OPERATOR'S MANUAL

VISUM

J.ASSY

VISUM

v.4.3

July 2020

This device contains **FCC ID 2AD66-RF2401F20**

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.

For further information, please visit **www.fcc.gov.**

This device contains **IC ID 21278- RF2401F20**

IC compliance
This device complies with Industry Canada license-exempt RSS standard(s).
Operation is subject to the following two conditions:
(1) This device may not cause interference, and
(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Conformité aux normes d'IC
Cet appareil est conforme à la(aux) norme(s) RSS sans licence d'Industry Canada.
Son utilisation est soumise aux deux conditions suivantes:
(1) Cet appareil ne doit pas causer d'interférences et
(2) Il doit accepter toutes interférences reçues, y compris celles susceptibles d'avoir des effets indésirables sur son fonctionnement.

Table of Contents

Operation Instructions

Specifications

- Radiofrequency communication at 2.4GHz.
- GFSK Modulation.
- Omni-directional antenna, 5dBi, 50 Ohms.
- SMA connector.
- Supply voltage: 10Vdc to 30Vdc.
- Display with 2 character, 7 segments.
- 2 Red/Green/Orange LEDs.
- Resistant to dust and water splash.

Specifications

- Resistant to dust and water jet.
- Radiofrequency communication at 2.4GHz.
- GFSK Modulation.
- Internal antenna.
- Dimension: 71mm (A) x 89mm (L).
- Weight: 245g.
- Internal diameter of the sensor: 45mm.
- Wearing protection: Stainless Steel.
- Outer diameter of the hose:
  from 1 1/4 to 2 1/16”.

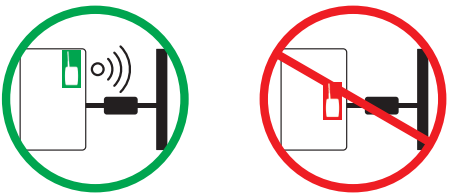
Installation | Monitor

1. Disassemble the bracket of the Monitor, removing the two side nuts.
2. Clean the installation surface with a cloth and alcohol.
3. Remove the film from the double-sided tape and fasten the bracket to the surface by pressing the whole area of the tape.
4. Wait for 15 minutes and then mount the Monitor on the bracket with the two side nuts.
5. If you install the bracket over a glass surface, put the anti-UV tape on the opposite side of the glass in order to protect the double-sided tape from the sun.
6. Press the ⏻ button to turn on the Monitor and hold it for 5 seconds to turn it off.

Alternatively, the tape may be removed to mount the bracket with screws or attached to a bar with clamps or RAM Mount kit (not included).

ATTENTION:
The **Monitor** should be installed with the antenna in a vertical line, and should be avoid putting the antenna in the horizontal position.

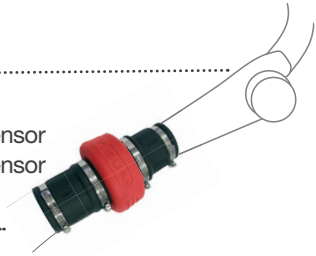
The **Monitor** should be installed with the best possible line of sight to the sensors in order to avoid communication problems.



Avoid installing the monitor close to the cab ROPS column. Keep a minimum distance of 12 in. between monitor and column.

Installation | Visum

TIP:
- Do not install the sensor flat. This will cause sensor wake up issues.



The sensor is installed between the diffuser/air release and the fertilizer outlet hose:

1 ¼”	1 ½”	1 ¾”	2 ⁄16”
			

Choose the correct inlet and outlet coupler for the hose and diffuser diameters.

TIP:
- Do not bend the couplers to install in your system. That can increase clogging or release during use.

ASSEMBLY

1. Cut a piece of the hose at the diffuser side with the length of the sensor-coupler assembly, so that the total length will be the same as the original hose.

2. Place the sensor with the internal antena facing “up” or “skyward”. The internal antenna is located to the left of the square patch with “P” and “L” between the “J” and “A” of the word J. Assy. See illustration below.

Sensor Assembly

1. Diffuser, **2.** Inlet coupler, **3.** Outlet coupler, **4.** Metal clamps, **5.** Hose.

Recommendations

3. Securely fasten the rubber couplers with the metal clamps[1].

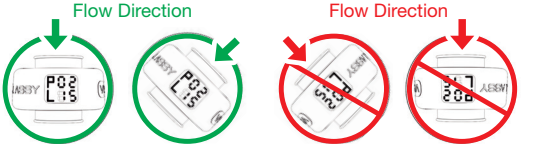
Do not "overtighten". Check the hose clamps after 10 minutes of field operation to ensure everything is snug and maintaining good connections.

TIP:

- Do not point or align the sensor antenna toward a metal barrier, that could degrade the communication efficiency from the sensor to the monitor.

ATTENTION:

- Do not install the sensor upside down. Installation must match the orientation in the pictures below.



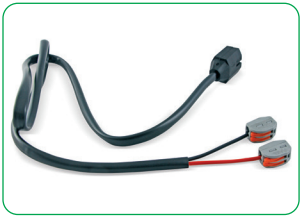
[1] 1, 75 em - 2, 75 em x 0312 em x 0021 in.

Power Connection

The power cable must be connected to 12Vdc to 24Vdc power source.

CONNECTING TO A POWER PLUG INSIDE OF THE TRACTOR CAB

1a. The installation kit will not be used, but a proper manufacturer harness (not included) will be needed.

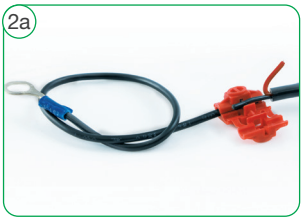


1b. Cut the power cable excess and mend the wires with the manufacturer harness.

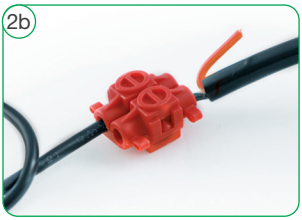
CONNECTING TO THE TRACTOR BATTERY

- Use the included installation kit is detailed below.

2a

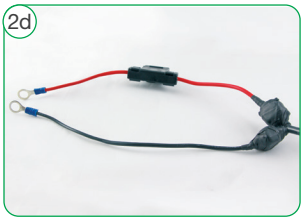


2b



2c

2d



- The red connector must be protected with self-fusing tape.
- Preferably, the power cable should be connected directly to the battery terminals.

ATTENTION:

- Do not disconnect any others cables attached to the battery of the tractor. It may affect the functionality of other electronics in the tractor.

ATTACH THE ANTENNA

- You will find the antenna inside your Monitors box.
- Attach it to the back of the Monitor by threading on the connection. Do not “over-tighten”.
- Position the antenna so that it is in a vertical orientation.

Network ID

All sensors must be configured with the network ID in order to communicate with the Monitor. The network ID can be found in the back of the Monitor or can be extract by software operation. The sensor configuration can be done with a Visum Monitor. Check how it can be done on this manual.

The following steps must be done:

1. Find the address indicator on the rubber cover (square with “P” and “L” and numbers).
2. Wake up the sensor by shaking it.
3. Place the magnet on the address indicator (make circular movement to easily turn on the internal switch).
4. Wait for the confirmation beep or message.
5. Fill the address indicator with the number of the implement and row.

ATTENTION:

- Never configure two sensors at the same time, even with two different devices, because the connections may cross each other.

TIP:

1. In order to change the address of any sensor, just follow the steps again.
2. Before doing the sensor “addressing procedure”, watch videos on Youtube by J.Assy (video Visum Monitor).
3. When installing the sensors on your machine initially, we recommend you “address” the sensors to the monitor on your workbench first before installing the sensors on the toolbar row units.

TIP:

4. Line up all your sensors on the workbench and write the row number on each first. Then add all the couplers and hose clamps.
5. Then you can either power up the monitor at the workbench with a 12V battery to complete the “Addressing” procedure, or carry the sensors to your tractor cab where you have installed the Monitor to complete the “Addressing” procedure.
6. After that then install the sensors on the toolbar/row unit at the air diffuser/air release. We recommend you install with the row numbers running from the left to the right (standing behind the toolbar facing the tractor cab) beginning with 1 to 12, 1 to 16 or however many rows you have to monitor.
7. Do not mount the monitor in the cab using a large high-powered magnet mounting kit or place a magnet near the monitor as it can cause the monitor to fail.

This is the area where you “ADDRESS” the sensor with the magnet that is included with the sensor.

Operation

- The Visum Monitor communicates with the flow sensors, indicating the presence or absence / blockage of flow.
- When you turn on the monitor the monitor should display a “00“on display and both LED should be OFF, indicating that no sensor has communicated with the monitor. That will happen every time that you turn on your monitor.
- Under normal conditions (sensors communicating and indicate flow), the display show two dashes and the LED of respect function (fertilizer or seed) will light up green, indicating that everything is Ok.
- The Monitor communicates only with sensors assigned to its ID, which is on a label on the back of the Monitor.
- In case of flow failure (absence or blockage), the Monitor will beep and the display will show the row number. Also, the LED related to the flow product (seed or fertilizer) will turn red.

- If the sensor loses the communication for more than 5 minutes the monitor will indicate missing sensor. In that case the monitor will beep and the display will show the row number Also, the LED related to the flow product (seed or fertilizer) will blink blue. If the Monitor is power cycled this sensor will no longer be listed.

- In case of MANEUVER[2] state a light will be whirling on the display and the LED related to the flow product (seed or fertilizer) will turn green.
- The monitor enter in MANEUVER state if 75% of the rows (or more than 8 sensors, if the implement have more than 12 rows) indicate no flow at the same time
- The Monitor gets out of maneuver state when more than 50% of the sensors indicate the presence of flow.
- To extend the life of the internal batteries, flow sensors are “sleeping” when they are not used. They wake up only when they detect motion, like when the

TIP:
Each time that the monitor is turned on, check if all the sensors are present after 2 minutes of use. Use function F1 to do this.

ATTENTION:
If the monitor enters the MANEUVER state during field operation check if there is a problem in a whole section.

***The VERSION is show every time that you turn your Monitor ON.**

[2] MANEUVER state is typically when you are maneuvering on the headlands making turns or similar maneuvering situations when the fertilizer is not expected to be flowing. It can be detect as MANEUVER state if you turn off one section.

Functions description

F1 | Reading sensor status

When entering the screen, it shows which sensors are present in the rows and their respective state.

The monitor should present on the screen the ordered list of rows and their connected sensors starting with the lowest number and the time between the increment of the row information should be 2 seconds. All states shown must be the ones the sensor was in BEFORE the switching state.

When increasing the row number, the monitor should show the corresponding state of the fertilizer and seed row on the indicative LEDs. If the monitor does not have a seed or fertilizer sensor in the row, the LED should be off, otherwise it should follow the following logic:

Green	Red	Flashing Blue
Sensor with flow	Sensor with flow failure	Sensor Missing[3]

[3] *Missing sensor is when the monitor does not receive a signal from that sensor for more than 5 minutes.*

OUTPUT CONDITIONS:
The user can cancel the process at any time by pressing ⏻ for 5 seconds. After listing all sensors, the function automatically returns to the device's operation screen.

F2 | Changing the monitor volume

Upon entering the screen, it shows the current volume level and allows change.

The monitor should show the current volume level and allow adjustments when clicking ⬍

When clicking on ⬍ the user will switch between the available levels and at each change a triple beep will be triggered to present the chosen volume.

The confirmation of a new selected level is made after the user clicks the ⏻ . After the confirmation click, the monitor should present the selection confirmation by presenting the text “OK” and going to the initial screen.

Volume changes can be made between the options below:

A1: Mute - no beep to present to the user
A2: Low level
A3: Medium level (factory default)
A4: High level

OUTPUT CONDITIONS:
The user can cancel the process at any time by pressing ⏻ for 5 seconds.

If the user does not choose or cancel the function, it must exit automatically in 60 seconds and maintain the previous adjustment.

F3 | Changing the Screen Brightness

Upon entering the screen, it shows the current brightness level and allows change.

The monitor should show the current brightness level and allow you to change it by clicking ⬍

When clicking on ⬍ the user will switch between the available levels and with each change the brightness on the screen will be updated.

The confirmation of a new selected level is made after the user clicks ⓘ

After the confirmation click, the monitor should present the selection confirmation by presenting the text “OK” and going to the initial screen.

When changing the brightness, the monitor must also show the final level of the LEDs showing the fertilizer LED in Green and the seed LED in Red at the selected brightness.

Brightness changes can be made between the options below:

B1: Low level
B2: Medium level (factory default value)
B3: High level

OUTPUT CONDITIONS:
The user can cancel the process at any time by pressing ⓘ for 5 seconds.

If the user does not choose or cancel the function, it must exit automatically in 60 seconds and maintain the previous adjustment.

F4 | Check sensor ID

When entering the screen, the two decimal points of the displays and the two LEDs in white are lit, after 1 second the display blinks the central segments of the two displays every 1 second: “-“ and “-”, both LEDs remain lit in white.

When entering the function, the monitor should start the process of requesting an ID on the radio, asking for the ID every 1 second.

In this mode, the user needs to bring the magnet closer to the sensor to perform the reading.

Upon receiving the message with the sensor address, the monitor should turn on the LED corresponding to the type in GREEN, and present the information on the display as follows (with an 1 second interval between them):

L	Row number	First ID letter	Second ID letter	...	Eighth ID letter

The sensor ID will be displayed three times.

OUTPUT CONDITIONS:
After presenting the data, the monitor should exit the function.

The user can cancel the process at any time by pressing ⏻ for 5 seconds.

The maximum time to remain within this function is 60 seconds.

F5 | Address sensors

Entering the function allows you to add a new sensor to your sensor list.

Using ⬍, the row number is increased, the user must select the row number to be added, the monitor must present the row number that will be addressed with the LEDs off. The monitor should also have a rapid increment if ⬍ is pressed for more than 1 second, until it is released, with an increase of 5 positions per second.

When selecting the row number to be addressed, the user must press ⏻ to confirm the selection.

During addressing, the LEDs should flash in white, while the DISPLAY displays the row number to be addressed statically.

In this mode, the user needs to bring the magnet closer to the sensor to perform the addressing.

After addressing the sensor, the monitor shows the message “Ok” on the display and turns on the LED corresponding to the sensor type in green, the user needs to confirm the addressing by clicking ⏻.

When the addressing is successful, the monitor will go to the row selection with the incremented value of 1, that is, if the addressing of row 3 was successful, it will now be ready to address row 4, waiting only for the user’s confirmation by same procedure.

OUTPUT CONDITIONS:
The user can cancel the addressing process at any time by pressing the ⏻ for 5 seconds, and the monitor returns to the row selection screen, if ⏻ is pressed again for 5 seconds the monitor returns to the device’s operation screen.

F6 | Display the monitor ID

Upon entering the function, the monitor must begin the process of presenting the ID.

Upon entering the function, the monitor will show its own ID.

On this screen, the monitor should keep the two LEDs off and present the ID information on the display, with an interval of 1 second, in the form:

L	Row number	First ID letter	Second ID letter	...	Eighth ID letter

OUTPUT CONDITIONS:
After presenting the data, the monitor should exit the function.

The user can cancel the process at any time by pressing ⏻ for 5 seconds.

The maximum time to remain within this function is 60 seconds.

F7 | Customize the Maneuver beep time

When entering the function, the monitor must present the current maneuver beep time on the display.

The user will be able to increase the value by pressing ⬍ if it remains pressed for more than 1 second, it should increase rapidly at the rate of 5 per second, until the button is released. The increment of this time is from 1 to 99 seconds. When the value reaches 99 it should turn to 1 again.

To confirm the selected value, the user must press ⏻.

OUTPUT CONDITIONS:
After confirming the selected time, the monitor should exit the function.

The user can cancel the process at any time by pressing ⏻ for 5 seconds.

Troubleshooting table

Symptom	Possible Cause
Monitor doesn't turn on.	Bad power supply.
No sound from Monitor.	Wrong configuration.
Weak numbers on display.	Wrong configuration.
No communication from one sensor (no show on **F1** list and/ or alarm with orange LED).	Sensor is not on network.
No communication from several sensors (no show on **F1** list and/or alarm with orange LED).	Bad network signal. No antenna is attached to the Monitor.
Maneuver state occurs during normal operation.	Several sensors informed no flow status.

If you need more assistance please contact our technical team to help you.

Actions
Check if the cable is intact. Check if the is properly connected to a 12V-24V power supply (red-positive, black-negative). Check if the fuse is plugged and intact.
Access function **F2** and change beep volume.
Access function **F3** and change brightness level.
Add sensor to the network with function **F5**. Low battery. End of sensor life.
Check if the antenna is properly attached and in vertical position. Try to move obstacles between antenna and sensors. Put the monitor in a place with the best line of sight to the sensors. Turn off any high-power radio source near to the implement.
Check if there is enough flow running on the pipes. Check if there is a section turned off.

Cleaning and Storage

Most operators will thoroughly clean fertilizer equipment after the season of use to prevent corrosion and to keep everything looking and in good working order.

When cleaning with a power washer, avoid direct blast of high pressure water to the sensors and couplers as it may rip or degrade the rubber cover and rubber couplers. We recommend using low pressure water and brush with a mild soap solution.

Best results are achieved by removing the sensors and couplers from the machine and rinsing/wiping with a damp cloth or sponge with mild soap to remove all the fertilizer, soil and field grime and allowing them to dry. Do not leave the sensors immersed in water.

Be sure to clean the hose clamps as well and remove all the fertilizer and soil and allow them to dry before reinstalling. If the ROW number identification from the original installation is faded or difficult to read, use a paint marker to write the row number on each so you do not get them mixed up when you re-install them. This will save you time later.

The sensors can be stored as installed on the machine or kept inside during the “off season”.

Warranty

This product is warranted by J.Assy Agricultural to be free from defects in material and workmanship for two (2) years from date of purchase of the original purchaser.

Any sensor, coupler or monitor will be repaired or replaced at no charge with the same item if it is found to be defective under normal use and when installed, operated and cared for according to the manufacturer’s instructions.

This warranty does not cover lost or stolen items or defects caused by accidents, fire, abuse or misuse of the product. This warranty does not cover coupler hose clamps.
This warranty does not cover Labor charges to remove or reinstall warranted product or replacement, transportation or mileage charges. For repair or replacement, return defective product to the original place of purchase.

Discarding

Dispose of properly. Recycling electronics conserves natural resources and minimizes the environmental impact of improper disposal.

July | 2020

J.ASSY

www.assyag.com