



PSi Apollo

Spreader Control & Mapping System

Technical Presentation



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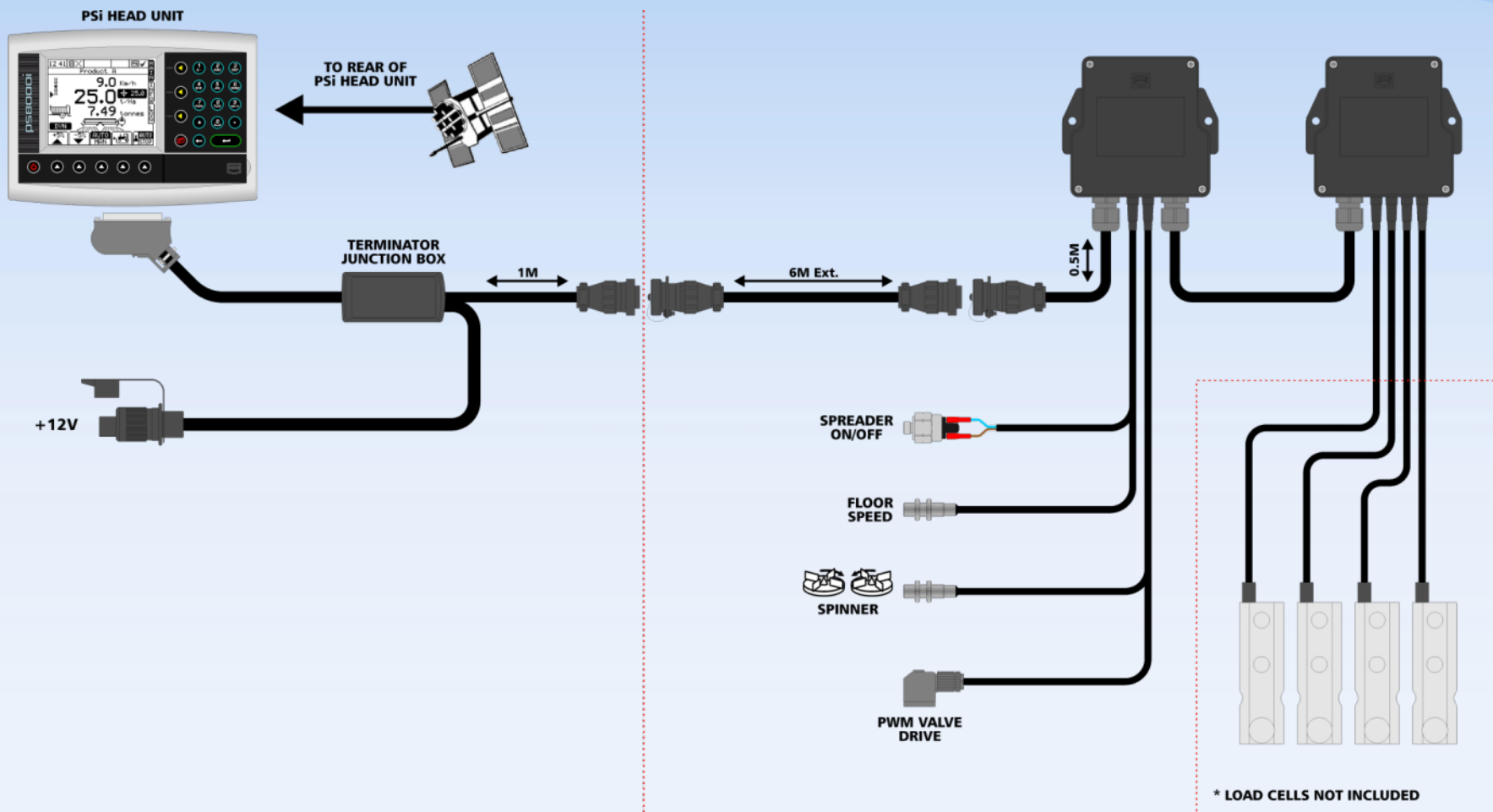
Part 1

System Architecture



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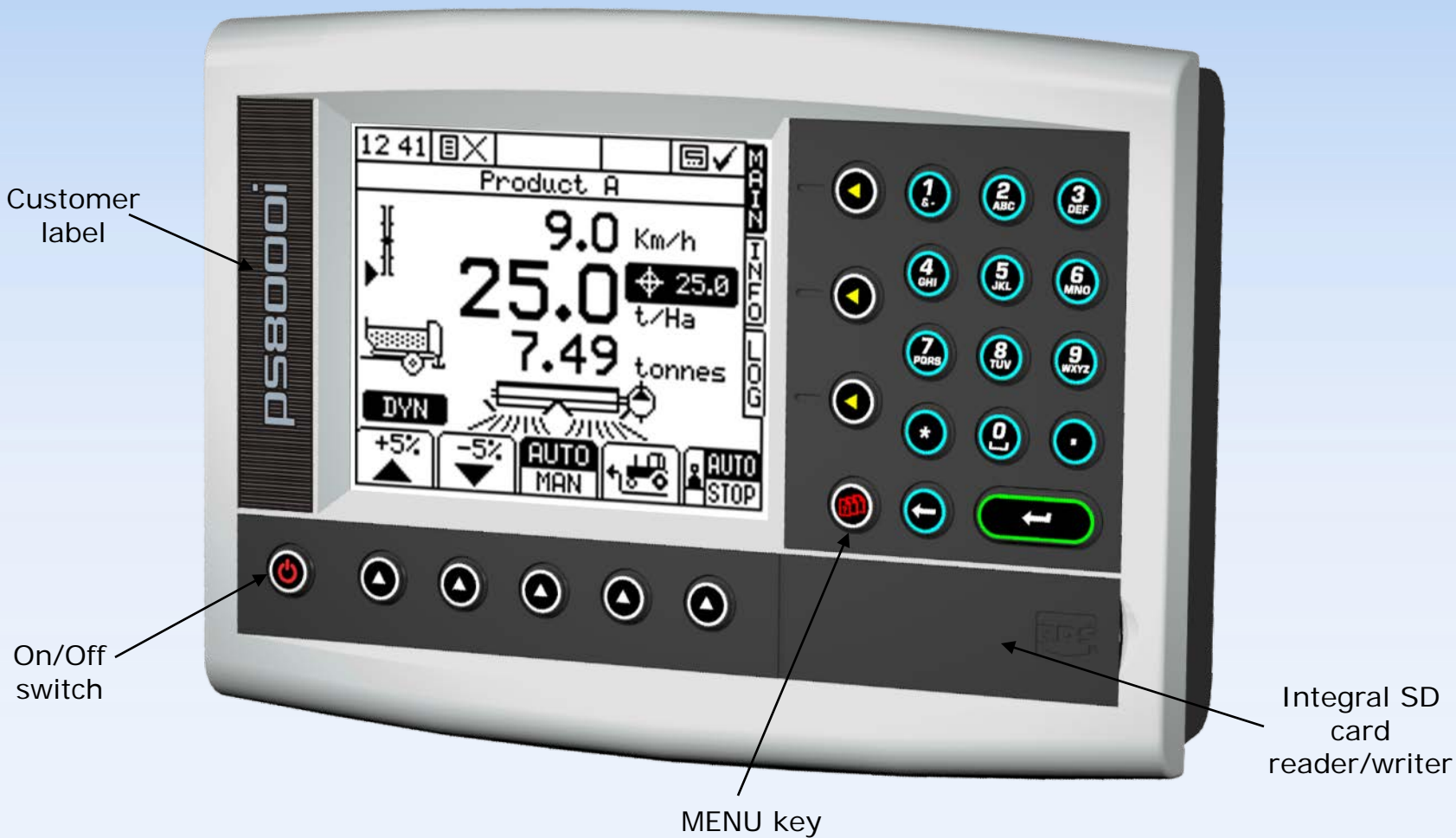
PSi Apollo System Architecture





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PSi





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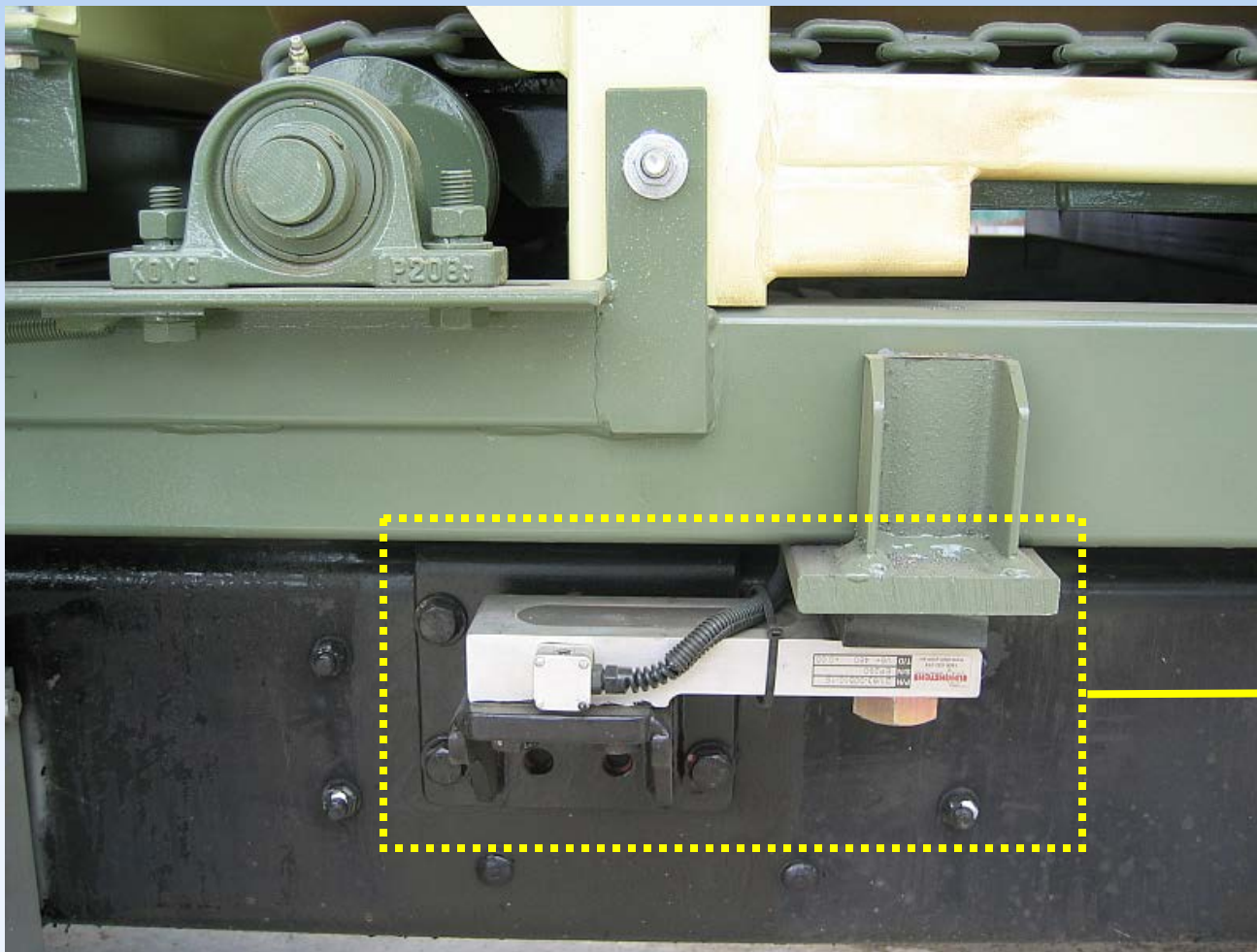
Typical Installations





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Typical Installation

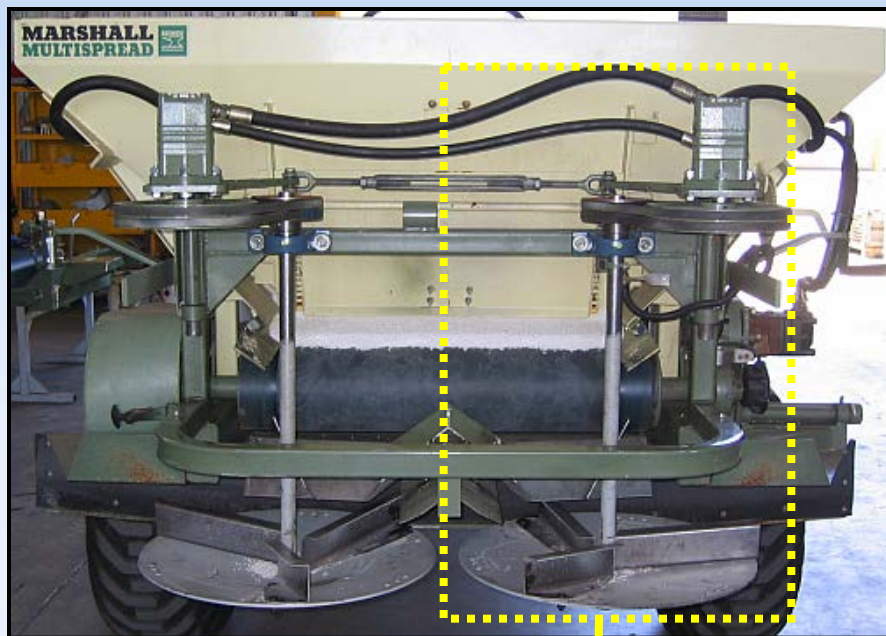


Load Cells



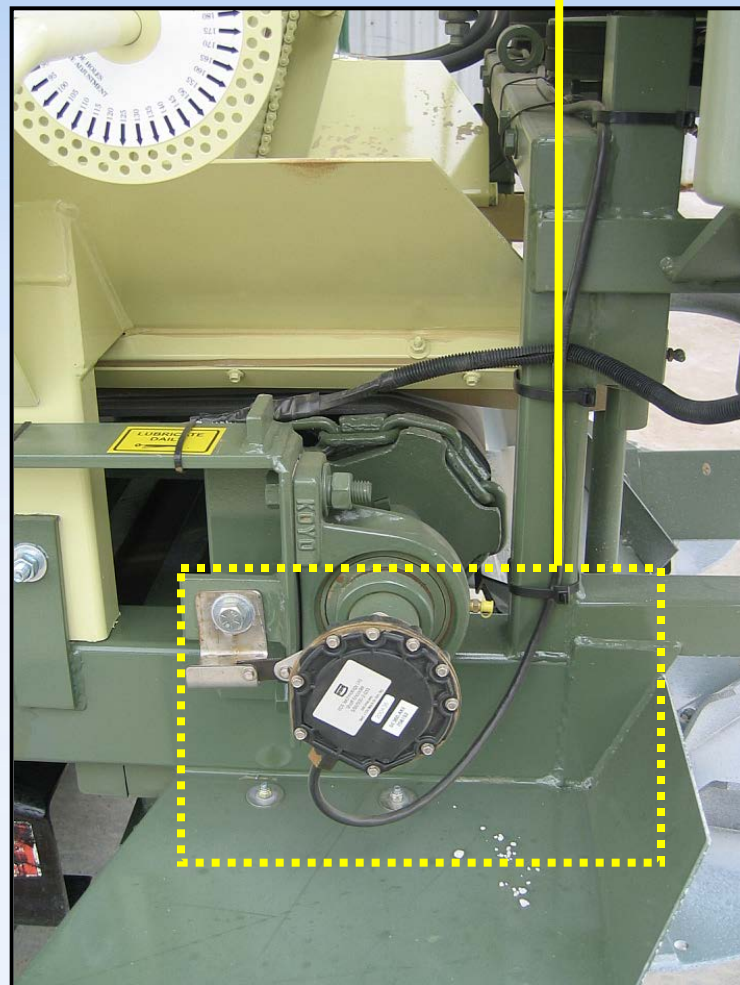
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Typical Installation



Spinner Speed Sensor

Floor Speed Sensor fitted to Roller





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PSi Apollo Features

- Application Rate control proportional to Forward Speed by hydraulic floor speed
- Weighing – Displays Live weight from Load Cells and self calibrates
- Ability to change the application rate on the move
- Precision Farming capability
- Traceability records with GPS positioning
- Beater/Spinner speed monitoring
- Pre-Start facility
- GPS Forward Speed
- Expected technology on a modern high specification spreader



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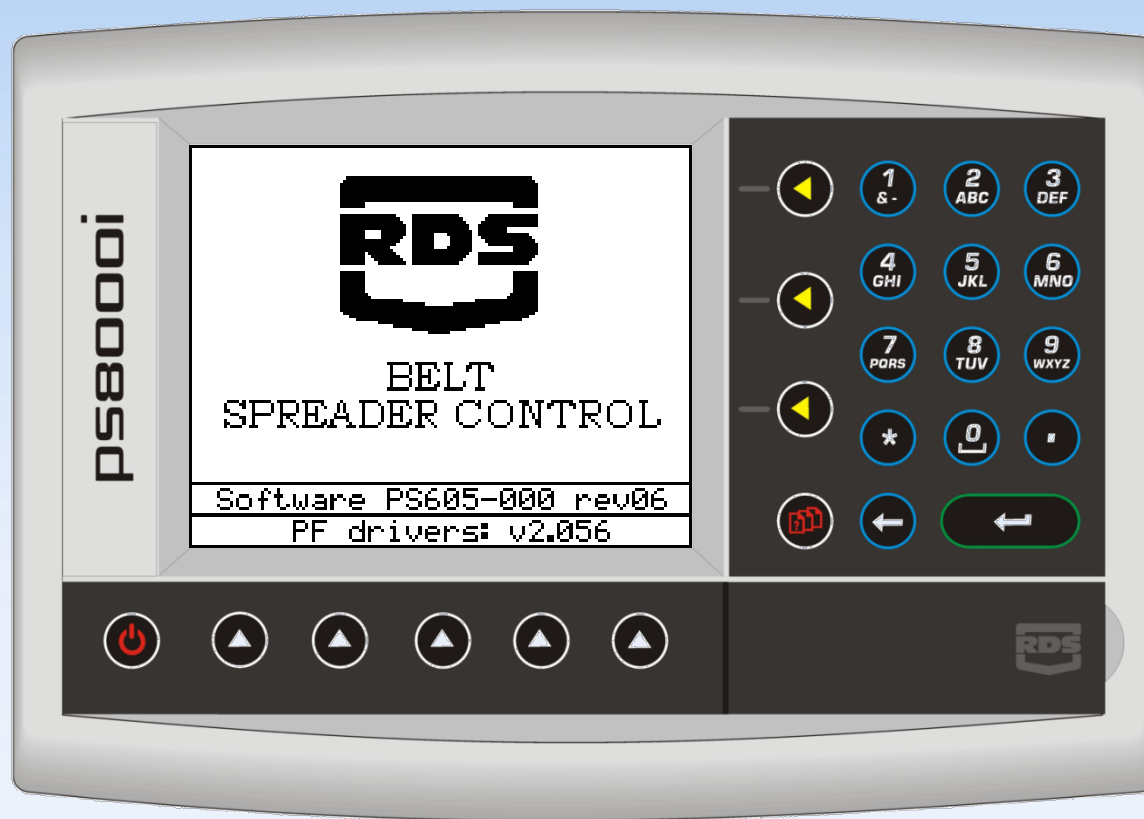
Part 2

Software Functions



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Startup Splash Screen

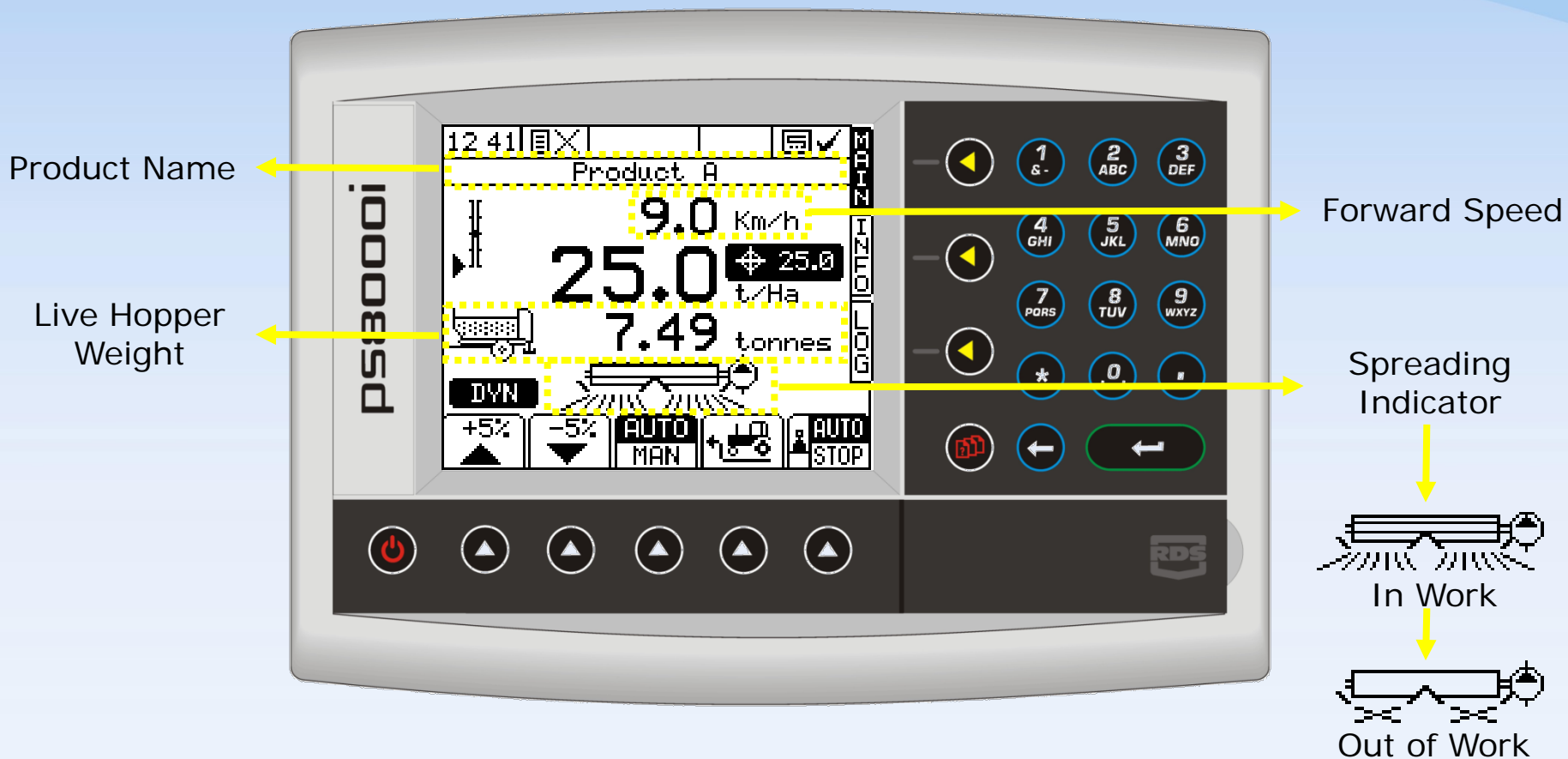


This can be a custom startup screen with the Manufacturers logo and product name.



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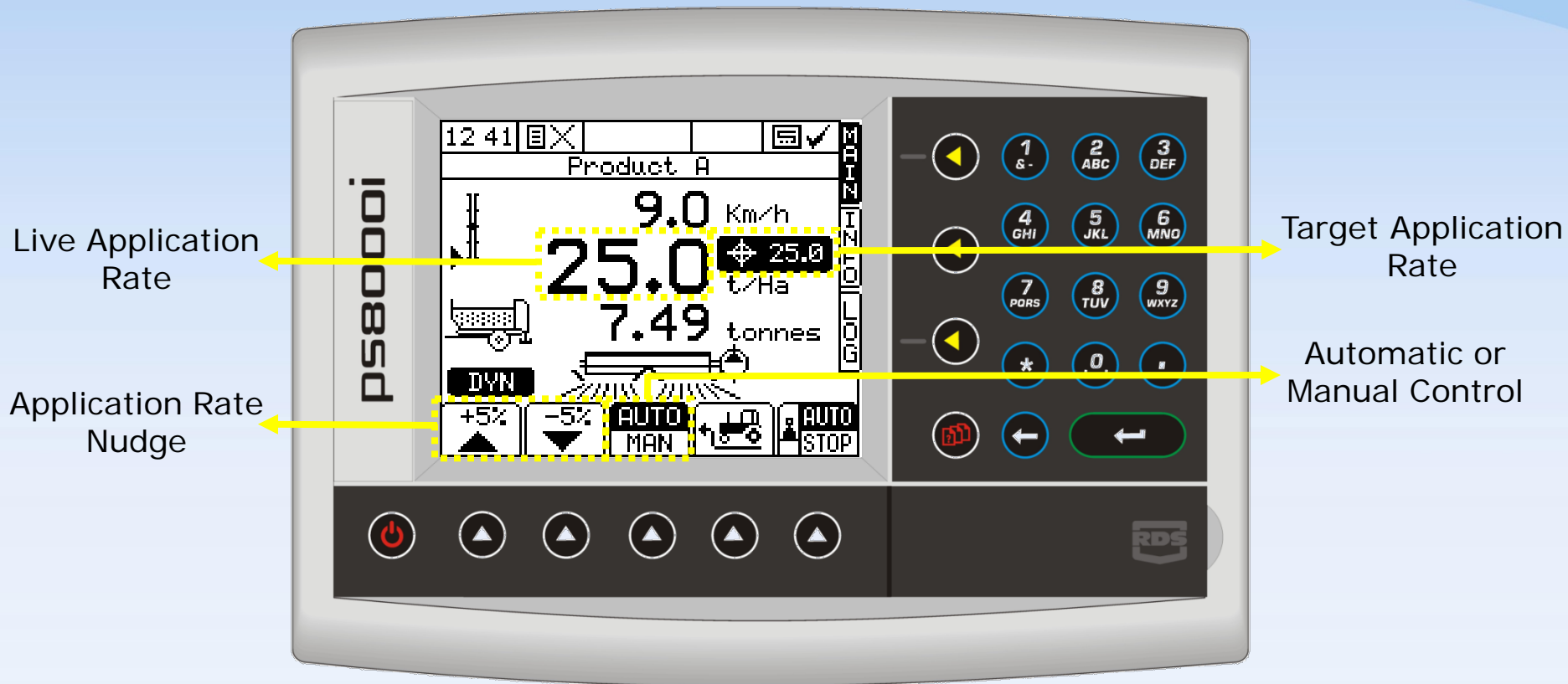
Main Operator Display





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Main Operator Display





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Info Display

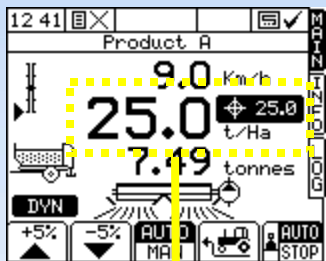




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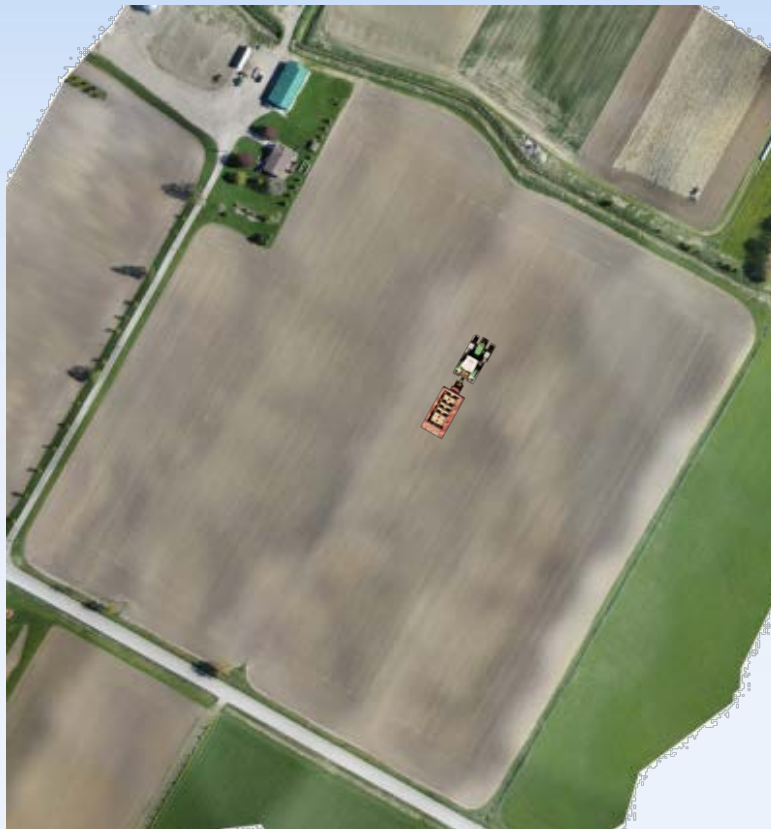
Self Calibrating Control System

The Apollo will automatically calibrate its output while spreading to ensure that the Target Application Rate is always achieved despite variable density and characteristics of the product.



Target Application Rate Programmed

System will spread at a 'Calculated Floor Speed' to achieve this rate

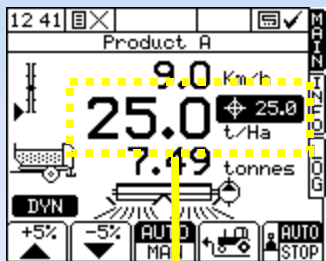




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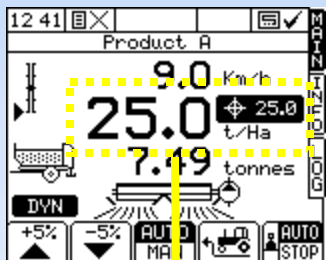




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Self Calibrating Control System

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Target Application Rate Programmed

System will spread at a 'Calculated Floor Speed' to achieve this rate



The system monitors over a set time period. For example update the calibration factor every 5 seconds.

Over this 5 second period:
Calculated Floor Speed assumed that it has spread **160kg**

Weight that has been removed from the load cells however calculates that **200kg** have been spread over the 5 second window.

$$\left(\frac{200}{160}\right) \times 100 = 25\%$$

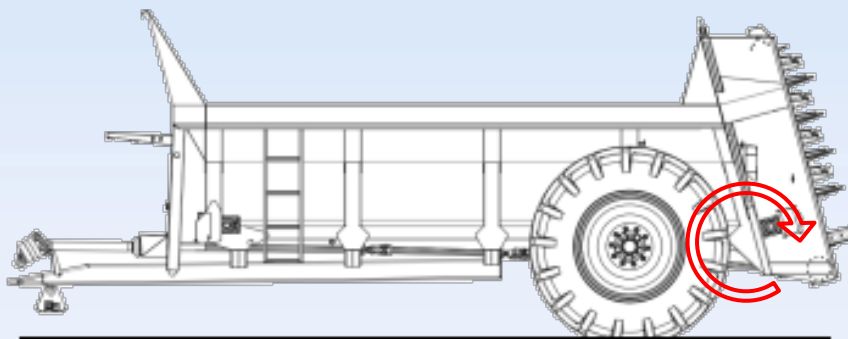


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Self Calibrating Control System

Based on the previous pages calculations, the calibration factor that is used to establish the 'Calculated Floor Speed' will now be adjusted by 25% to ensure that the next 5 second section of spreading dispenses 200kg.

To do this it must **increase the speed** of the hydraulic floor to dispense **more product**.



The same test will then be repeated for the next 5 second sample and continue for the duration of the job, constantly updating the calibration and altering the floor speed to match the Application Rate.



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Part 3

Precision Farming



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What can it do?

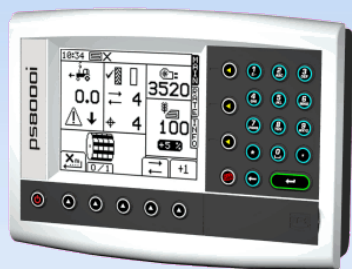
- Apply manure/fertiliser from an application map
- Record manure application for traceability and yield improvements
- Print out paper records
- Output data to SD card for invoicing and farm records
- Apply manure/fertiliser via a message from a third party instrument



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Basic Datalogging

Option 1



Option 2





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Basic Datalogging Output to Printer



- RDS APOLLO - LOGGED DATA -

Job number: 009
Job Date: 06/10/2010
Farm Number: 99
Field Number: 2
Start Time: 17:59
Finish Time: 19:09
Job Duration: 01:10
Product: Manure
- Cal factor: 0.50 kg/rev
- Target rate: 408.00 kg/ha
- Total area: 0.57 Ha
- Total weight: 228.773 kg
- Work rate: 3.51 ha/hr
- Actual rate: 403.75 kg/ha

F01: OPERATOR > DAVE
F02: WEATHER > SUNNY
F03: FUNC 3 >
F04: FUNC 4 >
F05: FUNC 5 >
F06: FUNC 6 >

Comments:

Operator:

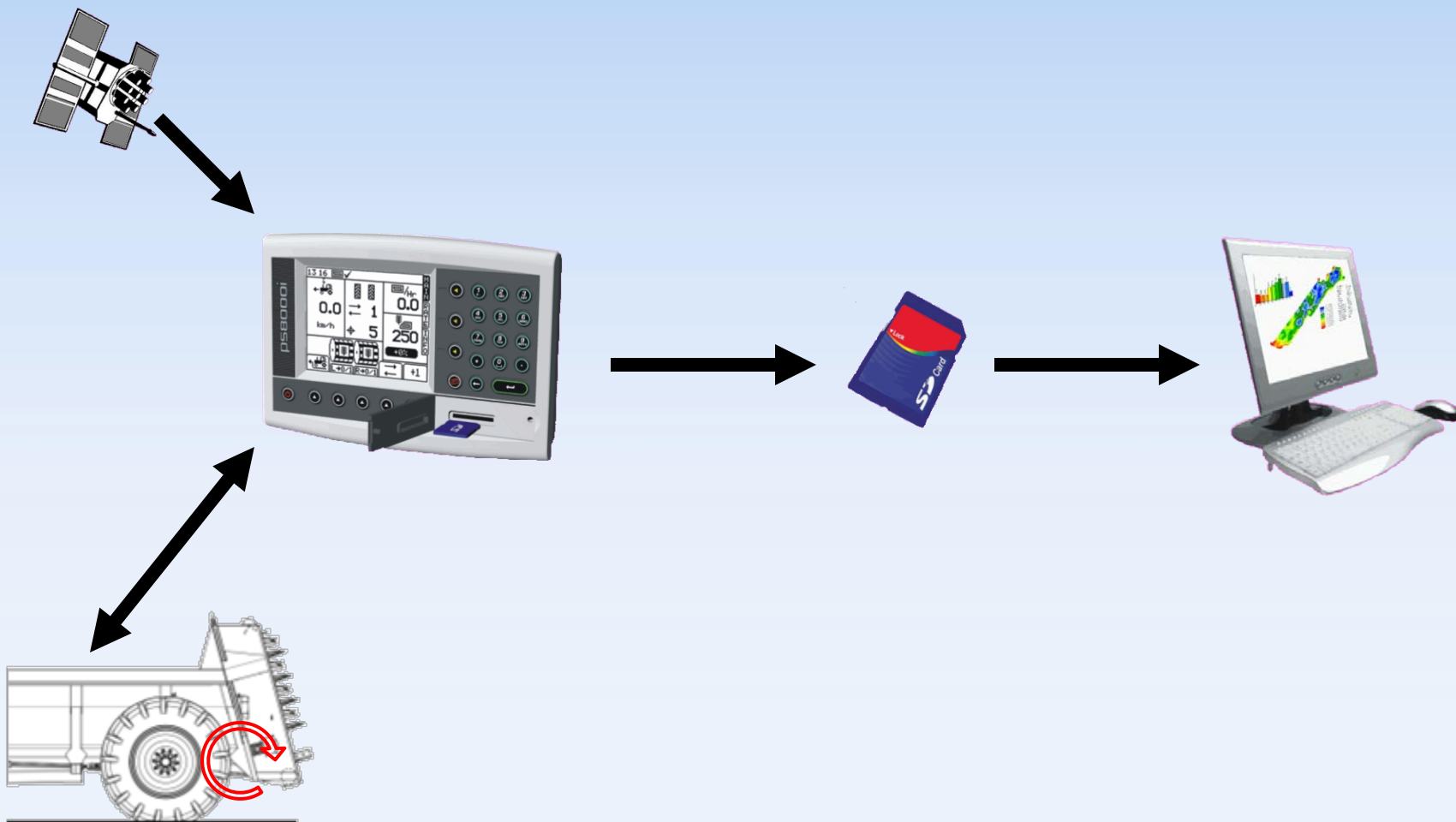
- Software PS405-001rev015 -

- Printed at 19:13:10 on 06/10/2010 -



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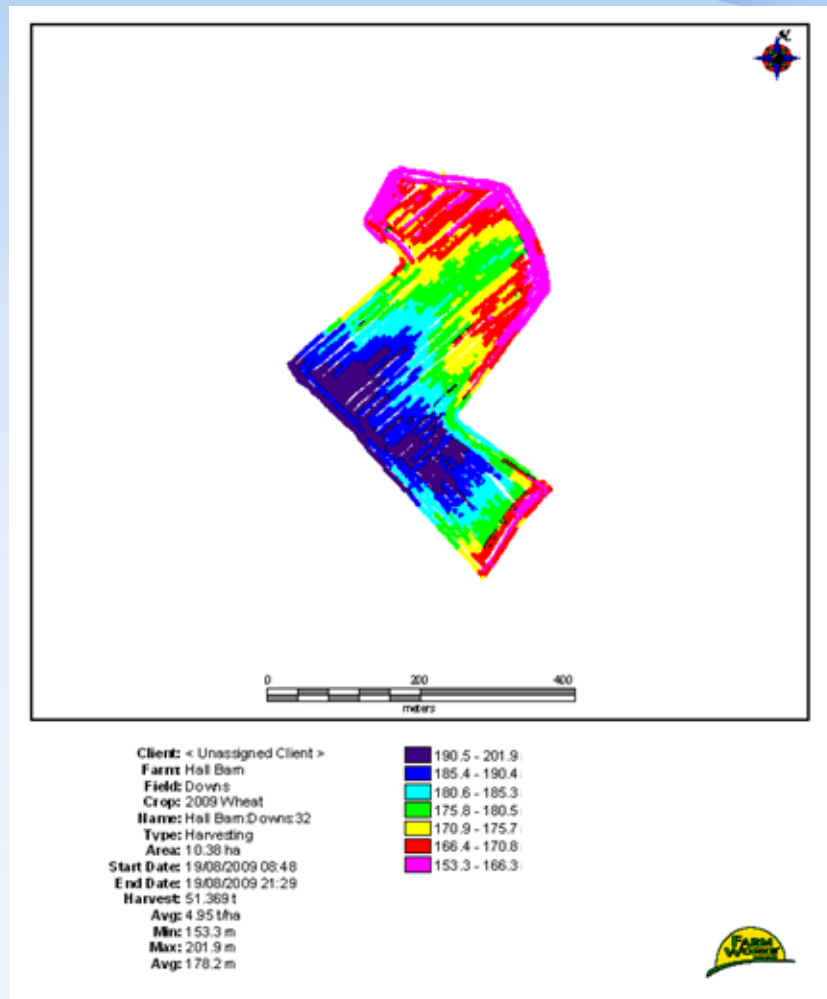
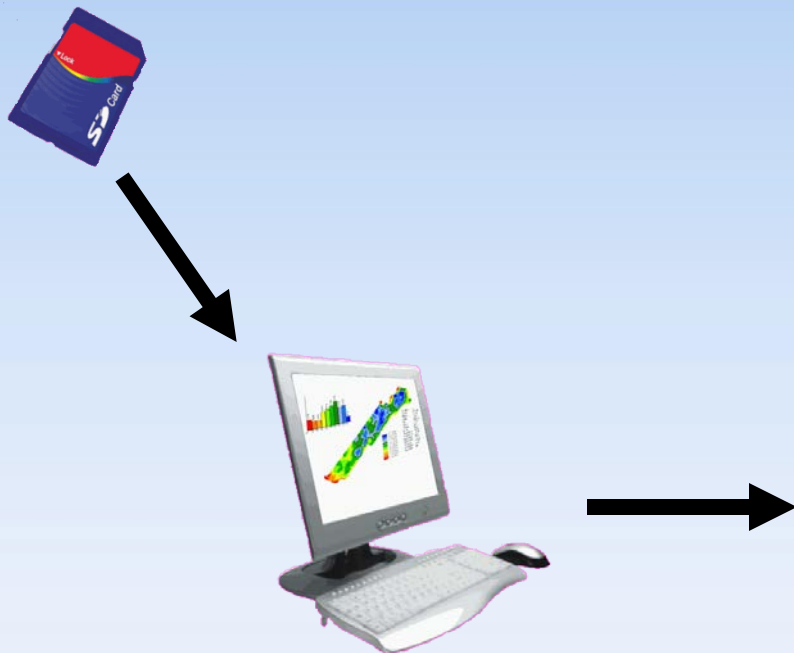
Datalogging with GPS





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Treatment Map

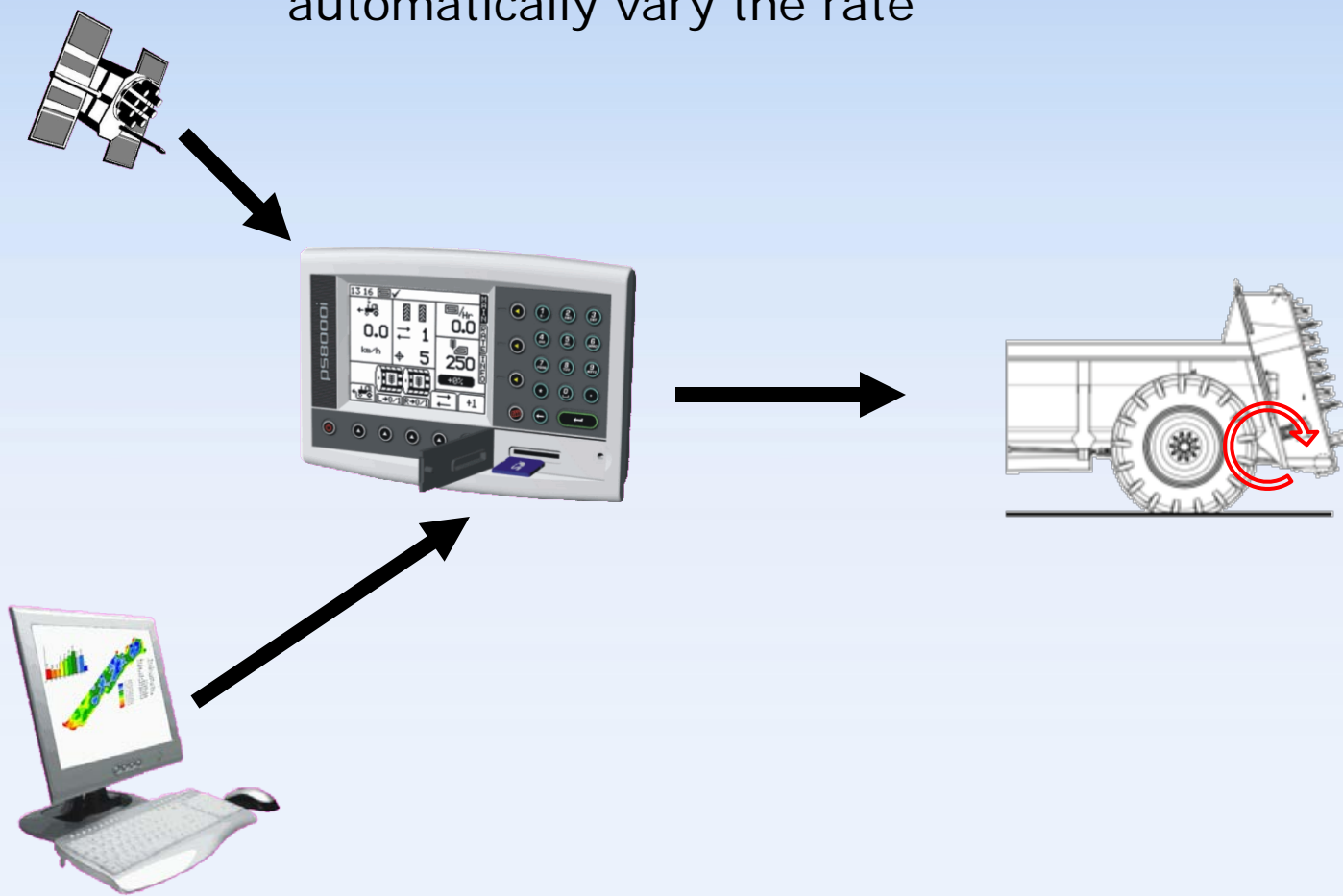




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Precision Farming

A pre-defined application map can be loaded to the SD card and automatically vary the rate

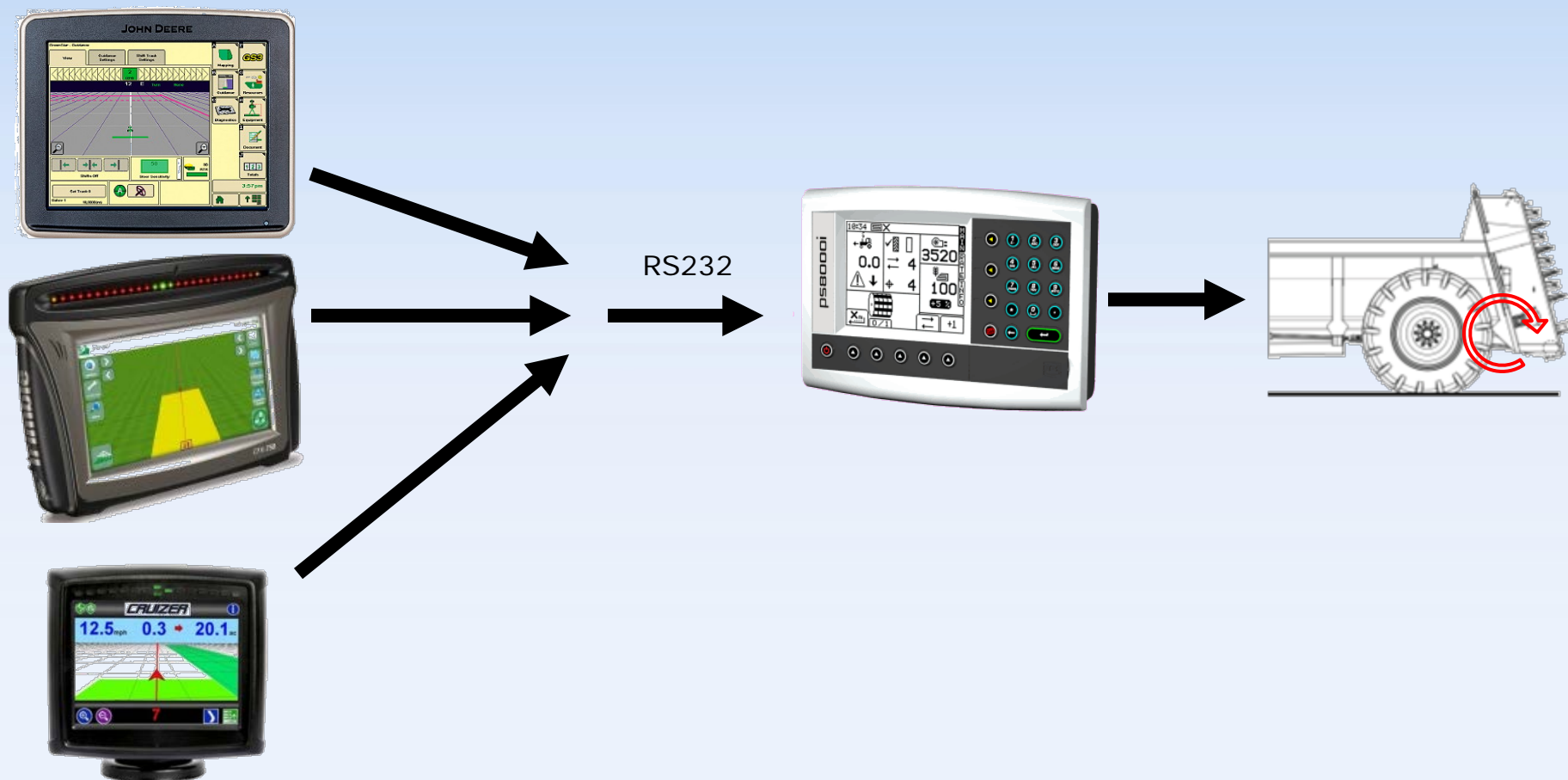




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Precision Farming

The system can receive an application rate from a third party controller such as a John Deere Greenstar, Raven or Trimble





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