

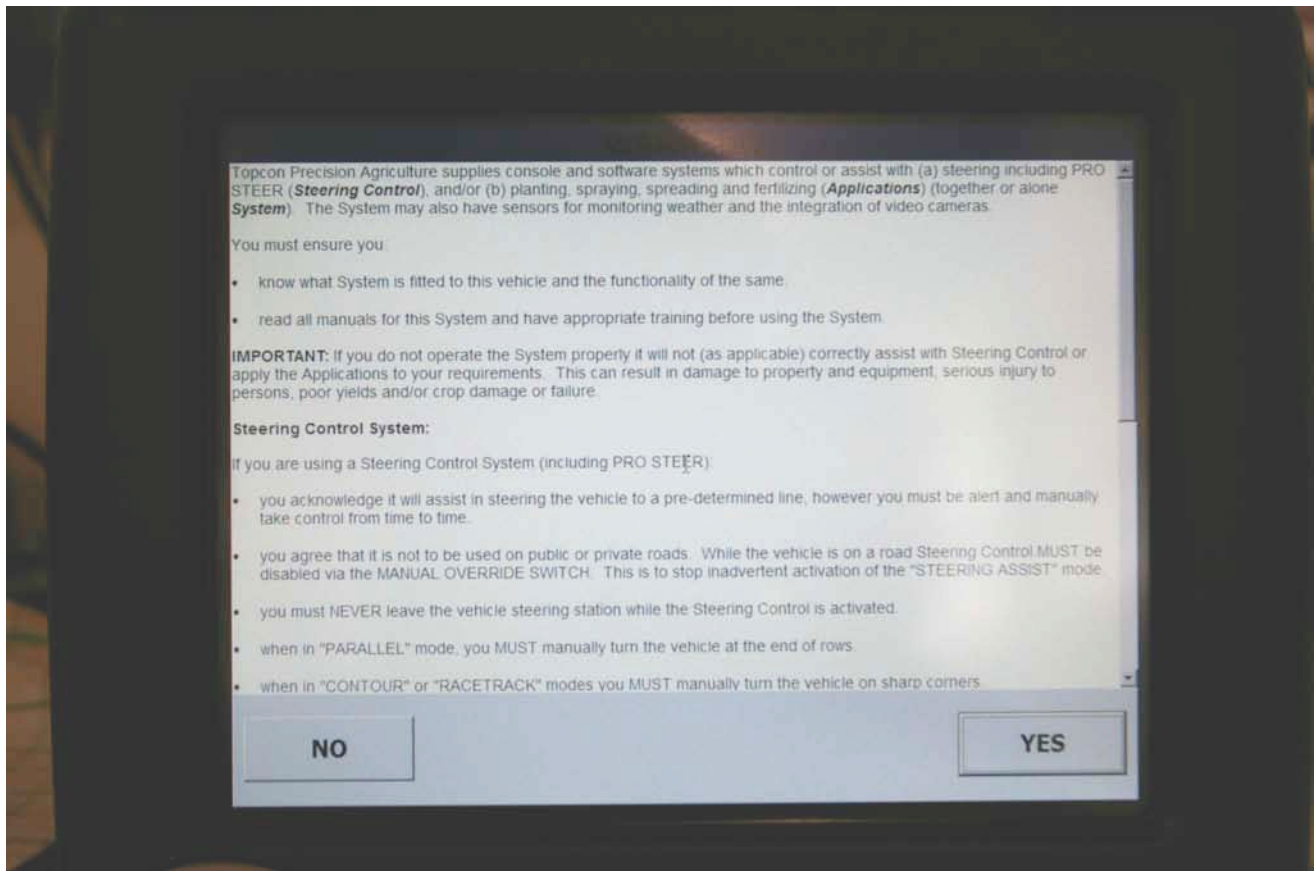


Topcon X20 VRT Monitor Set Up

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Territory Manager
Morris Industries Ltd.**

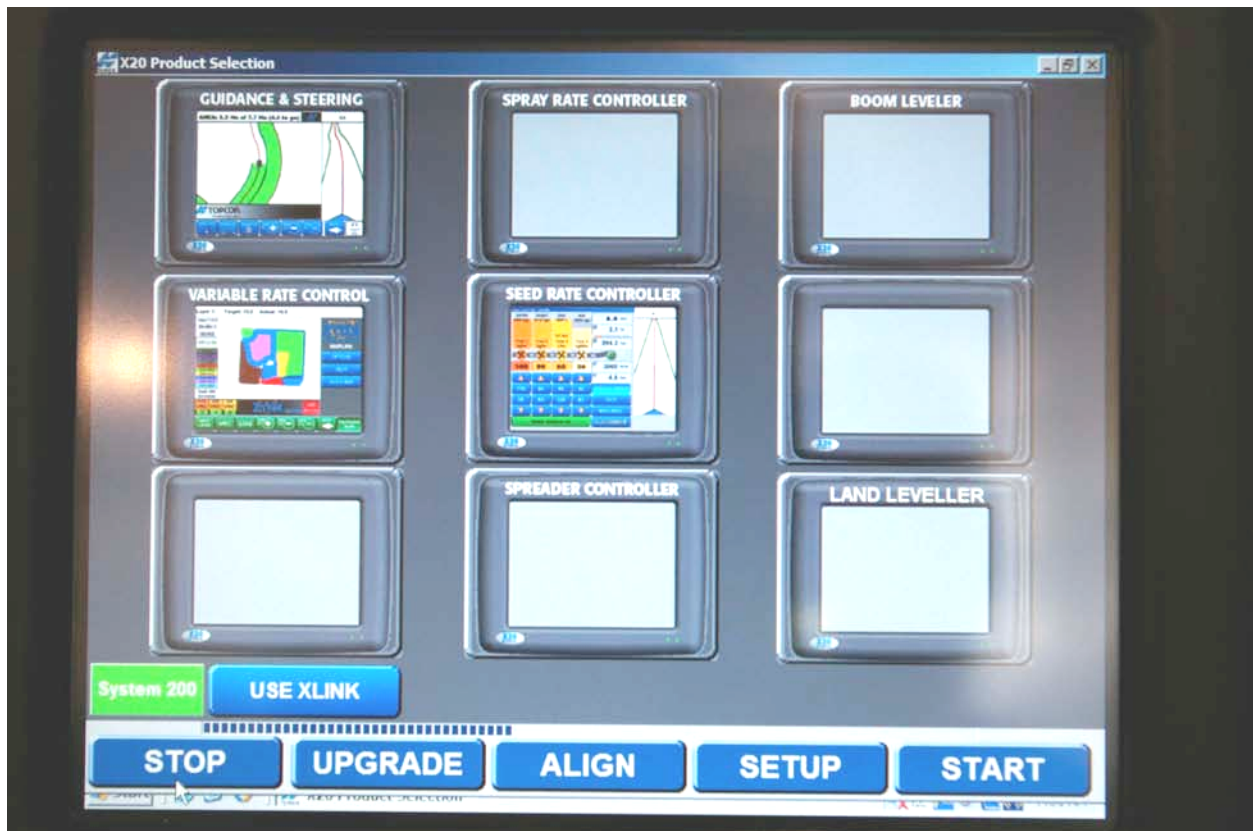
March 2013

To turn on the monitor, hold the button on the back for about 3 seconds. The screen below will come on.

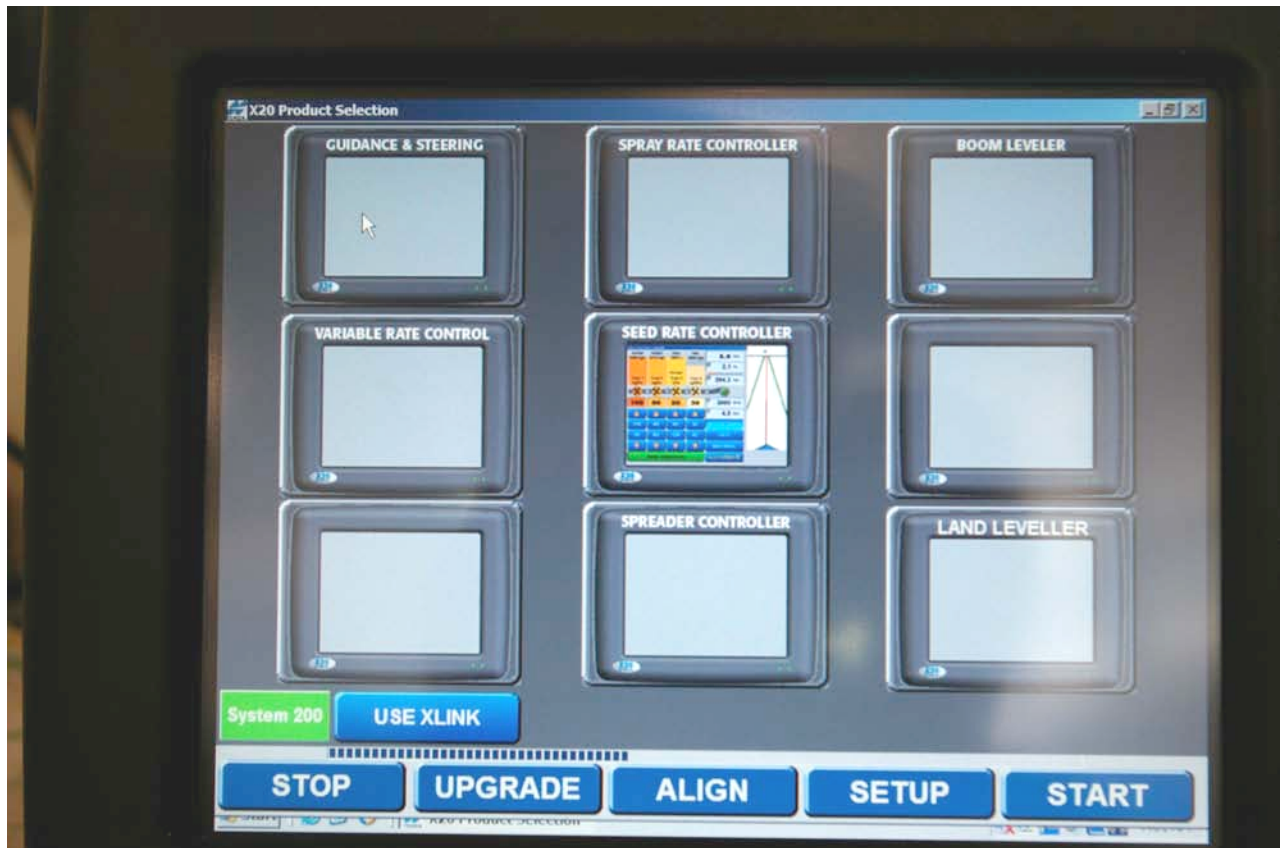


This is the first screen that comes up when the Topcon X20 Monitor is powered up. It is a disclaimer. If you say NO the monitor will not let you proceed. You need to touch YES.

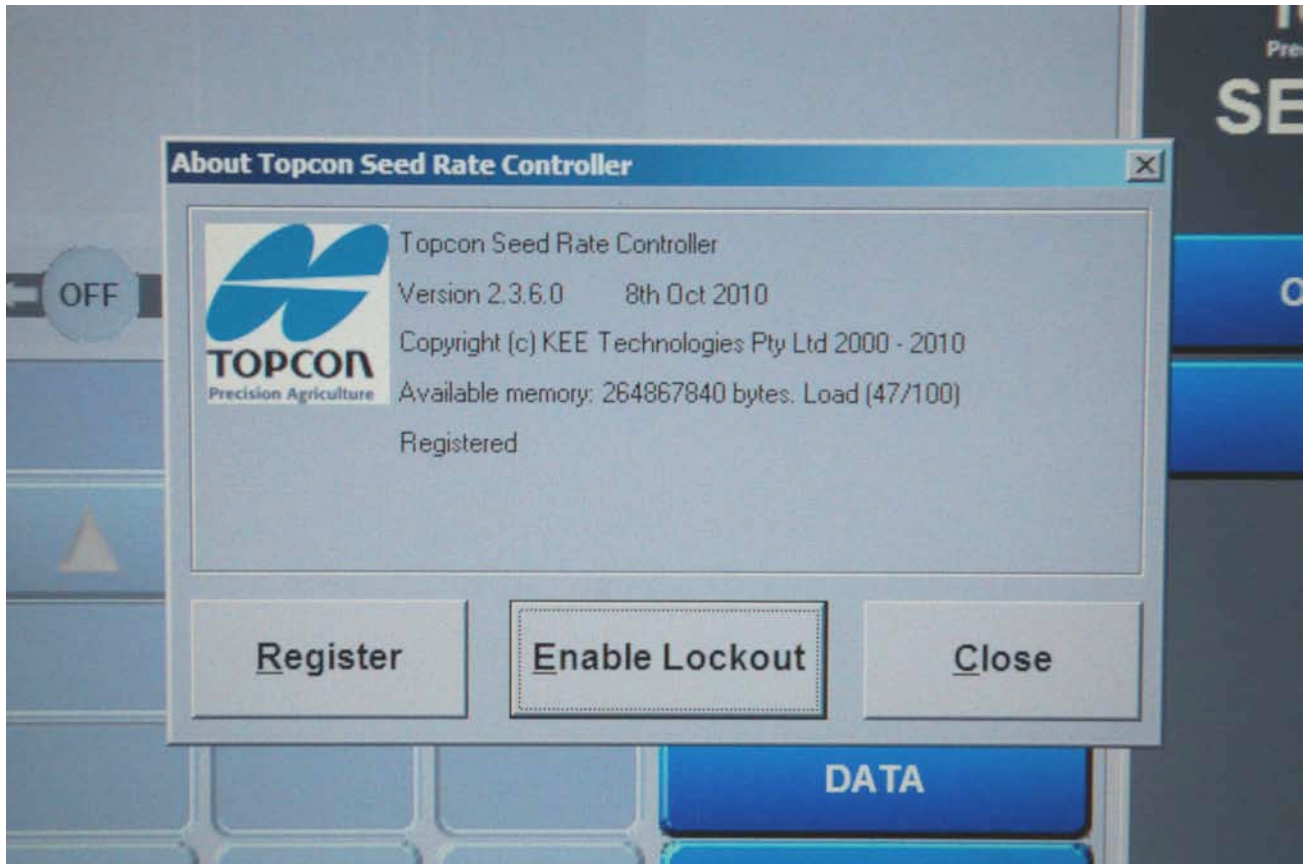
It is a good idea to use the supplied stylus to touch the screen. It makes it easier and is more precise.



Once you touch YES, this is the next screen that comes up. The Topcon X20 that is supplied from Morris for the VRT Cart comes with 3 Modules installed: Guidance & Steering, Variable Rate Control, and Seed Rate Controller. For operating the VRT on the Cart, the only one that we need to have visible is the Seed Rate Controller. Touch the STOP button, then touch the Guidance & Steering and the Variable Rate Control to turn them off. Once you have done that, touch START to proceed.



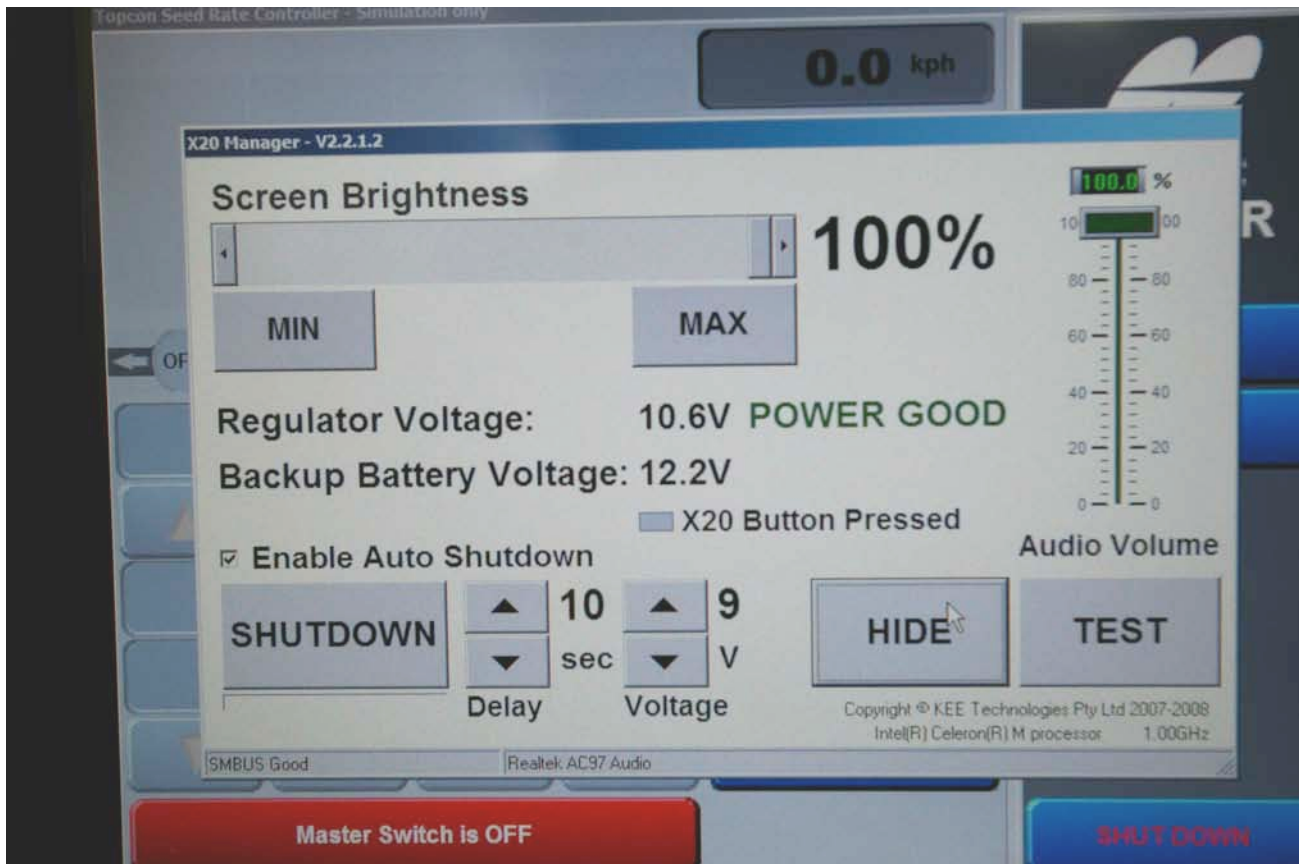
This is what your screen should look like before you touch START. Only the Seed Rate Controller will be enabled.



The current version of Topcon Seed Rate Controller software that Morris Industries Ltd. is using, is Version 2.3.3.0, 8th Oct 2010. Any other version will affect the functionality of the controller. To view the above screen, touch the Topcon logo in the upper right corner of the screen. Note that the screen says "Registered".

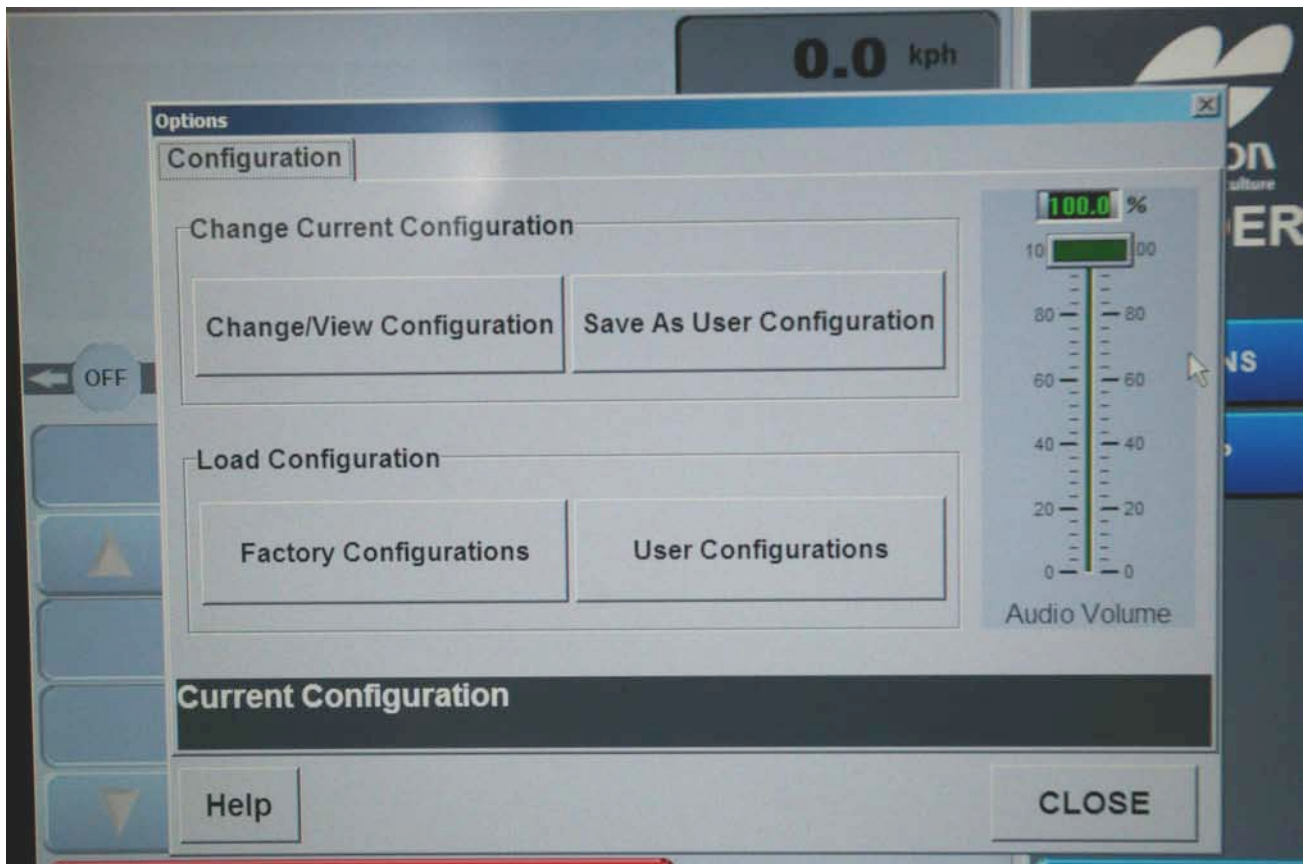


To change the brightness of the screen or the volume, you need to cover the Morris logo with your finger. You do not need to push, just cover it for a few seconds.

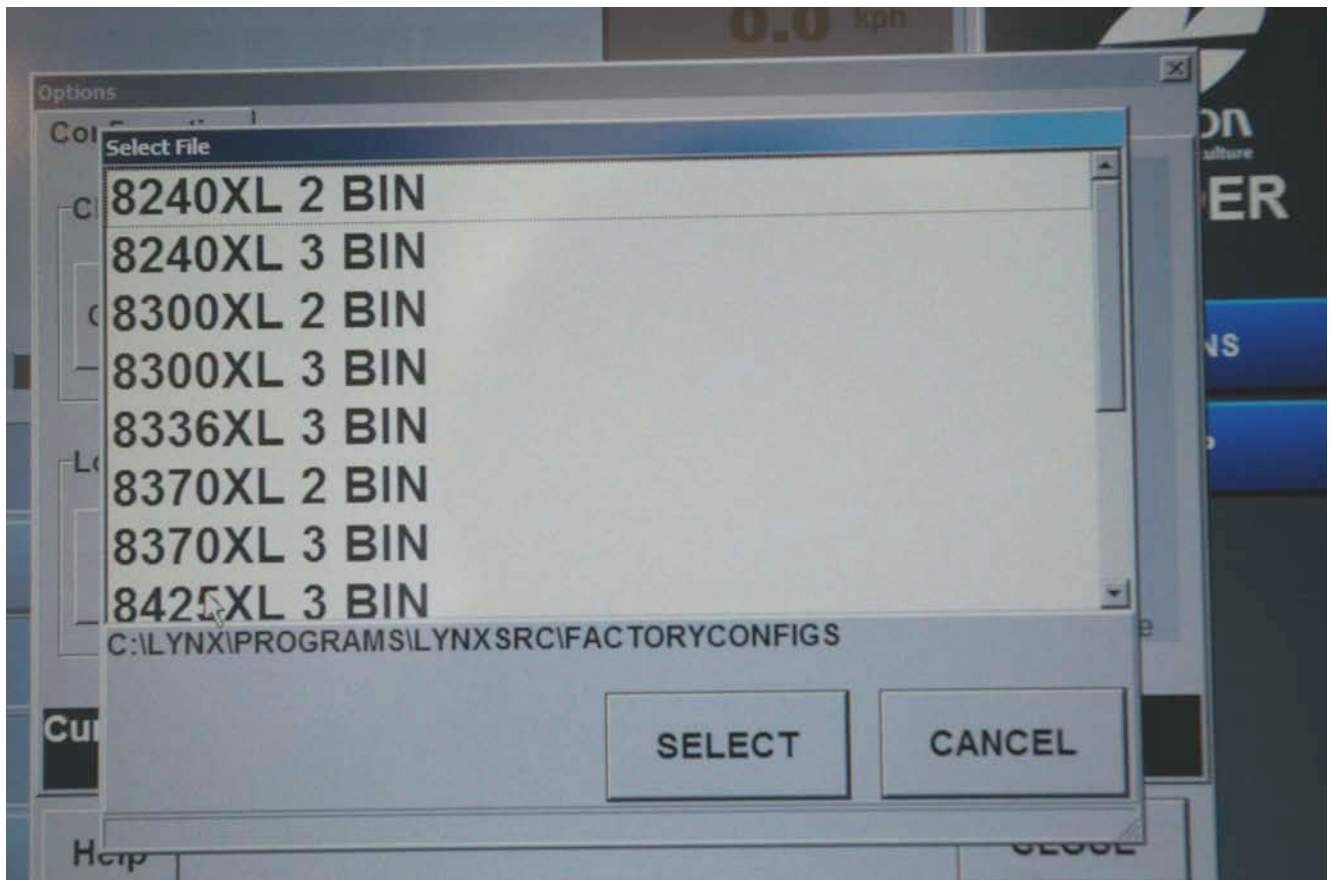


This is the screen that will show up. Move the volume or the brightness sliders to the desired level.

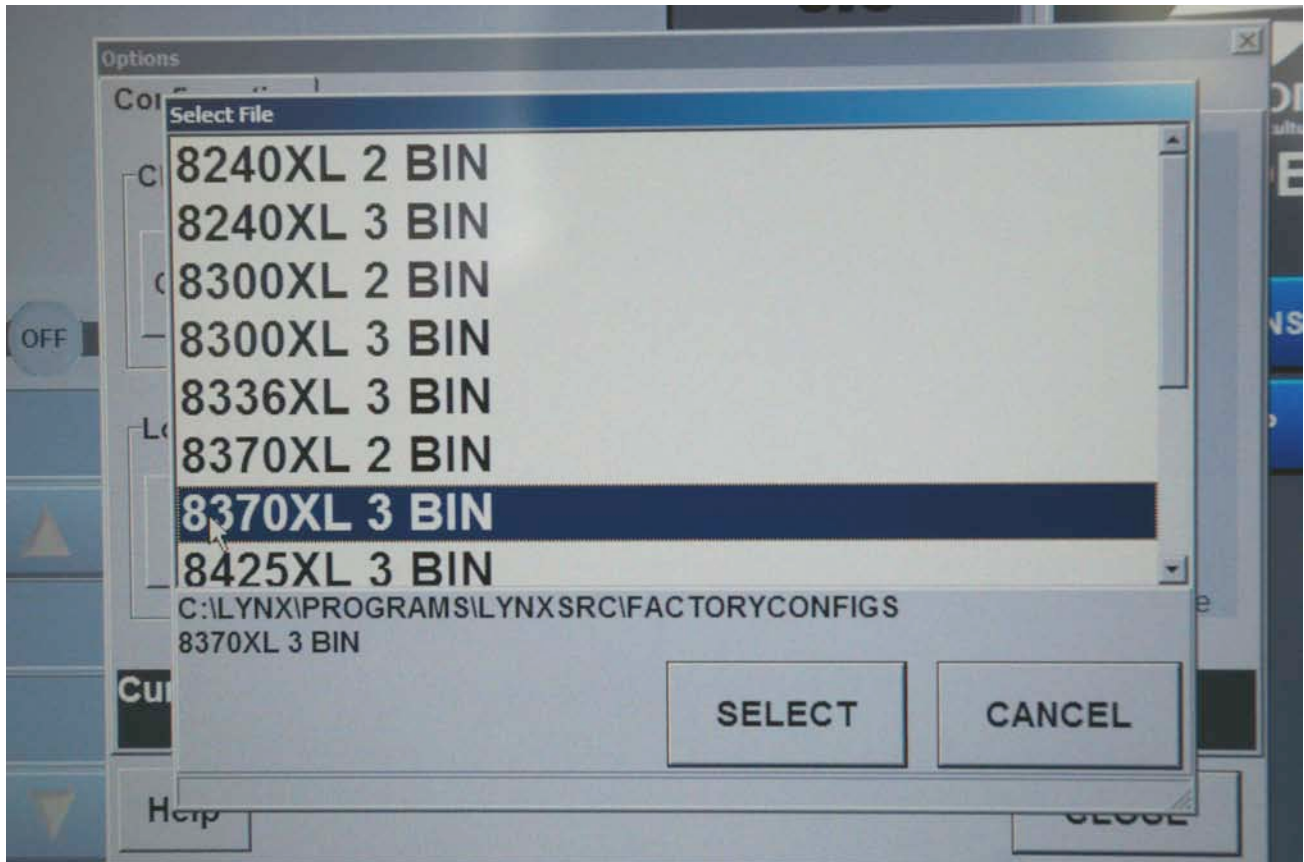
Caution: If you move the brightness to the very minimum level it will totally black out the screen. To get it back up you will need to touch the screen, or restart the monitor.



The monitor comes with a number of Factory Configurations saved in it. To load them, touch Factory Configurations.

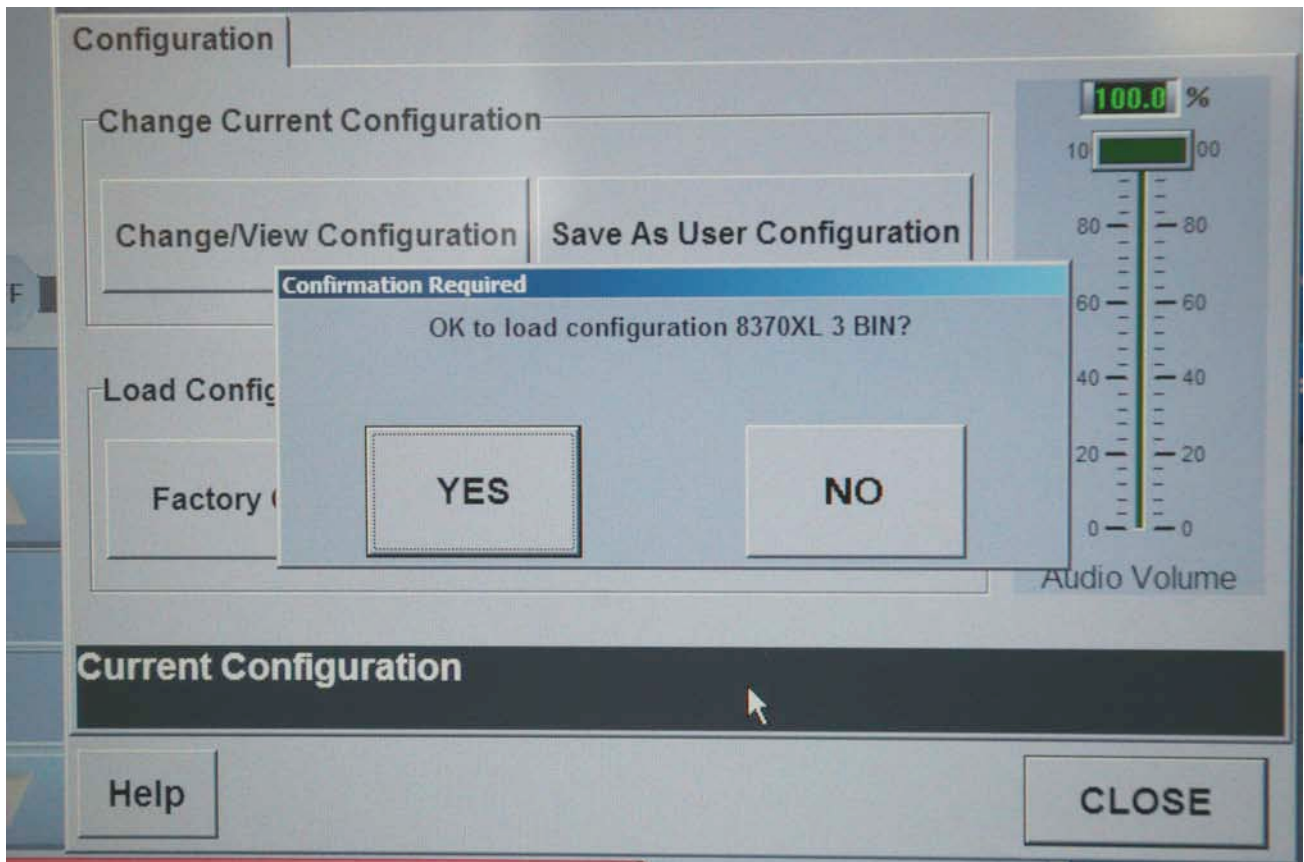


A screen will come up that shows the available configurations. Select the air cart that the Topcon X20 will be used with.

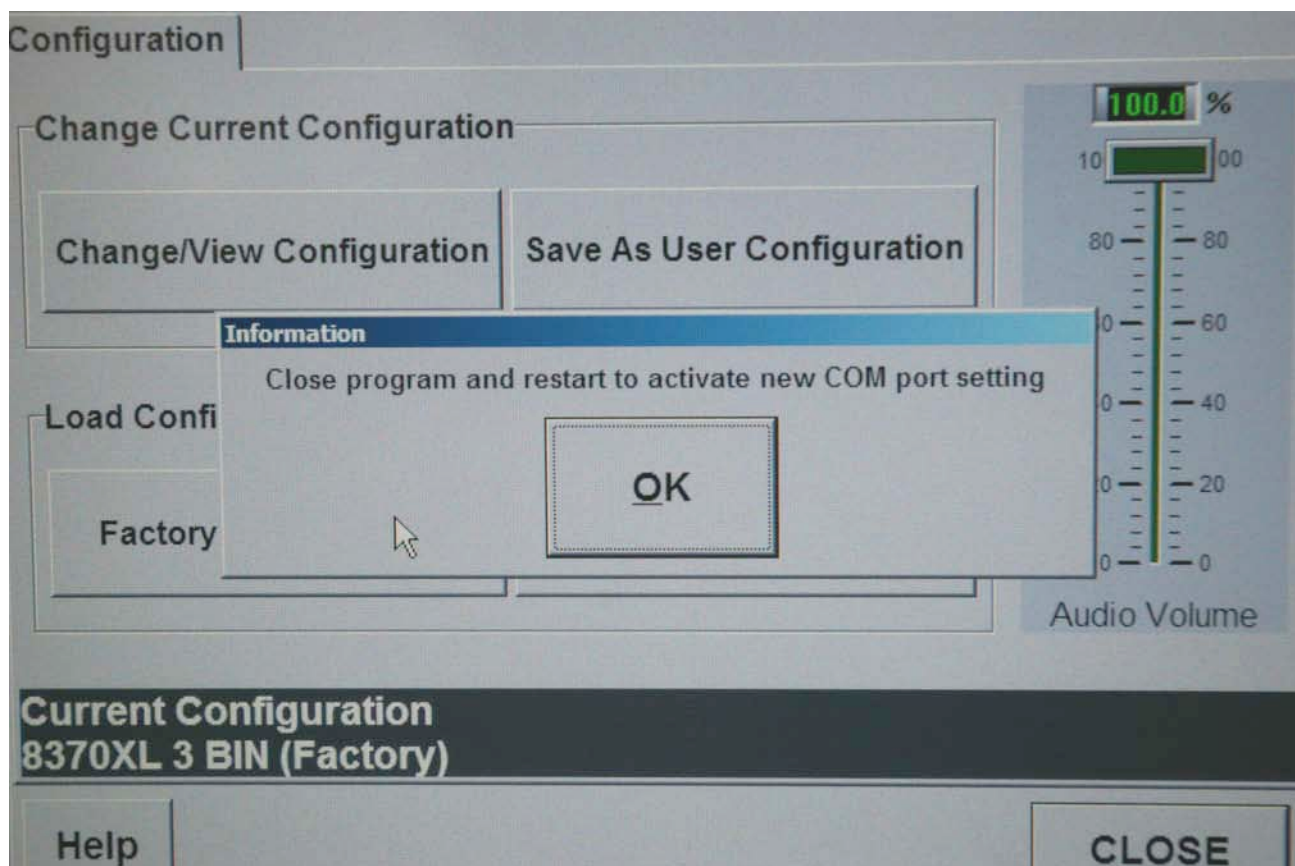


In this picture, the 8370XL 3 Bin is selected. This is a configuration that is used in Australia. If you select this one, it will give you metric.

For North America you need to select 8370XL 3 *Tank*. This will give you the imperial units.



On this screen, click YES. The selected configuration will be loaded for you.

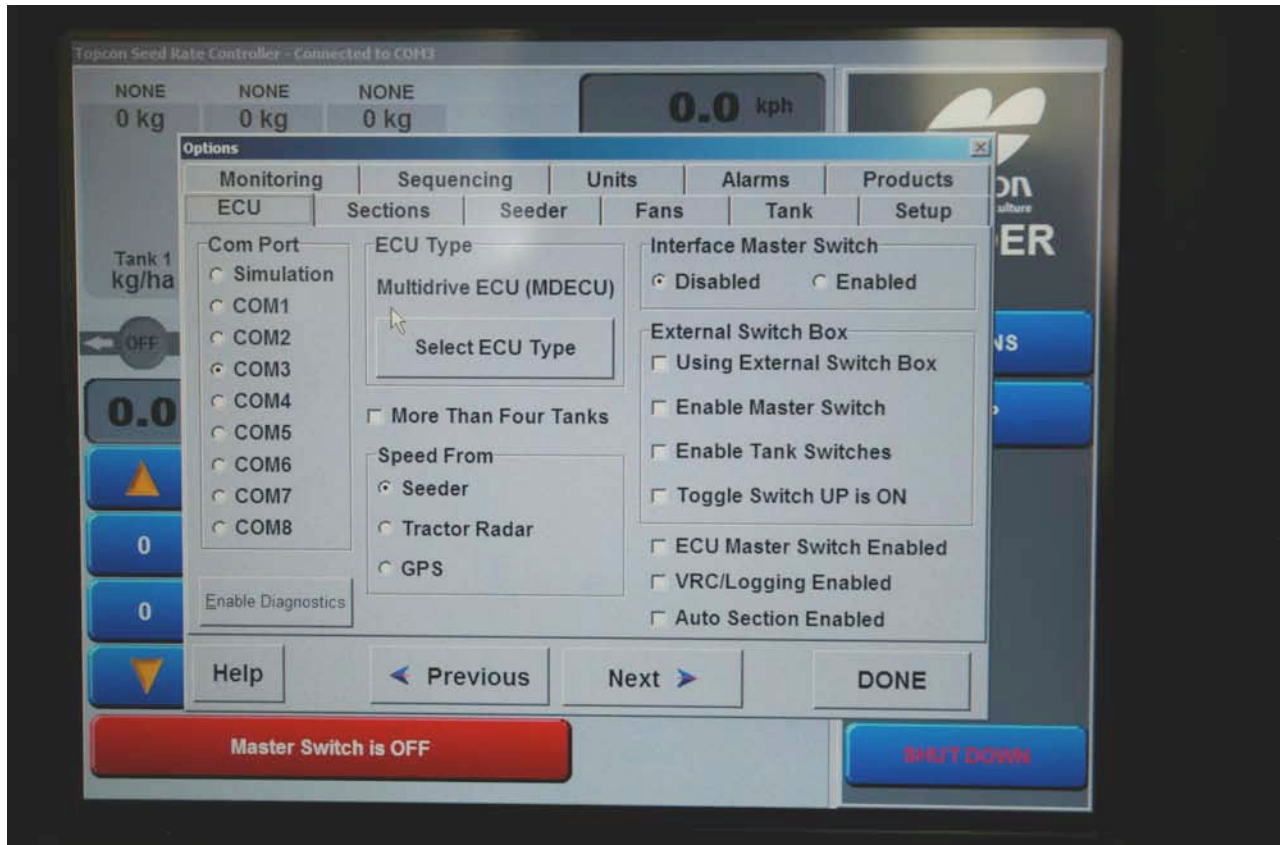


To complete loading the configuration, you will now need to close the program and restart the Seed Rate Controller. Click OK on this screen.



Your screen will now look like this. Note that this configuration was done as bins and the units are in kg/ha.

From this screen we need to continue the configuration. Touch the OPTIONS button.



This is the next screen. There are several important things on this screen:

COM PORT: Usually we use COM3 for the RS232 cable from the cart to be connected into. COM1 and COM2 are reserved for the GPS signal if it is hooked into the monitor.

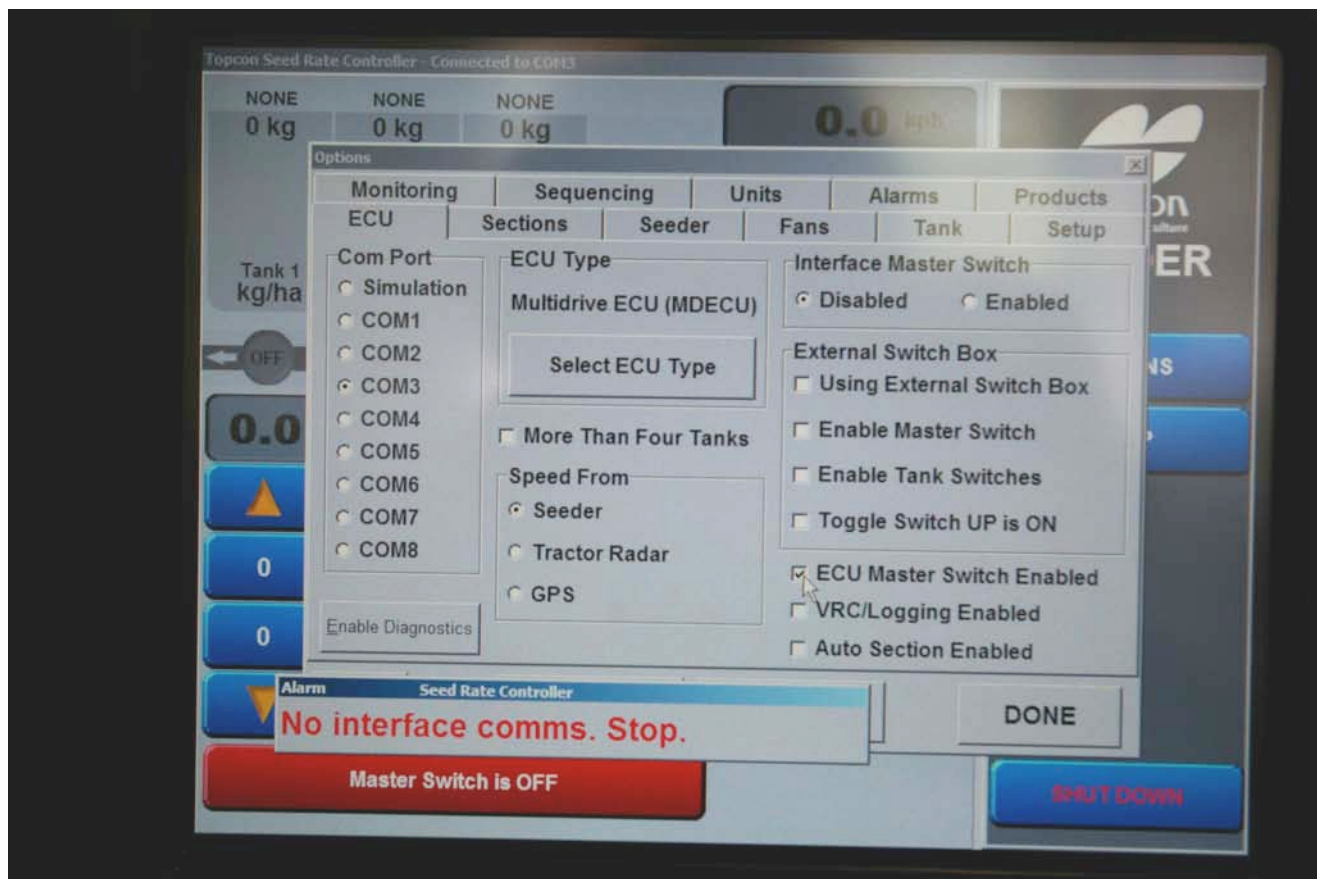
ECU Type: The Morris VRT Cart uses a Multidrive ECU.

Speed From: This is set to seeder. You will need to calibrate the PP400 factor later on in your setup. If you hook up the GPS to the monitor then speed can be taken from the GPS. Speed is most accurate from GPS.

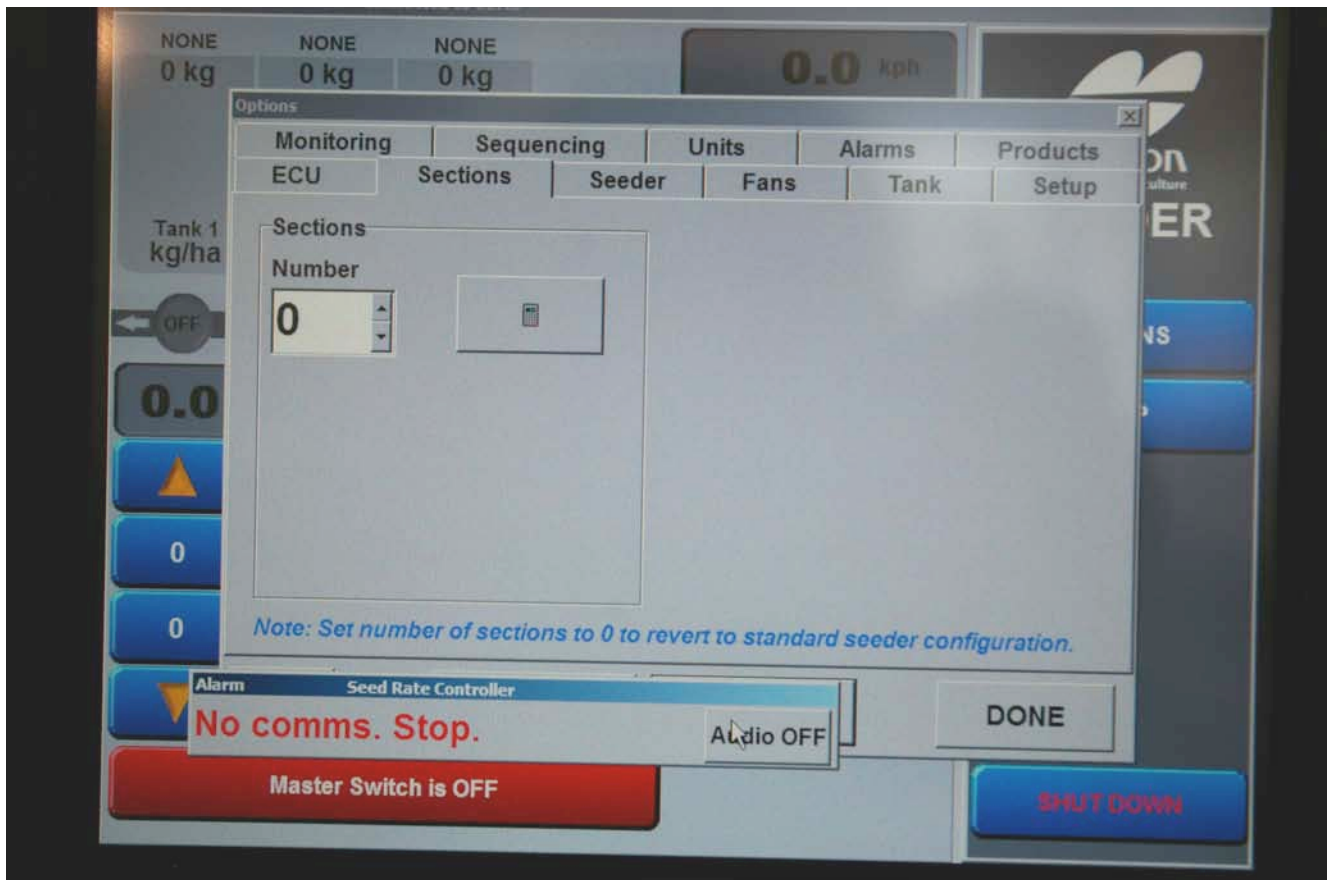
Interface Master Switch: This should be disabled.

External In-Cab Switch Box: If you are the external in-cab switch box, all 4 of the Boxes in the External Switch Box area need to be checked.

If you have a work switch on the drill check ECU Master Switch Enabled.

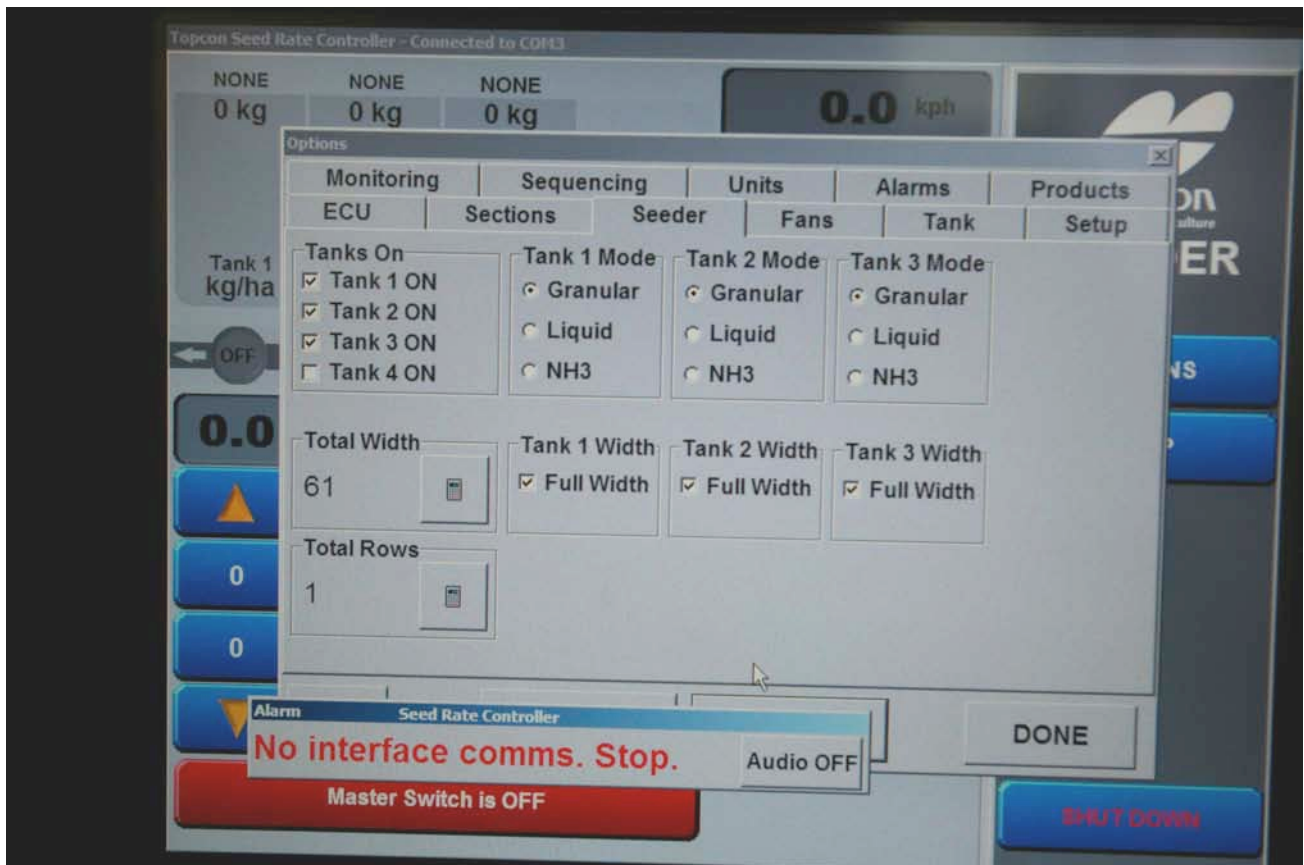


Click NEXT to go to continue.



This is the next screen. It should be as shown above.

Click NEXT to go to continue.



Tanks On: If you are using all three tanks, they should be clicked ON. If you are seeding with less than 3, uncheck the tank you are not using to keep it from alarming.

Total Width: of the drill needs to be set.

Total Rows: is 1.

The X20 Monitor has the ability to control liquid and NH3 as well as granular material. For the Morris air cart it should be set at Granular.

Tank Widths: are checked as Full Width.

Click NEXT to continue.



This is the fan screen. Most Morris carts only use 1 Fan.

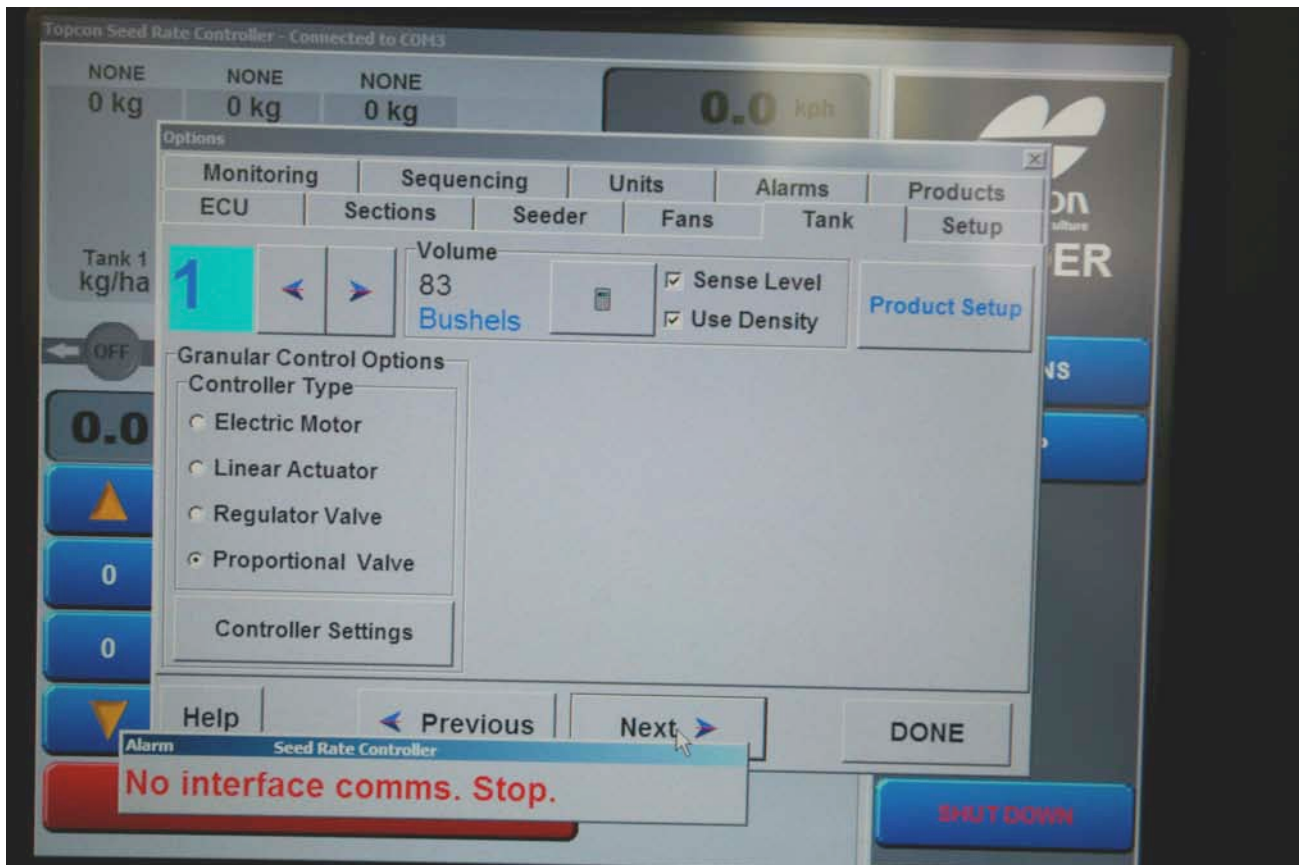
The sensor on the fan looks for 2 bolts as it is turning. The Fan Encoder should be set to 2.

Fan Alarms can be set by the user. The owner's manual recommends speeds for various crops and the fan alarms should be set near the fan speed that the user is operating at.

Fan RPM to start is usually set at 1000. This prevents the monitor from engaging the hydraulic drive motors if the fan speed is less than 1000 rpm.

The Monitor can display the hydraulic pressure from the C2 Contour Drill. The wire with the weather pak connector, that comes from the pressure transducer on the drill, needs to be connected to the weather pak pig tail that is coming out of Sensor 2 on the MDECU. This will be a 3 prong weather pak connecting to a 2 prong weather pak. Once this is connected, check Fan 2 under Pressure Sense.

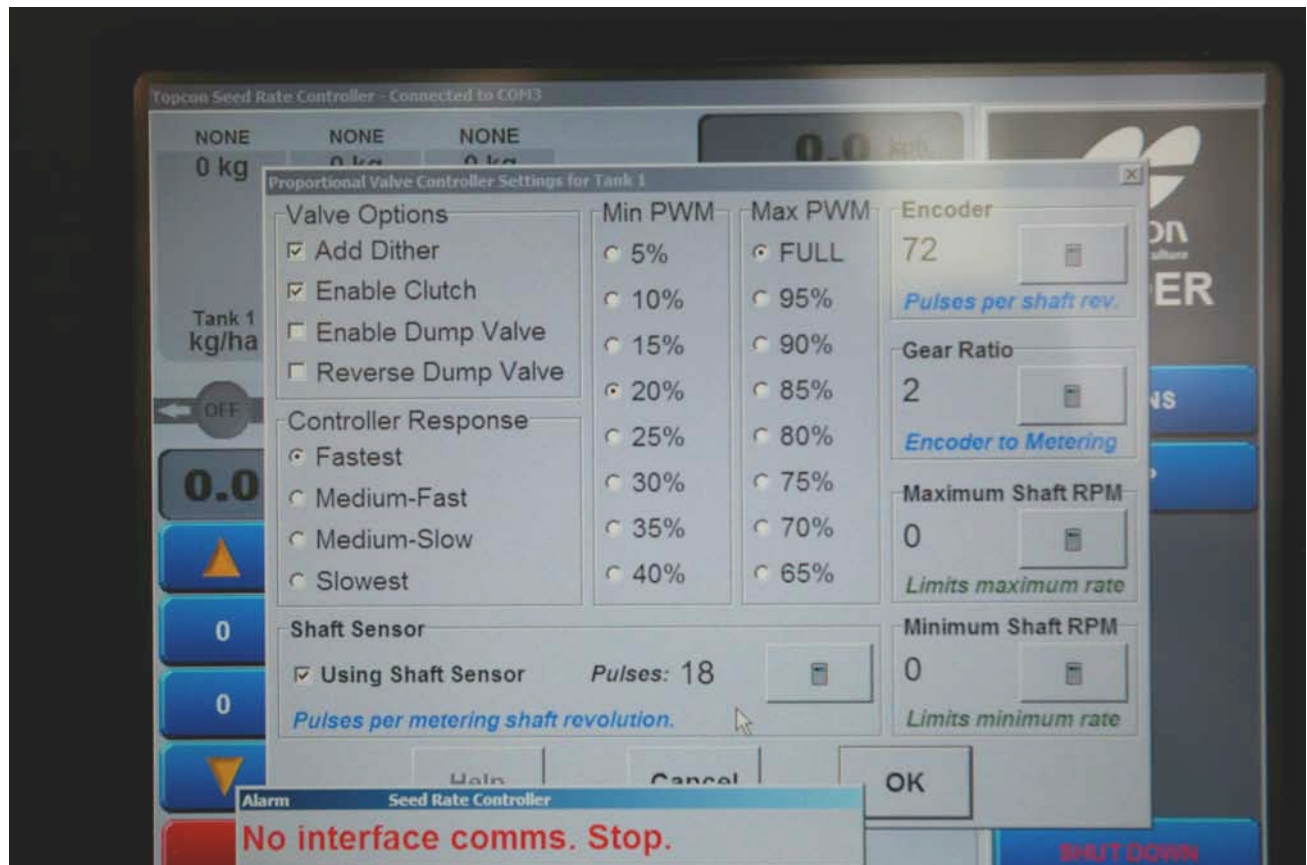
Click NEXT to continue



This is the tank screen. The preload of the factory setting has set the volume for you. Please keep in mind that this is the volume if the tank is filled completely full. When filling the tank with a granular material this is not achieved so the tank will probably have less than the completely filled volume in it.

Morris uses a Proportional Valve to control the hydraulic motors on the VRT cart. You will need to check the controller settings for each tank. Note that this is tank 1 in the picture.

Click on Controller Setting



Valve Options: are Add Dither and Enable Clutch

Controller Response: is Fastest.

Using Shaft Sensor is checked and set at 18. The wheel on the shaft has 18 teeth.

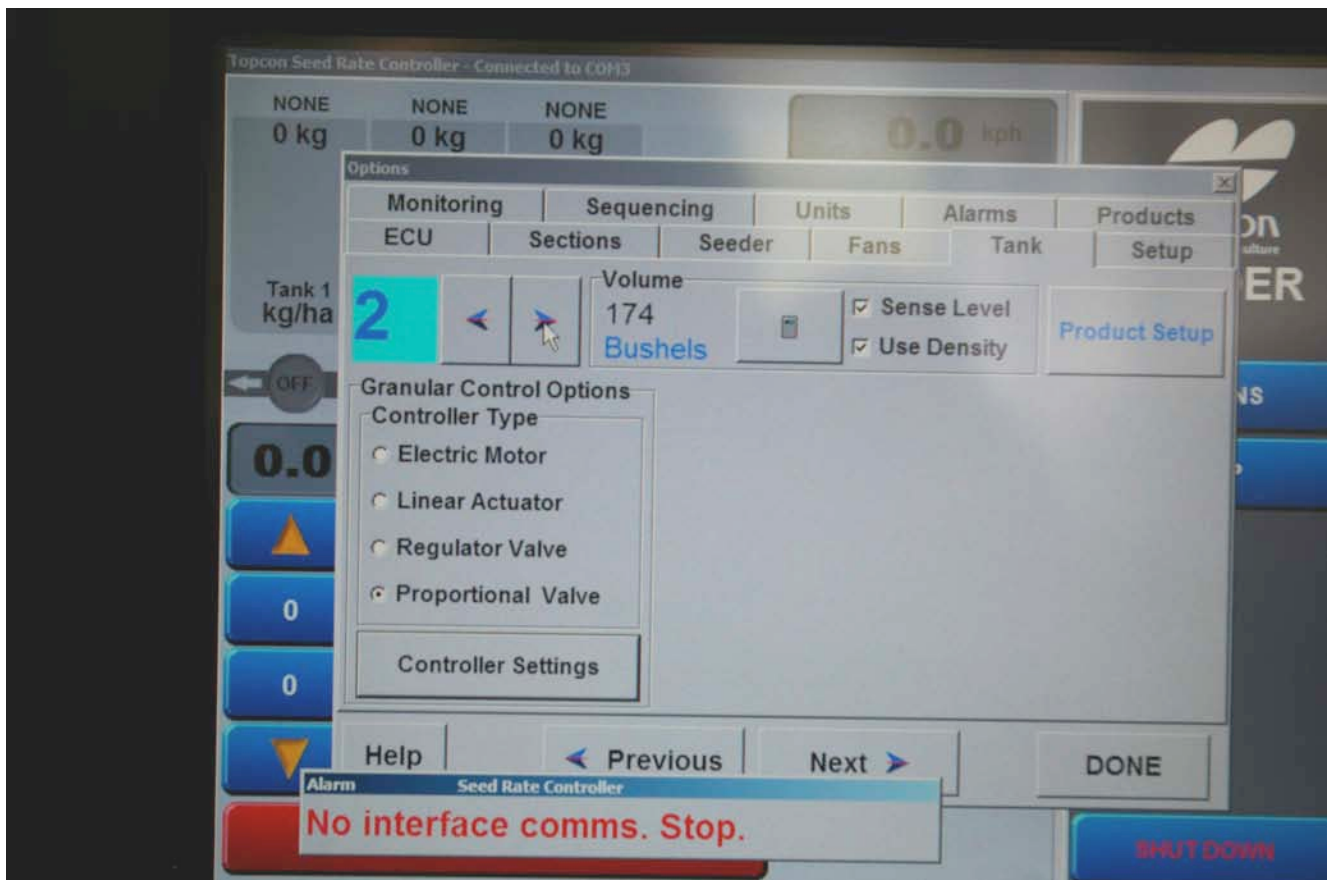
Min PWM is set to 20%. There can be times when the tank is used for products that go on at a very low rate where this needs to be set to 15%. Examples would be Inoculants or crops like canola that have low seeding or use rates.

Max PWM is set to FULL.

Encoder is set to 72. This is because the pick up wheel on the left side of the cart is a 72 tooth wheel.

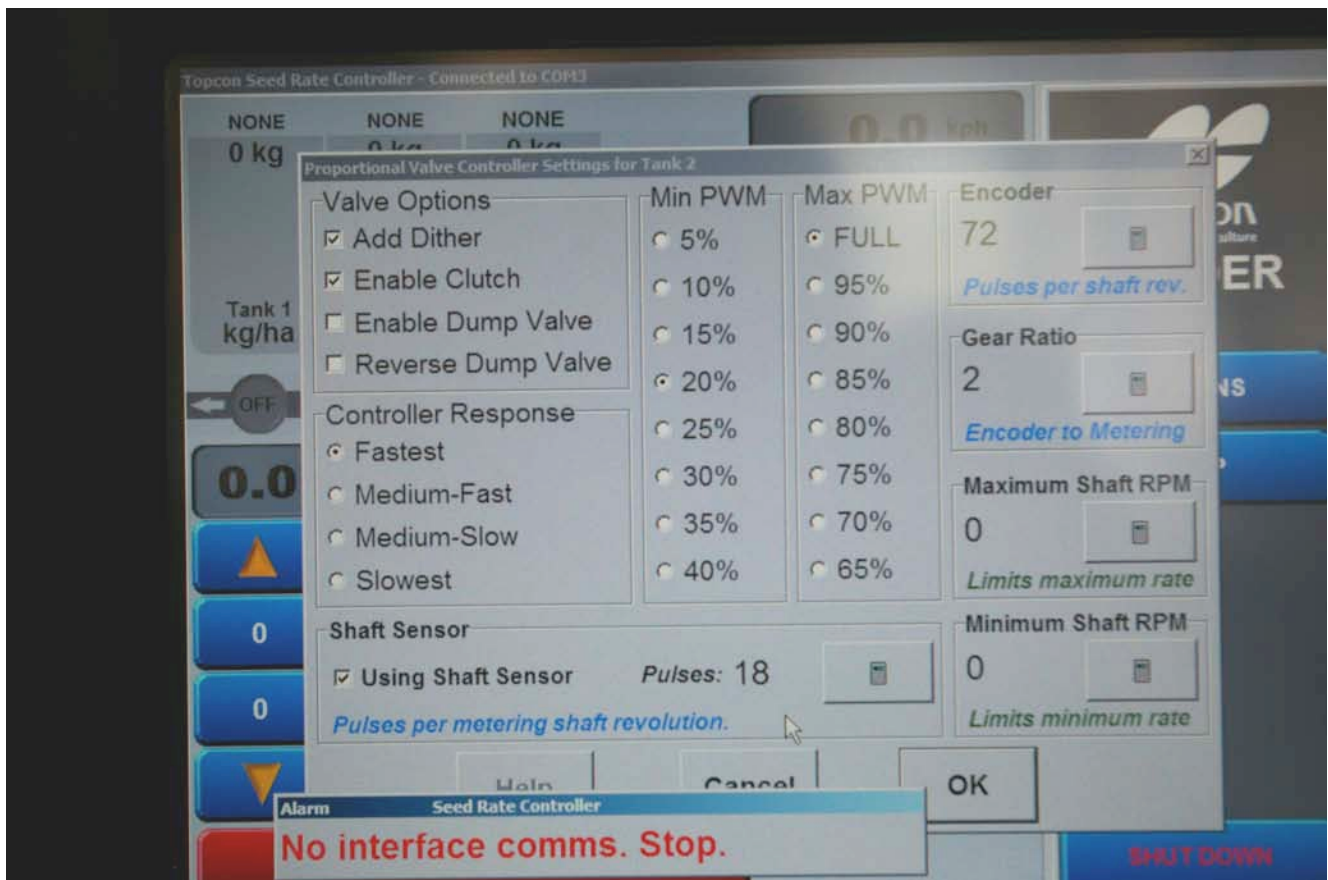
Gear Ratio is set to 2 for Direct Drive. If the gear box is set to SLOW SPEED Drive the Gear Ratio is set to 16.

Click OK.

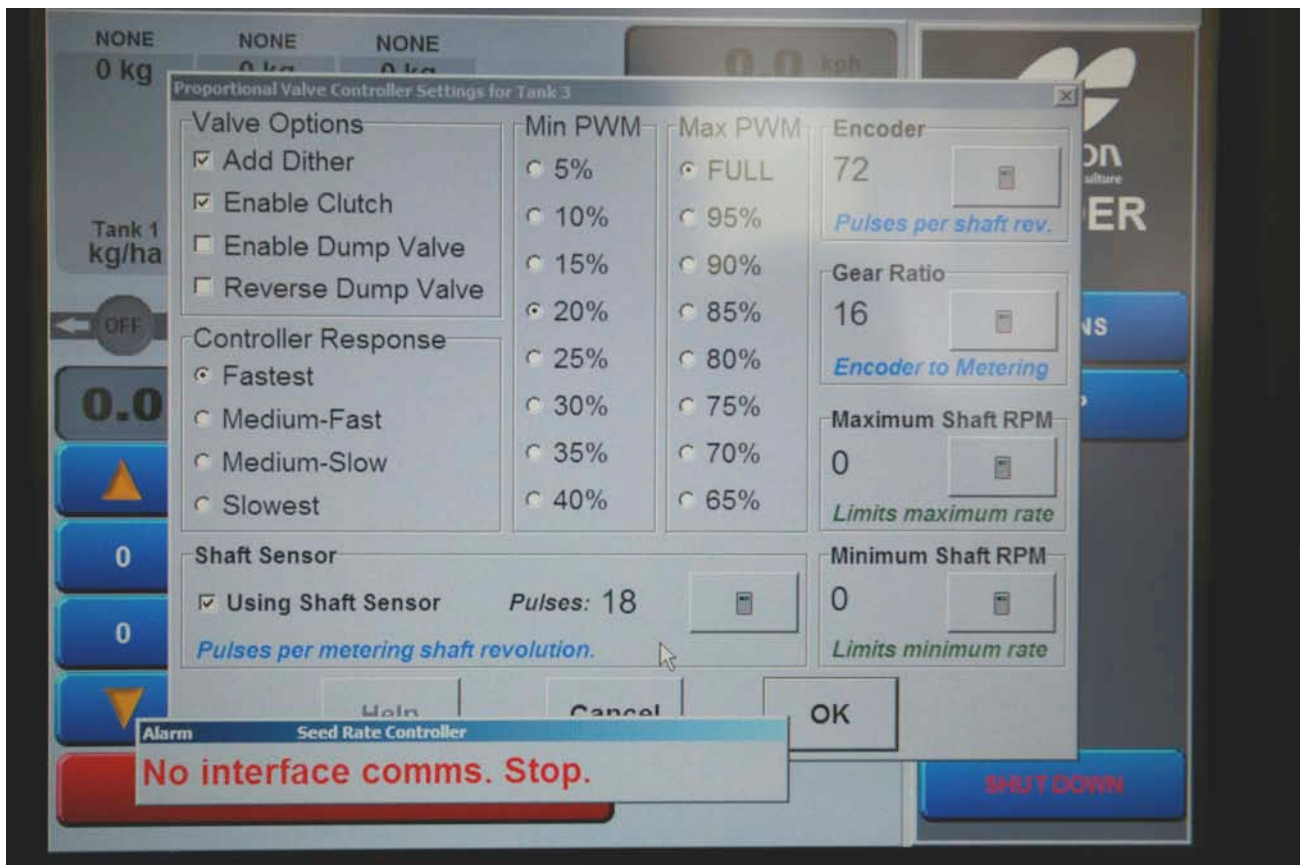


Select tank 2.

Click on Controller Setting to repeat for Tank 2.

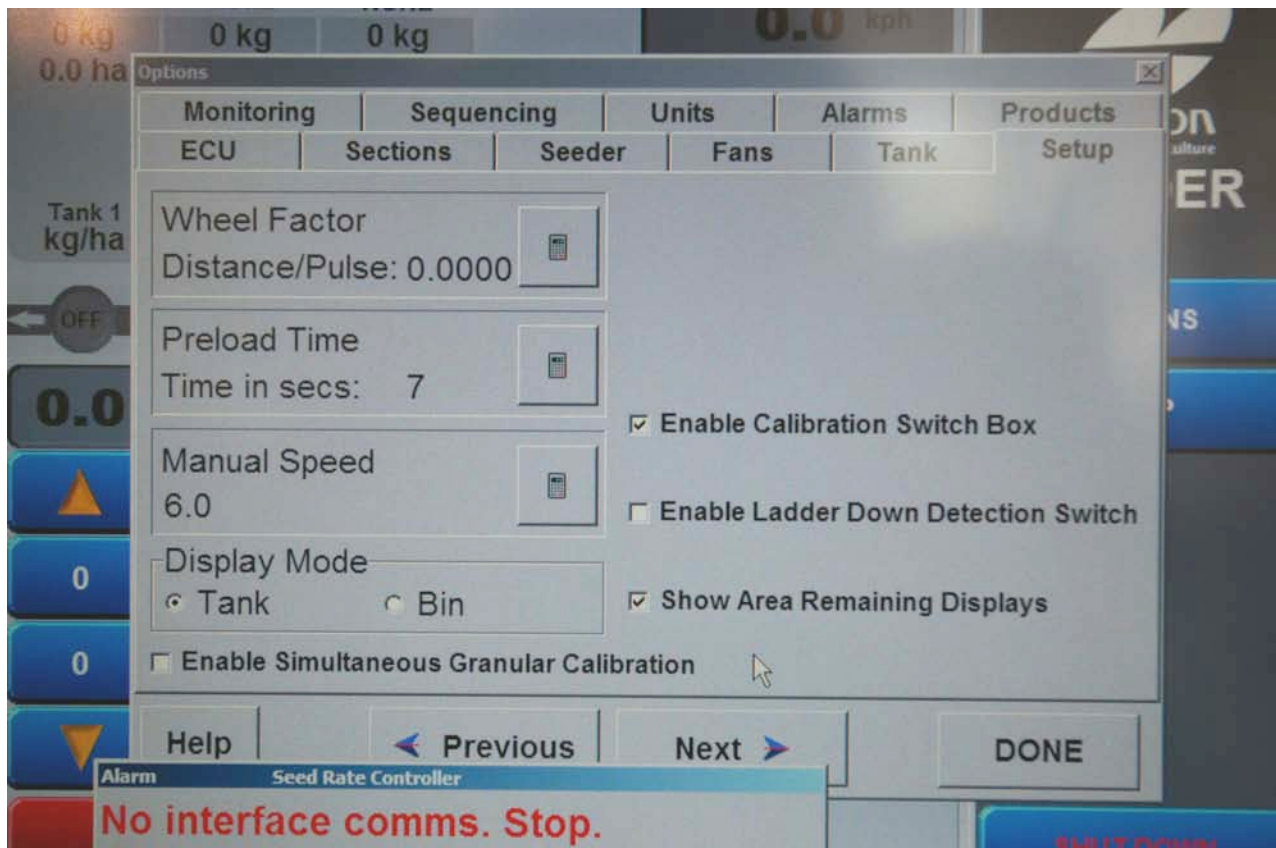


Click OK.



Repeat for Tank 3.

In this picture the Gear Ratio has been set to 16. This is how it would be set if the Slow Speed Drive was selected with the large Hairpin on the Gear Box for the tank.



This is the setup tab. You will need to calibrate the wheel factor. Refer to the Operator's Manual for instructions.

Preload Time is set to 7 secs. The user can change this to his own specs if he wishes.

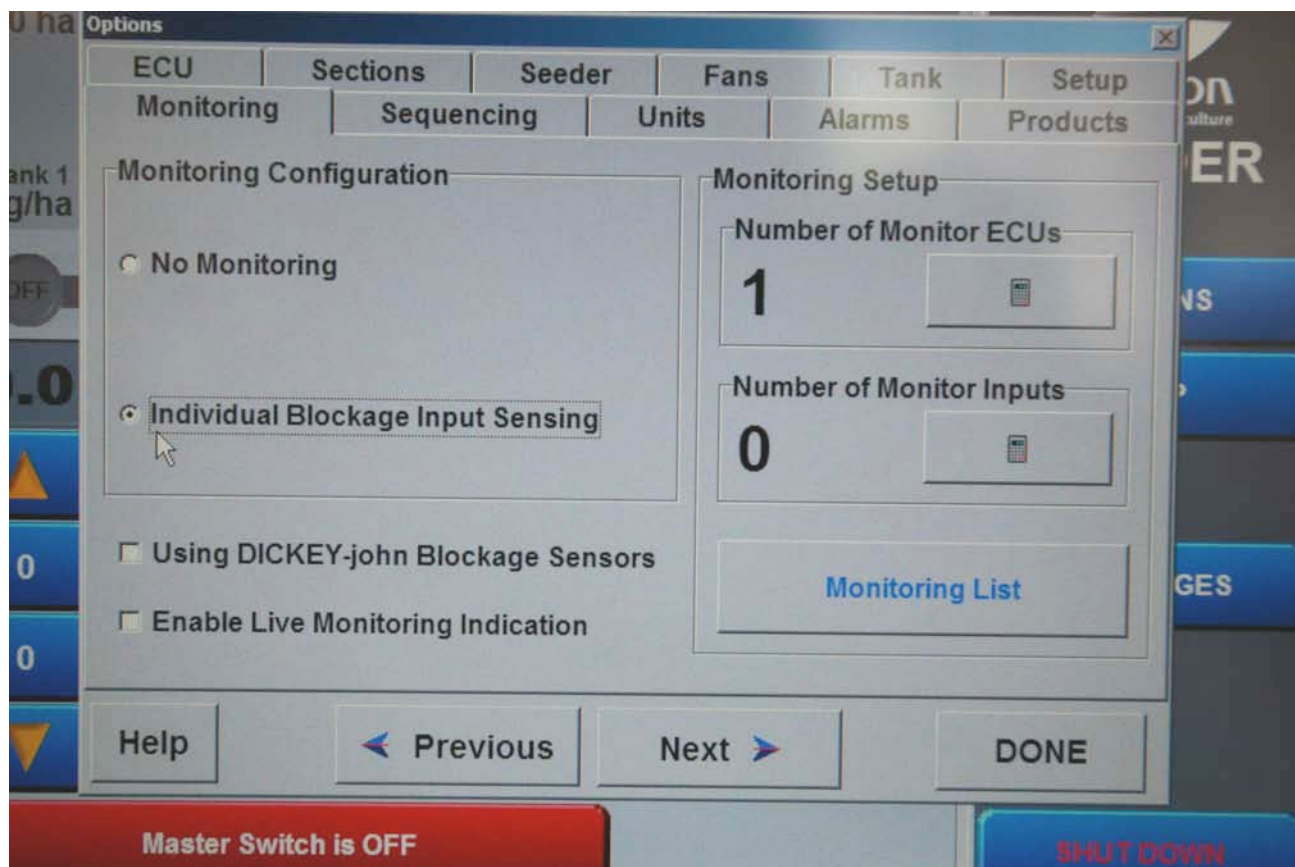
Manual Speed: This needs a number that is close to the speed that the user is going to operate at. It is used in the calibration of the metering rolls. It is also used to get the metering rolls to turn over when the unit is stopped to check for plugged runs.

Display Mode: Tank is selected in North America.

Enable Calibration Switch Box: This allows the remote switch mounted on the side of the cart to be used to prime roller and to perform calibration.

Show Area Remaining Displays: This will give a read out under each tank on the main screen showing how many acres can be seeded. This gives a mathematical calculation and is assuming that the tank is completely full. Farmers rarely get the tanks completely full due to the nature of granular product, so this display may not be absolutely accurate.

If the Enable Simultaneous Granular Calibration is checked then all metering rolls on all tanks would turn in calibration mode. This is not usually desirable and there is only one calibration tub supplied with the cart.



This is the monitoring Tab.

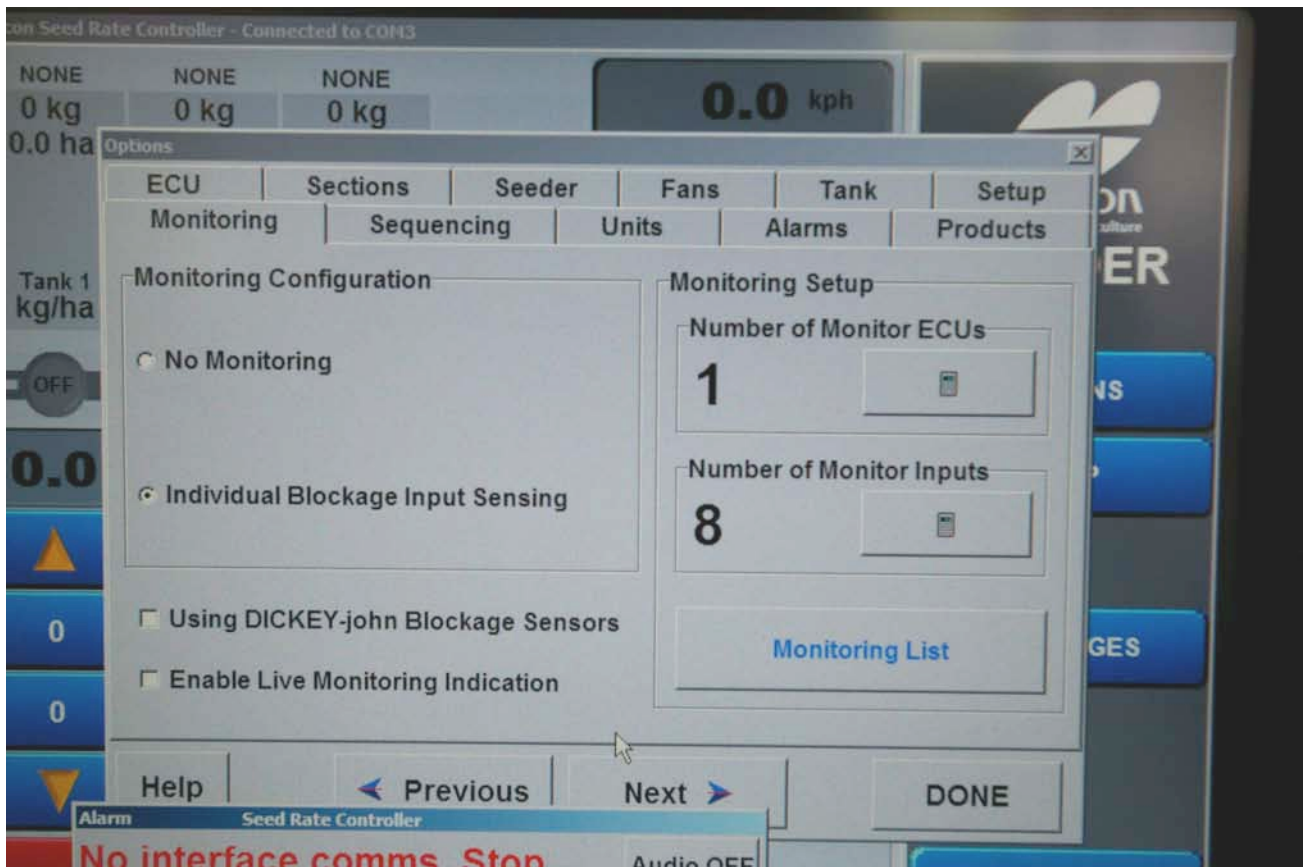
If you are using Topcon Monitors, then you need to check Individual Blockage Input Sensing, as shown above.

The number of Monitor ECU's needs to be entered.

For all other makes of monitoring, check NO Monitoring.

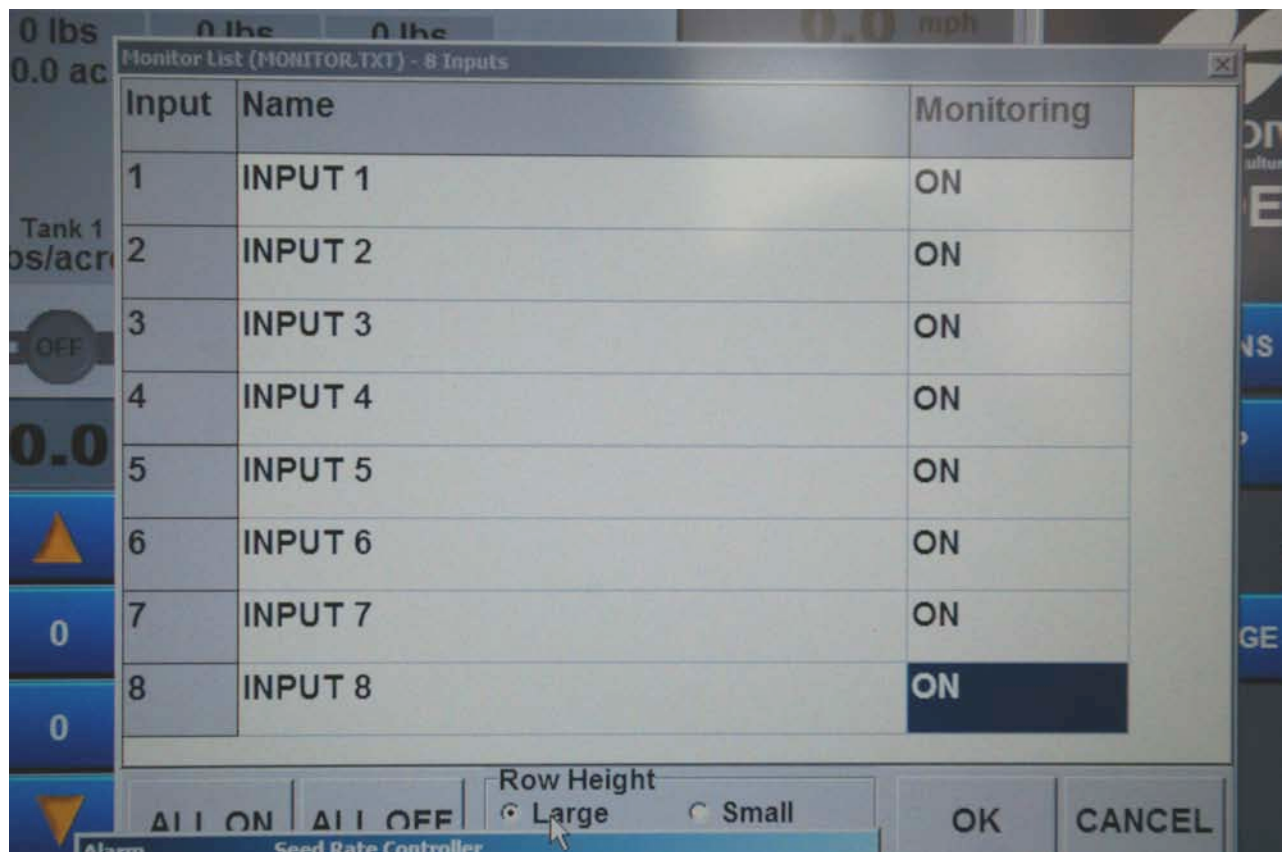
Note: Since this is a VRT Cart, flow rates of product can be varied. Topcon monitoring only monitors FLOW or NO FLOW. Blockage monitor calibration is not required because of this.

To have the blockage Monitor Inputs show up on the Data screen, check Enable Live Monitoring Indication.



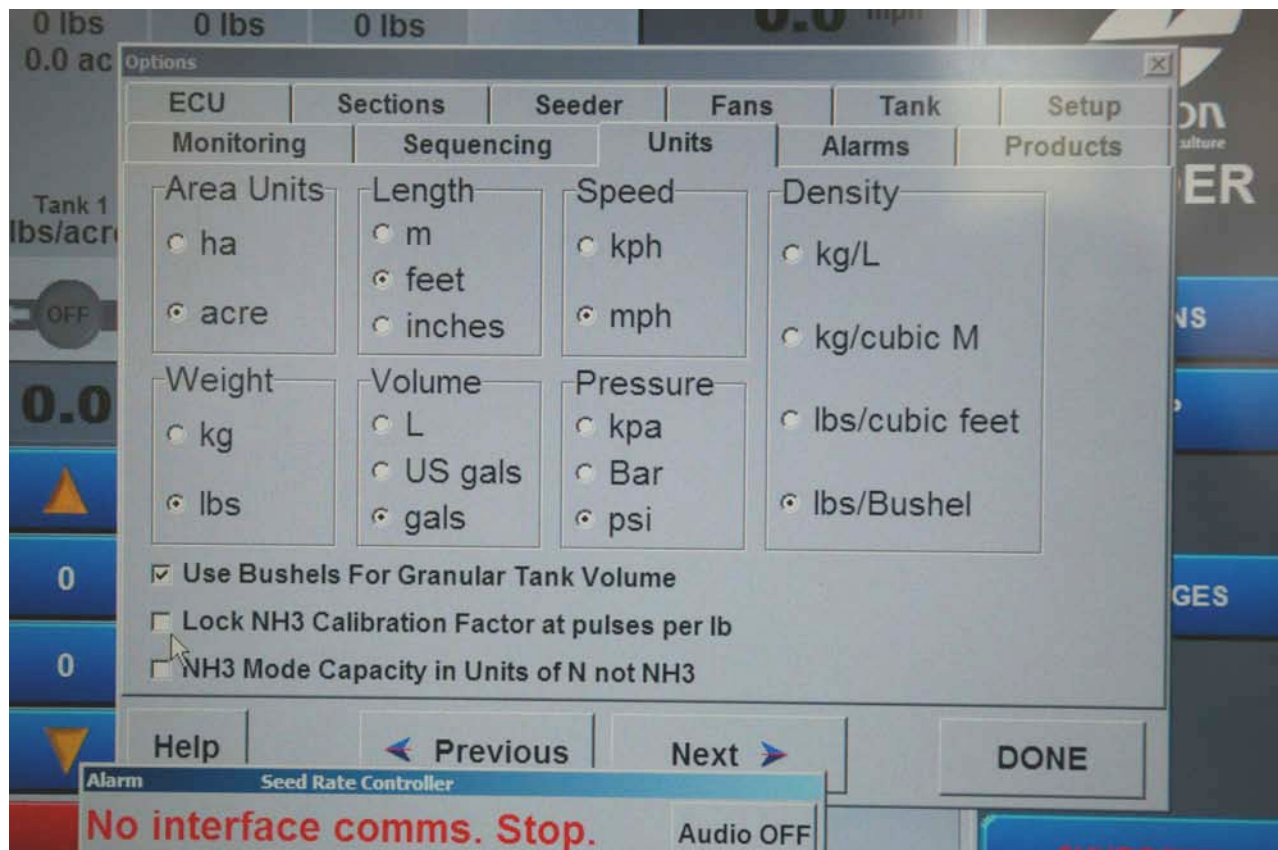
You will need to enter in the number of Monitor Inputs. In the photo above, the distribution is using 8 primaries on a single shoot drill. There are then 8 sensors or monitor inputs.

Click on Monitoring List.

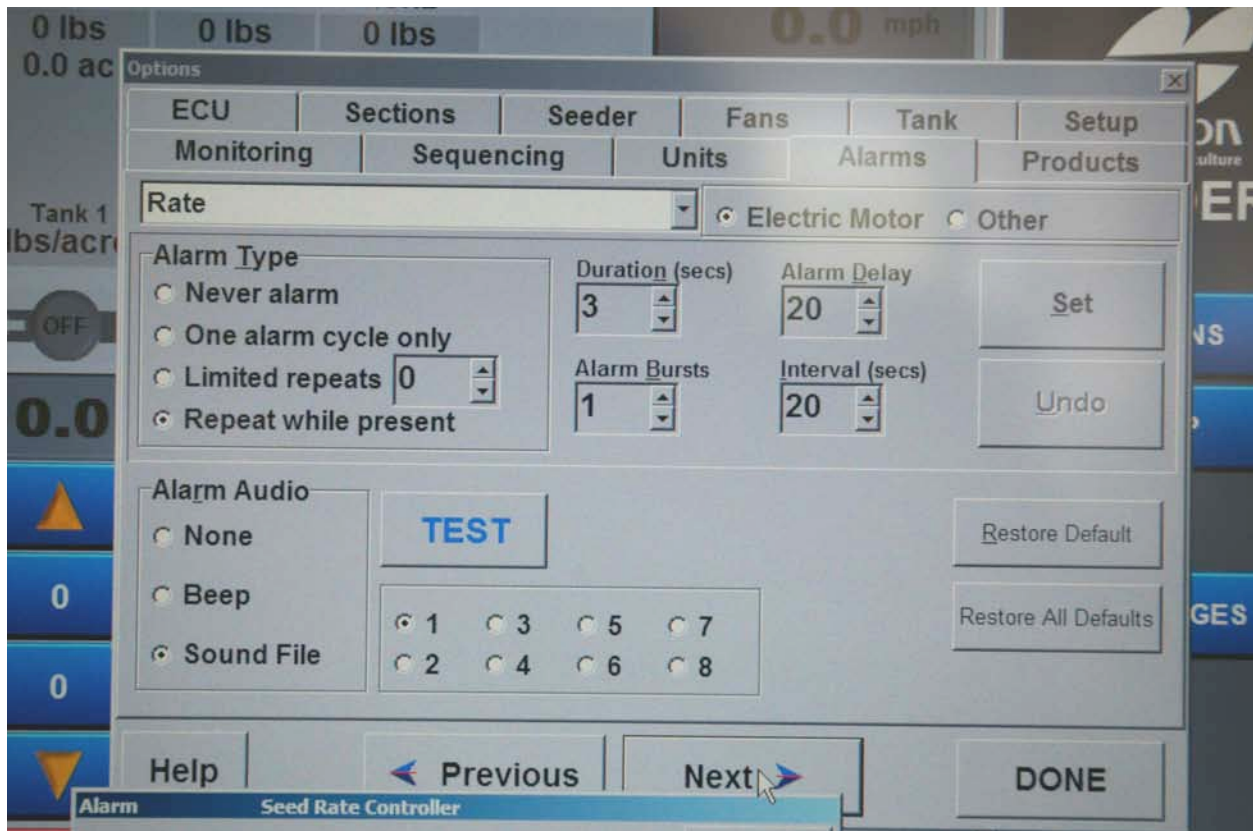


You will need to turn each monitoring input to ON.

The Sequencing Tab allows you to have a tank start before another one. For example: you could have the tank 1 on a tow between cart start 5 seconds before tank 3 so that when the product reaches the back of the air cart on start up, all product are there together. This is a user preference option. Typically users become familiar with the operation of the monitor and the seeding equipment and use this option at some time the future. It is more important for mapping applications where the time that the product is turned on is monitored and recorded.



This is the Units Tab. This allows you to set the units that the monitor is using.

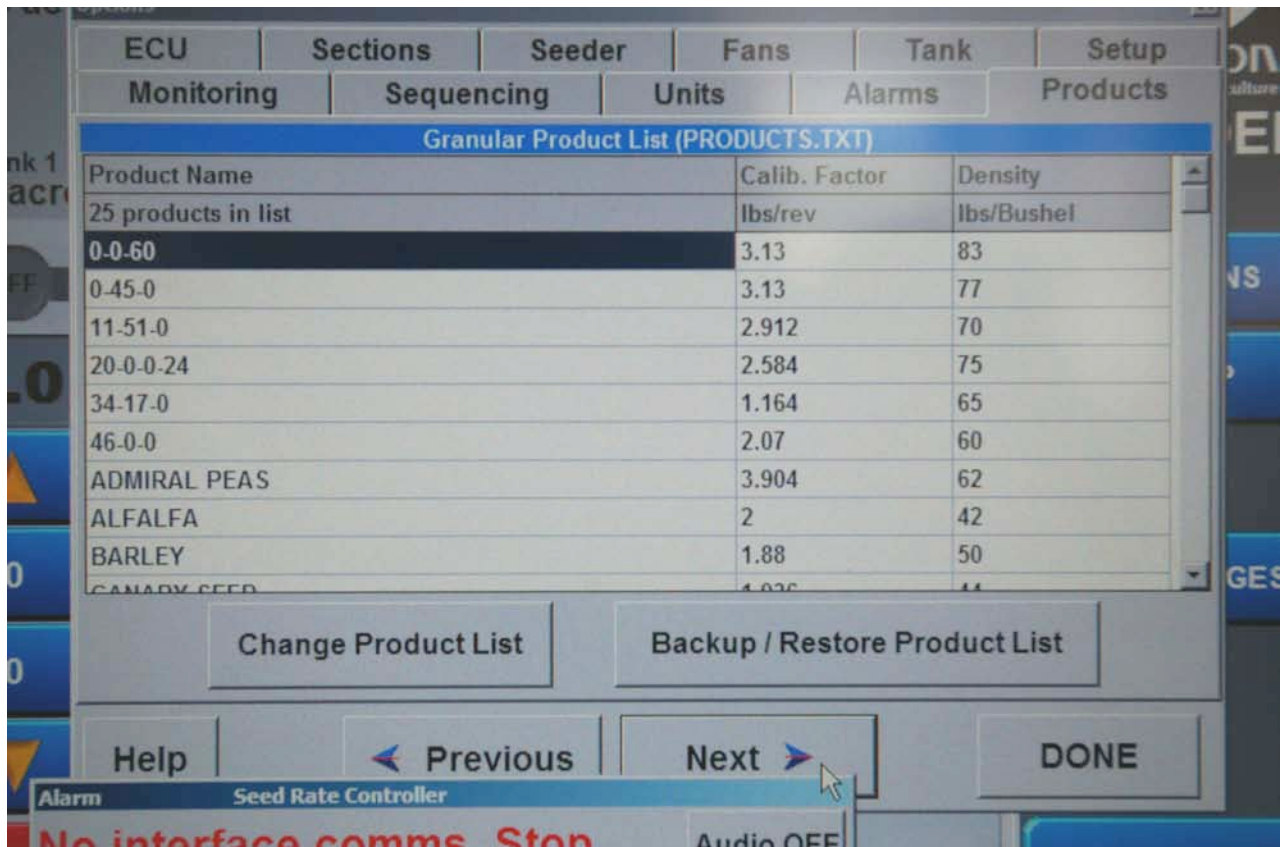


This is the Alarms Tab.

The X20 has a number of alarms. The alarms are visual and show on the screen and also use a sound file that gives an audible alarm where the actual alarm is voiced and spoken.

It is a good idea to install the auxiliary speaker in the tractor cab to better hear the alarms.

Alarms can be customized or turned off from this screen. This is a user preference screen.



This is the Products Tab.

Preloaded products are loaded on the monitor. They have a calibration factor and a density. The numbers may be close, but seed size and 1000 kernel weights change in various locations. A calibration is necessary to get the correct factors for the individual user's seed. Refer to the Operator's Manual for instructions.

New products can be added by the user, refer to the Operator's Manual for instructions.

Click NEXT

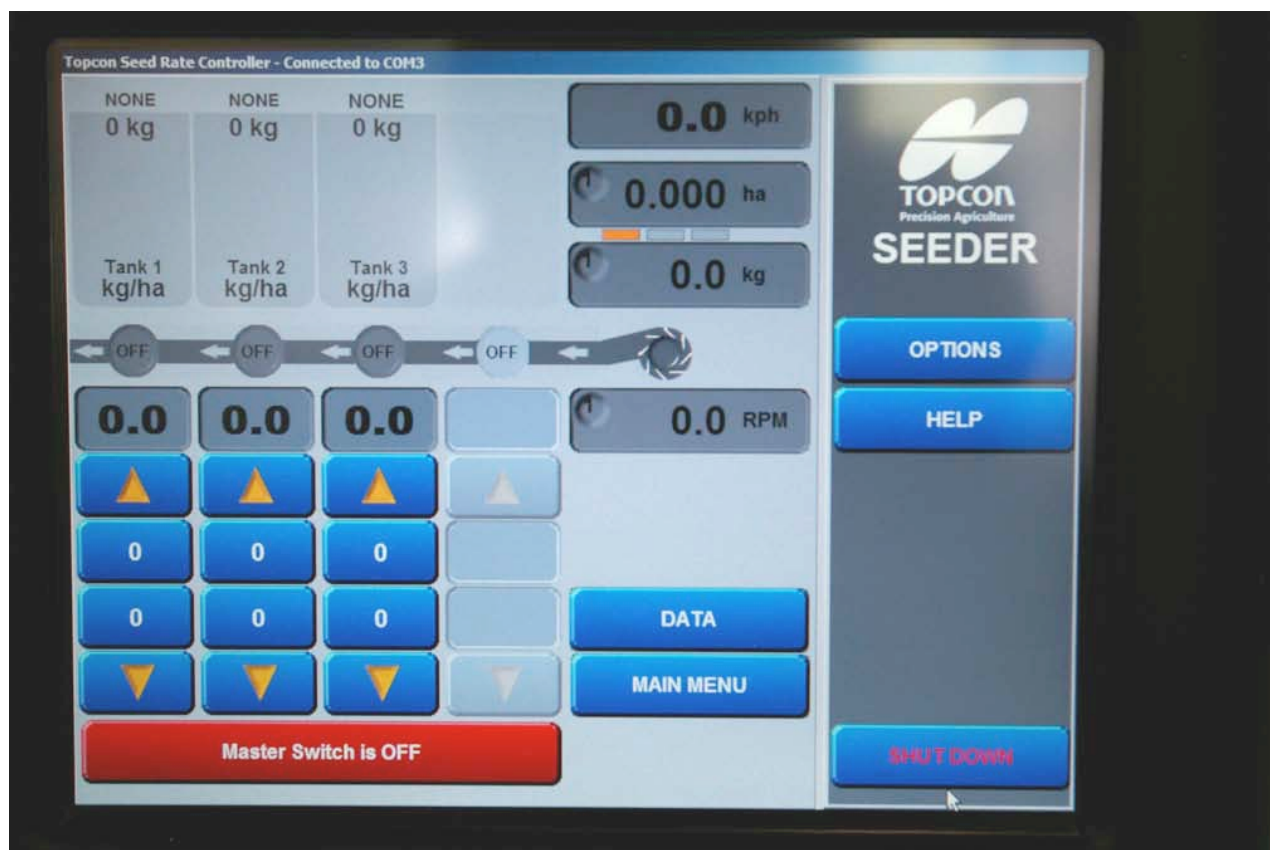
You have now completed setting up the monitor.

Click DONE.

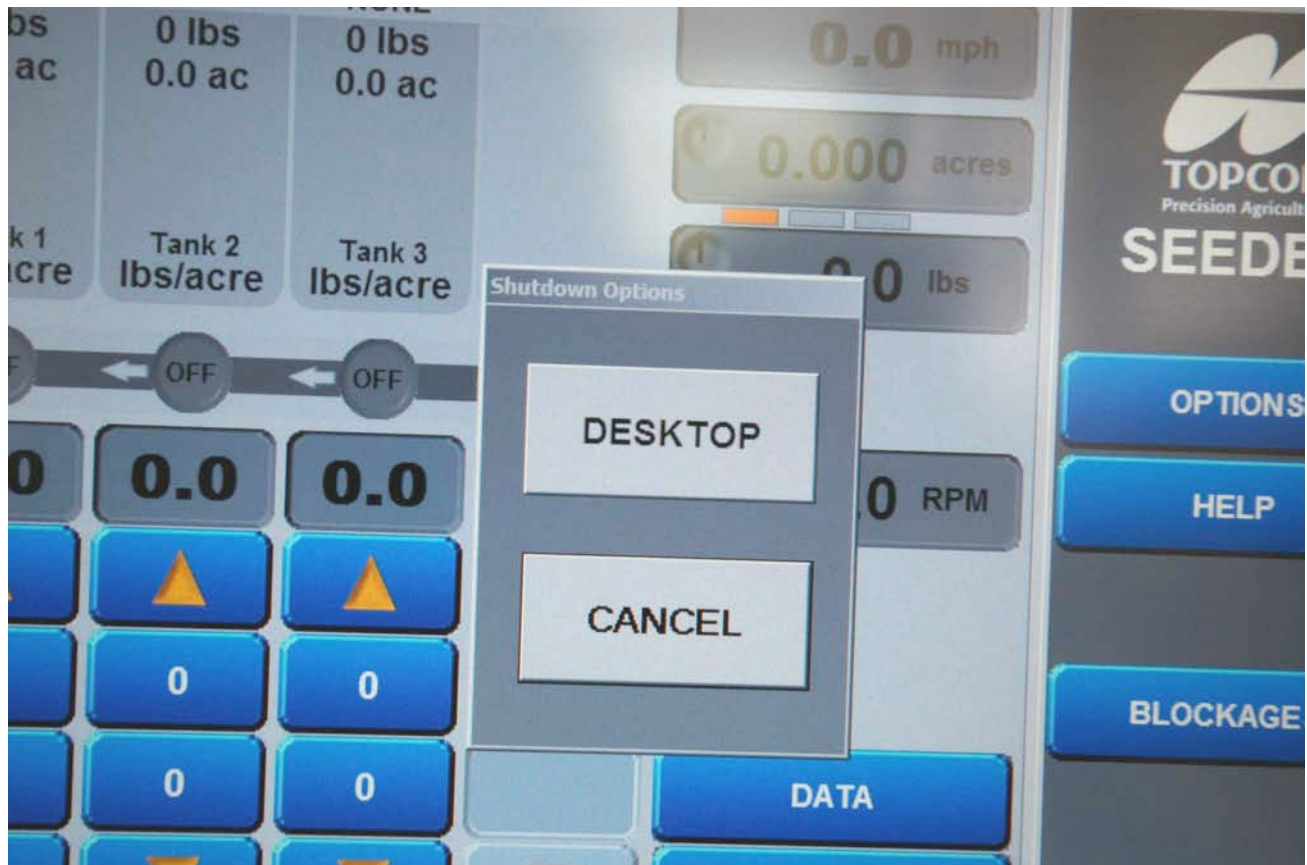
You will be prompted to save the set up as a user configuration. Using the keypad type in a name for the configuration and save it.

Once you have save it you can fill tanks and start the calibration process. Be sure to have the correct seed plate installed, and the hair pin in the correct drive location before starting calibration. Remember to prime the metering rolls first before the calibration. Remember to subtract the weight of the calibration tub.

To SHUT DOWN the monitor click on the SHUT DOWN button.



You will see this screen next:



Click on DESKTOP to continue to shut down.

The screen with the picture of the Morris Contour Drill will come up. This is like any computer screen. Click on Start, Turn Off Computer.





Click Turn Off.

Things to Check:

Fuses: The harness for the Morris Topcon X20 monitor should be attached directly to the battery for power. Each power lead may have a fuse in it. If the monitor turns on but not all functions are working, check fuses. If you have a blown fuse, check for crushed or bare wires in the harness.

The speed of the metering rolls is monitored by the computer and the valves that control the flow of the oil to the hydraulic motors are opened or closed to give the calibrated application rate. The metering rolls need to turn freely. If the application rates are erratic, disconnect the square drive shaft from the hydraulic motor, shut off the product slides on the tank, and turn the metering rolls by hand. Lumps of fertilizer, bird's nests, pieces of wood, and improperly adjusted seed plates all could cause the metering rolls to turn hard.

The sensors used on the Topcon VRT are Hall effect sensors. They need to be adjusted to 30 thousandths clearance from the pick up wheels. They also need to be straight and centered over the pick up wheels.

If in doubt, please feel free to call your Morris Industries Ltd. Representative.