

Artemis Lite

Variable Rate Drill Control

Calibration

RDS Part No.:	S/DC/500-10-
Document Issue:	1 : 28/10/10
Software Issue:	GW104-001 rev 14

Electromagnetic Compatibility (EMC)



This product complies with Council Directive 2004/108/EEC when installed and used in accordance with the relevant instructions.

IMPORTANT, READ THIS BEFORE USING THE ARTEMIS LITE

The Artemis Lite installation is a part of the Precision Farming System ("the System"). It is very important that you follow the described calibration procedures before operating the Artemis Lite instrument. Calibration and operation of the Artemis Lite must be in accordance with these instructions. Use of the System is subject to the following disclaimer;

1. So far as is legally permissible RDS Technology ("RDS"), or its distributors, shall not be liable, whatever the cause, for any increased costs, loss of profits, business, contracts, income, or anticipate savings or for any special, indirect or inconsequential damage whatsoever (death or personal injury excluded).
2. The capabilities and functions of the Precision Farming System ("the System") are limited as set out in the specification of the System, details of which are contained in the Help files and product literature and which must be read before using the System.
3. Without prejudice to the generality of the above it is hereby acknowledged that the System is not designed nor intended to a) originate variable treatment plans or b) achieve or avoid any application rate outside application parameters, which in both cases shall be the responsibility of the operator.
4. The standard terms and conditions of RDS (except clause 7), a copy of which is available on request, apply to the supply and operation of this System.

Service and Technical Support

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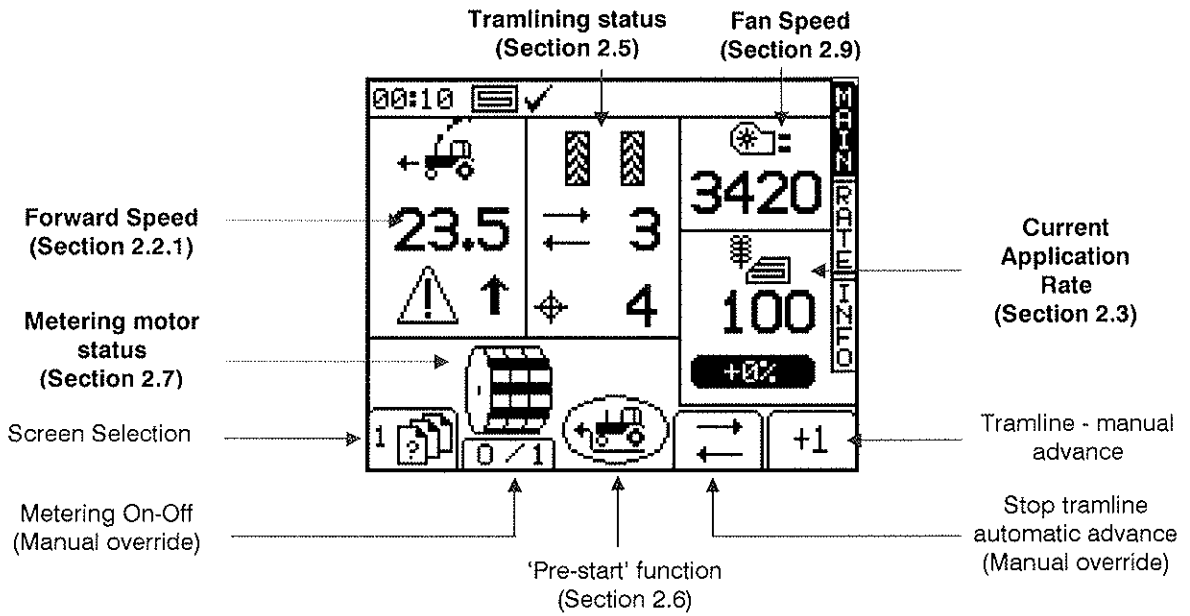
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1 Initial Settings

1.1 Menu keys

All instrument functions are accessed by five keys below the LCD display.

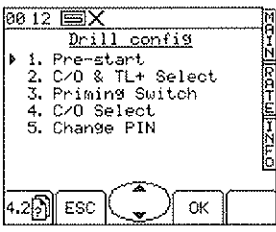
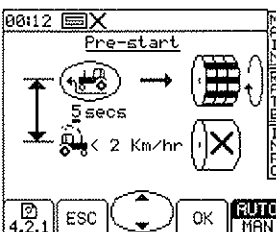


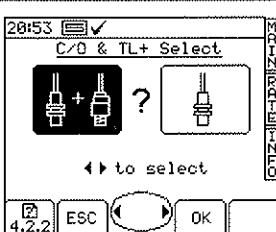


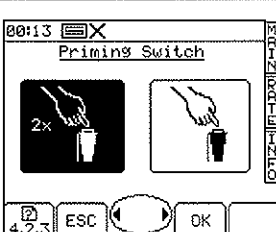
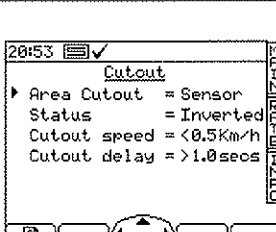
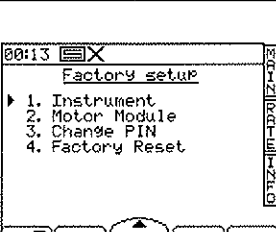
There are three primary screens MAIN, RATE and INFO for normal operating functions, and a SETUP screen for calibration functions. These are selected by using the 'Screen Select' key and scrolling through each screen.

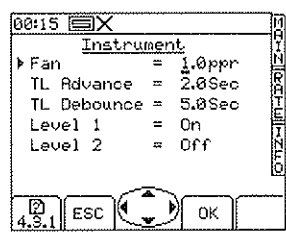
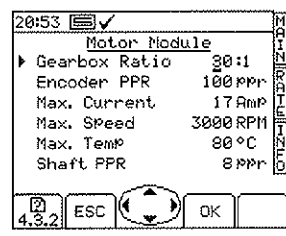

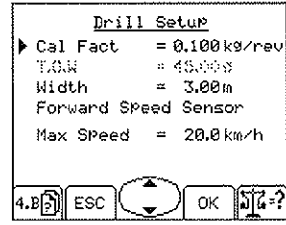
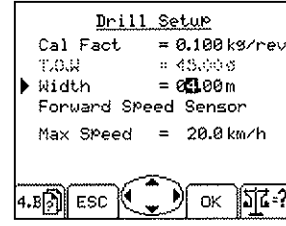


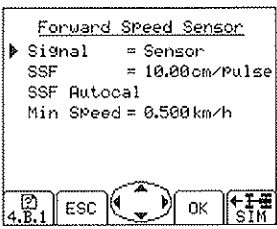
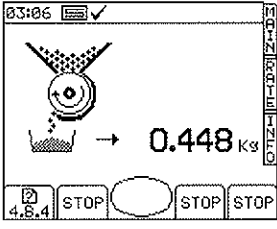
1.2 Initial setup routine

The Artemis Lite will need to be configured for the specific type of drill, which it is being fitted to, for example, Width, Tramlines, Speed.

#	Step	Display
1	Start Setup routine When the instrument is first switched on then the Artemis Lite startup screen is shown.	
2	Main Menu Use the 'Screen Select' key in order to get to the Main Menu screen.	

<p>3</p>	<p>Drill Config</p> <p>Select option 2. Drill Config from the Main Menu</p>	
<p>4</p>	<p>Pre-Start</p> <p>Configure the Pre-Start time.</p> <p>This time setting is how long the motor will run for before stopping if it has not received a forward speed pulse.</p>	
<p>5</p>	<p>C/O & TL+ Select</p>  <p>Separate Area Cutout sensor. L/R marker sensors fitted. Tramline advance triggered from marker sensors.</p>  <p><i>NOTE: Increase debounce time if false counts occur in operation.</i></p> <p>Tramline advance triggered via Area Cutout sensor.</p>	
<p>6</p>	<p>Priming Switch</p>  <p>LATCHING: The priming switch is pressed and released to start the motor. It is then pressed and released a second time to stop the motor.</p>  <p>NON-LATCHING: The priming switch must be pressed and <u>held</u> to run the motor.</p>	
<p>7</p>	<p>C/O Select</p> <p>The Area Cut Out sensor can be configured to work either from the Sensor (Finger Switch) or by the speed signal.</p> <p>If Speed is selected then once the instrument drops below the 'Cutout Speed' it will change state to be 'Out Of Work'</p>	
<p>8</p>	<p>Factory Setup</p> <p>Return to the Main Menu using the ESC button and then select 3. Factory Setup and enter the PIN code.</p>	


<p>9</p>	<p>Instrument Setup</p> <p>Fan – This equals the no. of magnets on the magnet carrier fitted to the fan shaft. Or the number of blades an inductive sensor will monitor.</p> <p>TL Advance – This is the number of seconds for which the TL Advance sensor must be closed before the TL will count +1.</p> <p>TL Debounce – This is the number of seconds for which the TL Advance sensor must be open after closing before the TL will accept another advance count.</p> <p>Level 1 - 'Full = 0V' - Hopper 1 level sensor is grounded when the hopper is full. 'Empty = 0V' - Hopper 1 level sensor is grounded when the hopper is empty.</p> <p>Level 2 (Upper Level) - As above.</p>	 <p>00:15 Instrument</p> <ul style="list-style-type: none"> Fan = 1.0ppr TL Advance = 2.0Sec TL Debounce = 5.0Sec Level 1 = On Level 2 = Off <p>4.3.1 ESC OK</p>
<p>10</p>	<p>Motor Module</p> <p>Set the Gearbox Ratio and the Encoder Pulses Per Rev to the same as the motor specification. These should be correct for a standard RDS motor.</p> <p>Configure the Shaft PPR to the number of magnets on the Metering shaft magnet ring. If there is no Shaft Confirmation Sensor fitted then set this to 0.</p>	 <p>20:53 Motor Module</p> <ul style="list-style-type: none"> Gearbox Ratio = 30:1 Encoder PPR = 100ppr Max. Current = 17Amp Max. Speed = 3000RPM Max. Temp = 80°C Shaft PPR = 8ppr <p>4.3.2 ESC OK</p>
<p>11</p>	<p>Drill Setup</p> <p>Return to the Main Menu using the ESC button</p> <p>and then select the  button to enter the Drill Setup page.</p> <p>The Cal Factor can be configured using the Auto Calibration Routine.</p>	 <p>Drill Setup</p> <ul style="list-style-type: none"> Cal Fact = 0.100 kg/rev TDR = 45.00s Width = 3.00m Forward Speed Sensor Max Speed = 20.0 km/h <p>4.B ESC OK</p>
<p>12</p>	<p>Drill Width</p> <p>Using the arrow keys, program in the full drill width for the machine that the system is fitted to.</p>	 <p>Drill Setup</p> <ul style="list-style-type: none"> Cal Fact = 0.100 kg/rev TDR = 45.00s Width = 3.00m Forward Speed Sensor Max Speed = 20.0 km/h <p>4.B ESC OK</p>

<p>13</p>	<p>Forward Speed Sensor Factor</p> <p>There are two options for the speed sensor. If an RDS TGSS Radar Speed is fitted then the SSF (Speed Sensor Factor) will be 0.778 cm/pulse. If an Encoder is fitted then you must calculate how many cm the landwheel will turn for 1 pulse.</p> <p>By selecting SSF Autocal, 100m can be marked out in the field and the box will automatically calculate the speed sensor factor.</p>	
<p>14</p>	<p>Product Calibration</p> <p>Refer to Section 2.1 for detailed instructions.</p>	

2. Product calibration

2.1 Initial product calibration

Set up the drill in the usual way for a bucket test.

- From the SETUP screen, press the  key.
- Select the desired units then enter the weight required to be metered out (fig.12) and press ENTER. The metering unit will then operate at the programmed calibration speed to dispense the correct amount of product, then stops. The instrument then displays a weight figure based on the existing programmed product calibration factor.

NOTE: If a priming switch is employed for calibration the calibration routine will commence from fig. 13.

- Weigh the contents of the container, and then enter the ACTUAL weight dispensed (fig. 14) and press ENTER to confirm.

Figure 12

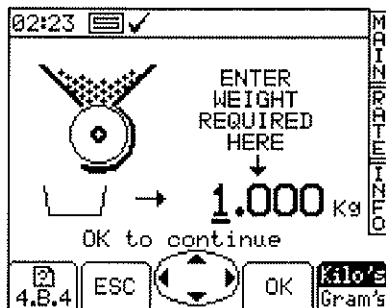


Figure 13

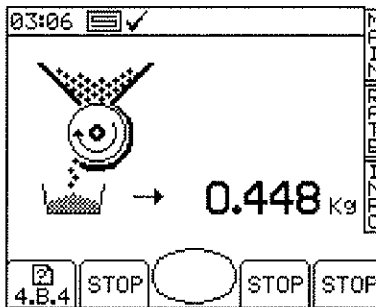
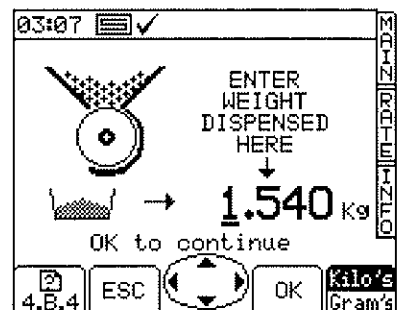
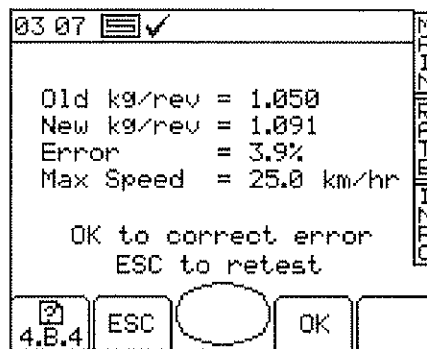


Figure 14



3. Press ENTER again for the instrument to re-calculate and display the new calibration factor in kg/rev, the error %, and the maximum forward speed that is permissible based on the application rate set for the product (fig.15).

Figure 15



4. Press ENTER again to confirm and store the new calibration factor, or press ESC to return to the SETUP menu screen.

It is recommended to reset the PART TOTAL to zero before commencing drilling. This will enable you after drilling an area, to quantify any error in the calibration factor by logging the theoretical amount of product used against a known amount used (a whole bag for example).

You can then adjust the calibration factor precisely, if necessary (section 2.5.2).

NOTE: Systems fitted to 'Accord' type metering mechanisms.

When changing from a low rate to a high rate i.e. 3kg/ha to 100kg/ha use the following procedure:

1. Move the metering slide to a position for the higher rate.
2. Operate the product calibration routine, dispense a suitable amount of product and enter the weight gained. The error will be considerable but press enter to correct the calibration factor and continue (see FIG 15).
3. Now program the required application rate (see SECTION 2.3).
4. Perform the product calibration routine again, the error this time will be marginal. Accept the error and begin drilling.

When changing from a high rate to a low rate i.e. 100kg/ha to 3kg/ha use the following procedure:

1. Move the metering slide to a position for the lower rate.
2. Operate the product calibration routine and enter the weight gained. If using the priming switch simply dispense a small amount of product and enter the weight. The error will be considerable but press enter to correct the calibration factor and continue (see FIG 15).
3. Now program the required application rate (see SECTION 2.3).

Perform the product calibration routine again this time dispensing a suitable amount of product. The error this time will be marginal. Accept the error and begin drilling.

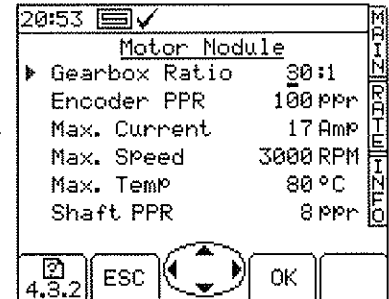
3. Other Settings

3.1 Metering unit(s) setup



3. Factory Setup

2. Motor Module



The only settings that may need changing are,

- (i) 'Shaft PPR: - This equals the no. of magnets on the magnet carrier fitted to the metering shaft(s). The magnet carrier supplied has 3 magnets, therefore set '3 ppr'.

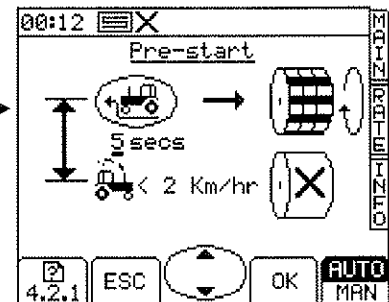
3.2 Pre-start function

The pre-start function helps to avoid an un-seeded area on entering work. It starts the metering unit at the calibration speed while the drill is still stationary, and 'primes' the drill so that the seed reaches the coulters just as the drill enters work.



2. Drill Config.

1. Pre-start



The pre-start time is established by trial and error. Simply enter the required value. Default is 5 seconds.

The metering motor will run at the calibration speed for the preset time limit, or until the forward speed exceeds 2km/hr, when full proportional control then takes over.

AUTO/MAN – when set to MAN (default) the Pre-Start must be initiated manually by the operator. If set to AUTO the Pre-Start will be initiated automatically when the drill is lowered.

3.3 Priming Switch

You can select either latching or non-latching operation of the momentary-action priming switch(s).

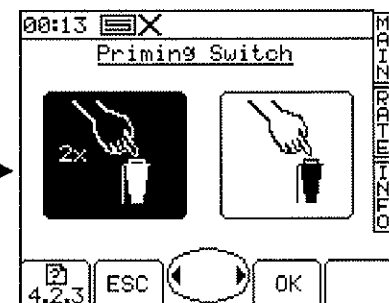


2. Drill Config.

1. Pre-start

2. C/O & TL Select

3. Priming Switch

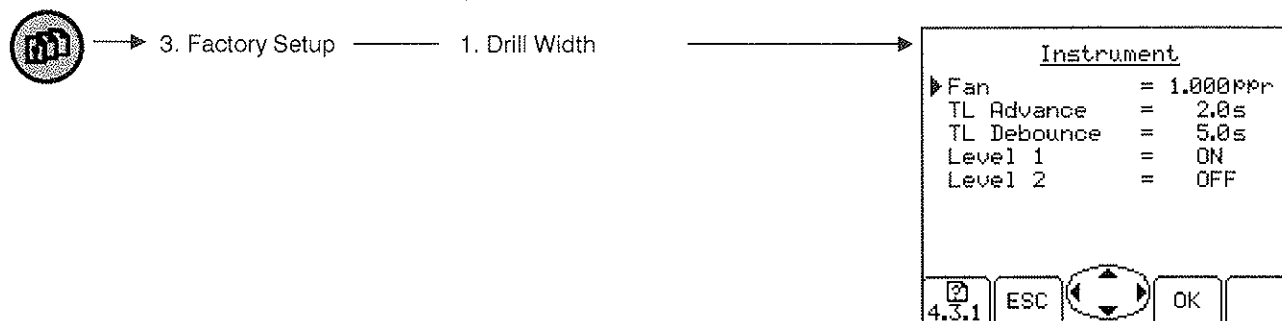


LATCHING: The priming switch is pressed and released to start the motor. It is then pressed and released a second time to stop the motor.



NON-LATCHING: The priming switch must be pressed and held to run the motor.

3.4 Fan speed sensor / Hopper Level sensor(s)



- (i) 'Fan PPR' - This equals the no. of magnets on the magnet carrier fitted to the fan shaft.
- (ii) 'Level 1':- 'ON to enable the Hopper Level Sensor. OFF to disable the sensor.
- (iii) 'Level 2':- As above.

Document history:

Issue 1: 28/10/10 Original issue