Operator’s Manual

Variable Rate Irrigation
STANDARD PARTS LIST:
The parts listed below are a guide only as the parts needed to install the 7000 VARIABLE RATE IRRIGATION depends on the pivot size. Parts marked X must be bought locally.

### ELECTRONICS

<table>
<thead>
<tr>
<th>PART No.</th>
<th>DESCRIPTION</th>
<th>QTY</th>
<th>SUPPLIED</th>
</tr>
</thead>
<tbody>
<tr>
<td>7000</td>
<td>MASTER NODE</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>604</td>
<td>FARMSCAN IRRIGATION MANAGER SOFTWARE</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>AM-7000</td>
<td>INSTRUCTION MANUAL</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>T-136</td>
<td>GPS WITH CABLE</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>HM-506</td>
<td>SCREWDRIVER</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>PC-508FS</td>
<td>USB STICK</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>SD-15B-05</td>
<td>GPS DC/DC CONVERTER</td>
<td>1</td>
<td>✓</td>
</tr>
<tr>
<td>HG-664</td>
<td>WATERTIGHT GLAND</td>
<td>2</td>
<td>✓</td>
</tr>
<tr>
<td>HG-607</td>
<td>WATERTIGHT GLAND</td>
<td>3</td>
<td>✓</td>
</tr>
<tr>
<td>7001</td>
<td>8 CHANNEL SLAVE NODE</td>
<td>TBD</td>
<td>✓</td>
</tr>
<tr>
<td>P-275</td>
<td>FERRULES</td>
<td>20/each</td>
<td>✓</td>
</tr>
<tr>
<td>HG-607</td>
<td>WATERTIGHT GLAND</td>
<td>2/each</td>
<td>✓</td>
</tr>
<tr>
<td>HG-664</td>
<td>WATERTIGHT GLAND</td>
<td>1/each</td>
<td>✓</td>
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### OPTIONAL PARTS

<table>
<thead>
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<th>PART No.</th>
<th>DESCRIPTION</th>
<th>QTY</th>
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<tbody>
<tr>
<td>DRH-120-24</td>
<td>3 PHASE POWER SUPPLY</td>
<td>TBA</td>
<td>✓</td>
</tr>
<tr>
<td>MDR-60-24</td>
<td>110v POWER SUPPLY</td>
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### AIR

<table>
<thead>
<tr>
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<th>DESCRIPTION</th>
<th>QTY</th>
<th>SUPPLIED</th>
</tr>
</thead>
<tbody>
<tr>
<td>¾ HP, 2 GALLON AIR COMPRESSOR</td>
<td>1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AIR COMPRESSOR MOUNTS</td>
<td>1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AIR COMPRESSOR HOUSING</td>
<td>1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AIR COMPRESSOR PRESSURE SWITCH</td>
<td>1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AIR PRESSURE GAUGE</td>
<td>1</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>9 GALLON AIR TANKS</td>
<td>TBD</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>AIR TANK MOUNTING BRACKETS</td>
<td>TBD</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>¾” id AIR LINE</td>
<td>TBD</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>3/8” id AIR LINE</td>
<td>TBD</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>HM-502</td>
<td>¾” TO 1/8” THREADED T-PIECES</td>
<td>TBD</td>
<td>X</td>
</tr>
<tr>
<td>HM-506</td>
<td>3/8” TO ¾” T-PIECES</td>
<td>TBD</td>
<td>X</td>
</tr>
<tr>
<td>HM-500</td>
<td>¾” TO 1/8” L-PIECES</td>
<td>TBD</td>
<td>X</td>
</tr>
<tr>
<td>S-390-4.2W-24VDC NO&amp;NC</td>
<td>BERMAD AIR SOLENOIDS</td>
<td>TBD</td>
<td>X</td>
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### WATER

<table>
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<tr>
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<th>SUPPLIED</th>
</tr>
</thead>
<tbody>
<tr>
<td>IR200</td>
<td>BERMAD WATER VALVES</td>
<td>TBA</td>
<td>X</td>
</tr>
</tbody>
</table>
Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Modifications not expressly approved by the manufacturer could void the user's authority to operated the equipment under FCC rules.
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NOTE:
All high voltage connections must be made by a certified electrician. Attempts to do so by an unqualified person is illegal and could result in serious injury or death.

Do not connect power to the system until the installation is complete.

DOUBLE CHECK ALL CONNECTIONS!
INCORRECT WIRING WILL RESULT IN DAMAGE TO THE SYSTEM
1.0 INTRODUCTION

The Farmscan 7000 Variable Rate Irrigation controller manages the watering regime of a pivot irrigation system in stand alone mode or using up to six 8 channel slave node boxes (up to a maximum of 48 watering channels plus end gun). Taking pivot position from a GPS the controller manages the watering rate by cycling sprinklers on/off to deliver the application rate specified by the user in an application map.

Application maps are created on a PC, using “Farmscan Irrigation Manager” software. Maps are then copied onto a USB stick and uploaded into the 7000. Up to 5 application maps can be uploaded into the internal memory and activated when required.

The application map divides the area covered by the pivot into pie slices from 1-10° wide, each slice can be split into a maximum of 48 segments. Watering rates can be set from 10% to 200% as desired, 10% to 90% is achieved by shutting the water off and 110% to 200% by slowing the pivot down. During application the 7000 controller will automatically recalculate the rates if the current segment does not call for 100% or more and speed the pivot up to maximize efficiency.

During application the display will show current watering rate, position, end gun status and speed and it will cycle through the node settings showing their application rates.

The system provides the option to control a beacon light, to indicate that the system is working under automatic control. Any error conditions will cause the beacon light to extinguish.

This manual provides detailed instructions on how to install, operate and calibrate the Farmscan 7000 Variable Rate Irrigation controller.

Important note:

There are two ways of controlling a pivot either pneumatic or hydraulic pilot control. The pneumatic method uses air to turn off the sprinklers and provides the best solution, but it is more expensive and involved to install. The Hydraulic control use the existing water pressure to turn the water off. If applying water the pneumatic method should be used to stop solids in the water causing any malfunctions.

This manual is written assuming pneumatic control is utilised.

The power supplies should be fitted in the pivot tower junction boxes where access to the high voltage is convenient.

A 3 phase supply (DRH-120-24) or 110V (MRD-60-24) can be selected depending on pivot type.

Power supplies are currently purchased from Meanwell.
2.0 INSTALLATION

2.1 7000 MASTER NODE INSTALLATION

2.1.1 INSTALLATION

Mounting to Pivot
The 7000 is housed in the master node box which is commonly hung on the first span of the pivot using a bracket that can be constructed out of 'L' beams. Fix the master node to the bracket and mount the bracket to pivot boom near the centre tower.

Connection inside Box
The 7000 is a DIN rail unit and it connects to 4 external relays to control fail safe relay, end gun, walking speed and the beacon light.

Data is bussed from master through to all the nodes with a light gauge data cable.
24 Volt local power is derived from a high voltage switch mode power supply (single or 2 phases optional). Use the P-275 ferrules and the little screwdriver provided to terminate the wires neatly into the screw terminals.

POWER
Each control box has a 24 volt switch mode power supply either suited to be wired to an extra high voltage (across two phases of the 3 phase power) or to 110V ac. The switch mode is located in the pivot junction box. The cable to connect to the mains power on the pivot must be a locally approved high voltage cable and this connection must be made by a licensed electrician. A low voltage cable is then used to bring the 24 volts to the master and slave nodes.
COMS CABLE
3 or 4 core data cable is required to connect the master node to the node boxes.

*Specification*
3 or 4 core cable (UV resilient outer insulation) containing 3 or 4 separate insulated wires with gauge 21 awg 14/0.20.

2.1.2 MASTER NODE CONNECTIONS
The master node switches out the manual controls from the existing pivot control panel through the failsafe relay to allow the Farmscan 7000 to control the end gun and the speed of the pivot.

To do this the end gun and the walking motor must be connected to the pivot control panel through the master node relays.

The master node can also control up to 5 zones plus the end gun as stand alone or more zones with additional slave nodes.

END GUN CONNECTION
The 110 Volt wire from the Pivot control panel, that goes to the end gun, must be cut.

The wire connected to the end gun is connected to the “End Gun Out” terminal on the "END GUN" relay.

The wire connected to the pivot control panel is connected to the “End Gun In” terminal on the end gun relay. See the diagram below.

SPEED (WALK MOTOR) CONNECTION
The 110 Volt wire from the pivot control panel, which controls, the walk motor must be cut.

The wire connected to the walk motor is connected to the “Walk Out” terminal on the Walk Relay.

The wire connected to the pivot control panel is connected to the “Walk In” terminal on the walk relay. See the diagram below.

BEACON LIGHT CONNECTION
A beacon light indicating the Farmscan 7000 is controlling can be connected to the beacon relay. The light will be turned on when the 7000 is controlling the pivot.

Connect the live wire from the beacon light to the “Beacon Out” terminal and the neutral from the beacon light to the neutral on the pivot.
Relay terminals.
NC1 is normally connected to C1 when relay in off state and C1 connects with NO1 if relay is energized.

OPERATION OF SAFETY NODE EXPLAINED
When the safety relay is activated, it will give the Farmscan 7000 control of the end gun and walk signal.

When the safety relay is deactivated, it will restore the original connection from your pivots control panel to the end gun and walk motors.
NOTES:
• If the speed mode is disabled in the Farmscan 7000 menu then the pivot will be driven at 100% speed.

END GUN OPERATES IN REVERSE
If the end gun works in reverse (off when it should be on & vice versa), select “End Gun” on the 7000 controller menu and toggle the current setting (high or low).

2.1.3 CONNECTION TO POWER
The power to the master and slaves is derived from a switch mode power supply. The 24 volt generated is connect to the power terminals on the 7000/7001

2.1.4 MASTER BOX CONNECTION TO SOLENOIDS
The master has facility to directly control the first 5 zones, follow the logic applied in section 2.2.2 if this is utilised and connect zone 6 (assume 5 on master) to the first slave node.

2.2 SLAVE NODE INSTALLATION
The slave nodes receive commands from the 7000 to activate air solenoids to stop the water flowing to the sprinklers. The length of time the air solenoids are activated is specified by the user in an application map (% rates) combined with the "DURATION" setting in the “SET UP MENU” of the 7000. For example, if the duration is 100 seconds and the rate is 50% the sprinklers will be on for 50 seconds and off for 50 seconds.

Node boxes are mounted on the towers for easy access. If using water as pilot mount the water pilot solenoid close to the sprinklers it controls.

Each slave node box can control up to 8 watering channels and each channel can be connected to one or more watering valves.
Up to 6 node boxes can be installed. Giving a maximum of 48 solenoids (watering zones) plus end gun.

Each ring on a watering map represents one channel and the sprinklers it controls. The width is the distance the sprinklers cover along the pivot’s boom.
2.2.1 SETTING UP NODE BOXES ON THE SYSTEM
Follow the guidelines below to connect the node boxes.

- Each node box has a unique address that the master can retrieve. The number of channels connected to the node must be set on the master (see section 3.4.5).

- The node box closest to the centre of the pivot must be assigned as node 1. The nodes must be assigned chronologically, so the last node is closest to the outer end of the boom.

2.2.2 NODE BOX CONNECTION TO SOLENOIDS

METHOD OF WIRING
The air solenoids are mounted conveniently close to the slave node. There is a liquid tight fitting to bring the cables from the air solenoids into the box. The cables from the air solenoids are connected to the node terminal blocks in order. To avoid shorting between terminals use the ferrules provided. Screw down each terminal tightly, without over tightening, making sure the wire has been firmly grasped.

CONNECTION
Up to eight air solenoids can be wired into one node box. There are eight 2 port terminals.

Wire the cables of the air solenoid, which controls the closest control zone to the pivot point tower, into the “SOLENOID 1” terminal.

Wire the second closest air solenoid to the pivot point into the “SOLENOID 2” terminal block. Wire the third closest air solenoid to the “SOLENOID 3” terminal and so on until all eight solenoids or as many as there are on this node are wired into the node box.

For almost all DC solenoids or control valves, polarity does not matter. Therefore wires from the air solenoid need not be wired into the 2 port terminal in a set way.

\[
\begin{align*}
&- + \\
&24V
\end{align*}
\]

### 2.2.3 NODE BOX INTERCONNECTIONS

Communication to the slave nodes is RS485 and effected through 3 wires (A,B and Ground) It is parallel connection, meaning all A are connected together, all B connected together and all grounds together.

For ease of wiring Pin 1 and 2 as well as pin 7 and 8 are internally connected.

See the diagram below.

### NODE POWER CONNECTION INFORMATION

Power is connected to the node boxes as shown in the diagram below if a 3 phase supply is used.

Connect two phases of the 3 phase power. Use local colour code convention cables.
2.3 AIR LINE INSTALLATION

The main air line 3/8” i.d (14.7 mm o.d.) runs from the compressor along the length of the pivot, supplying air pressure to the solenoids which in turn supply air to control the water valves. A drop air line ¼” i.d (8 mm o.d) runs from the air solenoids to the water valves. A common arrangement is for one air solenoid to control 4 water valves.

IMPORTANT!
The air solenoids only direct air pressure to the water regulators to turn watering off. Make sure the air solenoids are set to work this way.

This provides a failsafe system where if air pressure is lost or the electronics fails all watering will turn on, avoiding excessive pump pressure and ensuring the crop still gets watered.

2.3.1 AIR COMPRESSOR & AIR TANKS COMPRESSOR
For most pivot systems a 10 CFM air compressor is sufficient. If a single phase unit is used then a 3 phase to single phase transformer is needed.
If the pivot is a full circle pivot the compressor is hung on the first span of the pivot. See picture below for typical installation.
To keep water from accumulating in the air tank mount the air compressor on a slight angle towards the drain and plumb the air outlet from the drain plug on the bottom of the storage tank to a normally open dump valve, so that water can escape through the lines. See the diagram below.

TANKS
Air buffer tanks are needed to ensure the timely supply of air to the solenoids. Without them a delay of air pressure to the solenoids is likely to occur affecting the system's operation. Two 9 gallon (30l) air tanks are sufficient for a 2000’ pivot.

Mount a tank on the last tower and one in the middle of the pivot.

The air tanks and the compressor are to be sourced locally, they are not supplied by Farmscan.
TIP: 3 phase compressors are not always economical to procure but it is very economical and simple to fit a 3 phase motor to a single phase compressor.

2.3.2 MOUNTING AIR SOLENOIDS
Air solenoids are mounted close to the node boxes.

Screw the T-pieces and the L-piece into the air solenoids and cut sections of tubing to connect the solenoids on the bracket together. For 8 solenoids seven ‘T’ pieces and one ‘L’ piece are needed. The tubing that connects the solenoids together is connected to the main airline. See the diagrams below.

The picture below shows the S390 valve with top inlet installed on a pivot.
The diagram below shows the connections to be made to the ports of the air solenoids. The diagram also shows the position of the switch, so that when the air solenoids are **off** (0 VDC) air pressure is **not** directed to the water valves (ie watering on). Note water valves are normally open, leaving watering on in case of power or pressure loss. When the air solenoids are on (24VDC) they direct pressure to the water valves turning watering off.

If ants of other insects are likely to get into the air valves, fit an air silencer to the vent port.

**NOTE:** When solenoids are off air flows back from port 2 to port 3. When on, air flows from port 1 to port 2.
**TYPE OF AIR SOLENOIDS USED**

Air solenoids must be the 24VDC type with a 3 port base and mounting plate holes as shown below.

![Diagram of mounting holes in air solenoid base.]

The Bermad S200 3 series, 24VDC, 4.2 Watt air solenoids with a 10 bar pressure rating and a normally closed base are best suited. If using S390 24VDC normally closed Bermad solenoids, make sure bases have a 1.6mm (1/16”) orifice size.

**WATER VALVES AND AIR SOLENOIDS**

It is recommended that if an air solenoid is controlling 4 water valves then 3 t-pieces are to be used. See the diagram below.

![Diagram of water valves and air solenoids setup.]

**2.4 WATER INSTALLATION**

The water valves must be normally open, so that air pressure from the air solenoid closes the water valve or turns watering off. Without air pressure water valves must be open allowing water through to the sprinklers.

Typically 4 water valves are connected to one air solenoid using three t-pieces as branch off points.

Water valves recommended to be used are the 1” Bermad 205 hydraulic control valve.

**IMPORTANT NOTE**

To ensure that the pivot application rates are properly controlled the sprinklers must be fitted with pressure regulators.
2.5 GPS INSTALLATION

A GPS with a RS232 serial data output can be connected to any slave node or directly to the master, it is recommended the GPS be placed towards the far end of the pivot. For best results, mount the GPS following the guidelines below:

- Mount **high** on the pivot close to end tower. If end gun or impact sprinklers are used, raise GPS above water spray.

- Mount at least **1.5** metres (5 feet) away from any transmitting antennae (of any frequency). Closer positioning may overload GPS RF receiver circuits.

- Mount GPS as close to level as possible.

- GPS must function correctly at ultra slow speeds (some GPS become erratic at slow speed).

- **Do not extend the RS232 cable to GPS beyond 20m (60 feet)**

**CONNECTION TO GPS UNIT**

Connect the ground of the GPS to terminal 12 and to the ground of the GPS supply, and tx from GPS to terminal 11 on the slave node. Connect the supply to the GPS directly to a 24/24, 24/12 or 24/5 volt DC/DC GPS power supply as required.

2.6 TESTING INSTALLATION

**NODE, AIR AND WATER OPERATION**

The outputs of each Slave node box can be tested locally at each node box by pressing the “TEST” button or remotely at the master node using the “TEST MENU”.

The Slave nodes output 24V DC to the air solenoids to turn watering off. In the case of a power or comms failure the watering will be on.

**Procedure:**

1. Make sure power is supplied to the node and the air compressor is on.
2. Press the black “TEST” button on the Node.
3. Use up/down arrows to cycle through the 8 channels turning water off.
4. Press “RUN” to return to normal operation

LED 4 will flash to indicate unit is in test mode.
NOTE:
If the 7000 is controlling to an application map and the “TEST” button is pressed the node box will return to remote control as soon the test finishes.

DURING A COMMS FAILURE
If the 7000 can not communicate with the slave nodes then the LCD on the 7000 will show a comms error message and the nodes will revert to all sprinklers watering.

3.0 OPERATION

3.1 KEYS

3.1.1 MENU
The Menu key is used to enter the program menus, each press of the menu key will advance the controller to the next level.

3.1.2 CANCEL
Pressing the “Cancel” key will exit to the front screen.

3.1.3 OK KEY
The OK key will enter and exit into programming fields.

3.1.4 ARROW KEYS
The up and down arrow keys are used to increase or decrease the values or settings and to navigate up and down the menus. The Left Right keys enable you to move sidewards in settings to enable courser or finer adjustments to be made.

3.1.5 RESET
Holding the “Cancel” key and the “Right” arrow key during power up will reset the master node memory, deleting the settings and the addresses of the slave nodes.

3.2 MAIN SCREEN
When the system is operational the front screen will show “error messages”, Node condition as well as general status.

Error messages are shown on the top line and if there is more than one error they will cycle through all current errors

**LIST OF ERROR MESSAGES**

* PIVOT ERROR: Indicates GPS position is more than 100’ (30m) from the pivot circle.
* BAD COMMS: Indicates that one or more nodes are not responding.
* GPS FAILED: Indicates that communications to GPS has failed
* NO MAP: No map loaded
* DATA ERROR: The stored data has been corrupted
* STOPPED: The pivot has ceased moving

The Master and Node watering rate information will cycle through showing the current watering rates for each zone.

In addition the current angle (ANG) of the pivot, the END GUN (GUN) status, the current application rate (inch) equivalent to 100% and the walk speed (SPD) are displayed.

**CONTROL**

If the speed control is active (set up during pivot creation on PC software) the 7000 will adjust the pivot’s speed and valve cycle percentages to achieve the correct rate. It can mean both increasing and decreasing the pivot walk speed. The pivot will walk at the fastest speed to achieve maximum efficiency.

**SAFETY PRECAUTION!**

If a whole wedge in a watering map has been assigned a rate of 0% the 7000 will apply a rate of 20%. This is to prevent damage to the pivot while the pump works against closed watering outlets.

**3.3 INDICATOR LEDS**

The master and slave nodes have a number of LEDs to assist in the diagnostics of the system.

LED 1 (red) Indicates USB activity.
LED 2 (orange) indicats RS485 TX.
LED 3 (green) indicates RS232 RX.
LED 4 (red) if on = slave, if off = master, if flashing = node in test mode.
LED 5 (yellow) indicates node in setup mode.
LED 6 (green) 1 second heartbeat.

In addition there are red indicators for each output indicating the output is active. Light on means air on and water off.
3.4 MENU SCREENS

When you enter a menu screen there is a cursor on the first selection of the menu, use the up and down keys to select the item you wish to change and select by pressing “OK” then use up down to alter. When finished return to selection mode by pressing “OK” again.

NOTE, WHAT YOU SEE IS WHAT YOU GET. IN OTHER WORDS IF YOU CHANGE A PARAMETER AND EXIT THAT SCREEN, THE VALUE THAT WAS SHOWN IS STORED, YOU DO NOT HAVE TO PRESS OK TO LOCK IN ANY CHANGES.

3.4.1 Screen 1/7 “SETUP”

GPS BAUD
Set the baud rate of the GPS

DURATION
Determines the watering duty cycle, if set to 10 seconds and % is 50 then the sprinkler will be on for 5 seconds and off for 5 seconds.

SPEED
Set the normal walking speed of the pivot that corresponds to the INCH RATE set

INCH RATE
Set the watering rate corresponding to the SPEED set.

If the rates being applied are the same as the normal rate, the “SPEED” and “INCHES” values in the main screen will be the same as the normal speed and rate values. If the rates being applied are lesser or greater than the normal rate the pivot’s speed and the flow rate will change and the “SPEED” and “INCHES” values in the main screen will reflect this.

If the normal speed value is set to 100% then the 7000 will not be able to increase the speed of the pivot but only decrease it.

CONTROL
Select if running speed control or valve control (norm). If speed control is selected the system will alter the pivot walking speed if possible if more or less than 100% is applied, by either speeding up the pivot or slowing it down. In normal mode it will only alter the watering rate running the pivot speed at 100%.
END GUN

Used to toggle polarity of end gun operation. Some end guns require signal to be off to water and some signal to be on. Change setting if it is working in reverse.

CELL

If a cell phone modem is connected the 7000 will SMS the number entered here when certain alarm messages occur: Stopped, GPS failed, Pivot Error and Bad Comms.

3.4.2 Screen 2/7 “TEST”

OUTPUT
Select Solenoid, End Gun or Speed to test these functions. Works in conjunction with Rate to set a percentage control regime during test. (Remember that 100% on is light off)

RATE
The application rate for the solenoid can be set from 100 down to 0%, setting 50% for example will cause the solenoid to cycle on off at a 50% duty cycle.

MASTER/NODE
Select the master/node to test, 0=master 1-6 is corresponding slave node.

SOLENOID
Select the solenoid to test.

TEST
Move cursor to test and press OK to start the test.

NOTE: move cursor to item, press OK to activate and use UP/DOWN to change.
3.4.3 Screen 3/7 “DIAGNOSTIC”

VER
Shows the current firmware version running on the 7000.

ID
Each Farmscan 7000 system has a unique ID (serial number)

TX PACKETS
Shows the number of transmissions made by the 7000 since last reset.

RX PACKETS
Shows the number of responses received from slaves since last reset.

GPS PACKETS
Shows the number of transmissions received from GPS since last reset. If there are 4 nodes the tx/rx packets will be 4 times more than GPS (provided all is ok)

Press OK to reset counters.

LON
Shows current GPS longitude.

LAT
Shows current GPS latitude.

If the GPS signal is differentially corrected a “D” will appear after longitude.
3.4.4 Screen 4/7 “NODE SETUP”

On first power up there will be stars in all fields. Move cursor to Poll and press OK and walk to the first slave node and press SETUP. The slave will then identify itself to the master and the master will place its id in the first field. Continue to the rest of the nodes on the line in chronological order and each ID will be added in ascending order.

If there is a node failure move cursor to that node and press “OK” the cursor will now jump to its number (ie 2) use the up down key to set it to 0. Then repeat node setup procedure and proceed to the number two node and press the SETUP button for the master to recognize the new node. The 7000 will always place a new id in the first field with a 0 position.

3.4.5 Screen 5/7 “NODE SETUP”

Once all the nodes are identified and on line go to the second “NODE SETUP” screen and enter the amount of watering zones (SOLS) attached to each node.

If a number is entered against master, the master will directly control zones. Maximum number of zones controlled by master is 5.
USB
Will show the first 8 characters of the USB maker when a good USB stick is found once the file search below has been carried out.

FILE
To search the USB stick for watering maps place cursor on file and press OK, the cursor will change to the right side, now use the up down keys to search for maps. The first 8 characters of the watering maps that are found on the USB stick will be shown in sequence. Press OK to lock a map in and use up down arrows to return to LOAD and press OK to load this map.

MAPS LOADED
Will show the number of maps loaded on the 7000, 5 is the max number that can be loaded.

NOTE The 7000 will only recognize watering maps in the root directory and it will become very slow if there are numerous non pivot files on the stick.
MAP SELECT
Cursor will be on MAP when you enter the screen, map name shown is the current selected watering map, press OK to select and the up down arrow to scroll through the maps loaded on the 7000. The map shown can be deleted by going to delete and pressing OK. The latitude and longitude shown is the centre of the pivot.

3.5 SLAVE NODE

The slave node only has two control functions “TEST” and “SETUP”.

Pressing “TEST” will place the node in test mode, causing air solenoid 1 to turn on (watering zone 1 off). The up and down keys are used to select which solenoid is on. Pressing “RUN” will return node to normal operation, or test will time out after 60 seconds.

Pressing “SETUP” will cause the node to broadcast its ID as explained in section 3.4.4 above. Press “RUN” to return to normal or wait 20 seconds for time out of this function.
3.6 MASTER NODE RESET

Pressing the right arrow and cancel during power up on the master node will cause a complete reset of all data stored in memory including node ID and watering maps.

3.7 FIRMWARE UPLOADING

Loading new firmware on the master or slave node is done by holding the “UP” arrow key during power up with a usb stick containing the new firmware inserted. The red and yellow LEDs will start to flash indicating programming in progress. Flashing stops when programming is complete.