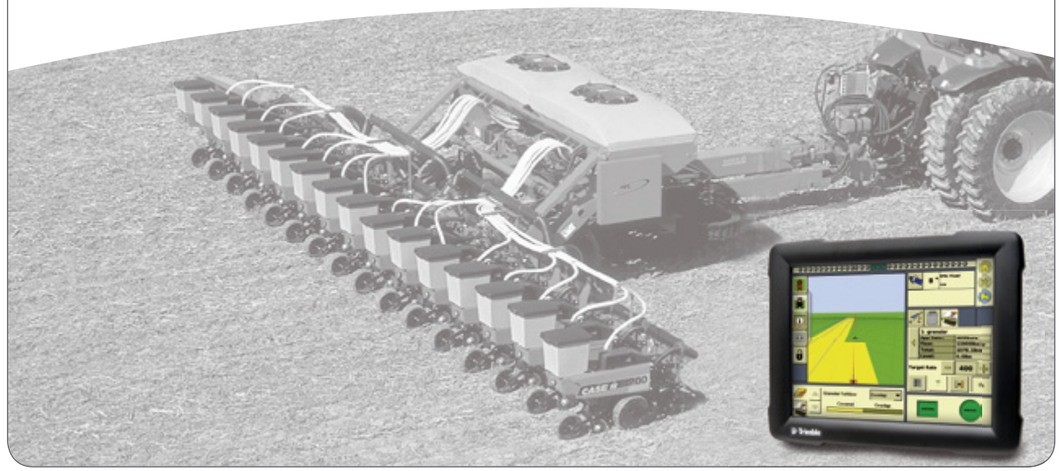
- Automatically control up to 24 rows individually for accurate shutoff
- Avoid double planting in headlands and point rows to help increase yields

Spraying Boom Section Control

- Save on liquid fertilizer and chemicals with automatic boom section control to reduce overlaps
- Improve productivity by maintaining speed and automatically turning off application at ends of rows

Anhydrous Ammonia Section Control

- Save on expensive anhydrous ammonia using automatic section control to reduce overlaps
- Utilize fast anhydrous shutoff valves for shut off



FARM WORKS MOBILE SOFTWARE

GATHER MORE INFORMATION FOR DECISION MAKING

While in your field, utilize the built-in GPS receiver and digital camera on the rugged Trimble® Nomad® or compact Juno® SB handheld computers and Farm Works Mobile software to capture geo-referenced pictures of problems such as weeds and insects.

AUTOMATIC SECTION CONTROL

Trimble's automatic section control shuts off rows or sections automatically, eliminating double applications and wasted inputs. Depending on the system you choose, it can manage seed, liquid and anhydrous, and features inch-level control from 24 to 48 sections for savings that can exceed 5%. It's the ideal upgrade for your guidance display from Trimble and it can be further upgraded to variable rate for even greater savings.

FIELD-IQ™ CROP INPUT CONTROL SYSTEM	TRU APPLICATION CONTROL™ SYSTEM
√ Control up to 48 individual rows automatically with easy to install Tru Count Meter Mount™ air clutches	√ Control up to 24 individual rows automatically with easy to install Tru Count Meter Mount air clutches
√ Control both liquid and seed placement simultaneously with the new Tru Count Meter Mount air clutch and new Tru Count LiquiBlock™ valves, which share the same air source	√ Automatic overlap detection to track where you've been and what you've done
√ Automatic overlap detection to track where you've been and what you've done	

VARIABLE RATE APPLICATION CONTROL

Increase yields and save money when planting, spraying, spreading or fertilizing. Adjust your rate manually or with a Trimble® display to automatically vary the rate using prescriptions.

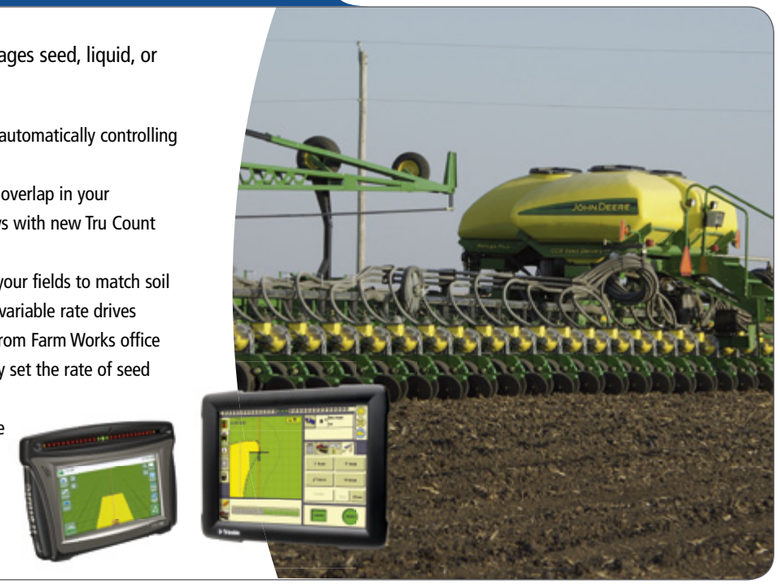
FIELD-IQ CROP INPUT CONTROL SYSTEM	TRU APPLICATION CONTROL SYSTEM
√ Variable rate application control for one material – either seed, liquid, anhydrous or granular	√ Variable rate application control of up to 4 products including seed, anhydrous, liquid and granular
√ Use PWM or Servo variable rate drives, in many cases re-using components already in your equipment, or use the Rawson PAR 2 or 40 for more accurate control	√ Use PWM or Servo variable rate drives, in many cases re-using components already in your equipment
√ Adjust the rate of application manually or using a prescription file from Farm Works® office software	√ Adjust the rate of application manually or using a prescription file from Farm Works office software
√ Use GreenSeeker® sensors to sidedress applications of liquid or NH3 and efficiently manage the varied nitrogen needs in your field	√ Use the FmX integrated display or the FieldManager™ display
√ Use the CFX-750™ display or FmX® integrated display	√ Monitor the seed population to detect plugged seed tubes

PLANTING/DRILLING

Field-IQ crop input control system

The planter function manages seed, liquid, or granular application:

- Prevent seed overlap by automatically controlling up to 48 individual rows
- Eliminate liquid fertilizer overlap in your headlands and point rows with new Tru Count LiquiBlock valves
- Vary seed population in your fields to match soil potential with Rawson™ variable rate drives
- Use a prescription map from Farm Works office software to automatically set the rate of seed
- Seed variety tracking for post harvest performance analysis



Tru Application Control system

The planter function manages seed, liquid, and granular application:

- Prevent seed overlap in your headlands, point rows and waterways by automatically controlling up to 24 individual rows
- Variable rate control for up to 4 products including seed, liquid and granular
- Seed variety tracking for post harvest performance analysis
- Monitor 1 hopper level sensor and 1 air pressure or 1 RPM sensor
- Compatible with Tru Count air clutches including the new Tru Count Meter Mount clutches

Field-IQ crop input control system

The sprayer function manages accurate liquid application:

- Control up to 48 sections or nozzles and shut off sections in waterways and point rows to avoid overspraying
- Use with existing boom shutoff valves and Tru Count LiquiBlock™ valves from Trimble for easy connections
- Connect directly into the vehicle boom shutoff valves so no additional cables are required
- Connect using platform specific kits designed to work with existing sprayer components including factory installed switches

Tru Application Control™ system

The sprayer function manages accurate liquid application:

- Advanced overlap control that automatically turns up to 24 boom sections ON/OFF
- Variable Rate Application (VRA) control on up to 4 products
- Monitor up to 4 pressure sensors and 3 RPM sensors
- The choice of speed input (GPS, radar, or manual speed)
- Advanced mapping with the ability to track application rates

WeedSeeker automatic spot spray system

WeedSeeker® Automatic Spot Spray System

The WeedSeeker® system helps you cut overall weed-control costs by up to 80% by saving on chemical costs, cutting down on time and labor, and reducing the environmental impact of your field activities.

- Uses advanced optics and computer circuitry to sense if a weed is present
- When a weed enters the sensor's field of view, it signals a spray nozzle to deliver a precise amount of herbicide
- The WeedSeeker system will spray only weeds, not bare ground, and is effective wherever weeds occur intermittently

SPRAYING

GreenSeeker RT200 nitrogen application system

GreenSeeker® Variable Rate Application and Mapping Systems

FmX® integrated display now functions as the cab interface for the GreenSeeker optical sensing system.

- The GreenSeeker® RT200 nitrogen application system offers a more efficient and precise way to manage crop inputs such as nitrogen
- Delivers the correct amount of fertilizer in real-time averaging an increase in profits by $15 per acre
- It verifies the amount of the nitrogen the soil has made available in season, then determines on-the-go a nitrogen prescription for the applicator to instantly deliver. The result is optimum placement of nitrogen, eliminating costly waste and extra field passes

EZ-Boom 2010 system

The EZ-Boom® switching and spray rate controller system can automatically turn on and off up to ten boom sections resulting in more precise application for all field work.

This simple to install and use system combines Variable Rate Application (VRA) control and automatic boom switching in the same box and is compatible with the EZ-Guide® 500 lightbar or the FmX integrated display

FLOW & APPLICATION CONTROL

AIR SEEDING

Tru Application Control system

The air seeding function on the Tru Application Control™ system manages seed, liquid, granular, and anhydrous ammonia (NH3) applications:

- Manage up to 4 products using Variable Rate Application (VRA) control
- Monitor up to 144 rows of blockage sensors
- Monitor up to 4 hopper level sensors
- Monitor up to 4 air pressure sensors and accessory RPM sensors
- The choice of speed input (GPS, radar, or manual speed)
- Advanced mapping with the ability to track varieties and log attributes

STRIP TILL AND ANHYDROUS

Field-IQ crop input control system

The fertilizer control function manages accurate applications:

- Avoid overlap in headlands and point rows using section control for up to 48 sections in strip till, NH3, and sidedress toolbars
- Control material applications more conveniently by connecting to existing valves and flow meters already in the tool bar
- Vary rates manually, using prescriptions, or GreenSeeker® system sensors to increase yields while keeping records of what was applied

Tru Application Control system

The strip-till functionality allows for accurate anhydrous ammonia (NH3) granular and liquid application:

- Advanced overlap control that automatically turns sections ON/OFF for anhydrous application
- Variable Rate Application (VRA) control for up to 2 anhydrous channels and up to 2 liquid or granular channels
- The choice of speed input (GPS, radar, or manual speed)
- Advanced mapping with the ability to track NH3 applied rates

SPREADING

Field-IQ crop input control system

The spreader function manages accurate granular application:

- Vary rates of fertilizer or lime with prescriptions to save money, increase yields and keep records of what was applied
- Avoid overlap by shutting off spreading when going over previously-applied areas
- Connect directly into the spreader manufacturers' existing components with a Field-IQ™ system or use a Rawson™ PAR 40 variable rate drive to handle high performance spreader boxes
- Monitor gate height and spinner speed to better manage application

Tru Application Control system

The spreader function manages accurate granular application:

- Variable Rate Application (VRA) control
- Monitor and control up to 4 products
- The choice of speed input (GPS, radar, or manual speed)
- Advanced mapping with the ability to track application rates

GreenSeeker RT200 nitrogen application system

GreenSeeker® Variable Rate Application and Mapping Systems

The FmX® integrated display now functions as the cab interface for the GreenSeeker optical sensing system.

- The GreenSeeker RT200 nitrogen application system offers a more efficient and precise way to manage crop inputs such as nitrogen
- Delivers the correct amount of fertilizer in real-time averaging an increase in profits by $15 per acre
- It verifies the amount of nitrogen the soil has made available in season, then determines on-the-go a nitrogen prescription for the applicator to instantly deliver. The result is optimum placement of nitrogen, eliminating costly waste and extra field passes

INFORMATION MANAGEMENT SOLUTIONS

Farm Works, a division of Trimble, offers a complete range of solutions for the field and farm office. Office solutions include field record keeping, farm accounting, herd management, basic mapping, water management, and mapping analysis. Select from a variety of modules that can be integrated and customized to provide one management solution for your farm.

Office Software

view MAP VIEWER	• Free map viewing software for precision ag displays • Build a list of clients, farms, field names and write the data to precision farming devices for data management • Print maps and guidance paths with legend • Can be upgraded to Farm Works® office solutions for additional field reporting, layering, accounting, and mapping analysis
trac FIELD RECORDS	• Set up any number of clients, farms, fields, and crop/year enterprises for quick access to field records • Enter crop plans for product ordering, budgeting, equipment usage, and employee allocation • Print reports for seed varieties, restricted use chemicals, fertilizer usage, fleet management, and field profitability
funds ACCOUNTING	• Assess the profitability of fields, livestock groups and equipment with detailed Enterprise Statements • Print accounting reports for both cash and accrual general ledgers • Keep up-to-date inventory for supplies (seed, chemicals, fertilizer, feed, etc), harvested crops, and livestock
site MAPPING	• Read and write data for use with a wide range of precision farming devices • Create an unlimited number of mapping layers with easy-to-use drawing tools • Utilize Google™ Maps for drawing field boundaries or to display as background maps • Utilize soil types, yield maps, or other data in creating simple variable rate prescription maps • Create, edit, and manage guidance paths from popular guidance systems including all Trimble® field displays
surface WATER MANAGEMENT	• Display a Watershed zone map to view where the surface water will go and where it will pool on the existing surface • Analyze a 3D view of elevation data to easily understand the flow of water on a field • Map out surface ditches, mains, sub-mains, laterals and enter information such as the type of material to be used, tile size and phase
pro ANALYSIS	• Utilize powerful yet easy to understand formulas to create prescription maps • Find out which parts of the field are more profitable by integrating your financial data with precision maps • Average multiple years of yield maps together to discover consistently high and low yielding areas of a field

When you are not in the office analyzing data, utilize GPS and handheld computers to perform field scouting and other important jobs. Enter field records, map field boundaries, record soil sampling locations by grid or zone, and capture images of weeds or pests for scouting purposes.

Field Software

mobile

MOBILE FIELD MANAGEMENT

- Enter field records
- Map field boundaries, drainage lines, pivots, ditches, and other points of interest
- Capture digital images of pests using mobile devices with built in cameras and GPS, such as a Trimble® Juno® handheld computer
- Utilize grids or management zones for soil sampling
- Use variable rate application maps with a wide range of third party controllers

To complete your farm management solution, Connected Farm™ utilizes wireless technology to transfer data and provide high accuracy RTK. Easily send real-time information such as A-B lines, prescription maps, no spray zones, and yield maps between your office, vehicle display and handheld computer—saving you valuable time and enhancing your field records.

Connected Farm

sync

DATA TRANSFER

- Easy delivery of planned jobs, sampling points, guidance lines, yield maps, and prescription maps
- Keep a backup of your raw data within your storage area, even after it has been downloaded to your desktop software

YIELD MONITORING

Accurately monitor and map harvested crop yield and moisture using the same Trimble® FmX® integrated display that you use for all your farming operations. Guide with either the EZ-Steer® assisted steering system or Autopilot™ automated steering system for consistent passes and to keep your header at capacity. Use the recorded yield data to analyze performance and create variable rate prescription maps using Farm Works® office software. Yield data stored on the FmX display can easily be transferred to the office using a USB storage device or upgrade to the Connected Farm™ solution and transfer data from field to office wirelessly. Farm Works software can help you evaluate field performance and identify problem areas.

SIMPLE INSTALLATION:

- Just connect the FmX display to existing combine sensors
- Compatible with John Deere 9x60 and 9x70 series combines
- Able to collect data from the Ag Leader® YM2000

VARIABLE RATE:

- Record yield data to analyze performance and then create variable rate prescription maps using Farm Works software
- Farm Works software allows formulas to be used to automate prescription map creation
- Apply customized amount of seed and fertilizer throughout the field

MAPPING:

- Accurately monitor and map harvested crop yield and moistures to avoid harvesting high moisture areas that could cause grain storage problems
- Identify drainage or weed pressure areas in the field

TRANSFERABLE DATA:

- Yield data stored on an FmX display can easily be transferred to the office using a USB storage device
- Utilize Connected Farm from Farm Works to transfer data wirelessly between the office and field, such as yield data or prescription maps
- Farm Works Pro software adds profit analysis and multi-year, averaging views of the yield data

ACCURATE AREA CALCULATIONS:

- Integrated system also performs accurate area calculations using auto cut width when the header is not full, providing an advantage for harvesting odd shape fields, point rows or areas already harvested
- No need to manually adjust actual cut width when not harvesting a full swath

SIMPLE USER INTERFACE:

- Familiar FmX integrated display used for steering and guidance
- Touchscreen provides large buttons and map area

GPS AND LASER LEVELING SOLUTIONS

The term water management refers to leveling activities designed to optimize water use when it's scarce, and the implementation of drainage systems to remove water when it is in excess. Water management is becoming increasingly important throughout the world due to various drought and rainy conditions, as well as governmental standards for water conservation.

There are two types of water management products available for use in agriculture today—GPS and laser leveling solutions. Both solutions can be used to effectively increase crop yields and improve water usage. The operating principles of GPS and laser equipment are very similar. Both include three steps—survey, design and grade—for water management optimization.

The survey step requires the operator to survey the field to be leveled or drained. A design is then created based on this survey to best optimize the leveling or drainage function to be performed. Finally, the field is graded to the pre-determined design through either laser or GPS guidance.

GPS SOLUTIONS

GPS solutions for water management include the FieldLevel II system from Trimble. The FieldLevel II system represents cutting-edge GPS technology and significantly decreases the setup, survey, design, and grading time for both leveling and drainage system operation. By utilizing GPS signals, the FieldLevel II system greatly diminishes the time required to perform leveling and drainage tasks, allowing the operator to complete a large amount of field work in a fraction of the time.

LASER LEVELING

Laser leveling is a low-cost way to get high-quality leveling results in your field. Laser products require additional operational time, but they can be useful in difficult GPS environments or when cost is a major factor in an equipment purchase.

FIELDLEVEL II SYSTEM FOR WATER MANAGEMENT

Land leveling and drainage tasks are made much easier with the addition of GPS signals to the process. The FieldLevel II system uses the convenience of GPS and GLONASS RTK technology to streamline the survey, design and grade steps required to level fields or install drainage systems. With the FieldLevel II system, there is no need to exit the tractor to reposition the laser transmitter or set stakes. A great deal of time is saved by performing all calculations from inside the cab.

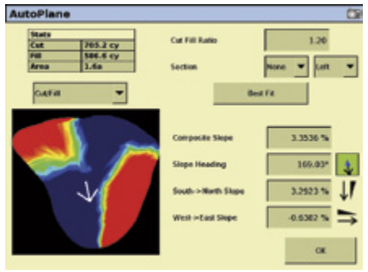
RUGGED FIELD COMPUTER

The same FmX® integrated display that you use with your precision guidance and control applications can also be used for your water management operations. With data collection, design and control functionality built right into this powerful display, managing your leveling and drainage operations has never been easier or more defined.

SURVEY—DESIGN—GRADE

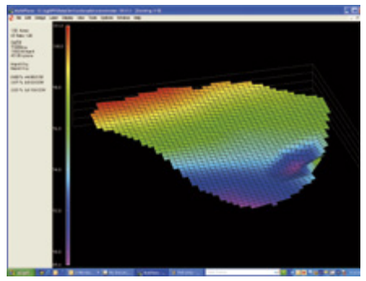
Topographic data can be collected via the FmX integrated display while using the Autopilot™ system, or by using the FmX display as a stand-alone. Using the collected topographic data, you can design the shape of the field, or slope and depth of your drainage structures, right on the FmX integrated display. With the completed design you can immediately start leveling or installing drainage structures. If you need to explore more scenarios for field designs, simply take the topographic survey to the office and work with MultiPlane software. The finished MultiPlane design can quickly be loaded into the FmX integrated display to shape the field surface.

AUTOPLANE



Best-fit designs can be created in the tractor cab and then modified to your farm's specific needs. This eliminates the need to utilize office software for field design creation.

MULTIPLANE

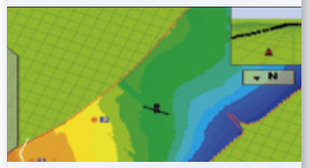


Complex designs can be created in an office using this desktop software package.

EXPAND YOUR PRODUCTIVITY

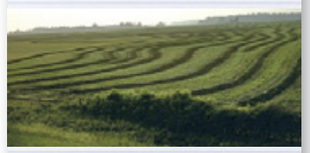
Upgrade to the Surface module of Farm Works® office software for enhanced surface and sub-surface drainage water management. Surface software is a surface analysis and design tool that assists with the optimal placement of tile and surface drains.

TOPOGRAPHIC MAPPING



Use the built-in survey function to record field elevations. There is no need to exit the tractor cab to reposition a laser transmitter.

LEVEE MARKING



Use Contour guidance mode to mark rice levees at a constant height with respect to the Earth's gravity. This ensures the fields can be watered with the optimal amount of water, increasing yields and eliminating any waste.

TILE AND SURFACE DRAINAGE

Use Autoslope to survey, design, and grade either surface or subsurface drainage. Autoslope will optimize the depth of your drain while ensuring that it stays within your minimum slope requirement.

LAND LEVELING

The Trimble FieldLevel II system provides the complete solution for surveying, designing and leveling field surfaces to ensure optimal water management. It provides vast improvements in yields, water usage, and farm productivity.

TRIMBLE LASER AND GRADE CONTROL SYSTEMS

SPRECTRA PRECISION® LASER AG401, GL500 AND GL700 SERIES BY TRIMBLE

The AG401 is Trimble's entry level laser transmitter. This self-leveling laser is ideal for growers with zero-grade fields who do not need to adjust the grade, and can be used for automatic machine control at long ranges up to 1500 feet. Both the GL500 and GL700 are useful for automatic machine control and in single or dual slope situations. The GL500 can be used for both short and long-range applications, and the GL700 is better suited for long-range operation (within a 1500 foot radius). Both lasers include remote grade changing technology so the user can control the laser via remote control. The GL500 and GL700 are also both equipped with active temperature compensation for use during rainy or cold conditions. And, the Spectra line of laser products by Trimble offers unmatched beam stability so that you don't lose laser beam quality on uneven surfaces.

AG401 LASER TRANSMITTER

GL500 SERIES

GL700 SERIES

TRIMBLE GRADE CONTROL SYSTEMS

The automated machine control systems offered by Trimble are a cost-effective way to improve the productivity and accuracy of agricultural drainage and leveling equipment. These grade control system options can improve the functionality of a Spectra Precision laser from Trimble by up to 50%. Trimble offers entry and high level control boxes and laser receivers to fit all budgets and applications.

GCS100		GCS200		GCS300/400	
CB40 CONTROL BOX	LR40 LASER RECEIVER	CB60 CONTROL BOX	LR410 LASER RECEIVER	CB415 UNIVERSAL CONTROL BOX	LR410 LASER RECEIVER AND SR300 SURVEY RECEIVER
					

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