Trimble User Interface

Quick Reference

Run Screen

Product Bar
→ These three bars are touchable buttons. Selecting them allows the user to change the target rate of the product.

Target Rate
→ The number on the right identifies the target rate for the product.

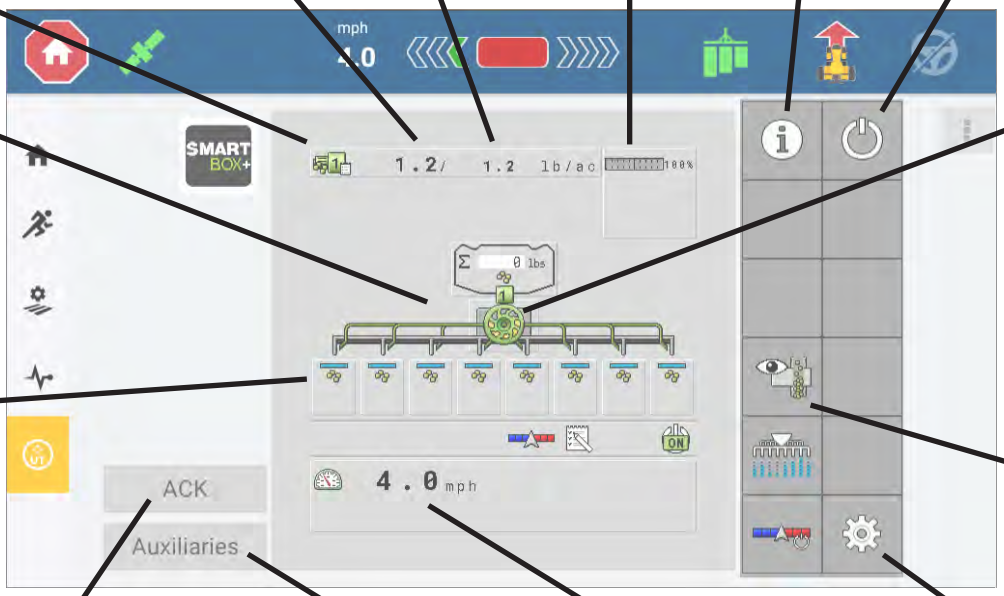
Trip Counter
→ This summarizes the area covered and the weight of product applied.

SmartBox™+ Master Power
→ This powers the SmartBox+ system on or off within the display.

As Applied Rate
→ The number on the left indicates the rate currently being applied.

Adjust Rates
→ This allows the user to adjust the product target rate or reset it to 100%.

Hopper Illustrations
→ These hopper illustrations tell the user how much of each product is left (across all SmartBox+ Row Units).



Prime the System
→ Prime the system to make sure all the meter hoppers are full and confirm that the system is set to apply the correct rate from the beginning.

SmartBox+ Row Unit Illustrations
→ These boxes represent each row unit. Up to 12 rows, each row unit will have its own box. After that, rows will be grouped:

- Blue = On and applying
- Red = On but commanded off
- Black = Master off
- Grey = Forced off by user either by physical switch on aux-N device or by touching the section on screen

Row Blockage View
→ Selecting this button changes the section control view to the row blockage view.

Acknowledge Warnings
→ The user can acknowledge the alarms by pressing the "ACK" button on the home screen when alarms appear. Priority 1 alarms signify there is a risk of operator injury, these alarms must be acknowledged before operation can continue.

Auxiliaries
→ Working with your authorized Trimble dealer, the "Auxiliaries" button is used to set up an external switch box.

Speed
→ The current speed is displayed by this speed meter. If a simulated speed is set, text will appear here that says "SIM."

Setting Button
→ The main system settings can be accessed here.

Task Controller Indicator
→ This indicates communication with the task controller is occuring.

System Status
→ This icon signifies whether the master switch is on or off.

Automatic Section Control
→ This indicates that section control is on.

SMART BOX+ A SIMPAS Technology

Settings Screen

Blockage Settings

→ Disable sensors: This button allows you to disable just a few sensors in the system (for example you might have one sensor on row three that is failing, but you need to get planting finished so you just want to carry on anyway). The options are:

- No (none disabled)
- Odd (sensors on odd numbered rows are disabled)
- Even (sensors on odd numbered rows are disabled)
- Custom (user chooses rows to disable)

→ Use the custom option if you need to disable something.

→ These three settings are applied to all rows for the selected product:

- Sensor delay time: This is how long the sensor is in a blocked/open state before the alarm triggers.
- Lower threshold: This is the percentage of blockage the sensor is seeing for the "is there flow?" alarm. Below this threshold the "no flow" warning will show.
- Upper threshold: This is the percentage of blockage the sensor is seeing for the "product blocked" alarm. Above this threshold the product on that row is considered to be blocked.

Hopper Settings

→ The Hopper Settings Screen displays the product weight. The buttons on the right will turn the product on or off - for example, when off, the product will not be applied.

Metering Unit Settings

→ Start calibration by clicking the icon on the right.

→ After calibration occurs, a clickable box appears around the product icon. A user can manually override the calibration settings by changing the blue text.

Diagnostics

→ This button accesses the Diagnostics Screen which houses many readouts of the current state along with targeted controls for specific actions (e.g. adjusting meter RPMs).

Speed Settings

→ Select which speed source the system displays. Normally, you will select GPS. The simulated speed can be changed to test the system. Click the blue text to enter a value. The wheel speed is based on the transmission output. The ground speed is based on a radar pointing at the ground.

Advanced Settings (Configuration)

→ This panel allows you to access the advanced settings for the hopper, product, implement configuration, and the metering unit. Consult with your authorized Trimble dealer about specific changes in the Advanced Settings.

SMART BOX+ A SIMPAS Technology

Diagnostics Screen

Implement Information

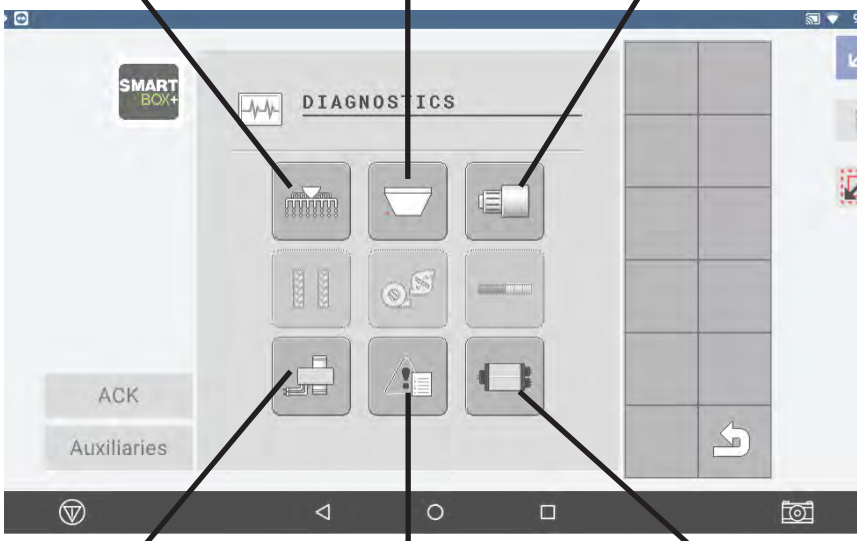
→ This tells you the state of the work position switch (lift switch).

Hopper Info

→ This tells you the current product amount in the hopper.

Metering Unit Information

→ This screen is used to manually change the RPM of meters. It will be used to prime the system, empty meters, and clear blockages. Enter a value by clicking the blue text. Run the meter backwards by entering a negative value.



Blockages and Diagnostics

→ This screen shows operating voltage, feedback reading (in millivolts), and emission reading (in millivolts).

Alarm and Warning History

→ This shows the history of the alarms. When troubleshooting with your authorized Trimble dealer, it is important to have the alarm code.

ECU Information

→ This page shows the software version, pool version, and the two system voltages.

SMART BOX+
A SIMPAS Technology

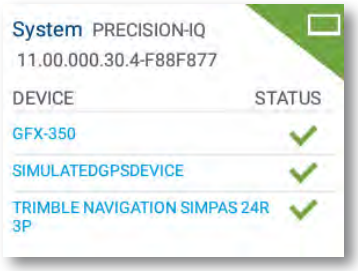
Setting Up Task Controller

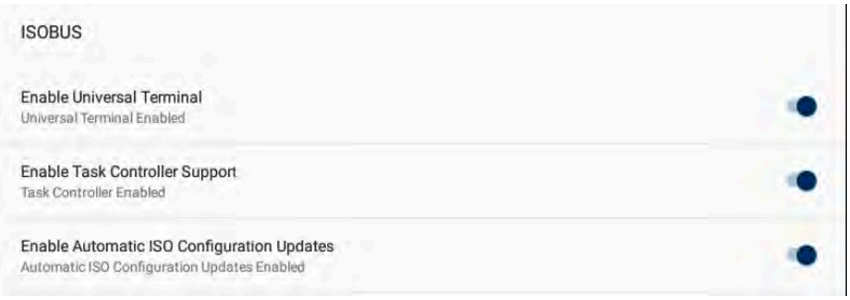
Quick Reference

Every manufacturer display is a little different when it comes to setting up a field, SmartBox™ product material, and task. This example walks through setting up a task controller through Trimble's Precision-IQ platform on a GFX-350 display.

Step 1:

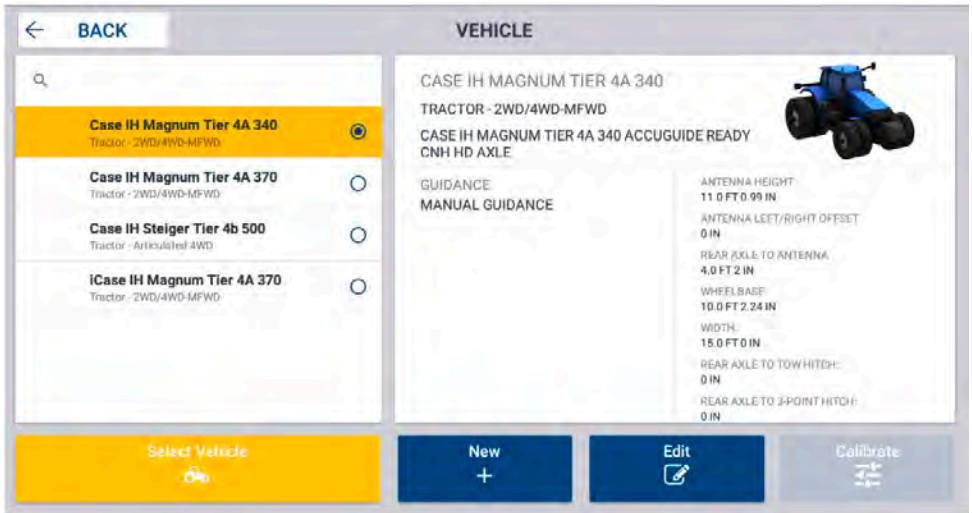
- → Press the **Precision-IQ** application from the main screen to bring up the PIQ home screen.
- → Press the **Settings** button, followed by "ISOBUS" in the list on the left side of the screen. Ensure that "Enable Universal Terminal," "Enable Task Controller Support," and "Enable Automatic ISO Configuration Updates" are all turned on.
- → Return to the PIQ home screen and ensure that "Mueller Elektronik GMBH N Co" is shown as a device under the "System" box and has a green checkmark in the status column. This ensures that the ECU is being recognized by the display.





Step 2a:

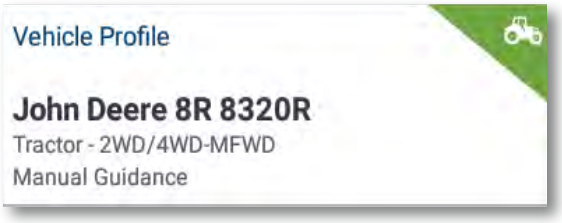
- → Press the Vehicle Profile box to enter the Vehicle Profile screen.
- → Press an already created profile in the box on the left side of the screen to view the vehicle details on the right side of the screen. Press the **Select Vehicle Profile** button at the bottom of the screen to select that profile.



SMART BOX+ A SIMPAS Technology™

Step 2b:

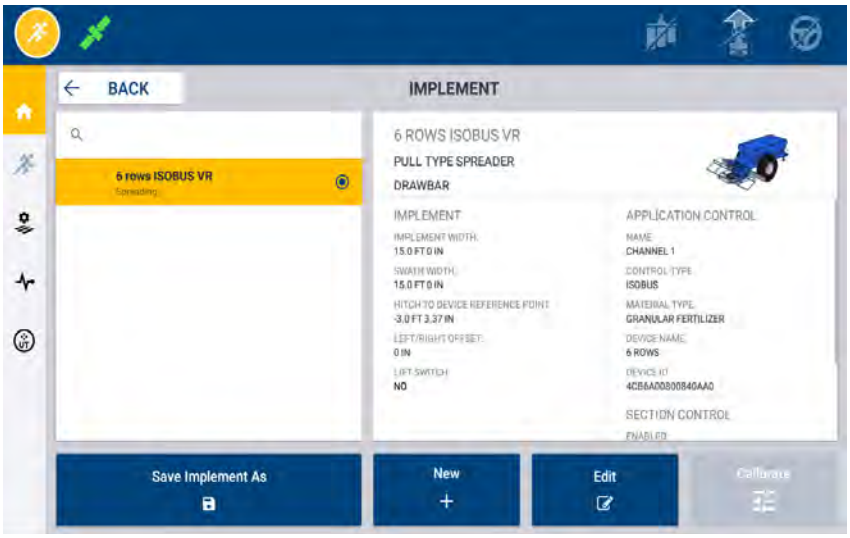
- To create a new profile, press the **New** key and enter all vehicle settings by pressing the tab on the left side of the screen, entering the required information, and scrolling to the next tab with the arrow on the right side of the screen. Press the **green checkmark** when all necessary settings have been entered to save the vehicle profile.
- Press the **Back** button to return to the home screen. The Vehicle Profile box should now be green in the top right corner.

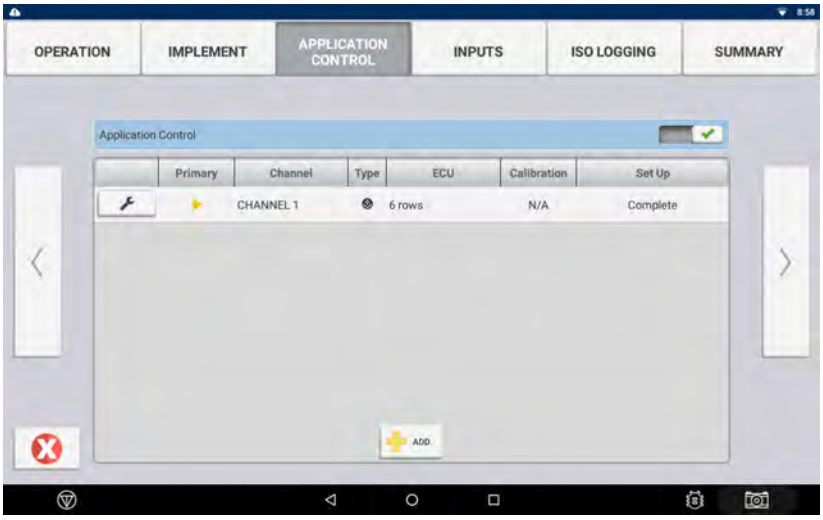


NOTE: Refer to the appropriate Trimble documentation for additional setup information.

Step 3:

- Press the **Implement** box. The Implement screen will appear. You can edit an existing implement (see step 3a) or create a new implement (see step 3b).





Step 3a:

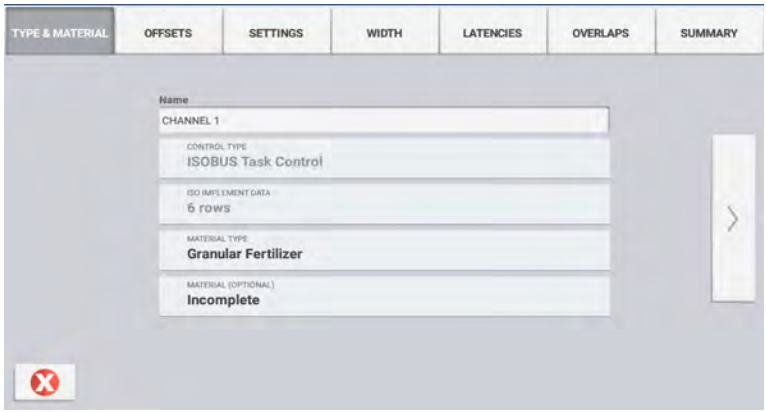
- To edit an existing implement, use the **Edit** key. The summary screen will appear. Press the tabs at the top of the screen to view and edit all available settings.
- In the **Application Control** tab, use the wrench softkey to modify an existing current channel.
- See step 3c to finish setting up the implement.

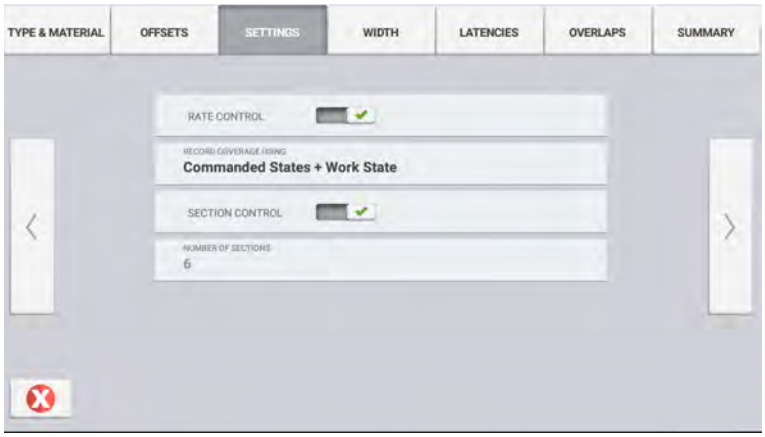
SMART BOX+ A SIMPAS Technology™

Step 3b:

- To create a new implement, use the **New** key on the Implement screen. In the "Application or Device" window, the ECU application type/ECU number should show up as a menu item. Ensure that this choice is selected.
- Tap the **New** arrow. Choose the operation type "Spreading," then tap the "Next" arrow to select the Implement type "Pull Type Spreader," continue to tap the "Next" arrow to review the name and hitch measurements; these entries are set by the ECU.
- On the "Measurements" tab verify the Application Width, Rows and Swath Width settings are correct, and enter the Physical Width and Physical Length settings. The Physical Width setting should match the overall width of the planter. The Physical Length setting should match the distance from the tractor hitch to the application point.
- In the **Application Control** tab, use the wrench softkey to modify a current channel.
- See step 3c to finish setting up the implement.

Step 3c:

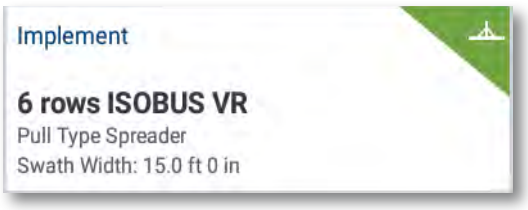




- Under the **Type & Material** tab, the control type should be greyed out and read "ISOBUS Task Control," and the "ISO Implement Data" should match the machine name of the ECU. Set the material type to match the channel you are configuring.
- Under the **Settings** tab, ensure that Rate Control and Section Control are ON if you wish to utilitze those features. For the option "Record Coverage Using" select the choice "Command states + Work State." Note that the "Link to Channel" and "Number of Sections" settings are not configurable, these are controlled by the SmartBox+ ECU.
- Tap the **Latencies** tab. Set the On and Off latencies to match the time of delay seen on your planter between the system turning on/off and product actually hitting the ground, or turning off.
- Tap the **Overlaps** tab. Set the "Start" and "End" overlap distances if you wish to double apply at the start and end of the row to ensure good coverage.
- Tap the **Summary** tab, then press the **green checkmark** to save the edited settings and return to the main implement configuration screen.

SMART BOX+ A SIMPAS Technology™

- Finish entering settings for the application control. Under the "Inputs" tab do not select the "lift switch" option. The lift switch setup is controlled by the SmartBox+ ECU. Under the "ISO Logging" tab set the logging option to "On" if you wish to record data to the ISO Task Data folder.
- Tap the **Summary** tab. Again, press the **green checkmark** to save the edited settings.

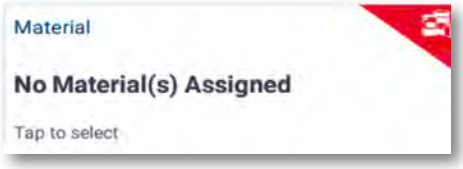


Step 3d:

- Press the **Back** button to return to the home screen. The Implement box should now be green in the top right corner.

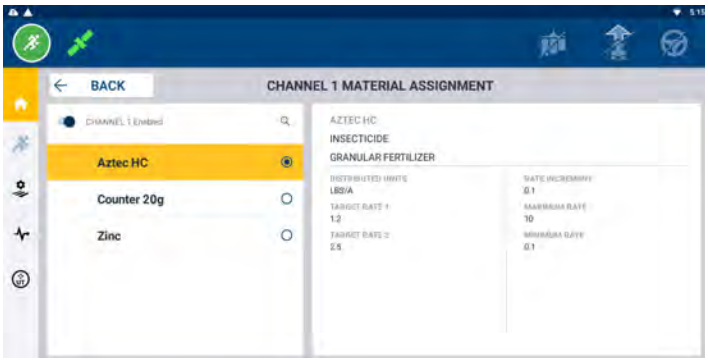
Step 4:

- You can use an existing material (see step 4a) or create a new material (see step 4b).



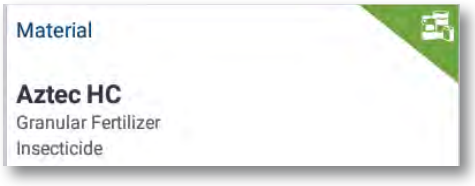
Step 4a:

- To use an existing material, press the **Material box** on the home screen to bring up the material details.
- Press a previously created material on the left side of the screen to select it and bring up the material details on the right side of the screen.

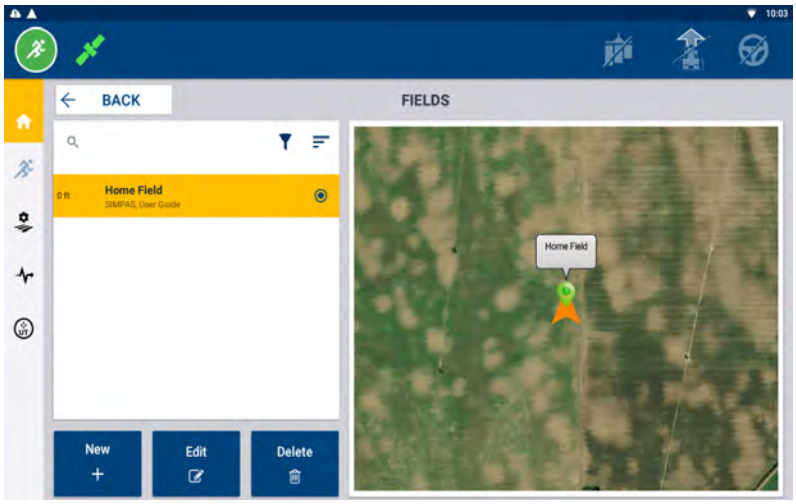


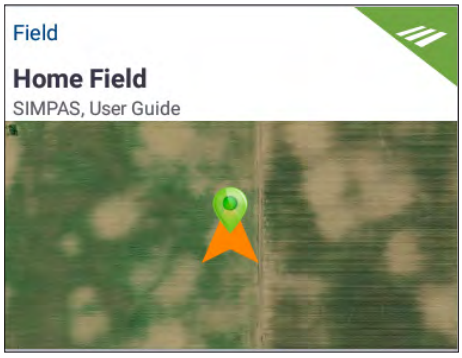
Step 4b:

- To create a new material, press the **New** key.
- Select a material type that corresponds to the application type set up in PIQ and the ECU settings. Fill out all necessary information and press the **green checkmark** to save these settings.
- The entries, Material Name, Category, Type, Distributed Units, and Material Density must be filled out.
- Further, once a Target Rate has been entered you must enter the Rate Increment, Minimum Rate and Maximum Rate entries before you can Save the material.
- Press the **Back** button to return to the home screen. The Material box should now be green in the top right corner.



SMART BOX+
A SIMPAS Technology

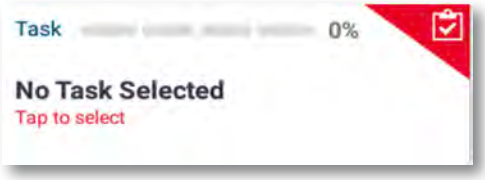


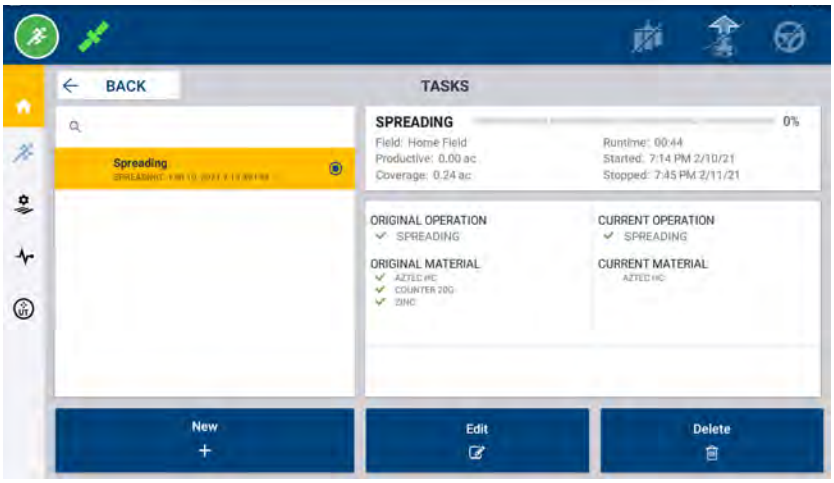


Step 5:

- → Tap the **Field box** from the PIQ home screen.
- → Create a new field, or select an existing field by tapping the appropriate field in the column on the left, followed by the **Back** button.
- → To create a new field tap the **New** button, enter the Field name, Client and Farm, then tap **Save** to create the field.

- → Press the **Back** button to return to the home screen. The Field box should now be green in the top right corner.





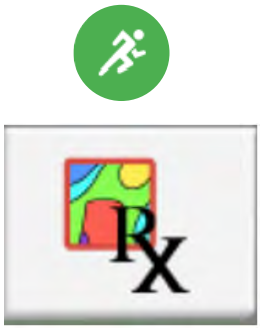
Step 6:

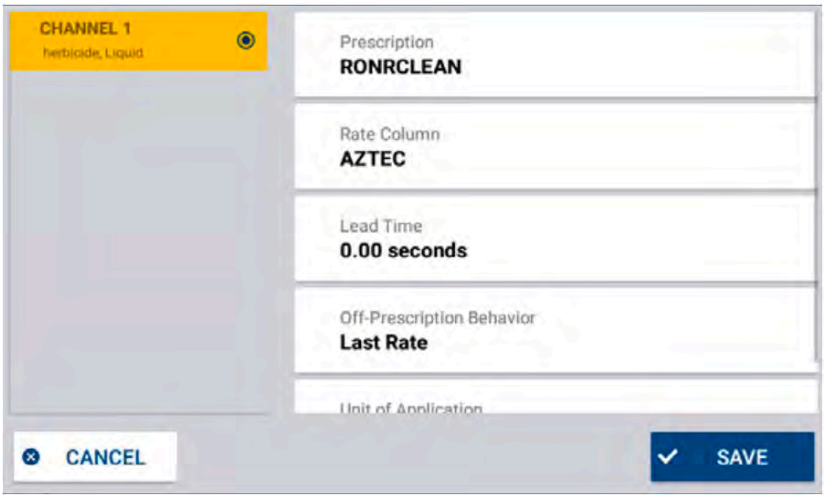
- → Press the **Task box** from the PIQ home screen.
- → Press a previously completed task on the left side of the screen to select it and bring up the task details on the right side of the screen. Edit this task by pressing the **Edit** key and updating the task name, or press the **New** key to enter a new Task Name. Ensure that the task matches the application type of the ECU.
- → Press the **Back** button to return to the home screen. At this point, all boxes on the home screen should be green.

SMART BOX+
A SIMPAS Technology

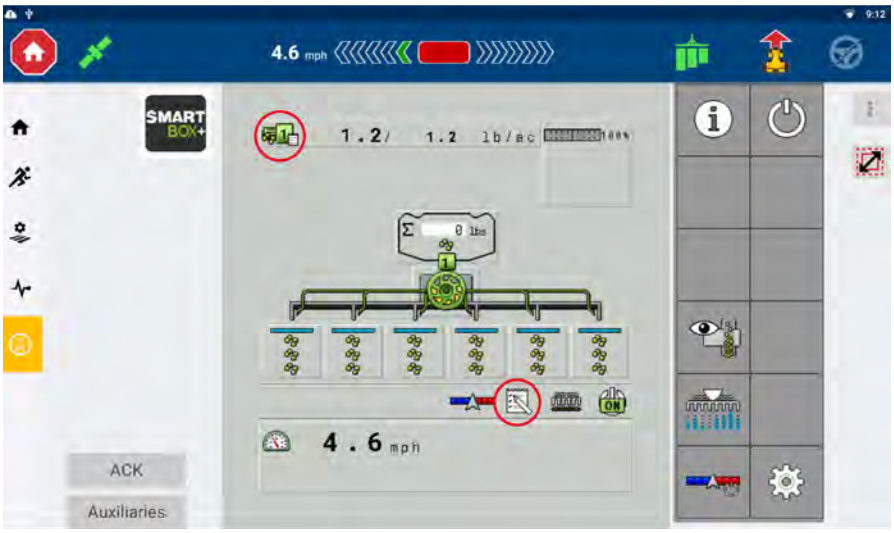
Step 7:

- → Press the **Run** key at the top left side of the screen. This will bring up the Run screen.
- → Press the **Rx** softkey on the right side of the screen. Next, press the Prescription key that reads "Tap to select."
- → Press the channel you wish to use to select it and bring up the prescription details.
- → Ensure the Prescription and Rate Column and Unit of Application entries are set correctly. Set the Lead Time and Off Prescription Behavior setting to your preference.
- → Repeat for all three channels.
- → Press the **Save** key to save and select that prescription.





NOTE: Consult with your prescription provider for information on the correct Prescription, Rate Column, and Unit of Application.



Step 8:

- → To ensure that the task is controlling the Target Rate, view the ISOBUS VT window.
- → Verify the Task Control Icon is visible next to the target rate indicators and also in the status bar.
- → The Task and Prescription are now set up and ready for application.

SMART BOX+
A SIMPAS Technology

Calibration

Quick Reference

Work with an authorized Trimble dealer to calibrate the SmartBox+™ system before use.

➔ First gather the needed materials:
- ☐ Live SmartBox product to be applied
- ☐ Catch bottle
- ☐ Gram scale
- ☐ Calibration sheets
- ☐ All required PPE listed on the SmartBox product label

When calibrating the system, all meters must be calibrated. To calibrate one metering unit at a time, select the SmartBox product, then select the row unit to test.

Steps:

☐ Remove product tube and install a catch bottle on the end of the product tube.

☐ In the UT, click on **Settings**  then click on **Metering Unit Settings**  then click on **Calibration Screen Icon** 

1. Click each **Metering System** button to make active.
2. Set target weight for each by clicking the **blue text** below. Enter the number of pounds and the speed.
3. Select product to calibrate by clicking the **Metering System Checkbox**.

4. Click the **Calibration Unit Selection** to specify which rows will be calibrated.

5. Select the **Prefill Icon** to fill all meters with product. Product is being dispensed right away to make calibration accurate.

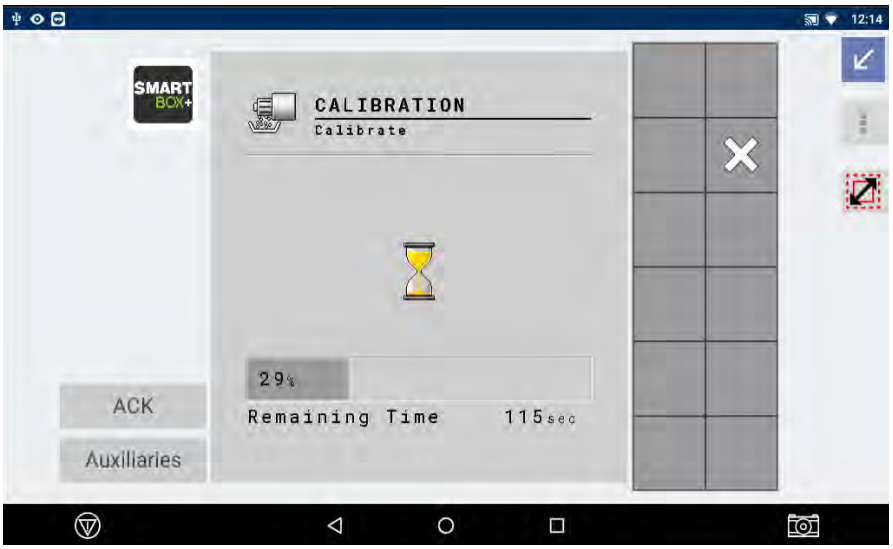
6. The **Start Icon** appears when the system is ready to begin calibrating. Select that icon to begin the calibration process.

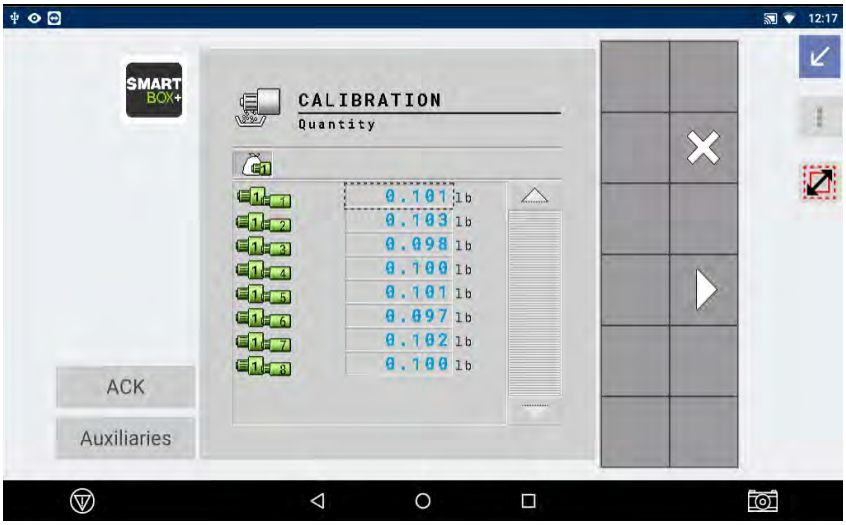
SMART BOX+ A SIMPAS Technology

7. Once the calibration has started, you will see this progress screen. The progress bar will increase and the countdown timer will give an indication of the amount of time remaining.

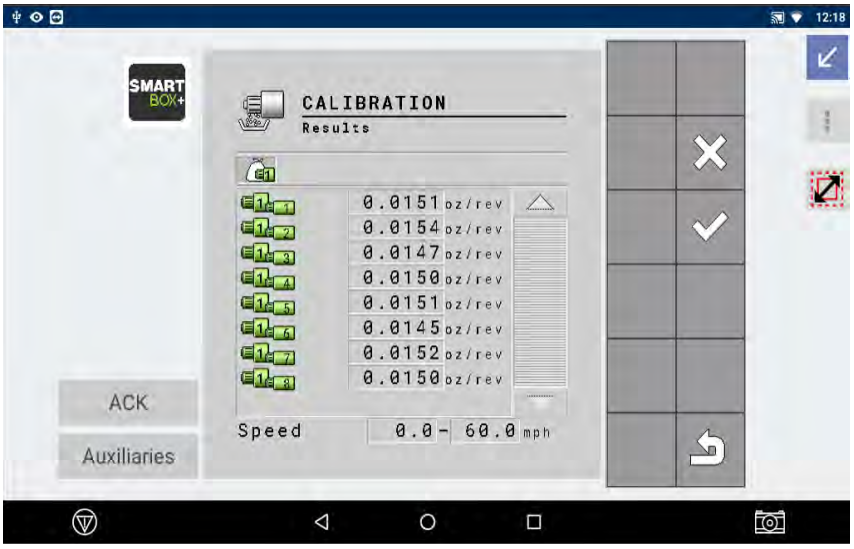
NOTE: For the calibration to run successfully, the system must be fully functional. If any of the following conditions exist, the calibration will not proceed which will be indicated by the progress bar not moving and the countdown timer not counting down:

- → The granular meters are not turning.
- → The granular meters are turning, but there is no RPM feedback.
- → The initial calibration value is set to 0.
- → The calibration value is outside the acceptable range.





8. When the calibration process has finished, use the gram scale to weigh the catch bottle.
9. Enter the weight in the Calibration Quantity screen in the UT. Click the **blue text** to enter weight.
10. The calibration results screen automatically adjusts the system to apply the correct rate.
11. Click the **Continue** button to confirm the entered weight and continue to the calibration results screen.
12. The calibration results screen displays the updated calibration value.
13. Click the **Checkmark** icon to accept these results and store the updated calibration value.



Safety note: Wear PPE according to SmartBox product label requirements. Dispose of calibration SmartBox product material properly according to the label requirements.

SMART BOX+ A SIMPAS Technology

Alarm Warnings

Quick Reference

The system is constantly monitoring itself to ensure that the requested operation is being achieved. If the requested application rate cannot be achieved, a warning will be shown.

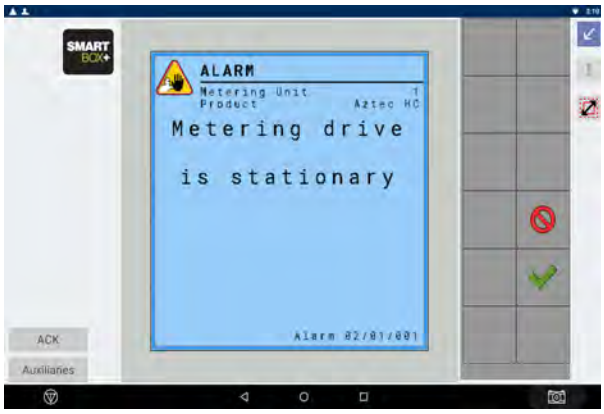
When an alarm appears, the row and channel on which the error is occuring is displayed at the top right of the error warning window. Use this information to locate the issue.

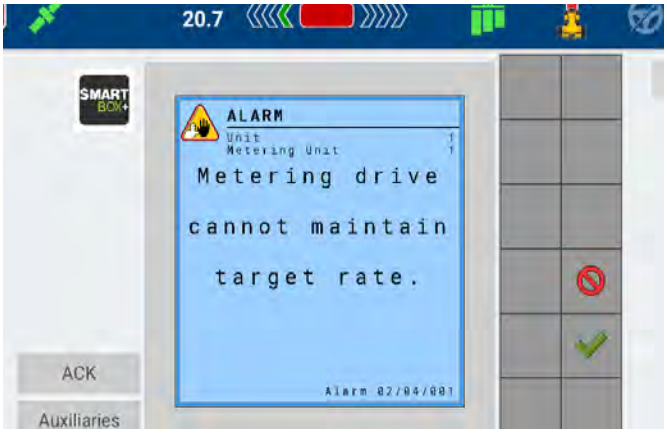
The system has several diagnostics screens built in. Use these to help determine the source and cause of issues if they arise.

Operational Alarm: Meter Drive Stationary

When this alarm occurs, the granular meter is not turning. This could be due to the following:

- The meter has no calibration factor.
- The meter RPM sensor is faulty and not returning the correct RPM report.
- The system has a blockage which has caused the meter to stop turning completely.





Operational Alarm: Cannot Maintain Target Rate

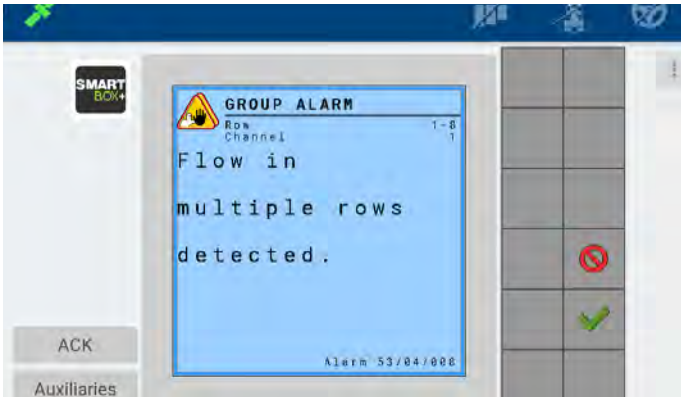
When this alarm occurs, the granular meter cannot turn at the rate being requested by the system.
This could be due to the following:

- The meter is stalled (due to a blockage).
- The meter RPM sensor is faulty and not returning the correct RPM report.
- The system is asking for more RPM than the meter can deliver because of an incorrect meter calibration or ground speed is too high.
- The system has a blockage which has caused the meter to slow down.

Operational Alarm: Flow Warning

When this alarm occurs, product flow has been detected in the meter, in a situation where no flow should be occuring. This could be due to the following:

- Vibration has caused a small quantity of product to move past the blockage sensor during transport.
- The blockage sensor settings need to be adjusted.



SMART BOX+ A SIMPAS Technology

Operational Alarm: No Flow Warning

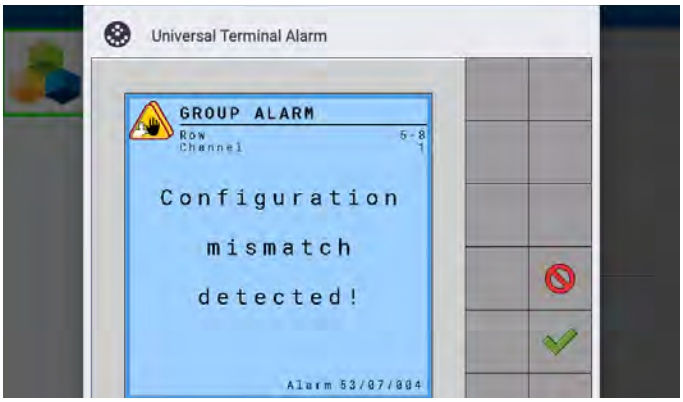
When this alarm occurs, product is not flowing when it should. This could be due to the following:

- The system has run out of SmartBox™ product (i.e. chemical product).
- The system has a blockage which has stopped the meter from applying product.

Configuration Mismatch Warning

When this alarm occurs, one or more meters has stopped communicating with the ECU. This could be due to the following:

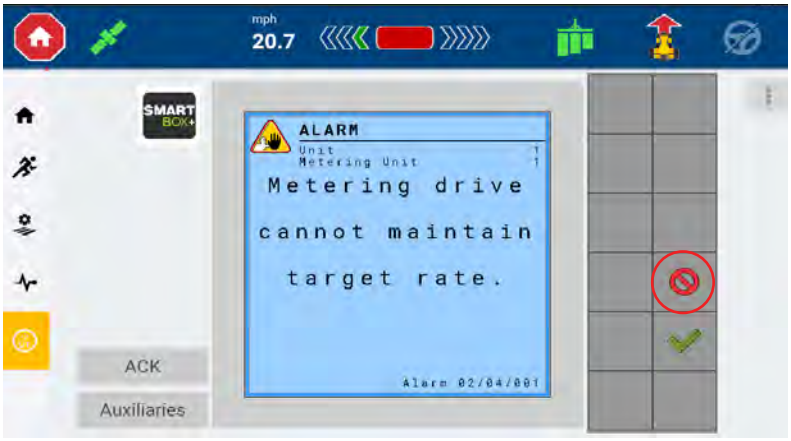
- System voltage is too low
- Damage has occurred to the meter harness
- Damage has occurred to the ECU harness
- Damage has occurred to the power harness
- The meter is faulty and needs to be replaced



Addressing Alarms

1. When an alarm appears, assess the planter to determine the cause of the alarm.
2. Once the condition that caused the alarm has been resolved, click the **green check mark** to clear the alarm.
3. If the alarm condition persists, the alarm screen will return.

SMART BOX+
A SIMPAS Technology

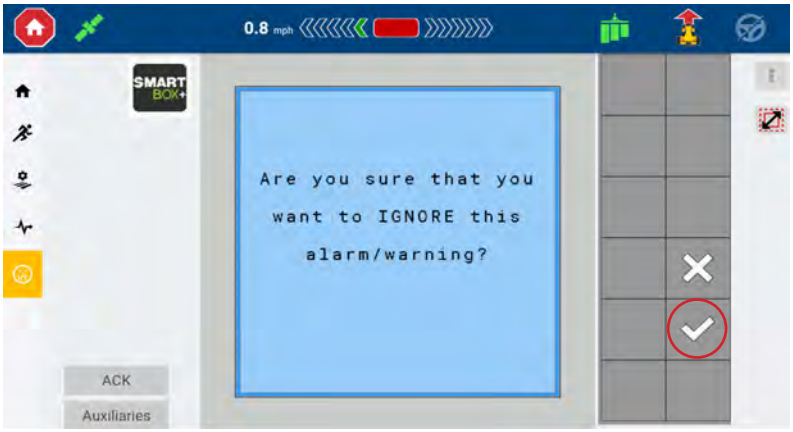


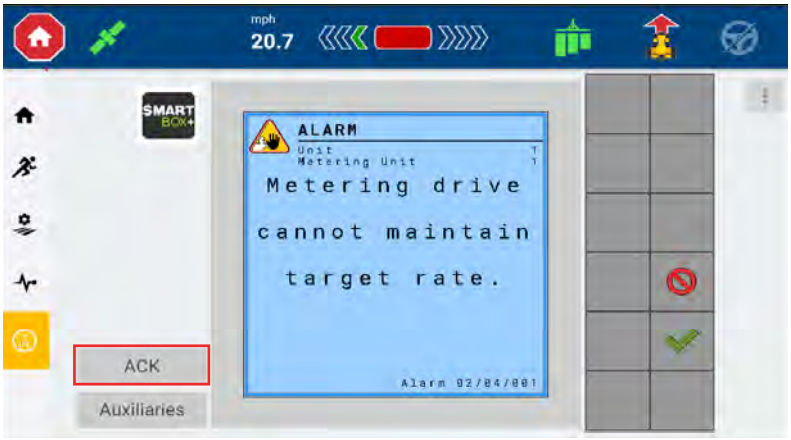
4. If it has been determined that it is safe and necessary to continue operating while the alarm condition persists, the alarm can be ignored.

5. When the alarm appears, click the **red circle** to ignore the alarm. This action will need to be confirmed.

6. Confirm that you ignore this alarm by pressing the **red circle**, followed by the **white check mark** on the following screen.

7. This will suppress the alarm until the system is shut off.





→ Additionally, alarms can be cleared by pressing the **ACK** button.

When troubleshooting a problem with an authorized Trimble dealer, the operator should reference the row and channel code on the top right of the error warning window. Additionally, the operator may need to view the alarm history. This is found in the Diagnostics screen under "Alarms and Warnings."
To access this screen, do the following:

1. Tap the **Settings** icon from the home screen.
2. Tap the **Diagnostics** icon.
3. Tap the **Alarms and Warnings** icon.

NOTE: The alarms and warnings history screen show currently active warnings (shown in full color), as well as those that have occured in the past but are inactive (shown grayed out). Warnings that have been "ignored" are removed from the list.

SMART BOX+ A SIMPAS Technology

Clearing a Blockage

Quick Reference

☐ If one meter is not working, put on required PPE for the SmartBox™+ products being applied and walk through this protocol:

Step 1: Check for physical blockages.

→ Check the product tube for physical blockages.

Step 2: Run the meters with blockages forward and backward at 200 RPM.

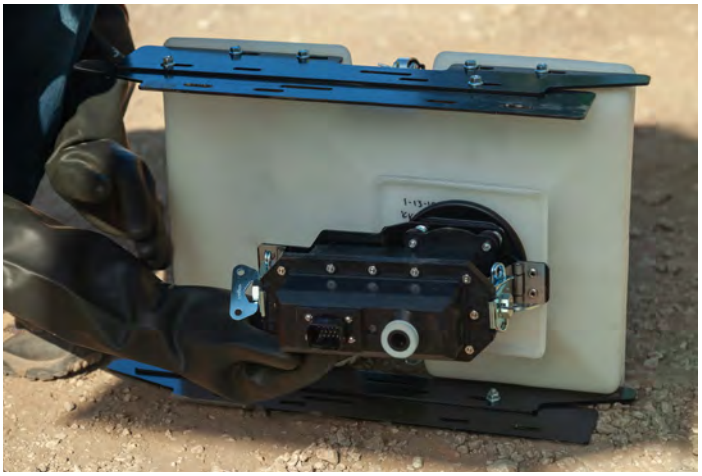
→ Push in the valve handle to ensure the valve on the transfer container is fully closed to stop product flow. Be prepared to catch the material in a container provided by your authorized Trimble dealer to minimize exposure and enable disposal after troubleshooting.

→ In the UT, select the "Settings" icon, then select the "Diagnostics" icon, and then select the "Metering Unit Info" icon. Manually turn on the meter by adjusting the RPM. Change the RPM by selecting the blue text and entering "200RPM" to try and push product through to clear it. Set the value to a negative number ("-200RPM") to reverse the meter, if necessary. Run the meter for two minutes at 200RPM to empty the meter. Please consult SmartBox product label for proper disposal options for the specified product.

SMART BOX+ A SIMPAS Technology

Step 3: Remove the meter from the quick attach system.

→ Remove the meter from the quick attach system and confirm there are no blockages in the product hopper.



Step 4: Call your authorized Trimble dealer.

→ If the problem cannot be solved, replace the meter and/or call your authorized Trimble dealer.

SMART BOX+
A SIMPAS Technology™