TRIMBLE GPS, GUIDANCE AND PRECISION AGRICULTURE SOLUTIONS FOR ALL SEASONS, ALL CROPS, ALL TERRAINS, ALL VEHICLES

2011 Trimble Agriculture Product Portfolio

Trimble

Trimble Agriculture. The line everyone follows.

TRIMBLE PRECISION AGRICULTURE
THE LINE EVERYONE FOLLOWS

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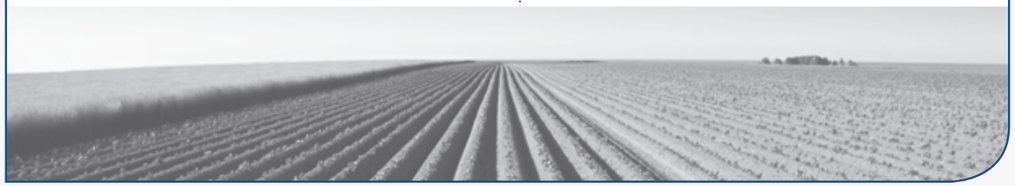


INTRODUCTION TO GPS

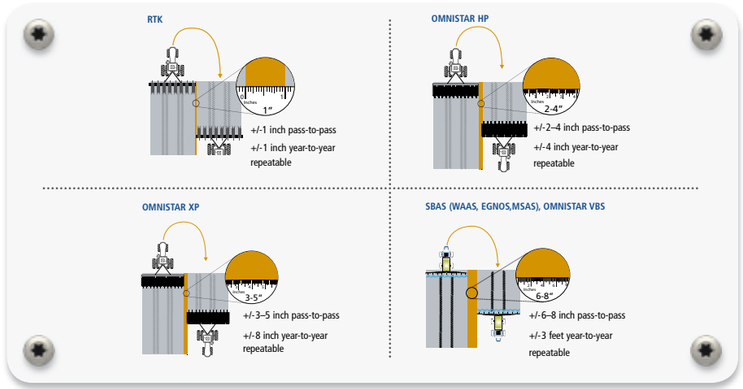
You have no doubt heard how the use of GPS technology is revolutionizing the agriculture industry by helping growers do things such as navigate through a field, spray their crops without foam markers, and precisely map the elevation of their farms. But what exactly is GPS and why do you need it on your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

(SPACE BASED AUGMENTATION SYSTEM)

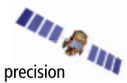
SBAS is also known as DGPS (Differential GPS). SBAS or DGPS corrections can be obtained through a number of free satellite systems operated by various governments throughout the world. These free systems include WAAS (US), EGNOS (Europe) and MSAS (Japan). SBAS uses L-band satellite corrections to provide submeter accuracy from +/- 6–8 inches. There are also a variety of subscription correction services that provide 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. Using RTK corrections in these applications 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 1990s 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 500 million acres of farmland in the United States, and over one billion acres worldwide.

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 apart, and a central server that uses Trimble proprietary software to create a correction map for the region covered by the network. GPS/GNSS receivers communicate using a cellular modem with this VRS server to 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."

GUIDANCE

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.

OPTIONS	EZ-GUIDE 250 SYSTEM	CFX-750 DISPLAY	FmX DISPLAY
Size of color screen	4.3"	8.0"	12.1"
Touchscreen		√	√
Video camera inputs		2	4
Built-in GPS receiver	1	1	2
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 compatibility			√
Office software compatibility	√	√	√
Yield Monitoring			√

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.

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

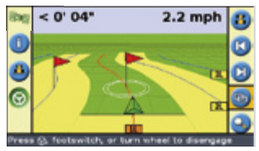
GUIDANCE PATTERNS
The FreeForm™ guidance pattern offers the ultimate in guidance flexibility, allowing you to work in different patterns and shapes that best fit the layout and contours of your field

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

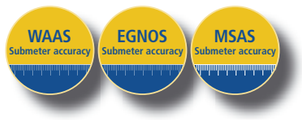
LB25 external lightbar can be mounted anywhere in your vehicle to measure off-line distance, regardless of where your display is located

COLOR SCREEN
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

MAPPING
Boundary mapping, point, line and area feature mapping



Available accuracies for the EZ-Guide 250 system:



Available satellite constellations for the EZ-Guide 250 system:

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:

Available satellite constellations for the CFX-750 display:

NEW! EZ-Remote joystick

Connect the EZ-Remote joystick to your Trimble® display to provide an even more convenient way to control functions from the cab.

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 seed sensing, the FmX integrated display has you covered. The versatility of the FmX integrated display makes it the affordable choice to adopt as technology changes.

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

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

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

FLOW AND APPLICATION CONTROL
Control seed population or material rates, and monitor real time seeding with the Field-IQ system

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

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

RATE CONTROL
Control the rate of up to 6 material types when planting, seeding, spraying, spreading and strip tilling

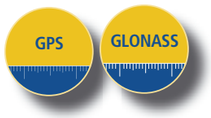
PRESCRIPTIONS
Easily perform prescription based rate control

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

WATER MANAGEMENT
Manage field leveling and field drainage with the FieldLevel II system

Available accuracies for the FmX display:

Available satellite constellations for the FmX display:



AgCam camera system

Expand your productivity by adding the AgCam system to your FmX or CFX-750™ display in order to monitor parts of your implement that are not visible from the cab.

STEERING

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 system	√	√
FmX display 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.

DISPLAY OPTIONS

EZ-GUIDE 250 SYSTEM

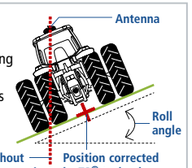
EZ-GUIDE 500 SYSTEM

CFX-750 DISPLAY

FmX INTEGRATED DISPLAY

T2 TERRAIN COMPENSATION TECHNOLOGY

Improves accuracy when driving straight lines across sloping terrain



RTK UPGRADE

Upgrade the EZ-Steer system to RTK for repeatable one-inch GPS positioning accuracy. This option requires the use of the EZ-Guide 500 lightbar, CFX-750 display or 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.

DISPLAY OPTIONS

EZ-GUIDE 500 SYSTEM

CFX-750 DISPLAY

FmX INTEGRATED DISPLAY

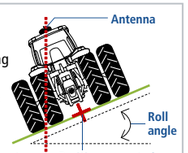
BENEFITS

- √ Provides one-inch repeatability with each pass
- √ Supports accuracy levels from WAAS to RTK
- √ Control speeds up to 30 mph
- √ Ultra-low speed control down to .04 mph
- √ High speed engagement for application vehicles
- √ Plug-and-play with your existing autosteer system

FULL STEERING INTEGRATION

T3 TERRAIN COMPENSATION TECHNOLOGY

Improves accuracy when driving straight lines across sloping terrain



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

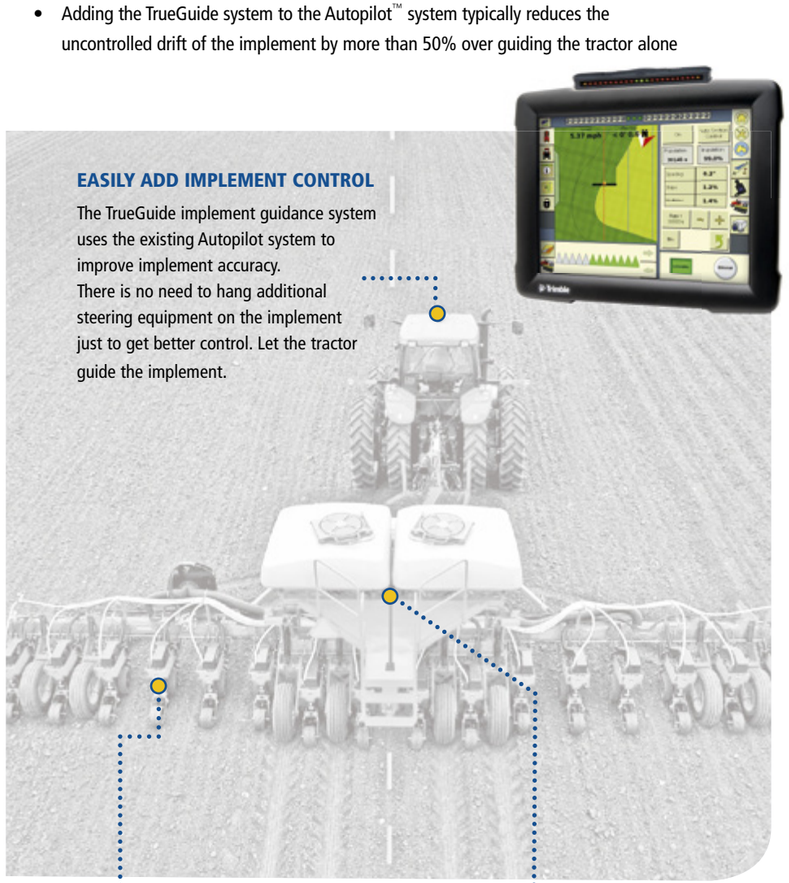
Minimize the effect of downdraft on severe hillsides. Let your Autopilot system pull the implement up the hill and hold the line.

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
- Supports a variety of vehicle types, including articulated 4WD, front wheel assist and tracked
- 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

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. Supports accuracy levels from WAAS to RTK.

TRUETRACKER IMPLEMENT STEERING SYSTEM

Take full control of your implement.

- The TrueTracker™ system steers the implement on a repeatable path even on extreme slopes and variable soils
- 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
- Maintain accuracy on rolling terrain using T3™ terrain compensation technology mounted on the implement

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.

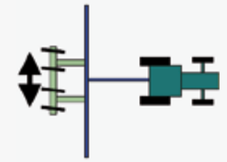
TRIMBLE CORRECTION SERVICES

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

ONE DISPLAY—COMPLETE CONTROL

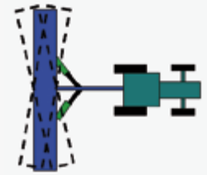
The FmX integrated display in the tractor communicates guidance information to the TrueTracker system, instantly adjusting implements such as tillage tools, strip till, planters, cultivators and harvesters to follow directly in the path of the tractor.

STEERING COULTERS



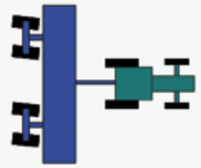
Use steel coulters to steer.

TONGUE STEER



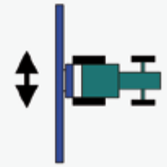
Steer the tongue to change the implement path.

LOAD BEARING WHEEL



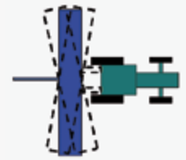
Steer the implement wheels.

SIDESHIFT



Shift the 3-point laterally.

ARTICULATING THREE POINT



Rotate the 3-point to change the direction.

FLOW & APPLICATION CONTROL

PLANTING/DRILLING

AIR SEEDING

SPRAYING

SPREADING

STRIP TILL/ANHYDROUS

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, controls the rate of material applications, and monitors seed delivery or fertilizer blockage. 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 Tru Count LiquiBlock™ valves that easily connect to clutch air lines

Control Seed Populations or Material Rates in Your Field with Field-IQ Variable Rate Control

- Adjust your seed population, fertilizer rates, or spray application manually or using a prescription created using Farm Works® office software
- **NEW!** Simultaneously control the application rate of up to six different materials including seed, granular seed, granular fertilizer, liquid, and anhydrous ammonia in different combinations
- 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
- Use GreenSeeker® sensors and apply the correct amount of fertilizer the plants need
- Apply the correct amount of lime to manage your soil's PH in every location

Monitor Real Time Seeding Information or Fertilizer Delivery Lines

- **NEW!** See results of singulation analysis including information on population, singulation, skips/multiples, spacing, and quality of spacing
- **NEW!** Make adjustments to your planting system with real time data feedback
- **NEW!** Use blockage sensors to make sure distribution of fertilizer or granular seed is even and that no lines are blocked

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 for up 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.

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

VARIABLE RATE APPLICATION CONTROL

- √ Simultaneously control the application rate of up to six different materials including seed, granular seed, granular fertilizer, liquid, and anhydrous ammonia in different combinations
- √ Use PWM or Servo variable rate drives, in many cases reusing components already in your equipment, or use the Rawson™ PAR 2 or 40 for more accurate control
- √ 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 CFX-750 display or FmX integrated display

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.

ADVANCED SEED MONITORING

Optimize the operation of a planter and create a high yielding environment with accurate seed placement. Prevent costly seeding errors by tracking seed meter performance.

- √ Monitors seed giving the operator confidence in planting operations
- √ Provides singulation details from the seeding system that allows for on-the-go planter tuning and increases the quality of seed placement
- √ Prevent costly planter problems by catching them early before they cause yield reduction

FLOW & APPLICATION CONTROL

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 the 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
- Analyze your seeding performance with status items such as population, singulation, skips/multiples, and spacing
- Track your seed varieties for post harvest performance analysis

AIR SEEDING

AIR SEEDING

- Control up to 6 materials simultaneously with manual rate or prescription
- Minimize overlap detection with control drive or add sections for liquid/NH3
- Control existing PWM, Linear Acuators, Electric Motors, or Servo systems
- Monitor up to 144 rows of blockage sensors
- Auxillary sensors can read Fan Speed, Bin Level, Air Pressure, and Implement switches

SPRAYING

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 or Tru Count LiquiBlock valves 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

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.

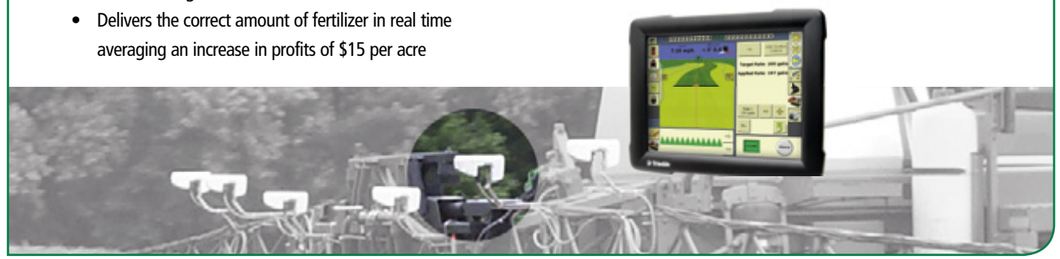
- Uses advanced optics and computer circuitry to sense if a weed is present
- When a weed enters the sensor's field of view, it signals a spray nozzle to deliver a precise amount of herbicide
- The WeedSeeker system will spray only weeds, not bare ground, and is effective wherever weeds occur intermittently

GREENSEEKER CROP SENSOR APPLICATION SYSTEM

GreenSeeker® Variable Rate Application and Mapping Systems

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

- The GreenSeeker RT200 variable rate application and crop vigor mapping 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 of $15 per acre
- It can be used to verify 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



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
- Monitor gate height and spinner speed to better manage application

RAWSON VARIABLE RATE DRIVES

Vary the rate of application to match the needs of specific areas of your field.

- Use a Rawson™ PAR 40 variable rate drive to handle high performance spreader boxes
- Replaces ground drive mechanism, eliminating chains, clutches and wheel slippage
- Very fast response, going from stand-still to applying material at the correct rate within a fraction of a second

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- Delivers the correct amount of fertilizer in real time, averaging an increase in profits of $15 per acre
- It can be used to verify 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

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 6 material applications more conveniently by connecting to existing valves and flow meters already in the tool bar
- Monitor delivery line blockage for granular strip till
- Vary rates manually, using prescriptions, or GreenSeeker system sensors to increase yields while keeping records of what was applied

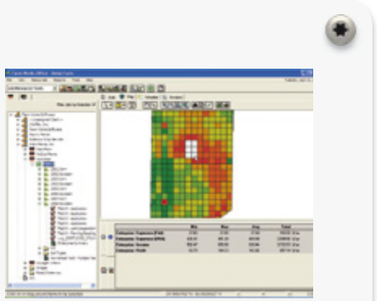
FIELD-IQ CROP INPUT CONTROL SYSTEM COMPATIBILITY

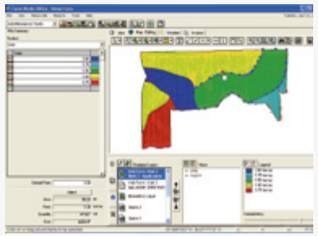
OPTIONS	CFX-750™ DISPLAY	FmX DISPLAY
NUMBER OF CONTROLLED SECTIONS	up to 48	up to 48
SECTION CONTROL TYPES		
Tru Count Clutches	√	√
Tru Count LiquiBlock Valves	√	√
Boom Valve	√	√
NUMBER OF CONTROL DRIVES	1	up to 6
CONTROL DRIVE TYPES		
Rawson	√	√
Servo	√	√
PWM	√	√
Linear Actuator		√
Electric Over Hydraulic		√
NUMBER OF MATERIALS	1	up to 6
MATERIAL TYPES		
Seed	√	√
Granular Fertilizer	√	√
Liquid	√	√
Anhydrous	√	√
SEED MONITORING		
Singulation Analysis		√
VARIABLE RATE APPLICATION		
GreenSeeker system		√
Shapefile Prescription Map	√	√

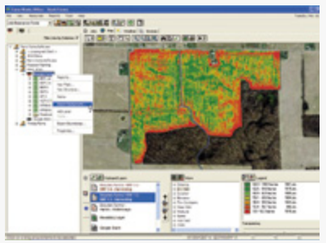
GATHER MORE INFORMATION FOR DECISION MAKING

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.

FLOW & APPLICATION CONTROL







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 to transfer data from field to office wirelessly. Farm Works software can help you evaluate field performance and identify problem areas.

When the yield monitoring plugin has been installed, the FmX integrated display uses the existing sensors on the combine to gather yield and moisture data. When working in the field you can view full color yield and moisture maps being created in real time as the crop is being harvested. The data is stored in the display and can be easily imported into agriculture mapping software.

Once the harvest season is over, your yield data can be handled with Farm Works Software. Adjust maps by entering information from the actual scale tickets. You can easily compare seed variety yields and yields from the past 3 years. With Pro software you can normalize multiple years of data, generate profits maps and create prescription maps from yield data.

YIELD MONITORING

SIMPLE INSTALLATION

- Compatible with John Deere 9x60 and 9x70 series combines
- One cable connection to the John Deere yield monitoring system
- 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 amounts 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

- Utilize overlap detection to perform accurate area calculations using auto cut width when the header is not full, providing an advantage for harvesting odd-shaped 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

CONNECTED FARM AND FARM WORKS INFORMATION MANAGEMENT

With Connected Farm™ from Trimble, you can now wirelessly share valuable time-saving data between your farm office, vehicles, and workers out in the field—all using a single modem and cellular subscription. No more waiting for someone to grab a USB stick and physically take information from one place to another.

A development between Farm Works and Trimble, Connected Farm builds on decades of experience that both companies have delivering cutting-edge precision agriculture solutions to farmers around the world. By using wireless technology to share data in real time, Connected Farm is the revolutionary next step for farm efficiency.

WITH CONNECTED FARM YOU CAN:

- √ **NEW!** Use Dispatch to track vehicle movement and service hours in order to maximize fuel efficiency, and organize fleet management and maintenance schedules.
- √ **NEW!** Use Dispatch to place geo-fences around farms and fields to identify when vehicles are entering or leaving a site in order to eliminate incorrect chemical application on crops and minimize vehicle theft.
- √ **NEW!** Connect to VRS Now™ Ag using the DCM-300 modem and receive real-time, sub-inch corrections for greater precision.
- √ Design or edit an A/B line, or boundary files for section switching, and immediately share the information using Sync with other vehicles in the field for improved guidance management.
- √ Coordinate vehicle management by sending instructions to the cab of your choice using Sync.
- √ Streamline soil sampling data collection by wirelessly transferring target maps to the field using Sync, or completed jobs to the office using Mobile software and a Trimble® handheld, with no limitation on the number of employees sampling at the same time.
- √ Create prescription maps in the office and immediately send them to the field.
- √ Collect yield data during harvest and quickly send the information to the office for analysis and reporting.
- √ Automatically save original data files in a secure location outside the farm and eliminate the fear of losing valuable data.

CONNECTED FARM COMPONENTS:

DISPATCH

- Vehicle tracking
- Geo-fencing
- E-mail alerts

SYNC

- Data exchange
- Data security
- Wi-Fi compatible

VRS NOW AG

- RTK accuracy
- Reliable coverage
- Supported network

NEW! DCM-300 MODEM

	DCM-300G	DCM-300C
GSM Coverage	√	√
CDMA Coverage		√
Dispatch	√	√
Sync	√	√
VRS Now Ag	√	√

TRIMBLE VRS NOW AG

USES THE SAME DCM-300 MODEM!

Want RTK sub-inch level corrections but don't have an RTK base station in your area? Trimble gives you options. VRS Now Ag delivers RTK sub-inch corrections around the world.

Using your local cellular provider, your GPS/GNSS receivers access precise RTK sub-inch level corrections throughout your farm to:

- Gain seamless coverage even in hilly or blocked terrain
- Get unequalled VRS coverage and reliability from Trimble
- Access 1-inch accuracy in less than 1 minute after connecting

CONNECTED FARM & FARM WORKS

FARM WORKS INFORMATION MANAGEMENT

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 a single management solution for your farm.

OFFICE SOLUTIONS

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

FARM WORKS® SOFTWARE

A DIVISION OF TRIMBLE

When you are not in the office analyzing data, utilize GPS and handheld computers to perform a variety of field operations. Enter field records, map field boundaries, record soil sample locations by grid or zone, and capture images of weeds or pests for scouting purposes with one solution.

FIELD SOLUTIONS

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

MOBILE SOFTWARE FROM FARM WORKS IS COMPATIBLE WITH THE FOLLOWING TRIMBLE HANDHELDS:

TRIMBLE JUNO HANDHELD:
The Trimble Juno handheld kit is an economical solution that avoids the need to carry a camera, a GPS receiver, and a PDA.

TRIMBLE NOMAD HANDHELD COMPUTER:
The Trimble Nomad® handheld computer kit provides a rugged solution that avoids the need to carry a camera, a GPS receiver, a cellular modem, and a PDA.

TRIMBLE YUMA RUGGED TABLET COMPUTER:
The Trimble Yuma® computer provides a rugged solution that includes an integrated GPS receiver, two digital cameras, 9-pin serial port, a large 7-inch touchscreen, and Windows® 7 operating system.

TRIMBLE GeoXT HANDHELD:
The Trimble GeoXT™ handheld provides a rugged solution that avoids the need to carry a high performance GPS receiver and a PDA.

WATER MANAGEMENT

The term water management refers to leveling activities designed to optimize water use when it is 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.

Your investment in Trimble water management technology can also be leveraged over other agriculture solutions, such as precision guidance, seeding, and flow and application control. This cross-functional utility means you get more from your investment. Trimble has 25 years of experience in the water management business and our systems are proven to improve yields by 25%, and reduce water usage by 30%. Because Trimble knows every dollar—and every drop—counts.

GPS SOLUTIONS

GPS solutions for water management can be used to effectively increase crop yields and improve water usage. The operating principles of GPS have 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 using GPS guidance.

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.

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.

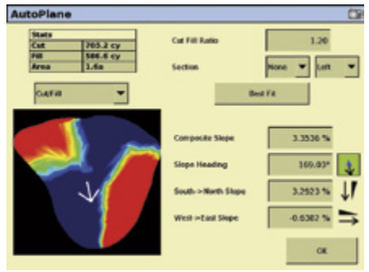
RUGGED FIELD COMPUTER

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

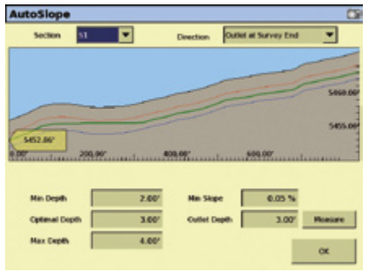
Topographic data can be collected via the FmX integrated display while using the Autopilot™ system, or by using the FmX display as a stand-alone. Using the collected topographic data, you can design the shape of the field, or slope and depth of your drainage structures, right on the FmX integrated display. 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 Farm Works® Surface software. Surface is an analysis and design tool that assists with the optimal placement of tile and surface drains.

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.

AUTOSLOPE



Use Autoslope from the seat of your cab to survey, design, and grade either surface or subsurface drainage.

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.

TILE AND SURFACE DRAINAGE

Autoslope will optimize the depth of your drain while ensuring that it stays within your minimum slope requirement. Use Point-and-Slope mode to maintain your desired slope, regardless of direction. RTK positions take the guesswork out of laying tile.

LAND LEVELING

The FieldLevel II system provides the complete solutions for surveying, designing and leveling field surfaces to ensure optimal water management.

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.

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