USER GUIDE

# VISUM AIRFLOW


J.assy

| Visum Airflow | User Guide v. 1.0 | Product v. 1.0 |
|---|---|---|

**This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:**
**(1) This device may not cause harmful interference, and**
**(2) This device must accept any interference received, including interference that may cause undesired operation.**

**This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body**

# Disclaimer

This fertilizer flow sensor is a monitoring tool designed to assist in the efficient management of fertilizer application.
While every effort has been made to ensure the accuracy and reliability of this product, it is important to note that no device is completely infallible. Factors such as environmental conditions, interference from other electronic devices, and natural wear and tear may affect the sensor's performance.
**This product should not be used as a primary safety device.**
Always follow all applicable safety guidelines and procedures when operating agricultural machinery.
The manufacturer is not responsible for any damages, injuries, or losses resulting from the misuse, incorrect installation or unauthorized modifications.

# Contents

# Presentation

## What is the VISUM AIRFLOW sensor

The VISUM Airflow sensor is the technology that allows the farmer to remotely monitor the presence or absence of the fertilizer flow, warning possible blockages. When there is an interference in the flow of the metered input, a quick response is sent to the user.

Available for pneumatic implements.


Monitor


Visum Airflow Sensor

## Specifications

### Monitor

- Communication via radio frequency at 2.4GHz
- GFSK Modulation
- Omni-directional Antenna, 5dBi, 50 Ohms
- RP-SMA Connector
- Power voltage: 10Vdc to 30Vdc
- Display with 2 characters of 7 segments
- 2 Red/Green/Blue LEDs
- Resistant to dust and water splash

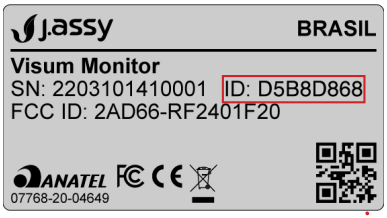

### Sensor

- Resistant to dust and water
- Communication Radio Frequency at 2.4GHz
- GFSK Modulation
- Internal Antenna
- Dimensions: 71mm (H) x 89mm (W)
- Weight: 145g
- 2 piece install: Back plate uses aviation grade double sided tape and sensor locks into place.
- Diagnostic LED
- Operating temperature: from 30 F up to 120 F
  Storage temperature: from -22 F up to 140

# Pairing

In order for all sensors to communicate with the monitor, they must be configured in the same communication network.

Each monitor has a unique ID, which can be located on the back of the sensor.





**A** Access the **F5 function** to pair the sensors.

**Step 1:** Press the ⬍ button until F5 appears on the monitor screen.

**Step 2:** Press the button ⓘ to confirm and access the function.

**Step 3:** Select the row where you want to add the sensor by pressing the ⬍ button and confirm the number using the ⓘ button.

With the ⬍ button pressed for more than 1 second, the display of the items will be accelerated, with the advance of 5 positions per second.

**Step 4:** After confirming, shake the sensor, to wake it up and **position the magnetic pen in the location indicated below.**

**HINT:** The sensors might be on deep sleep (hibernate) mode. If so, hold the magnetic pen until you see it's LED blink green three times and then remove and reapproach the magnetic pen to complete pairing. See page 15 for more details.

**Step 5:** During pairing, the icons on the monitor will flash intermittently in white, while the display shows the row number to be paired.

**HINT:** The operation can be cancelled by pressing the ⏻ button for 5 seconds.

**Step 6:** After completing the sensor pairing, the monitor will display Ok and the LED will turn green, once this is displayed, press the ⏻ to confim.

**Step 7:** The monitor will display the next row number. For example, if row 3 has just been paired, the screen will show row 4, waiting for confirmation to start the same procedure for the next sensor.

**ATTENTION:**

**Never pair 2 (two) sensors simultaneously. Wait around 3 (three) seconds to start the configuration of the next sensor**

## B How to identify the numbers

The sensor has an area to identify the row numbers, this can be made with a permanent marker


Example of numbers markings

# Operation

## Before use

The monitor must be installed with the antenna in an upright position:


The J.Assy monitor communicates with the flow sensors, indicating flow or blockage of flow


When you power on the monitor, it may display “00” indicating that no sensors have communicated with it yet. As soon as the first message is received the monitor will show “--” and the product icon will light up.

Whenever the monitor is turned on, check that all sensors are connected. To confirm, after 5 minutes of connected usage, access the F1 function.

## During use

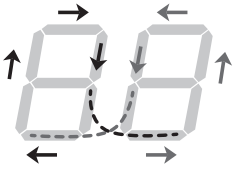
Under normal conditions (sensors communicating and indicating flow) the display should show two dashes “- -” and the LED of the respective model (Fertilizer or Fine Grain) should be green, indicating correct operation.


The monitor communicates only with sensors present at the same monitor address.
This address is found on the label, located on the back of the monitor.

In case of flow failure (absence or clogging), the monitor will beep and the number of the row with the problem will appear on the display. The LED will turn red.


If the sensor loses communication for more than 5 minutes, the monitor will indicate that the sensor is missing and issue an alert, showing the row number with the blue LED flashing (or solid blue in some monitor versions).

In case of MANUEVER (or headland mode), the display will show a figure 8



When 70% of the sensors are indicating no flow, the monitor will display the headland pattern.

The monitor exits the headland state when more than 50% of the sensors indicate the presence of flow again.

To optimize the battery life, when not in use, the VISUM AIRFLOW sensors will enter standby mode

The sensors return to operation only when they are moved, such as when the implement moves and the monitor is turned on.

## Function Descriptions

Front navigation buttons on the monitor.

To view the functions press the ⬍ button and navigate between the functions.

To access a function press the ⏻ button .

To confirm an action press the ⏻ button.

To cancel the function and return to the operation screen press the ⏻ button for 5 seconds.

After 60 seconds without any interaction, the monitor automatically returns to the home screen.

### F1 | Connected Sensors List

This function will list all the sensors that have communicated with the monitor, since power up. It's recommended to run this function at least 5 minutes after powering up the monitor. During the list, a red icon does not indicate a problem with that row. It just means that that row has no flow at this moment.

Legend:

| Green | Red |
|---|---|
| Product flowing | Product not flowing |

**IMPORTANT:**
**The LED icon color considers the flow state of each sensor before headland started.**

---

### F2 | Monitor Volume

With the function selected, navigate to toggle between available volume levels. The volume demonstration is done by a triple BEEP. To confirm press ⓘ and wait, an OK will be displayed on the screen.

Indication of volume levels:
A1: Mute (without BEEP)
A2: Low
A3: Medium (factory default)
A4: High

---

### F3 | Screen Brightness

With the function selected, navigate to switch between the available brightness levels. With each click the brightness will be adjusted. To confirm press ⓘ and wait, an OK will be displayed on the screen.

Indication of brightness levels:
B1: Low
B2: Medium (factory default)
B3: High

### F4 | Check Sensor ID

With this function selected, the sensor ID verification is started. The product icons will turn white. Approach the magnet in the pairing region of the desired sensor to check it's ID.

Upon receiving the message with the sensor ID, the monitor LED will turn green and display the following information on the display:

| L | Row number | 1st letter of ID | 2nd letter of ID | ... | 8th letter of ID |
|---|---|---|---|---|---|

The sensor ID will be displayed three times.

### F5 | Pairing sensors

After accessing the function, select the row number you want to add. The monitor should display the row number to be paired with the fertilizer and small grains icon off.

With the ⬍ button pressed for more than 1 second, the display of the row numbers will accelerate, by 5 number increments per second.

To select the row number to be paired, press ⏻.

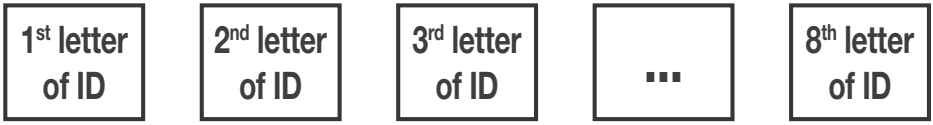
The fertilizer / small grains icons will flash white intermittently

At this time, touch the magnet to the sensor to address. After completion, the monitor will show the OK ('Oh') information and will show a green LED, according to the sensor model. After this, press the ⏻ button to confirm.

The monitor will display the next row number. For example, if row 3 has just been paired, the information for pairing row 4 will be displayed, waiting only for confirmation to start the same procedure for row 4.

## F6 | Display Monitor ID

With the function selected, the fertilizer/ small grain icons will be turned off and with the interval of 1 second the identification information of the monitor will be displayed, in the following order:




The sensor ID will be displayed three times.

## F7 | Customize the Maneuver BEEP time

By pressing the ⬍ button it is possible to increase or decrease the BEEP time.

If the ⬍ button is pressed for more than 1 second the time will increase rapidly, every 5 seconds until the button is no longer pressed.

The selection of the BEEP time can vary between 1 and 99 seconds. When the display reaches 99, the next number will again be 1.

To confirm the selected value, press the ⓘ button.

The user can increase the value by pressing the ⬍ button, if it remains pressed for more than 1 second, the value will increase by 5 number increments per second, until the button is released. The increase in this time is from 1 to 99 seconds. When the value reaches 99 it will go back to 1 again.

To confirm the selected value the user must press the ⓘ button .

## F0 | Fault Detection Level

The function is only released for editing after at least one Airflow sensor communicates with the monitor since it was turned on, otherwise when trying to edit “ER” will be displayed. If this occurs, without turning off the monitor, shake at least one of the sensors so that it communicates

and try again after a few seconds.

When entering the role, the user will be able to choose between three levels:

PORTUGUESE and ENGLISH:

- OF: Off - Default value
- HI: High Level
- MD: Middle Level
- LO: Low level

After confirming the sensitivity level, the monitor should exit the function.

After the level is set, the monitor will ensure that the configuration of all Airflow sensors currently or in the future communicating with the machine is in accordance with the selected level value.

The User may also cancel the function at any time by pressing the button  for 5 seconds ⏻.

# Sensor LED Indicator

The magnetic pen can also be used without selecting any function on the monitor to check the battery life of each sensor. When you touch the sensor at the addressing location (lower left corner) the LEDs will blink twice indicating battery level as follows:


- Two green blinks: Battery is fine.
- Two yellow blinks: 30% battery life remaining or lower.
- Two red blinks: Battery life is nearly depleted. **Replace battery immediately.**

**Deep Sleep Mode (Hibernation):**
In case the LED fades in from dark to blue over a few seconds, when approaching the magnet, that means the sensor is currently in deep sleep mode. In this mode the sensor will not wake up with movement and is not monitoring flow. This mode is meant for shipping and storing the sensors before initial field use. Just hold the magnet close until it blinks green for three times and you've put the sensor into regular operation mode.

Remove the magnet and approach it again to get the battery feedback described previously.

**Regular Operation:**
When the sensor is operating normally, without the magnetic pen, the LED will blink green 5 quick times when the sensor wakes up (due to movement detection).

The LED's will also blink red rapidly when going back to sleep (due to lack of activity or monitor responses).

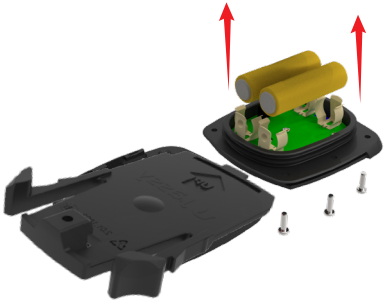
During product application the sensor will occasionally blink green when its reading flow and red when no flow is being detected.

# Battery Replacement

**01 |** Slide the sensor off the backplate

**02 |** Remove the screws behind the sensor

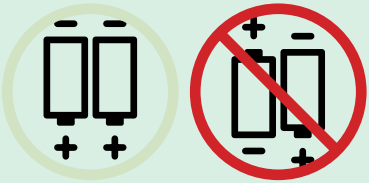
**03 |** Undock the base cover, gaining access to the internal chip with the batteries



**04 |** Remove discharged batteries

**ATTENTION:**

**Note the mounting orientation of the batteries in the circuit.**



**Do not mix new and used batteries. Always replace both batteries for new ones**

**05 |** Insert the new batteries. Remount the screws using a manual screwdriver. The recommended torque is 0.5 N.m (4,4 in-lb). **Do not overtighten** as this can damage the sensor case or the screws.

# Installation on the machine

Tools and materials:

You will need:

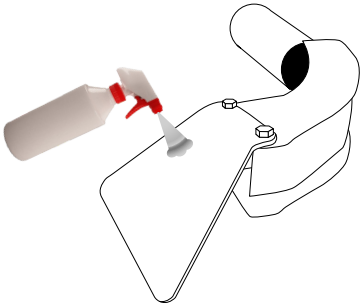
- Isopropyl Alcohol 90%
- Soap & water
- Clean rags
- Voltmeter (or multimeter)
- Heat Gun or Torch
- Permanent Market

In our box:

- Sensors
- Backplates with screws
- Monitor kit
- Cab power cable
- Repeater kit
- Additional kits

## Sensor Installation:

1. Clean all strike plates on the machine with soap and water and a clean rag. Remove all dirt and residues until the whole surface is clean;



**01 |** Clean thoroughly the site to be applied.

**HINT:** If there are bent or dented strike plates the backplate might not adhere properly. Straighten them or replace if needed. Check with a metal ruler if needed.

**HINT: 2** Optionally, you can also use a paint remover wheel with a grinder to help clean the strike plate before using soap and alcohol. Do not use sanding discs as they may create dents on the surface making it harder for the tape to adhere.

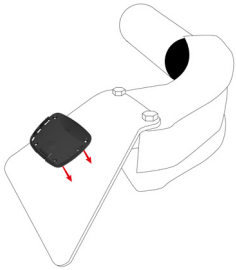
2. Use a new and CLEAN rag, soak it with the Isopropyl Alcohol and rub on all strike plates. This will remove any leftover soap and other residues; Make sure it's a clean rag and add generous amounts of alcohol to each strike plate.

3. Wait until the alcohol dries up, make sure the strike plate is thoroughly clean.

4. Heat the strike plates with a heat gun for a few seconds, to dissipate any humidity andheat up the metal.

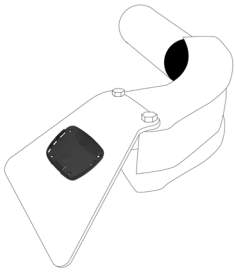
5. Remove the red liner from the double-sided tape on backplates and stick one to each strike plate.

Remove the Protection Label.



Position the sensor on the plate for application.

6. Press each backplate against the strike plate in downward motions to make sure any air pockets are removed from the double-sided tape through the slit on the tape.



Press so that the 3M glue has better adhesion.

**IMPORTANT:**

- **Make sure the “UP” arrow is pointing up.**
- **Install the backplates in the center to bottom of strike plate.**
- **Remember that the sensor mounts from the top of the backplate and slides down to lock into place, leave clearance.**
- **Make sure the bottom part of the backplate is all within the strike plate area, DO NOT leave the sensor hanging over the bottom as shocks might unglue them from the machine.**
- **There are additional backplates in the installation kit, if one of the applied backplates are not right, clean the strike plate again and add a new one.**

7. Slide the sensors onto the backplates until they lock into place. Do a light traction test by forcing the sensor up and down to make sure its locked and the tape is well glued to the machine.

8. Mount the screws that lock the sensors to the backplates. Use a manual screwdriver to tighten. The recommended torque is 0.5 N.m. (4,4 in-lb) **Do not overtighten** as this can damage the sensor case or the screws.

9. Using a permanent marker, write the corresponding row number on each sensor.

## Special instructions

Special instructions for installation of the sensors on specific brands of Machines are as follows:

**John Deere, TerraGator, Fendt:**

On two center tube strike plates, behind the bed, Two rubber strips. This is essential to maximize the detection of any blockages.

## Monitor Installation:

1. Choose a spot in the machine cab that has good visibility for the operator, avoid blocking the rearview mirrors as well as avoiding the drivers seat when rotated side to side.

2. Clean the surface you chose to mount the monitor with the cleaning tissue provided.

3. Remove the liner and glue the mounting support to the area. Press it for a few seconds removing any air pockets. Clean and glue the sunblock adhesive on the outside glass to protect the support adhesive from UV rays.

4. Mount the monitor on the RAM mount and tighten it in place. Don't overtighten as it can damage the mounting parts.

5. As each machine is different, check with the voltmeter (or multimeter) on the available power plug in the cab which terminal corresponds to KEYED POWER. The two other ones will be CONTINUOUS POWER and GROUND (pre mounted in the connector).

6. Mount the hanging terminal of the power cable to the KEYED POWER position in the conector by inserting it from the back and pushing it in until it locks in place.

7. Connect the power cable to the cab power plug and connect the monitor in one of the two exit connectors provided.

8. With the key turned to power on position, test to make sure the monitor turns on, by pressing the power button.

9. The monitor will flash all LED's (make sure none of them are dead) it will show a language selection "EN" for English, "PT" for PORTUGUESE. Choose the language of your liking by pressing the selection button. Confirm by pressing the power button.

**ATTENTION:**

**If the ambient temperature is below 32° F, heat the strike plate surface with a heat gun before applying adhesive tape.**

## Repeater Installation:

1. Mount the repeater to the back of the machine, it is used to extend the range of the wireless messages.

2. Mount the sensor antenna (indicated with an arrow on the adhesive label) with good visibility to the sensors.

3. Mount the monitor antenna (indicated with an arrow on the adhesive label) with good visibility to the machine cabin.

4. Run the power cable from the repeater to the cab

   **HINTS:**

   -Have in mind that the machine will fold up and might cut or damage the harness
   - Run the power harness with preexisting harnesses, as those are safe regions to run them.

5. Connect the power harness to the remaining power plug from the power cable in the cab.

6. Pair the repeater using function F5 on the monitor, just like if it was a sensor. You can add it to row number 01 (any row number will work, except 99). Approach the magnet on the indicated region when needed to complete pairing.

7. Make sure to enable the repeater mode on the monitor otherwise the repeater will not communicate with the monitor. Here is how:
   1. On the monitor, press and hold both buttons at the same time. Hold until display changes to advanced functions.
   2. Press the config button until “A6 – Repeater Enabled” shows up. Select this function by pressing the power button.
   3. Press the config button to set it to “ON”.
   4. Confirm with the power button. “OK (Oh)” will show up.
   5. Hold the power button for 6 seconds to exit advanced function menu.

## Cabin Power

Cabin power cable needs to be connected in the cab and the two outputs will be used, one for the monitor, one for the repeater.

# Display start up

## Display Verifications

- Press the ⏻ button until the screen comes on.
- The screen will turn on, check to ensure that all LEDs are working properly.
- At the end of the check, the display will show the firmware version number.

# Troubleshooting

### 1 | Monitor will not turn on

Check to ensure that power cable is intact and properly connected to a 12V-24V power supply (red/blue positive, black/negative).

### 2 | Monitor is not emitting sound

Access the F2 function and adjust the monitor volume.

### 3 | How do I know if the sensor's battery is dead?

If you approach the magnetic pen of the pairing area and you should see the LEDs blink with the battery feedback.

Another way is to run a F1 function (after at least 5 minutes running with the machine after powering up the monitor) and checking if the sensor is showing up on the list.

### 4 | The numbers on the display are weak

Access the (F3) function and change the brightness of the screen

### 5 | Communication is not coming from one or more sensors (sensor not listed when you run F1 function)

The problem may be communication signal or the antenna may not be properly mounted on the monitor. Check that it is mounted and in the upright position, try to remove obstacles between the antenna and sensors.
Position the monitor in a location that has a direct view to the sensors.
Disconnect any radio source near the sensors.

### 6 | Maneuver (or headlands mode) during application

Check if there is sufficient flow in the rows or if any section has been switched off. If this still occurs, check if the sensors or strike plates have build-up on them in case of a build-up on the sensor, clean the sensor a soft cloth. Avoid using objects that could damage the sensor during cleaning.

If necessary, the use of running water and neutral soap is recommended for more effective cleaning. Do not use pressurized water, this may damage the sensor.

### 7 | The monitor is beeping indicating an alarm on one or more sensors during normal application

Check that there is no build-up on the sensors and if so, clean according to instructions above

# Cleaning and storage

It is recommended at the end of the season to wash the sensors with running water and mild soap **DO NOT** pressure wash, **DO NOT** use tools to scrape of build-up, as this may damage the sensor

In between season, remove the sensors from the machine and store inside remember to make sure and keep all sensors for that specific machine together and marked with corresponding row number

After following the guidelines mentioned in this manual, your VISUM AIRFLOW system will be ready for application

IF YOU HAVE ANY QUESTIONS OR A POTENTIAL EQUIPMENT ISSUE, PLEASE CONTACT YOUR LOCAL SALES REPRESENTATIVE OR RETAILER, OR VISIT:

www.jassy.ag


J.assy

www.jassy.ag