

CATALOG 501

# PRECISION FARMING SOLUTIONS

THE PERFECT BLEND OF ADVANCED TECHNOLOGY AND SIMPLICITY



**TeeJet**<sup>®</sup>  
TECHNOLOGIES

A Subsidiary of  **Spraying Systems Co.**<sup>®</sup>

*The Easy Decision for Precision.*



## TABLE OF CONTENTS

---

Introduction .....	Page 4
Matrix® Pro GPS Guidance System .....	Page 6
FieldPilot® Auto-Steer System .....	Page 10
BoomPilot® Automatic Boom Section Control .....	Page 12
RowPilot Section Control for Planters.....	Page 14
CenterLine® 220 GPS Guidance System.....	Page 15
ISOBUS Rate Control Solutions .....	Page 16
Upgrades, Accessories & Components .....	Page 18
Understanding GPS Accuracy .....	Page 22

## ABOUT TEEJET TECHNOLOGIES

TeeJet Technologies introduced the very first spray nozzles designed for agricultural use in the 1940s and has been the leader in spray products and accessories ever since. We were also among the first to introduce electronic controls to the agricultural market in the mid-1980s and have an established leadership position in the precision farming market as well. Growers around the world depend on TeeJet Technologies for a wide range of products ranging from spray tips, boom components and valves to guidance, auto-steer and rate control systems.





# BOOST PRODUCTIVITY AND PROFITS

Are you looking to be more productive, more profitable and more responsive to the environment? TeeJet Technologies has a suite of advanced precision farming tools to help you increase your efficiency, improve your bottom line and reduce your environmental footprint.

TeeJet Technologies, a leader in precision application components, control system technology and application data management, provides products that can be put to work immediately and deliver payback with the first pass across your field. Our solutions are designed for quick installation, intuitive operation and easy and economical expansion as your needs evolve. We strive to provide unique capabilities, more features and more functionality at a lower cost than other suppliers.

We push the boundaries of high-performance, maximum value equipment for precision farming. TeeJet Technologies first introduced electronic controls to the market more than 30 years ago and is now a global leader in ISOBUS technology. Our company holds more than 200 patents and dozens of industry firsts including guidance over video (patent-pending), integrated rate control and automated steering systems.

Our complete array of precision farming solutions will help you control input costs and maximize yields. Our product line fits a wide range of budgets and farming operations and includes systems for guidance, swath management, auto-steer, rate control, machine monitoring and more.

Plus, we've aligned ourselves with the best dealers in the world. Our knowledgeable experts work closely with them to make sure you get the most out of your investment. When you buy from TeeJet Technologies, you can count on quality and outstanding technical support.

**Look to TeeJet Technologies for innovation, value and simplicity.**



# MATRIX® PRO WITH REALVIEW™ GUIDANCE OVER VIDEO



## Guidance Like You've Never Seen Before

When it comes to guidance, Matrix Pro is in a category of its own. Exclusive features and unmatched flexibility make it unlike any other guidance product.

### RealView Guidance Over Video – A TeeJet® Exclusive!

Now you can have all the guidance information you need, watch what's ahead and monitor various implement operations on a single console simultaneously. The result? Improved accuracy, easy implement monitoring and reduced stress.

### NextRow – Another TeeJet Exclusive

You'll never drive into the wrong row again when making headland turns with NextRow. Enter swath width and Matrix Pro will guide you to the correct row every time.

### Complete User Control

You choose what you want to see – guidance over video, video only or guidance only. Choose the number of cameras based on your requirements – up to eight cameras can be used.

### Upgrade at Your Own Pace

Matrix Pro is auto-steer and automatic boom section control (ABSC) ready. Enabling these features in the future is fast, easy and economical.

## Use the Matrix Pro System for:

- Spraying
- Spreading
- Tillage
- Solid seeding
- Harvesting



MORE INFORMATION ON A SINGLE SCREEN THAN EVER BEFORE



REALVIEW GUIDANCE OVER VIDEO



VIDEO CAN BE TURNED OFF AT ANY TIME



GUIDANCE INFORMATION CAN BE TURNED OFF AT ANY TIME

## Matrix® Pro System Overview: Features that Boost Productivity and Efficiency

- Exclusive RealView™ Guidance Over Video displays guidelines on a real time display of the field actually being worked. Matrix Pro also displays video from up to eight cameras for monitoring of many machine operations
- Two-way data transfer allows uploading and downloading of job data, boundaries, no-spray zones, AB lines and more to save time and increase efficiency
- Save and recall multiple guidance lines for future reference and field operations
- Easy-to-use PC utility simplifies creating/maintaining client/farm/field/job data
- Unique NextRow feature helps determine the correct row to drive into when making headland turns in established row crops
- “Painted screen” provides graphical display of field coverage, including skips and overlaps
- Set reduced swath widths for headland spraying and then easily revert to full-swath spraying for the main area of the field
- Field Finder suggests field boundaries and/or jobs based on current location
- A+ degree heading makes setting exact guideline directions quick and easy. This is especially useful when operating multiple machines in the same field at the same time

“Being able to watch four different areas of the equipment with the cameras is a definite plus for us. In addition, we really enjoy the color screen, additional guidance features and coverage map data we can export.  
**Matrix has helped us increase efficiency, lower costs and reduce stress.”**

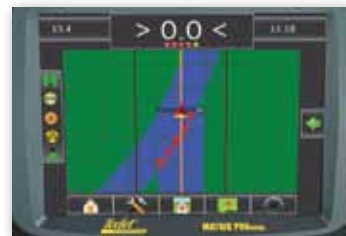
– BRIAN FRENCH, CUSTOM APPLICATOR,  
FRENCH AGRI-SERVICE INC.



REALVIEW CAMERAS CAN BE EASILY MOUNTED ANYWHERE



NEXTRROW GUIDES YOU THROUGH HEADLAND TURNS



ELIMINATE OVERLAPS BY ADDING AUTOMATIC BOOM SECTION CONTROL



TWO WAY DATA TRANSFER

# MATRIX® PRO WITH REALVIEW™ GUIDANCE OVER VIDEO



## Matrix Pro System Overview: Easy and Economical Expansion Options

- Add FieldPilot® auto-steer system, BoomPilot® ABSC and/or RowPilot planter section control without breaking the bank. Matrix Pro has the functionality built in so upgrading requires simple hardware additions
- Adding more capabilities doesn't complicate operation. Matrix Pro only displays menu and setting options related to the functions you're using
- Matrix Pro multi-tasks with ease so you can operate all your systems simultaneously

## UPGRADES, ACCESSORIES & COMPONENTS

FieldPilot® Auto-steer: **See page 10**

BoomPilot® Automatic Boom Section Control: **See page 12**

RowPilot Automatic Planter Section Control: **See page 14**

RealView camera: **See page 18**

Tilt Gyro for automatic adjustment in uneven terrain: **See page 19**

Video Selection Module; required for use with more than one camera: **See page 19**

Higher-performance antennas for better gain and sensitivity; GPSL1 and GLONASS-compatible: **See page 20**

OmniSTAR®, CORS or base station RTK solutions: **See page 21**



## Matrix® Pro System Overview:

### High-Quality Components Ensure Dependable Operation

- Bright color touch screens readable in full sunlight – choose Matrix Pro 570G with a 5.7 in/145 mm display or Matrix Pro 840G with a 8.4 in/213 mm display. Matrix Pro 840G is recommended when using four or more cameras to simplify viewing
- Intuitive, easy-to-use display with simple menus and large field image on the main screen
- RealView™ cameras provide crisp video over a wide range of lighting conditions – full sun to total darkness – and distances up to 60 ft/20 m
- Internal WAAS/EGNOS receiver provides reliable GPS signal
- ClearPath™ technology, standard on the Matrix Pro, enhances GPS performance in areas where reception is poor or in regions where differential correction is not readily available.  
**See page 21 for more information**
- Compatible with CORS or base station RTK solutions in addition to WAAS and OmniSTAR® XP/HP (requires use of additional external receiver)
- Optional receivers and antennas available for improved accuracy



RXA-30 ANTENNA



RX410P RECEIVER



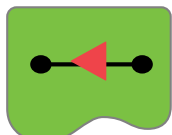
RX510 DUAL FREQUENCY RECEIVER

## Perspective-View Guidance



The upper right and upper left displays are independently user selectable to display one of the following: area, ground speed, swath number, time of day or heading

## Guidance Modes



Straight AB



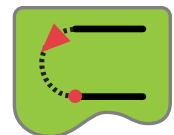
Curved AB



Circle Pivot



Last Pass



Next Row

# FIELDPILOT® HYDRAULIC AUTO-STEER SYSTEM

## Does More, Costs Less

Put FieldPilot in the driver's seat and you'll cover more ground more accurately than you could manually. FieldPilot auto-steer system will save you time, money and stress. With more features and a lower cost, FieldPilot offers more value and a faster payback than other auto-steer systems.

## Exceptional Steering Performance and a Smooth Ride

Rough terrain? Hilly, sloped fields? FieldPilot connects to your equipment's hydraulic power steering system for reliable and convenient control. Tilt compensation and gyro-stabilization are standard features and automatically correct side slope positional errors to ensure accuracy. The proportional PWM steering valve provides aggressive line acquisition and stable online performance yielding accuracy and a smooth, comfortable ride. You can drive faster, extend your operating hours and still maintain precision.

## Optimum Performance, Unique Features

FieldPilot uses the Matrix® Pro system for GPS guidance so you'll be able to take advantage of our exclusive RealView™ Guidance Over Video feature. It is the only system on the market that displays guidance information and live video simultaneously. You'll find it easy to monitor multiple implements and field operations and optimize performance.

## Unbeatable Price, Broad Platform

FieldPilot offers incredible value with more functionality than systems that cost 10% to 30% more. This means you'll recoup your initial investment faster. Plus, the cost to add automatic boom section control (ABSC) is significantly less than competitive systems. FieldPilot can be installed on a wide variety of makes, models and years of tractors, sprayers and combines.



## Use FieldPilot for:

- Spraying
- Spreading
- Tillage
- Solid seeding
- Row crops
- Harvesting

## FieldPilot Overview

- Low-cost, high-performance auto-steer system greatly reduces operator fatigue and significantly improves productivity
- The Matrix® Pro interface is easy to learn. Touch screen with intuitive icons simplifies set-up and operation
- Matrix Pro console is available in two sizes, 5.7 in/145 mm or 8.4 in/213 mm. Up to eight cameras can be used with the system
- Direct-connect auto-steer capability for select vehicles greatly simplifies installation and eliminates the need to install a hydraulic valve. For other vehicles, FieldPilot can be owner-installed in approximately four to eight hours. Installation kits are available for more than 300 different vehicles including many older model tractors, combines and sprayers. **Please visit [www.teejet.com](http://www.teejet.com) or contact your local representative for more information**
- Hydraulic steering interface is responsive and provides excellent line acquisition and stable on-line performance
- Clutter-free cab. No brackets or motors are required in the cab eliminating any chance of interference with normal steering. Exterior valve location minimizes noise and heat
- FieldPilot is automatic boom section control-ready. Control up to 15 boom sections automatically when you add BoomPilot® or RowPilot



PWM STEERING VALVE HELPS ENSURE A SMOOTH RIDE AND ACCURATE PERFORMANCE



DIRECT-CONNECT AUTO-STEER CAPABILITY FOR SELECT VEHICLES GREATLY SIMPLIFIES INSTALLATION



OPTIONAL FOOT SWITCH FREES UP HANDS MAKING TURNS EVEN EASIER TO HANDLE

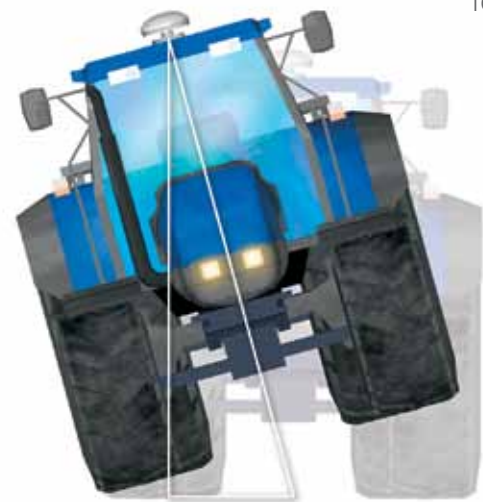
## UPGRADES, ACCESSORIES & COMPONENTS

RealView™ camera: **See page 18**

Video Selection Module; required for use with more than one camera: **See page 19**

Higher-performance GPS antennas for better gain and sensitivity; GPSL1 and GLONASS-compatible: **See page 20**

OmniSTAR®, CORS or base station RTK solutions: **See page 21**



TILT COMPENSATION AND GYRO-STABILIZATION CORRECT SLIDE SLOPE ERRORS AND ENSURE ACCURACY

"Everyone knows the advantages you can expect to see in fuel savings and input costs when you use auto-steer. I think the biggest advantage is the efficiencies you gain in reducing operator stress. **With FieldPilot®, I'm less fatigued and can run a couple of hours more than when I would have to concentrate on my driving.**"

– BILL BOSTON, ATHENSVILLE, IL



# BOOMPILOT® AUTOMATIC BOOM SECTION CONTROL



## Reduces Input Costs by as Much as 15%

BoomPilot uses GPS to record the applied areas in your field and makes automatic adjustments based on that data. When a section of your sprayer boom overlaps an applied area, that section is switched off. When it enters an unapplied area, the section is turned on. Adding BoomPilot to your Matrix® Pro guidance system should be an easy decision. The upgrade cost is low and the savings you'll experience will quickly offset your investment.

TeeJet® patented Flow Back valves provide an ideal complement to BoomPilot by ensuring rapid and precise boom shutoff. Using Flow Back valves and BoomPilot together delivers unbeatable value by eliminating waste.

## Compatible and Easy to Install

BoomPilot is compatible with a wide variety of rate controllers and maintains accurate application rates and area measurement. The Y-cable and module design is easy to install and allows continued use of existing boom section switches. In many cases, you can install BoomPilot in about 10 minutes.

## Optimum Performance, Unique Features

Because BoomPilot is part of the Matrix Pro guidance system, you'll also be able to take advantage of our exclusive RealView™ Guidance Over Video feature. It is the only system on the market that displays guidance information and live video simultaneously. You'll find it easy to monitor and verify multiple implements and field operations in order to optimize performance.

## Use BoomPilot for:

- Spraying

## BoomPilot Overview

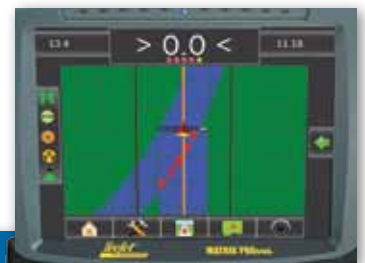
- Elimination of overlaps and skips results in lower input and fuel costs
- Automatic control reduces operator stress
- Compatible with a wide variety of rate controls
- Controls up to 15 boom sections
- No additional switch box required – BoomPilot uses your existing section control switches
- Quick installation, intuitive operation
- TeeJet® Flow Back valves provide an ideal complement to BoomPilot. Flow Back valves include an extra passage that allows boom pressure to be dissipated immediately, resulting in instantaneous shut-off of the spray nozzles



WITH BOOMPILOT



WITHOUT BOOMPILOT



BOOMPILOT HELPS ELIMINATE SKIPS AND OVERLAPS



FLOW BACK VALVES ENSURE RAPID AND PRECISE SPRAY NOZZLE SHUT-OFF

## UPGRADES, ACCESSORIES & COMPONENTS

RealView™ camera: **See page 18**

Video Selection Modules; required for use with more than one camera: **See page 19**

Higher-performance GPS antenna for better gain and sensitivity; GPSL1 and GLONASS-compatible: **See page 20**

OmniSTAR®, CORS or base station RTK solutions: **See page 21**

"We recently added TeeJet Technologies Matrix® guidance system, FieldPilot® auto-steer system and BoomPilot® automatic boom section control to our JCB tractor and GM-R Eazi-Trac trailed sprayer. **Now that we rely on BoomPilot, we've significantly reduced the amount of pesticide we're using.**"

– JOHN ORFORD, NORFOLK, UK



# ROWPILOT\* SECTION CONTROL FOR PLANTERS



## Eliminates Seed Waste

With the high cost of seed, automatic planter section control offers a significant payback. RowPilot automatically shuts off planter row sections where overlap occurs and automatically resumes planting when the overlapped area has been exited. Reducing skips and overlaps saves seed, increases yields, improves harvestability, and increases your profitability.

## Saves Money and Reduces Operator Fatigue

Using RowPilot can yield significant savings by minimizing seed waste especially on end rows and point rows. Savings of 5% or more are common. That means a 500-acre/200-ha corn producer could pay for the system in a single season based on typical seed prices. As plant populations and seed costs continue to rise each year, the payback on this investment is even quicker. Automated operation also reduces operator fatigue and can increase productivity by allowing travel at normal planting speed into end rows and optimized efficiency of nighttime planting.

## Optimum Performance, Unique Features

RowPilot uses the Matrix® Pro system for GPS guidance so you'll be able to take advantage of our exclusive RealView™ Guidance Over Video feature. It is the only system on the market that displays guidance information and live video simultaneously. You'll find it easy to monitor and verify multiple implements and field operations in order to optimize performance.

\*RowPilot availability varies by country. Please contact your local representative.

## Use RowPilot for:

- Row crops

## RowPilot Overview

- RowPilot supports up to 12 clutch sets and can operate planters with up to 24 rows. The included switchbox allows for the manual operation of planter row clutches
- Compatible with a wide variety of planters and row clutches. **Please visit [www.teejet.com](http://www.teejet.com) or contact your local representative for more information**
- Increase yields by eliminating competitive plants that often lodge, are difficult to harvest and produce localized yield reductions
- Reduce cost of other inputs, like insecticides, that operate on the same driveline
- Improve harvest efficiency with easy to follow rows

## UPGRADES, ACCESSORIES & COMPONENTS

RealView camera: **See page 18**

Video Selection Module; required for use with more than one camera: **See page 19**

Higher-performance GPS antennas for better gain and sensitivity; GPSL1 and GLONASS-compatible: **See page 20**

OmniSTAR®, CORS or base station RTK solutions: **See page 21**



# CENTERLINE® 220 GPS GUIDANCE SYSTEM

## Simple, Affordable, Reliable

The compact, portable CenterLine 220 is designed to let you profit from GPS lightbar guidance with any field operation. For easy-to-use, no-frills, low-cost manual guidance, there is no better choice. It's a great replacement for foam markers. CenterLine 220 provides more features, costs less and eliminates recurring foam costs and maintenance headaches.

### So Simple, You'll be Operational in Minutes

Set-up is so fast and easy that you'll be up and running in minutes with CenterLine 220. It's extremely simple to use with minimal programming requirements – no manual needed.

### Affordable Value

CenterLine 220 is an excellent choice for growers taking their first steps into precision farming or for those needing an economical secondary unit. A proven product with many satisfied users, CenterLine 220 is widely used by growers around the world.

### Use the CenterLine 220 for:

- Spraying
- Spreading
- Tillage
- Solid seeding
- Harvesting

## CenterLine 220 Overview

- Simple GPS guidance in a compact, portable package
- Quick and easy set-up
- Produces radar-like speed output compatible with many control and monitor systems
- LED lightbar plus a graphical screen provide multiple methods of displaying guidance information
- Straight-line and curved AB guidance modes along with return-to-point function
- Integrated look-ahead functionality anticipates vehicle's future position
- Durable, backlit keypad is easy to see in low-light conditions

"Our first experience with precision agriculture was with a CenterLine 220. We later added FieldPilot® auto-steer system to it. Our JD 9100 tractor is used mostly for anhydrous ammonia application and tillage operations, so **WAAS accuracy was all that I was looking for with these applications.**"

— DEAN KORSMEYER, ALHAMBRA, IL

# TEEJET® ISOBUS RATE CONTROL SOLUTIONS

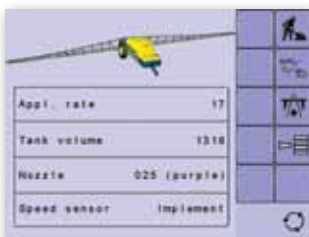
## Options for Growers With or Without a Virtual Terminal

Many newer tractors feature factory-installed ISOBUS terminals. If you have a virtual terminal in your cab, you're well aware of the benefits of ISOBUS. Our ISOBUS IC18 Electronic Control Unit (ECU) can help you leverage that investment by providing rate control economically. Or, if you're in need of a simple rate control solution but don't yet have any ISOBUS components, our IC18 ECU and Matrix® 570 VT can meet your immediate need and provide a foundation for the future.



### Use TeeJet ISOBUS rate control for:

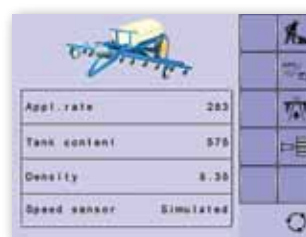
- Spraying
- Spreading
- NH3 application



SPRAYING



SPREADING



NH3 APPLICATION



AUTOMATIC BOOM SECTION CONTROL



## ISOBUS Rate Control Solutions Overview

### IC18 Sprayer ECU and IC18 Spreader ECU: Use with your existing VT for spraying and spreading

- Works seamlessly and displays on any ISOBUS VT
- Easy navigation menu and data rich display
- IC18 Sprayer ECU suitable for use with NH3 and liquid fertilizer
- IC18 Spreader ECU for dry product application
- Automatic boom section control upgrade option
- Variable rate control available providing your VT has GPS and task control capability
- IC18 ECU resides on the implement, reducing hardware in the cab

### IC18 ECU and Matrix® 570 VT: For spraying and spreading

- Easy navigation menu and data rich display
- Can be used for NH3 and liquid fertilizer application as well as spraying and spreading
- Add additional ISOBUS ECUs as your needs change
- Provides basic rate control
- Standardized plugs, cables and software simplify installation and connectivity and result in true “plug and play” technology. IC18 ECU resides on the implement, reducing hardware in the cab

### BoomPilot® ECU

- Suitable for use with IC18 ECU for sprayers
- Matches available sections on IC18 Sprayer ECU and provides automatic boom section control
- Includes internal GPS receiver
- BoomPilot ECU resides on implement, eliminating hardware in the cab



IC18 SPRAYER ECU AND IC18 SPREADER ECU USE THE SAME ENCLOSURE BUT PROVIDE DIFFERENT FUNCTIONALITY



MATRIX 570 VT IS EASY TO USE AND INSTALL



BOOMPILLOT ECU HAS A BUILT-IN GPS RECEIVER

## UPGRADES, ACCESSORIES & COMPONENTS

- Multiple ECUs can be linked together for multi-product application
- Switchbox with master and individual boom section shutoffs available

## A Bit About ISOBUS and TeeJet® Technologies

- In 2001, farm machinery manufacturers agreed to implement a common standard for communication interfaces on tractors, implements and farm management systems. The standard is called ISO 11783 and is commonly referred to as ISOBUS. The common standard enables products from different manufacturers to communicate and eliminates the need for separate terminals, displays and controls. Once ISOBUS is fully implemented, tractors will have a single virtual terminal in the cab
- A virtual terminal is the device that allows the operator to provide input information. An Electronic Control Unit (ECU), also known as a job computer, is installed on the implement and is where processing and control occurs
- TeeJet Technologies has been a global leader in ISOBUS development and implementation. Design and manufacturing of ISOBUS components for sprayers and spreaders started in 2001

# UPGRADES, ACCESSORIES & COMPONENTS

## RealView™ Cameras

### Improve Accuracy and Simplify Monitoring

Our Matrix® Pro guidance system uses RealView cameras for guidance over video. Most growers mount a RealView camera to the cab to provide video of what's ahead. However, camera placement is entirely up to you. You can use up to eight cameras with Matrix Pro allowing you to monitor multiple equipment operations or field activities. All video is displayed on the Matrix Pro console.

#### Plus:

- RealView cameras capture crisp images over a wide range of distances and lighting conditions from full sunlight to total darkness
- Nighttime camera viewing distance extends up to 60 ft/20 m
- Sturdy RAM mount for easy installation and adjustment anywhere
- Dust and water-resistant construction ensure long service life and reliable performance
- Add up to eight cameras to the Matrix guidance system for a more complete view of your field and equipment. The possibilities are endless from watching center boom sections to planter row units and seed/fertilizer hoppers



## Video Selection Module

- Used in conjunction with Matrix® Pro to allow operation of two to eight cameras
- Rugged module with mounting flanges allows for ease of installation
- Module allows camera images to be flipped and rotated as needed via onscreen settings



## Tilt Gyro Module

- Corrects GPS position errors caused by side-slope conditions when using Matrix Pro for guidance. Unit ensures reliable performance across a variety of terrains
- Mounts to a solid structure on your vehicle and provides corrected position data to the Matrix Pro. For example, if your GPS antenna is mounted 12 ft/4 m above the ground, a 10% side slope can cause 2 ft/0.6 m of position error. Tilt compensation and gyro-stabilization automatically communicates the required correction
- Rugged, solid state construction
- Separate module is mounted remotely in vehicle cab to minimize clutter
- Set-up is performed easily in the field with on-screen calibration procedure
- Diagnostic LEDs indicate the power status, operating status, and status of incoming GPS data
- Weatherproof electrical connector for trouble-free operation
- Mounting holes built into housing



**TIP:** Add Tilt Gyro Module to Matrix Pro when operating in hilly or rolling terrain to ensure accurate and consistent position information. **See pages 22 and 23 for information about GPS accuracy.**

## Patch Antenna

- Compact, low profile design with a magnetic base for fast and easy installation
- Compatible with WAAS and EGNOS correction signals (Matrix Pro GLONASS upgrade optional)
- Reliable, field proven design

**TIP:** Matrix Pro requires use of an antenna. Choose the patch antenna when working in areas with an unobstructed view of the sky and thorough GPS satellite coverage. **See pages 22 and 23 for information about GPS accuracy.**



# UPGRADES, ACCESSORIES & COMPONENTS

## RXA-30 Antenna

- High-gain, helix antenna provides increased noise rejection and improved reception of lower elevation satellites. Good for operating in northern latitudes or areas with lots of trees or hills
- Compatible with WAAS and EGNOS correction signals
- GLONASS ready design (Matrix® Pro must be GLONASS capable)
- Sturdy magnetic mount for fast and easy installation

**TIP:** Matrix Pro requires use of an antenna. Choose the RXA-30 Antenna when working in areas with a moderately obstructed view of the sky such as heavy tree cover or hilly terrain or in more extreme latitudes where GPS satellite coverage is less consistent. **See pages 22 and 23 for information about GPS accuracy.**

## RX370p Receiver

- Antenna and receiver combined into single enclosure for easy installation and space savings
- Compatible with WAAS and EGNOS correction signals
- Produces radar-like speed output compatible with many control and monitor systems
- Cruise technology maintains accuracy during brief correction signal outages
- Pre-configured for plug-and-play compatibility with TeeJet® guidance systems
- Compatible with TeeJet and many other guidance and precision farming devices



## RX410p Receiver

- Flexible receiver is compatible with WAAS, EGNOS, Beacon, and L-band (OmniSTAR® VBS) corrections
- Cruise technology maintains accuracy during brief correction signal outages
- Separate antenna is compatible with GPS, WAAS, EGNOS, Beacon and L-band signals
- Set-up wizard guides you through the set-up process
- On-board display and buttons permit easy configuration and status checks



## RX510 Receiver

- Dual-frequency (L1/L2) WAAS/EGNOS antenna provides improved accuracy over single frequency antennas
- Compatible with OmniSTAR XP and HP
- Compatible with both GPS and GLONASS satellites
- Single piece, smart antenna design for ease of installation
- Quick-release, lockable mounting bracket provides security and allows receiver to be easily moved between multiple vehicles
- ClearPath™ Technology
  - Utilizes advanced algorithms to calculate position information in situations where DGPS coverage is spotty or inconsistent due to satellite geometries or heavy tree cover
  - In geographies where SBAS is not available, such as South America, portions of Asia and other regions, ClearPath provides a more refined and accurate signal based on non-differential GPS data. ClearPath does not provide WAAS/EGNOS-level accuracy but it offers significant improvement over basic GPS position information



## RX610 Receiver

- RTK receiver for use with CORS/Network RTK
- Internal cellular modem available in CDMA or GSM network configuration
- Dual-frequency (L1/L2) WAAS/EGNOS antenna provides improved accuracy over single frequency antennas
- Compatible with OmniSTAR XP and HP
- Compatible with both GPS and GLONASS satellites
- Single piece, smart antenna design for ease of installation
- Quick-release, lockable mounting bracket provides security and allows receiver to be easily moved between multiple vehicles
- ClearPath technology
  - Utilizes advanced algorithms to calculate position information in cases where DGPS coverage is spotty or inconsistent due to satellite geometries or heavy tree cover
  - In geographies where SBAS is not available, such as South America, portions of Asia and other regions, ClearPath provides a more refined and accurate signal based on non-differential GPS data. ClearPath does not provide WAAS/EGNOS-level accuracy but it offers significant improvement over basic GPS position information



**TIP:** Matrix® Pro requires use of an antenna. Choose the RX510 for applications where improved accuracy above and beyond WAAS/EGNOS is desired such as row crop planting.

**TIP:** Matrix Pro requires use of an antenna. Choose the RX610 when sub-inch/mm accuracy is needed. In addition, RTK accuracy provides year-to-year repeatability which is beneficial in strip-till and general row crop applications where multiple trips will be performed in the same fields throughout the growing season.

# UNDERSTANDING GPS ACCURACY

## GPS Accuracy Definitions

**Pass-to-pass accuracy** measures the relative accuracy of a GPS receiver over a 15-minute interval. It does not reflect the long-term accuracy, which is affected by GPS drift.

**Year-to-year repeatability** is the measure of repeatable accuracy that allows one to return to the same point and follow the same guidance path a day, week, month or year after being initially established.

## Different System Accuracies:

GPS Receivers	Pass-to-Pass Accuracy	Year-to-Year Repeatability
RTK	+/- 1 in/2 cm (also referred to as centimeter or sub-inch)	+/- 1 in/2 cm
OmniSTAR HP	+/- 2-4 in/5-10 cm (also referred to as decimeter)	+/- 4 in/10 cm
OmniSTAR XP	+/- 3-5 in/8-13 cm (also referred to as a decimeter)	+/- 8 in/20 cm
OmniSTAR VBS, Beacon, WAAS, EGNOS	+/- 6-10 in/15-25 cm (also referred to as sub-meter)	+/- 3 ft/1 m

## GPS Glossary

### Antenna:

A device for transmitting and receiving radio frequency (RF) signals. In terms of guidance devices, a GPS/GNSS antenna merely accepts signals from satellites or base stations. No internal calculations are performed within the antenna.

### Base Station:

A stationary GPS/GNSS receiver that serves as a reference point, providing correction data to a "rover" GPS/GNSS unit. Correction data can be broadcast via RF, cellular signal or the Internet.

### Commercial Satellite Provider:

Another common source for DGPS signals. Error correction information obtained from their base stations is sent to a communications satellite (separate from the GPS satellites) and broadcast to the user. These satellite-based corrections tend to have more widespread coverage than tower-based broadcasts (FM links), and system accuracy is not greatly affected by the user's distance from the base station receivers. Most of these service providers require a subscription fee for use. A commonly known provider is OmniSTAR®.

## GPS Glossary

### CORS (Continuously Operating Reference Station)/ Network RTK:

A series of base stations spread across a given geographic region (such as an entire state/county) that are networked via a centralized computer and which broadcast RTK correction data over the Internet. CORS networks may be publicly or privately owned/operated and may offer a free signal or require an annual subscription fee. By accessing a CORS network via a cellular connection, the end-user eliminates the need to own a base station.

### Differential GPS (DGPS):

The most common way to correct for normally occurring GPS errors. Examples of DGPS include WAAS, EGNOS, OmniSTAR® and RTK.

### Dual Frequency or L1/L2:

This term refers to a navigational receiver capable of using L1 and L2C satellite frequencies to derive a position.

### EGNOS (European Geostationary Navigation Overlay Service):

A satellite based augmentation system (SBAS) developed jointly by the European Space Agency (ESA), European Community and EUROCONTROL. The system is free to use and provides differential correction coverage primarily across the European continent. EGNOS delivers pass-to-pass accuracies of 15-25 cm/6-10 in and year-to-year accuracies of +/- 1 m/3 ft.

### GLONASS (Global Navigation Satellite System):

A global satellite navigation system developed and operated by the Russian government. It is composed of approximately 24 satellites which continuously orbit the earth. While early GNSS receivers typically utilized only GPS signals, many of today's GNSS receivers can utilize signals from both GPS and GLONASS, effectively increasing the total number of satellites available for use.

### GPS (Global Positioning System):

The name of the satellite-navigation network maintained by the U.S. Department of Defense. It is composed of approximately 30 satellites which continuously orbit the earth. The term is also used to refer to any device that depends on navigation satellites for functionality.

### GPS Drift:

Positional shift that can be caused by changes in satellite constellation, operating near trees or other obstacles and satellite clock errors. RTK correction is recommended for field applications where the effects of GPS drift need to be minimized.

### GPS Receiver:

Converts the satellites' signals received via antenna into position, velocity and time. This information is used for navigation, positioning, time dissemination and research.

### GNSS (Global Navigation Satellite System):

A general term that refers to a multiple satellite navigation system used by a receiver to compute its position. Examples of these systems include: GPS developed by the United States and GLONASS by Russia. Additional systems in development include Galileo by the European Union and Compass by China. New generation GNSS receivers are being designed to utilize multiple GNSS signals (such as GPS and GLONASS). Depending on constellation and desired accuracy levels, system performance may be improved by having access to a greater number of satellites.

### RTK (Real Time Kinematic):

Currently the most accurate GPS correction system available that uses a land-based reference station located in relatively close proximity to the GPS receiver. RTK can provide one-inch, also known as centimeter, pass-to-pass accuracy and also provides year-to-year position stability. RTK users can have their own base stations, subscribe to RTK Networks or use CORS.

### SBAS (Satellite Based Augmentation System):

A general term that refers to any satellite-based differential correction system. Examples of SBAS include: WAAS in the United States, EGNOS in Europe and MSAS in Japan. Additional SBAS covering other regions of the world will likely be coming online in the future.

### WAAS (Wide-Area Augmentation System):

A satellite correction service developed by the Federal Aviation Administration (FAA). It is free to use and provides coverage across the U.S. along with parts of Canada and Mexico. WAAS delivers pass-to-pass accuracies of 6-10 in/15-25 cm; however, year-to-year accuracy will be in the range of +/- 3 ft /1 m.



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