



PRECISION FARMING

GPS MONITORS, NAVIGATORS AND COMPUTERS FOR AGRICULTURE

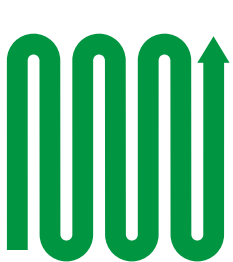


PRECISION FARMING

High-technology, precision, flexibility, and productivity are the basis of Precision Farming. Using these concepts ARAG has developed a number of components, monitors, and navigation systems suitable for most agricultural applications.



The software provides four guidance modes for treatment management:



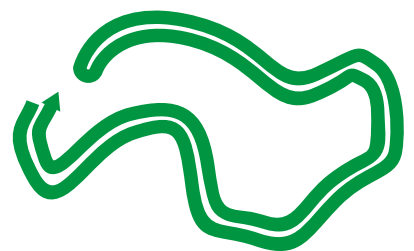
Parallel



Curved



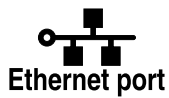
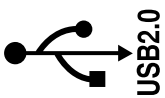
Pivot



Free guidance

delta80 Monitor and Navigator

The DELTA 80 monitor is able to handle all spraying applications and features developed by ARAG. Together with the complete management of fertilizer application, weed control, and the functions of precision farming, it offers improved ergonomics and the ability to remotely control the system for diagnostics and remote assistance.



- 8.4" display.
- Backlit keyboard.
- 3G connection to communicate with the machine in the field, for software updates, updating of work configurations, and remote assistance.
- Ability to manage up to 104 spraying points (with SELETRON), and 9 hydraulic functions.
- Storage of agricultural processing data with geo-referencing for better traceability.
- Management of advanced features of precision farming such as automatic steering, variable rate application, and automatic section control.

bravo400S Monitor and Navigator



The BRAVO 400S is the most commonly utilised monitor in the ARAG product range. It can be interfaced to the full range of ARAG control systems. It is ideal for the complete management of fertilizer applications, weedicide spraying, and precision farming functions.



- Ability to manage up to 104 spraying points (with SELETRON), and 9 hydraulic functions.
- Storage of agricultural processing data with geo-referencing for better traceability.
- Management of the more advanced features of precision farming, such as automatic steering, variable dosing and automatic boom shut-off.

ninja Monitor and Navigator

The NINJA has the same performance as the BRAVO 400S. With its cover it provides high IP protection for installation on machines without cabs.



- Waterproof IP65.
- Ability to manage up to 104 spraying points (with SELETRON), and 9 hydraulic functions.
- Storage of agricultural processing data with geo-referencing for better traceability.
- Management of the more advanced features of precision farming, such as automatic steering, variable dosing and automatic boom shut-off.



navigator^{LT} Navigator



- Integrated GPS receiver.
- Storage of agricultural processing data with geo-referencing for better traceability.

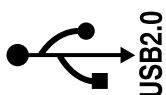
The NAVIGATOR LT is the ARAG monitor dedicated to customers that want a simple but smart visual guidance system. It is the first step towards the optimization of agricultural processes. The monitor includes an integrated GPS receiver and can be fitted to machines without requiring any additional equipment.

bravo400s^{LT} Computer with direct connection



The BRAVO 400S LT is a controller able to directly operate valves without the aid of an additional ECU. It offers the same functions of BRAVO 400S, adding easy installation with the benefit of cost reduction.

- High performance / price ratio, suitable for intermediate segment sprayers.
- Controls up to 7 boom sections and hydraulic functions.
- Storage of agricultural processing data with geo-referencing for better traceability.
- Management of advanced features of precision farming such as automatic steering, variable rate application, and automatic section control.



Automatic Steering System

for

delta30 bravo400s



MDU-4

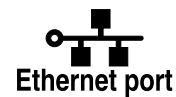


ECU-S1



The ARAG automatic steering system is composed of the electric motor MDU-4 for the mechanical actuation of steering, and the electronic control unit ECU-S1 which controls the motor itself. It can be combined at any time to ARAG precision farming systems. Autosteering integration provides high performance steering for all agricultural processes not achievable with the manual use of visual guide systems.

- Easy installation.
- High precision guidance, 2cm accuracy, either pass to pass and absolute (RTK differential correction).



Rear cameras

- Infrared night vision
- Adjustable bracket
- Selector for direct or symmetrical vision
- CCD 1/3" colour sensor - 512x582 pixels
- Vision angle: 120°
- Cable - 15 m
- Power supply: 12Vdc.







GPS receivers

for

delta80 bravo400s ninja bravo400sIT

The Arag range of GPS receivers can use both GPS and GLONASS systems thereby increasing the number of satellites used for calculating the position, enhancing reliability even under difficult conditions such as in the presence of obstacles (trees, houses, bridges, etc.)



MODEL	AgStar	Smart 6T	Smart 6T Double Frequency	Smart 6L Double Frequency	Smart 6L Terrastar	Smart 6L RTK
FEATURES						
Single Frequency (L1)	●	●				
Double Frequency (L1/L2)			●	●	●	●
Integrated Inclinometer		●	●			
SBAS DIFFERENTIAL CORRECTION						
None	●	●	●	●	●	●
EGNOS, MSAS, WAAS	●	●	●	●	●	●
Terrastar-C				○	●	●
RTK		○	○	○	○	●
PRECISION FARMING						
Visual Navigation 	●	●	●	●	●	●
Automatic Steering System 			●	●	●	●
Variable Rate Application 	●	●	●	●	●	●
Automatic Section Control 			●	●	●	●

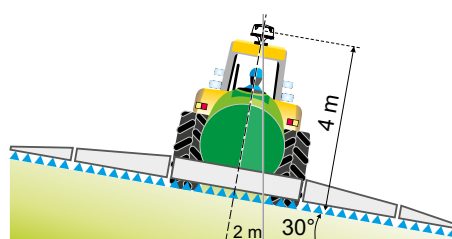
Legend: ● available / ○ Upgrade payment option, available after purchase

SBAS DIFFERENTIAL CORRECTION	ACCURACY		SUBSCRIPTION
	PASS-TO-PASS, 15 min	ABSOLUTE	
None	18 cm ⁽¹⁾	5.0 m	
EGNOS, MSAS, WAAS	18 cm ⁽¹⁾	1.5 m	
Terrastar-C	4 cm	4 cm	●
RTK ⁽²⁾	2 cm	2 cm	●


⁽¹⁾ 18 cm pass-to-pass accuracy obtainable with Double Frequency (L1/L2) receivers, otherwise 28cm.

⁽²⁾ Available only if paired to DELTA 80 3G.

Models with built-in inclinometer are able to compensate for measurement errors due to ground inclination, even 2 meters on steep slopes.



Comparison chart

	delta80	bravo400s	ninja	bravo400sIT	navigatorIT
FEATURES					
LCD colour display	●	●	●	●	●
Display size	8,4" / 213 mm	5,7" / 145 mm	5,7" / 145 mm	5,7" / 145 mm	5,7" / 145 mm
Backlit keyboard	●				
SD memory card reader 		●	●	●	●
USB 2.0 data port 	●	●		●	
WiFi 	●				
Ethernet 	●				
3G modem 	●				
External GPS receiver	●	●	●	●	
Integrated GPS receiver					●
Camera interface	●	●		●	
PRECISION FARMING					
Visual navigation 	●	●	●	●	●
Automatic steering system 	●	●		●	
SPRAYER APPLICATION 					
Seletron actuators (max) 	104	104	104		
Boom section valves actuators (max) 	13	13	13	7	
Hydraulic functions (Oil, max)	9	9	9	7	
Rate control	●	●	●	●	
Variable rate application 	●	●	●	●	
Automatic section control 	●	●	●	●	
Automatic boom leveling (Fixed geometry boom)	●	●	●		
Automatic draw bar and axle steering	●	●	●		
IBX100 electronic control unit 	●	●	●		
Joystick 	●	●	●		
Switch box (water and oil)	●	●		integrated	
VISIO 	●	●	●		
SYNCR0 	●	●	●		
SPREADER APPLICATION 					
Rate control	●	●	●		
IBX100 electronic control unit 	●	●	●		

If connected to the IBX100 control unit (Sprayer and/or Hydraulic) the ARAG monitors (DELTA 80 / BRAVO 400S / NINJA) become computers able to handle the most advanced spraying functions. The monitors can display all guidance and spraying management information.



SPRAYER APPLICATION FOR IBX100



The IBX100 Sprayer/Hydraulic is the electronic control unit (ECU) which when connected to the Arag monitors (DELTA 80 / BRAVO 400S / NINJA), allows management of advanced functions of the crop sprayer. Indications for navigation and parameters for the spraying management are displayed on a single screen.



Boom leveling with fixed geometry

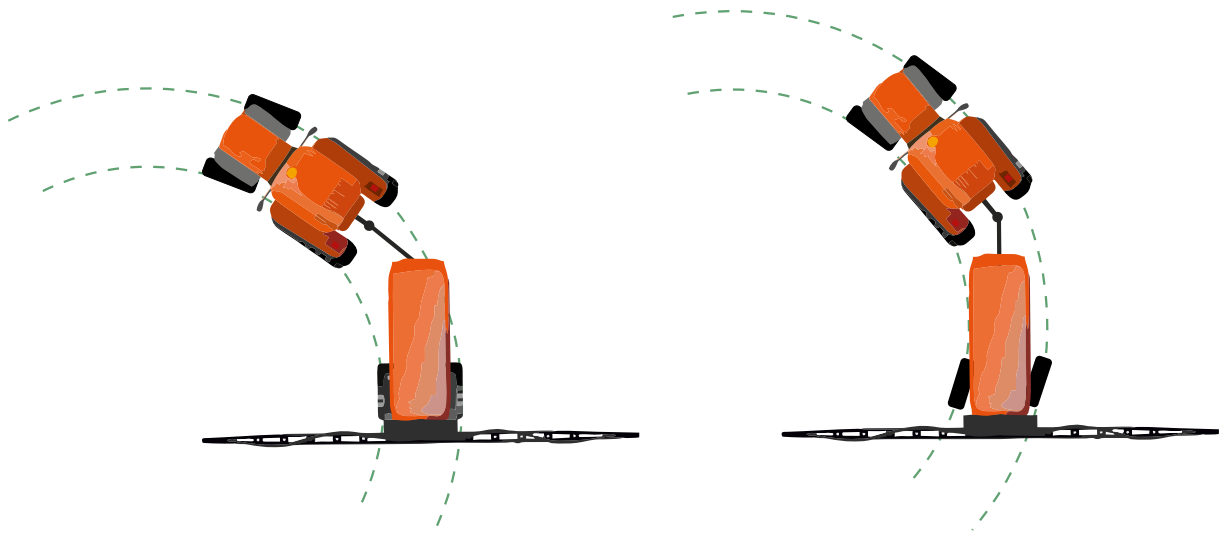
This function has been designed for the IBX100 to maintain a uniform distance of the bar from the ground even in the case of gradients thus ensuring a correct treatment coverage.

- High precision and reduced response times.
- User friendly
- Suitable also for already existing sprayers.



Draw bar and steering axle

Draw bar and steering axle management are additional functions of the IBX100 Hydraulic ECU. With these functions the machine will drive to the tram line minimizing crushing of the crop.



DRAW BAR
by measuring the draw bar angle, IBX100 suitably controls the hydraulic cylinder and allows to vary the draw bar steering angle.

AXLE
by measuring the draw bar angle, IBX100 suitably controls the hydraulic cylinder and allows to vary the steering angle of the axle.

explorer Multifunction joystick

The EXPLORER joystick manages all spraying and hydraulic functions directly from the handle, ensuring a solid anchor point and a stable acceleration control.



- Tactile feedback about status messages is transmitted through vibration (haptic technology).
- 15 keys to control up to 39 functions.
- 4 status LED.
- Backlit keyboard.
- Completely waterproof IP65.

Switch boxes

ARAG switch boxes are designed with ergonomic shape for intuitive control.

- Available with 5, 7 and 13 boom sections control (13 ways sequential)
- Version with 7 or 9 hydraulic functions
- Bayonet-bracket assembly (if secured to Delta 80 / Bravo 400S) or mount with suction cup (to be ordered separately).



Available up to 7 boom sections and 9 hydraulic valves

syncro Computer for auxiliary circuits

The SYNCRO is an innovative control system to manage auxiliary services on the spraying machines. Through the A-NET* connection to the new 853 and 863 series electric valves and several sensors, it is possible to automate the control sequences (tank filling, circuit and boom washing, etc.) that up to now have been performed manually by the operator.



- Can implement complex sequences.
- Reduces the possibility of human error.
- Integrated diagnostics of all valves.

*ARAG communication protocol in compliance with CAN BUS specifications

visio Multifunction display

The VISIO manages and displays the tank level, through a level sensor or flow meter connected to the IBX100.



- Weatherproof
- Visual and acoustic alarms
- Backlit graphic display



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