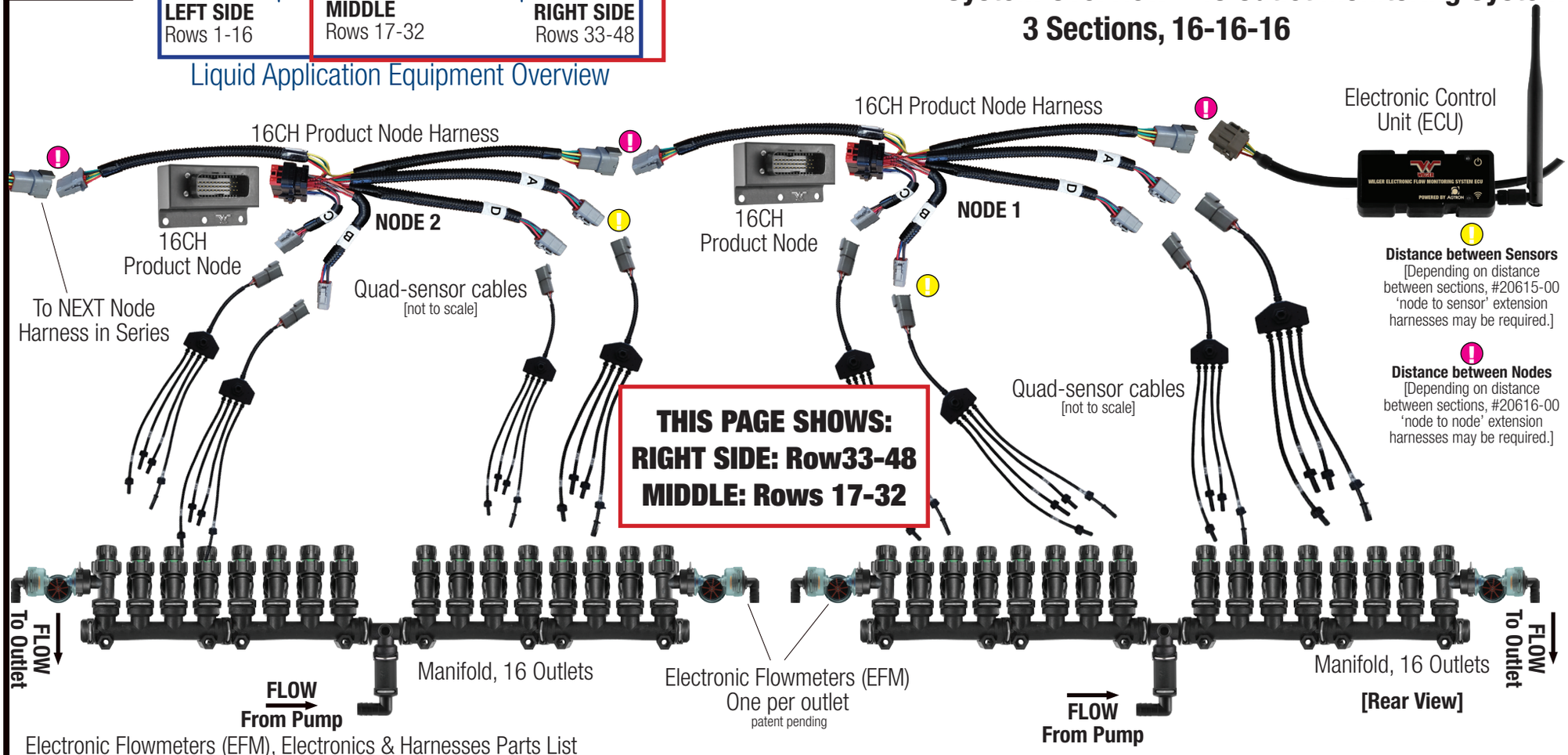
System Overview - 48 Outlet Monitoring System
3 Sections, 16-16-16

[not to scale]

LEFT SIDE Rows 1-16 | **MIDDLE** Rows 17-32 | **RIGHT SIDE** Rows 33-48

Liquid Application Equipment Overview



Electronic Flowmeters (EFM), Electronics & Harnesses Parts List

Quantity	PART#	Description	Extra Information
1	20603-00	ECU Base Kit	incl. 20' battery harness, terminator, ECU, ECU antenna
3	20621-00	16CH Node Klt	incl. 16CH Node, 16CH Node Harness, 4x Quad-sensor cable
0	20612-00	16CH Node Harness Cap	Covers unused quad-sensor cable connections
! as req'd	20615-00	Ext. Harness [NODE to SNR]	6' Extension Harness [6-pin], NODE to QUAD-SENSOR CABLE
! as req'd	20616-00	Ext. Harness [NODE to NODE]	12' Extension Harness [8-pin], NODE Harness to NODE Harness

Manifold, Plumbing & Auxiliary Parts List

Quantity	PART#	Description	Extra Information
12	20634-00	4 Outlet EFM Manifold Kit	incl. 4-Outlet manifold, 4 EFM assembly kits (incl. jets), 4x Check Valve
0	20633-00	3 Outlet EFM Manifold Kit	incl. 3-Outlet manifold, 3 EFM assembly kits (incl. jets), 3x Check Valve
3	20576-00	ORS Manifold Strainer	One strainer per Manifold Feed.
6	20521-00	ORS Manifold End-cap	Two used per center-fed manifold.
3	20526-00	ORS TEE w/ 1/4" NPT-F*	*1/4" NPT Port comes sealed; must be drilled out to be used.
3	205**XX**-00	ORS Inlet Fitting	ORS Inlet must be selected from catalog by preference (up to 1").
48	205**XX**-00	ORS Outlet Fitting	ORS Outlet must be selected from catalog by preference.
48	21500-VXX	ORS Metering Orifice	ORS metering orifice size must be selected by required flow rate.

Each EFM has a sensor cable plugged into it. When powered, each EFM sends signal through the Product Node Harness, to Product Node, to ECU.

From ECU, wireless transmits to an Android tablet, and displays flow rate and other information to user.

Part No. 48 Outlet EFM Plumbing Manifold Assembly Overview, Rows 17-48 | Rev. 1 Feb 7/20

Item Description Flow Monitoring Manifold System, 48 Total Outlets ORS Manifold Plumbing, 3 Section Layout (16-16-16)

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[not to scale]

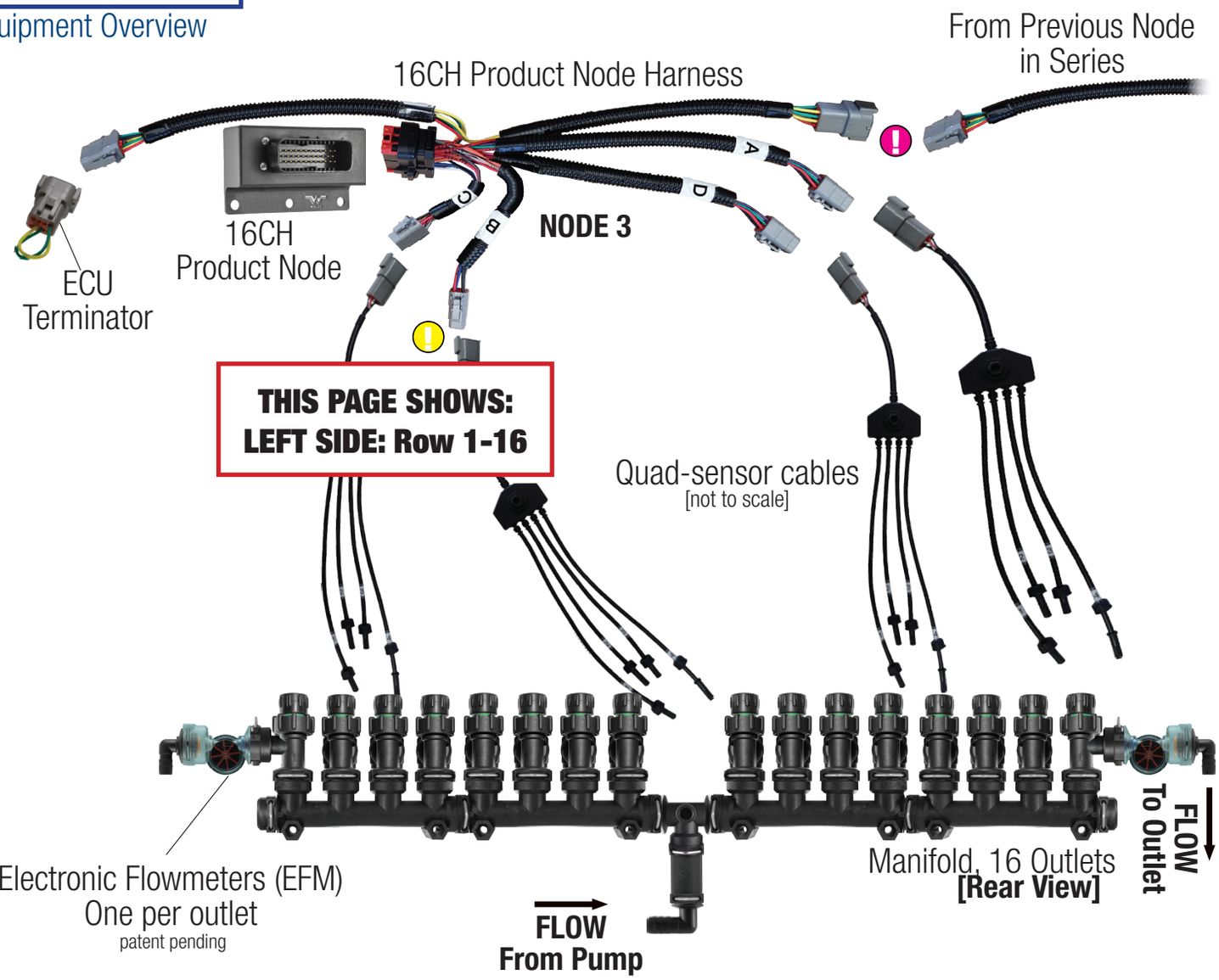
LEFT SIDE Rows 1-16 | **MIDDLE** Rows 17-32 | **RIGHT SIDE** Rows 33-48

Liquid Application Equipment Overview

System Overview - 48 Outlet Monitoring System
3 Sections, 16-16-16

Distance between Sensors
[Depending on distance between sections, #20615-00 'node to sensor' extension harnesses may be required.]

Distance between Nodes
[Depending on distance between sections, #20616-00 'node to node' extension harnesses may be required.]



Each EFM has a sensor cable plugged into it. When powered, each EFM sends signal through the Product Node Harness, to Product Node, to ECU.

From ECU, wireless transmits to an Android tablet, and displays flow rate and other information to user.

Part No. 48 Outlet EFM Plumbing Manifold Assembly Overview, Rows 1-16	Rev. 1 Feb 7/20
Item Description Flow Monitoring Manifold System, 48 Total Outlets ORS Manifold Plumbing, 3 Section Layout (16-16-16)	

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Manifold Breakdown, 16 Outlets

Manual ON/OFF Check Valve
When 'ON', acts like check valve.
When 'OFF', turns off flow for maintenance/etc.

Flowmeter Jet[patent pending]
Stabilizes the flow across the flowmeter paddle wheel for more accurate and consistent readings
Color coded to flow range.
(Green/Red/Blue/Black)

Flowmeter Body[patent pending]
Sensor is inserted into [rear side] housing.
Relays pulse feedback to product node.

ORS Outlet/Inlet Fittings
A variety of sizes and types of fittings can be used from the O-ring Seal (ORS) outlet family.
From Hose Barbs, to threads, to quick-connect tube.

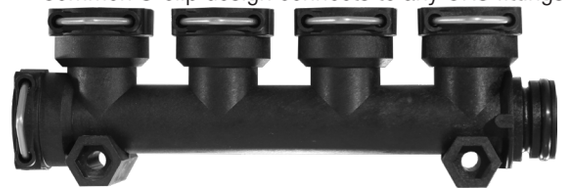
ORS Metering Orifice [Optional*]
If manifold is being used to meter liquid flow, use orifice. If metering orifice exists in system elsewhere, ignore ORS metering orifice.

[Optional] ORS Strainer [not to scale]
50 Mesh ORS Strainer Assembly
Housing + Strainer Cartridge

NEW

ORS Tee [not to scale]
Center-feeds a plumbing manifold with an ORS Inlet

ORS Manifolds [not to scale]
O-ring seal manifolds are available in 1-4 outlet varieties.
Common U-clip design connects to any ORS fittings.



ORS End-Cap [not to scale]
An end-cap is used to terminate any manifold end.

Manifold Assembly

[Back View]
No sensor cable

Part No. EFM Plumbing Manifold, 16 Outlet	Rev. 1 Feb 7/20
Item Description Flow Monitoring Manifold System, 48 Total Outlets ORS Manifold Plumbing, 3 Section Layout (16-16-16)	

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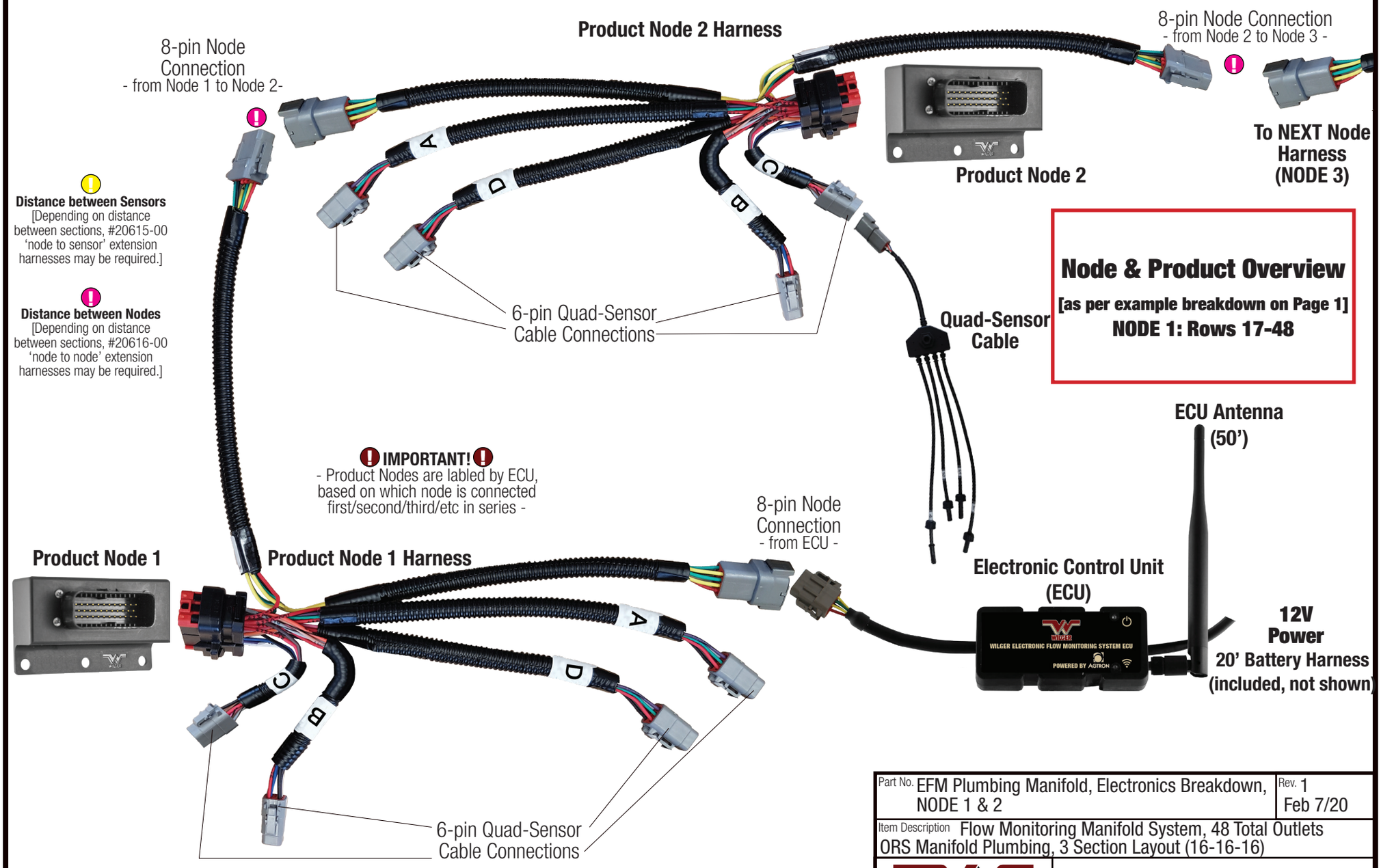
Electronics Breakdown, [Up to] 32 Sensors Total
Covering: RIGHT SIDE & MIDDLE
SENSORS: 2x 16



Extension Harness are also available [not shown]
12' Node to Node Extension Harnesses [8-pin]
6' Node to Quad-Sensor Cable Extension Harnesses [6-pin]

Part No. EFM Plumbing Manifold, Electronics Breakdown, NODE 1 & 2	Rev. 1 Feb 7/20
Item Description Flow Monitoring Manifold System, 48 Total Outlets ORS Manifold Plumbing, 3 Section Layout (16-16-16)	

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Electronics Breakdown, [Up to] 32 Sensors Total
Covering: LEFT WING
SENSORS: 2x 12

8-pin Node Connection
- from Node 2 to Terminator -

8-pin Node Connection
- from Node 3 to Terminator-

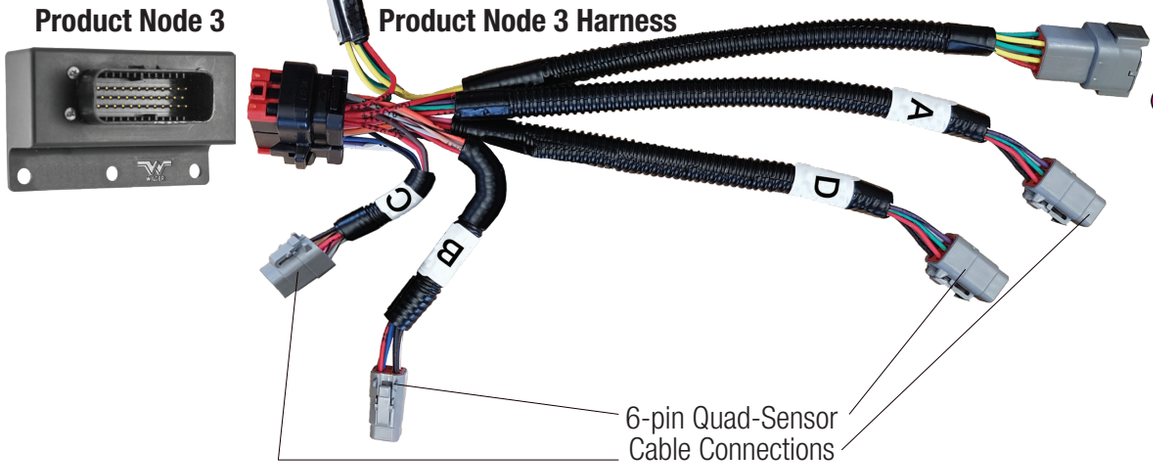
ECU Terminator

IMPORTANT!
- A terminator must be connected to the last node in series' 8-pin connection -

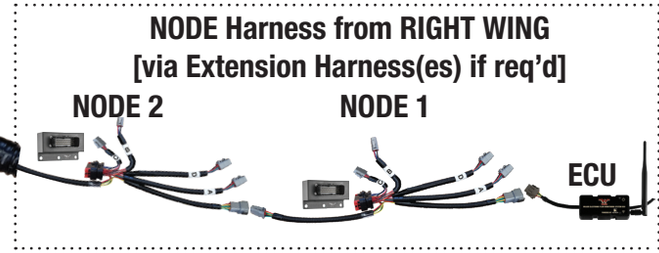
Distance between Sensors
[Depending on distance between sections, #20615-00 'node to sensor' extension harnesses may be required.]

Distance between Nodes
[Depending on distance between sections, #20616-00 'node to node' extension harnesses may be required.]

Node & Product Overview
[as per example breakdown on Page 1]
NODE 3: Rows 1-16



IMPORTANT!
- Product Nodes are labled by ECU, based on which node is connected first/second/third/etc in series -



Extension Harness are also available [not shown]
12' Node to Node Extension Harnesses [8-pin]
6' Node to Quad-Sensor Cable Extension Harnesses [6-pin]

Part No. EFM Plumbing Manifold, Electronics Breakdown, NODE 3	Rev. 1 Feb 7/20
Item Description Flow Monitoring Manifold System, 48 Total Outlets ORS Manifold Plumbing, 3 Section Layout (16-16-16)	

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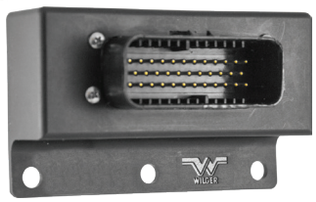
Sensor Connections Breakdown - 16 Outlet Manifold

IMPORTANT!
- Product Nodes are labled by ECU, based on which node is connected first/second/third/etc in series -

8-pin Node Connection
- to Next Node in series or Terminator-

16CH Product Node Harness

8-pin Node Connection
- from ECU or previous node in series-



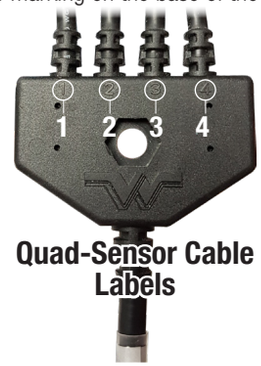
16CH Product Node

Node & Product Overview

[as per example breakdown on Page 1]

NODE 1: Rows 33-48
NODE 2: Rows 17-32
NODE 3: Rows 1-16

IMPORTANT!
- Quad-sensor cables have 4 sensors, with the molded label (1/2/3/4) designed by the marking on the base of the cable -



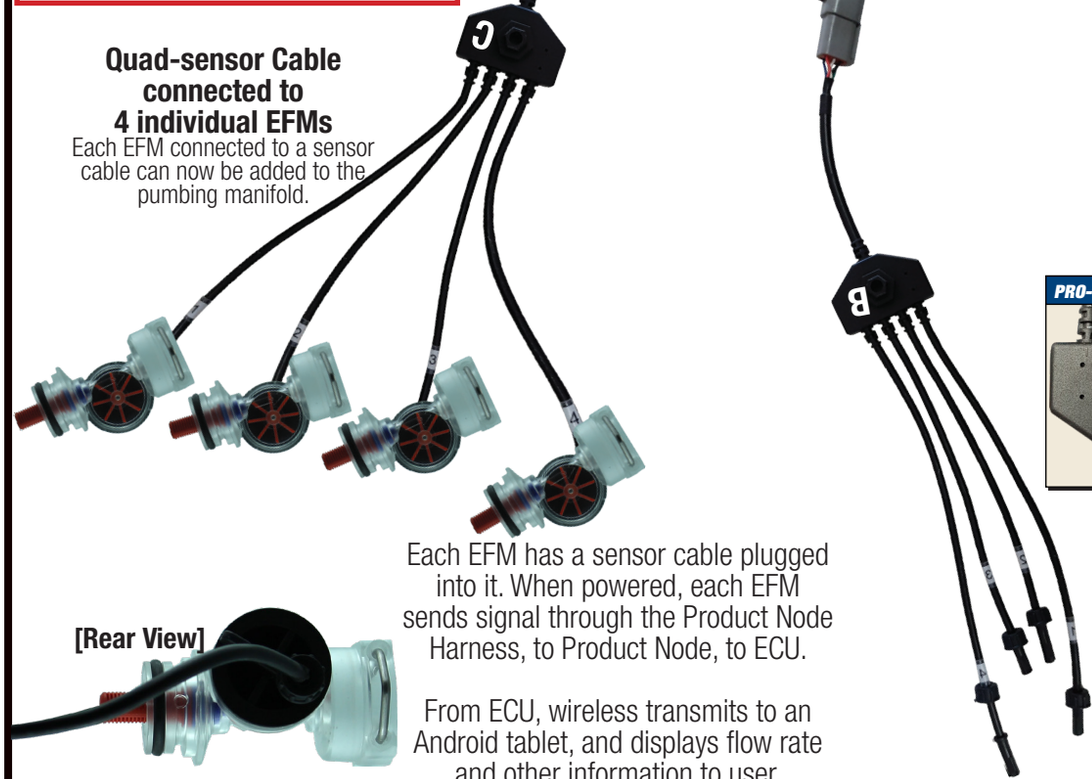
Quad-Sensor Cable Labels

Label quad-sensor cables with Node cable letter

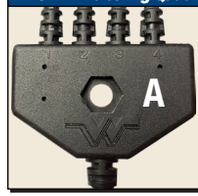
Quad-Sensor Cable

Quad-sensor Cable connected to 4 individual EFMs

Each EFM connected to a sensor cable can now be added to the pumbing manifold.



PRO-TIP: Labeling Quad-Sensor Cables



With a white marker, label each quad-sensor cable with A, B, C or D, based on which Product Node Harness cable it is connected to.

[Rear View]

Each EFM has a sensor cable plugged into it. When powered, each EFM sends signal through the Product Node Harness, to Product Node, to ECU.

From ECU, wireless transmits to an Android tablet, and displays flow rate and other information to user.

Part No. EFM Plumbing Manifold, 16 Outlet, Sensor Connections Breakdown, 16/16 sensors used	Rev. 1 Feb 7/20
Item Description Flow Monitoring Manifold System, 48 Total Outlets ORS Manifold Plumbing, 3 Section Layout (16-16-16)	

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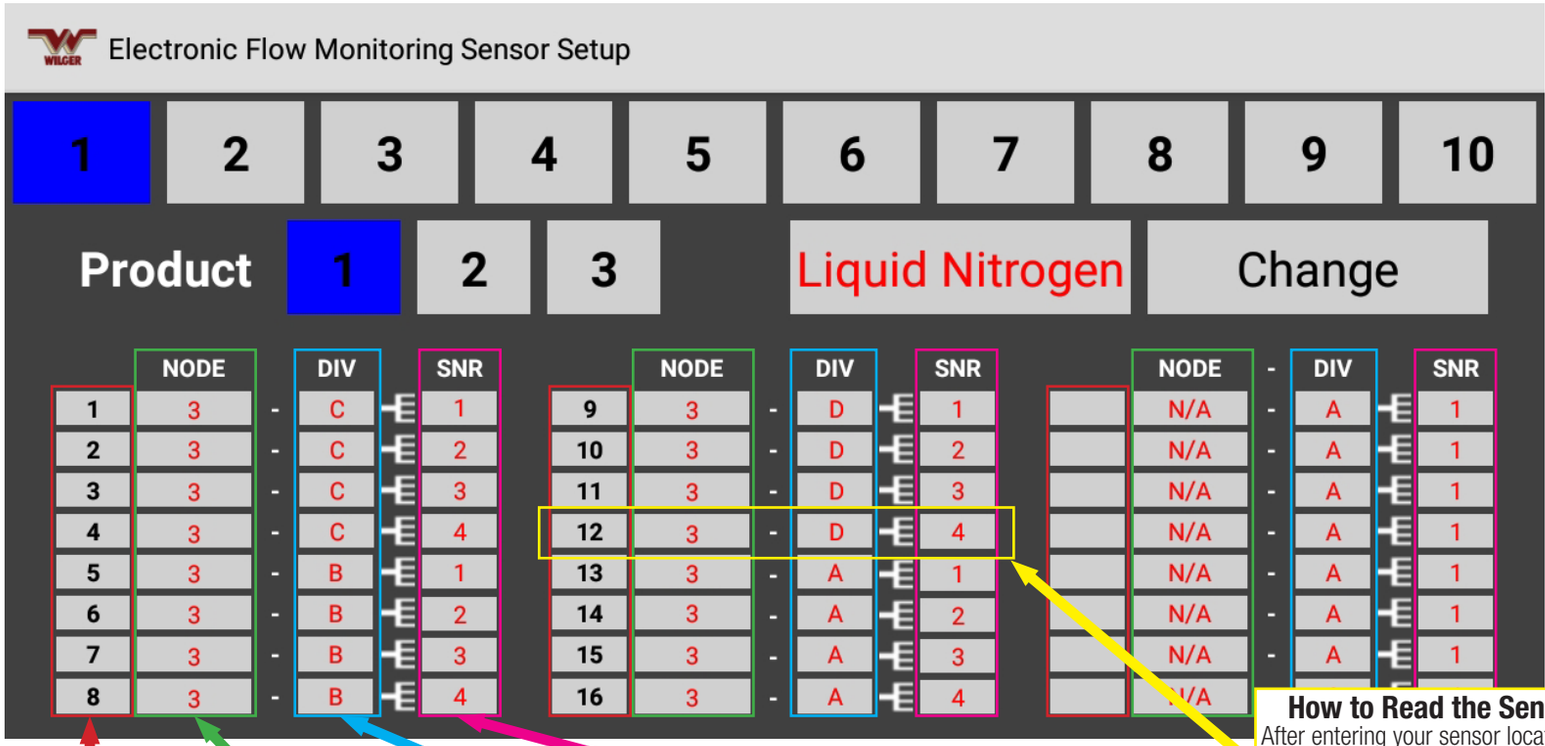
NOTE: The following may look different depending on app version being used, but in essence, will be the same. Follow the manual for the most up-to-date reflection of the app.

How To Label Sensors For Entry Into APP - SECTION 1: Outlets 1-16 [PRODUCT NODE 3]

After completely setting up the ECU Settings Screen, enter the Sensor Setup Screen, which allows you to enter each respective product sensor in it's correct position, relative to the ECU.
While sensors do not have to be connected in consecutive order as laid out on your application implement, they do have to be entered accurately within the app to reference properly on the display.
The below example screen is only ONE depiction of how to set a screen up. For convenience, you can customize the layout of the outlets on up to 10 'section' pages.

It is important that seperate products be listed under PRODUCT 1/2/3, respectively.



	NODE		DIV		SNR		NODE		DIV		SNR		NODE		DIV		SNR
1	3	-	C		1	9	3	-	D		1		N/A	-	A		1
2	3	-	C		2	10	3	-	D		2		N/A	-	A		1
3	3	-	C		3	11	3	-	D		3		N/A	-	A		1
4	3	-	C		4	12	3	-	D		4		N/A	-	A		1
5	3	-	B		1	13	3	-	A		1		N/A	-	A		1
6	3	-	B		2	14	3	-	A		2		N/A	-	A		1
7	3	-	B		3	15	3	-	A		3		N/A	-	A		1
8	3	-	B		4	16	3	-	A		4		N/A	-	A		1

We have to 'label' a sensor, based on its location. The label is derived from its:

PRODUCT NODE#: NODE 1

IMPORTANT!
- Product Nodes are labled by ECU, based on which node is connected first/second/third/etc in series -

QUAD-SENSOR CABLE DIVIDER [DIV] LABEL: A / B / C / D

IMPORTANT!
- Quad-sensor divider labels are labeled on the node harness itself, labeled with either an A, B, C, or D -

SENSOR CABLE LABEL: 1 / 2 / 3 / 4

IMPORTANT!
- Sensor cable labels are molded (or labeled) on the actual quad-sensor cable, with either a 1/2/3/4. Ensure you refer the sensor label correctly. -

Physical Row Description
This is manually added to depict which row this is on the implement.

For example, if a section begins at row '17', this cell can be entered as "17", etc. In this example, it began at **ROW 1**.

[NODE] PRODUCT NODE #
If the sensor is connected through the PRODUCT NODE #3 harness, ensure under NODE, it is listed as '3'.

Ensure a sensor's [NODE] corresponds with its correct NODE #.
In this example, sensors 1-16 began at **NODE 3**.

[DIV] QUAD-SENSOR CABLE HARNESS LABEL
Select A / B / C / D based on the corresponding node harness cable that a quad-sensor cable is attached to.

In our example, the first rows are attached to **DIV C**, as shown in the system overviews.

[SNR] SENSOR CABLE LABEL
Depending on the sensor cable's number (1/2/3/4) that is molded into the quad-sensor cable housing, enter the sensor number with the corresponding outlet.

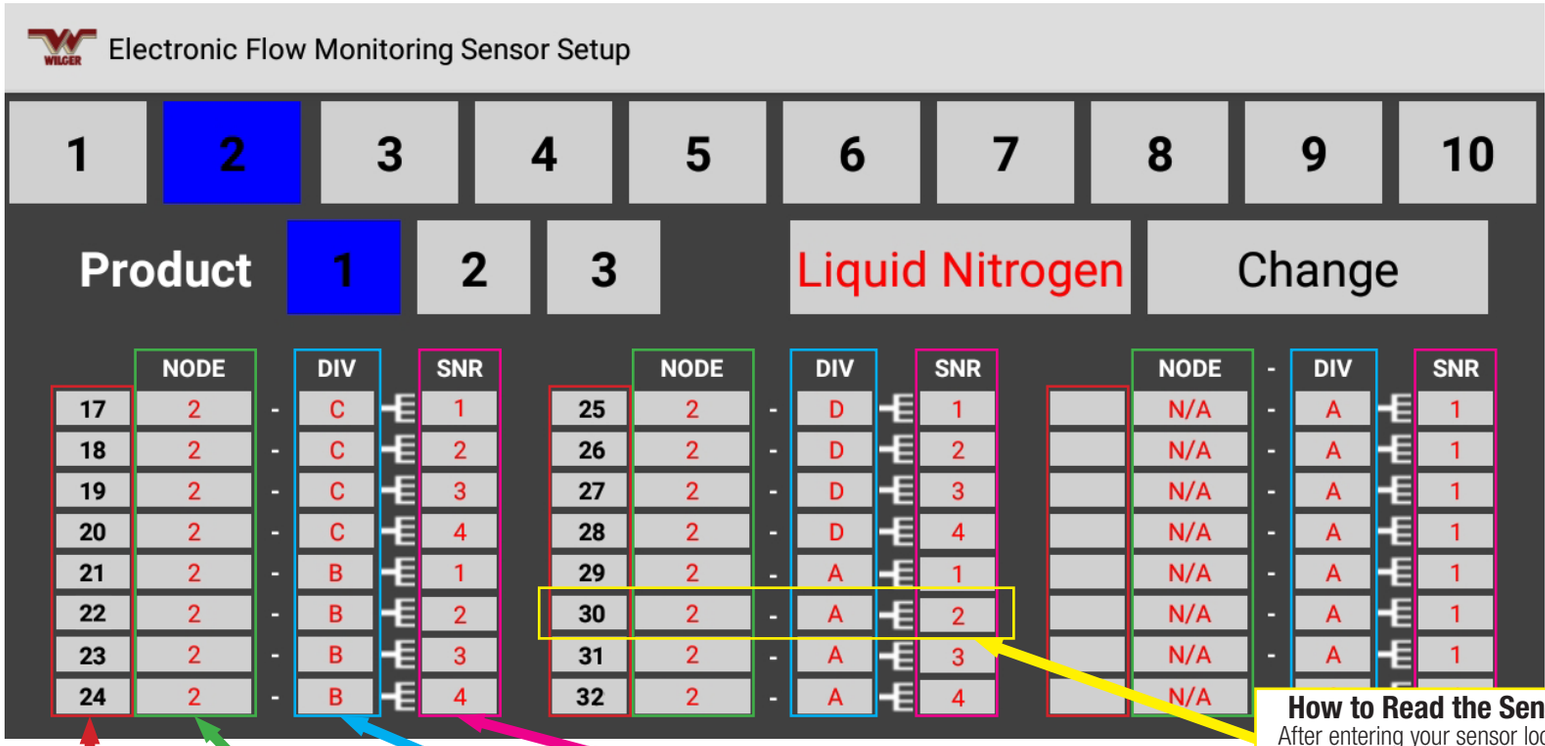
In our example, **SNR 1** is the first row of product on the implement.

How to Read the Sensor Location (Eg. Location 3D4)
After entering your sensor locations into the app, as you'd like them laid out on pages 1-10, you can verify each line of the example as follows: **Outlet 12** is connected to **SENSOR 4 or [SNR 4]** on the quad-sensor cable, on the **Node Harness Cable 'D' or [DIV D]**, which is connected to **Product Node 3 or [NODE 3]**.

NOTE: The following may look different depending on app version being used, but in essence, will be the same. Follow the manual for the most up-to-date reflection of the app.

How To Label Sensors For Entry Into APP - SECTION 2: Outlets 17-32 [PRODUCT NODE 2]

After completely setting up the ECU Settings Screen, enter the Sensor Setup Screen, which allows you to enter each respective product sensor in it's correct position, relative to the ECU.
While sensors do not have to be connected in consecutive order as laid out on your application implement, they do have to be entered accurately within the app to reference properly on the display.
The below example screen is only ONE depiction of how to set a screen up. For convenience, you can customize the layout of the outlets on up to 10 'section' pages.



We have to 'label' a sensor, based on its location. The label is derived from its:

PRODUCT NODE#: NODE 1

IMPORTANT!
- Product Nodes are labled by ECU, based on which node is connected first/second/third/etc in series -

QUAD-SENSOR CABLE DIVIDER [DIV] LABEL: A / B / C / D

IMPORTANT!
- Quad-sensor divider labels are labeled on the node harness itself, labeled with either an A, B, C, or D -

SENSOR CABLE LABEL: 1 / 2 / 3 / 4

IMPORTANT!
- Sensor cable labels are molded (or labeled) on the actual quad-sensor cable, with either a 1/2/3/4. Ensure you refer the sensor label correctly. -

How to Read the Sensor Location (Eg. Location 2A2)
After entering your sensor locations as you'd like your rows laid out, you can read & verify each line of the example as follows:
Outlet 30 is connected to **SENSOR 2 or [SNR 2]** on the quad-sensor cable, on the **Node Harness Cable 'A' or [DIV C]**, which is connected to **Product Node 2 or [NODE 1]**.

Physical Row Description
This is manually added to depict which row this is on the implement.

For example, if a section begins at row '16', this cell can be entered as "16", etc. In this example, it began at **ROW 17**.

[NODE] PRODUCT NODE #
If the sensor is connected to the 16CH PRODUCT NODE #1 harness, ensure under NODE, it is listed as '2'.

Ensure a sensor's [NODE] corresponds with its correct NODE #.
In this example, sensors 1-16 began at **NODE 2**.

[DIV] QUAD-SENSOR CABLE HARNESS LABEL
Select A / B / C / D based on the corresponding node harness cable that a quad-sensor cable is attached to.

in our example, the first rows are attached to **DIV C**, as shown in the system overviews.

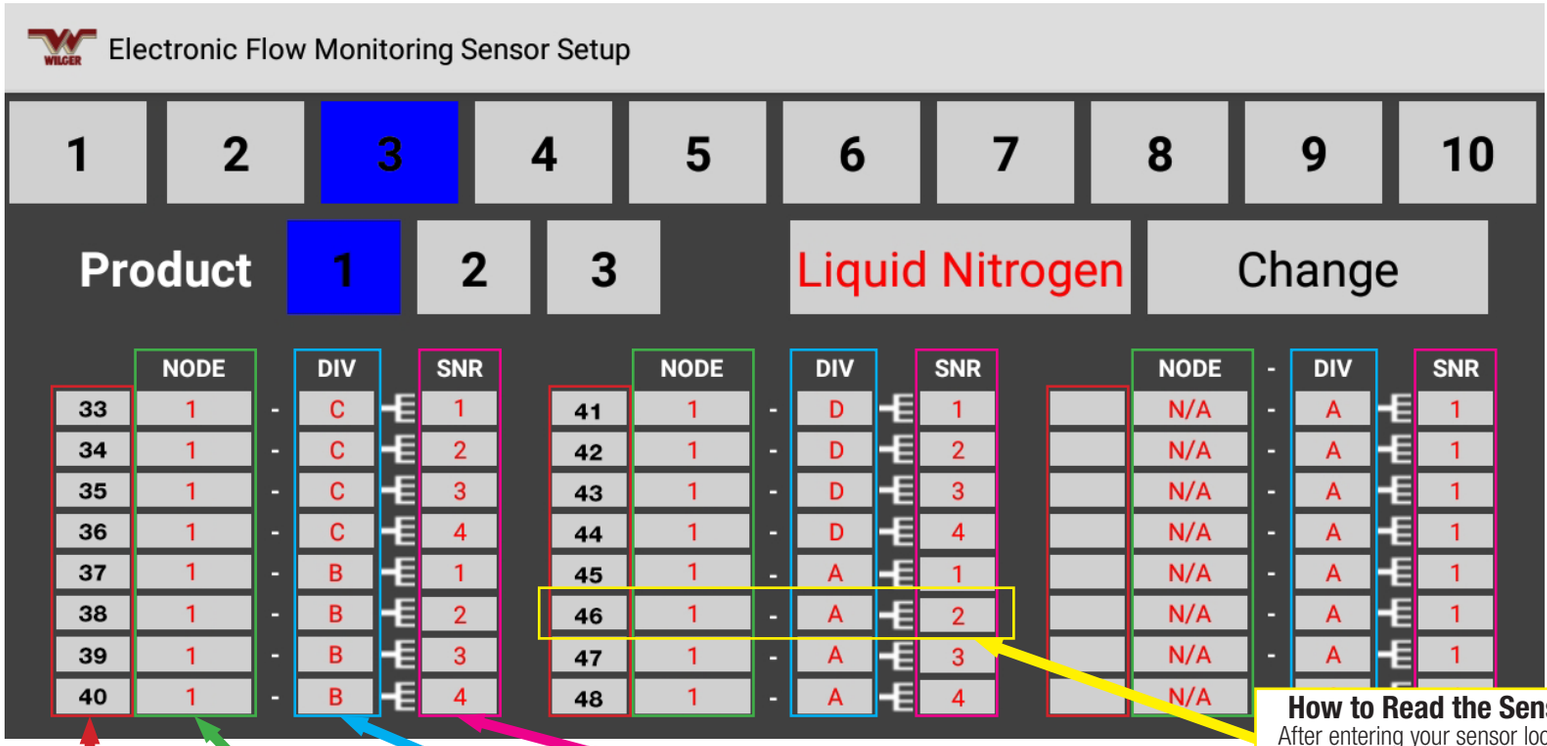
[SNR] SENSOR CABLE LABEL
Depending on the sensor cable's number (1/2/3/4) that is molded into the quad-sensor cable housing, enter the sensor number with the corresponding outlet.

Since our first sensor is capped, in our example, **SNR 1** is the first row of product on the implement.

NOTE: The following may look different depending on app version being used, but in essence, will be the same. Follow the manual for the most up-to-date reflection of the app.

How To Label Sensors For Entry Into APP - SECTION 3: Outlets 33-48 [PRODUCT NODE 1]

After completely setting up the ECU Settings Screen, enter the Sensor Setup Screen, which allows you to enter each respective product sensor in it's correct position, relative to the ECU.
While sensors do not have to be connected in consecutive order as laid out on your application implement, they do have to be entered accurately within the app to reference properly on the display.
The below example screen is only ONE depiction of how to set a screen up. For convenience, you can customize the layout of the outlets on up to 10 'section' pages.



We have to 'label' a sensor, based on its location. The label is derived from its:

PRODUCT NODE#: NODE 1

IMPORTANT!
- Product Nodes are labled by ECU, based on which node is connected first/second/third/etc in series -

QUAD-SENSOR CABLE DIVIDER [DIV] LABEL: A / B / C / D

IMPORTANT!
- Quad-sensor divider labels are labeled on the node harness itself, labeled with either an A, B, C, or D -

SENSOR CABLE LABEL: 1 / 2 / 3 / 4

IMPORTANT!
- Sensor cable labels are molded (or labeled) on the actual quad-sensor cable, with either a 1/2/3/4. Ensure you refer the sensor label correctly. -

How to Read the Sensor Location (Eg. Location 1A2)
After entering your sensor locations as you'd like your rows laid out, you can read & verify each line of the example as follows:
Outlet 46 is connected to **SENSOR 2 or [SNR 2]** on the quad-sensor cable, on the **Node Harness Cable 'A' or [DIV A]**, which is connected to **Product Node 1 or [NODE 1]**.

Physical Row Description
This is manually added to depict which row this is on the implement.

For example, if a section begins at row '16', this cell can be entered as "16", etc. In this example, it began at **ROW 33**.

[NODE] PRODUCT NODE #
If the sensor is connected to the 16CH PRODUCT NODE #1 harness, ensure under NODE, it is listed as '1'.

Ensure a sensor's [NODE] corresponds with its correct NODE #.
In this example, sensor 33 began at **NODE 1**.

[DIV] QUAD-SENSOR CABLE HARNESS LABEL
Select A / B / C / D based on the corresponding node harness cable that a quad-sensor cable is attached to.

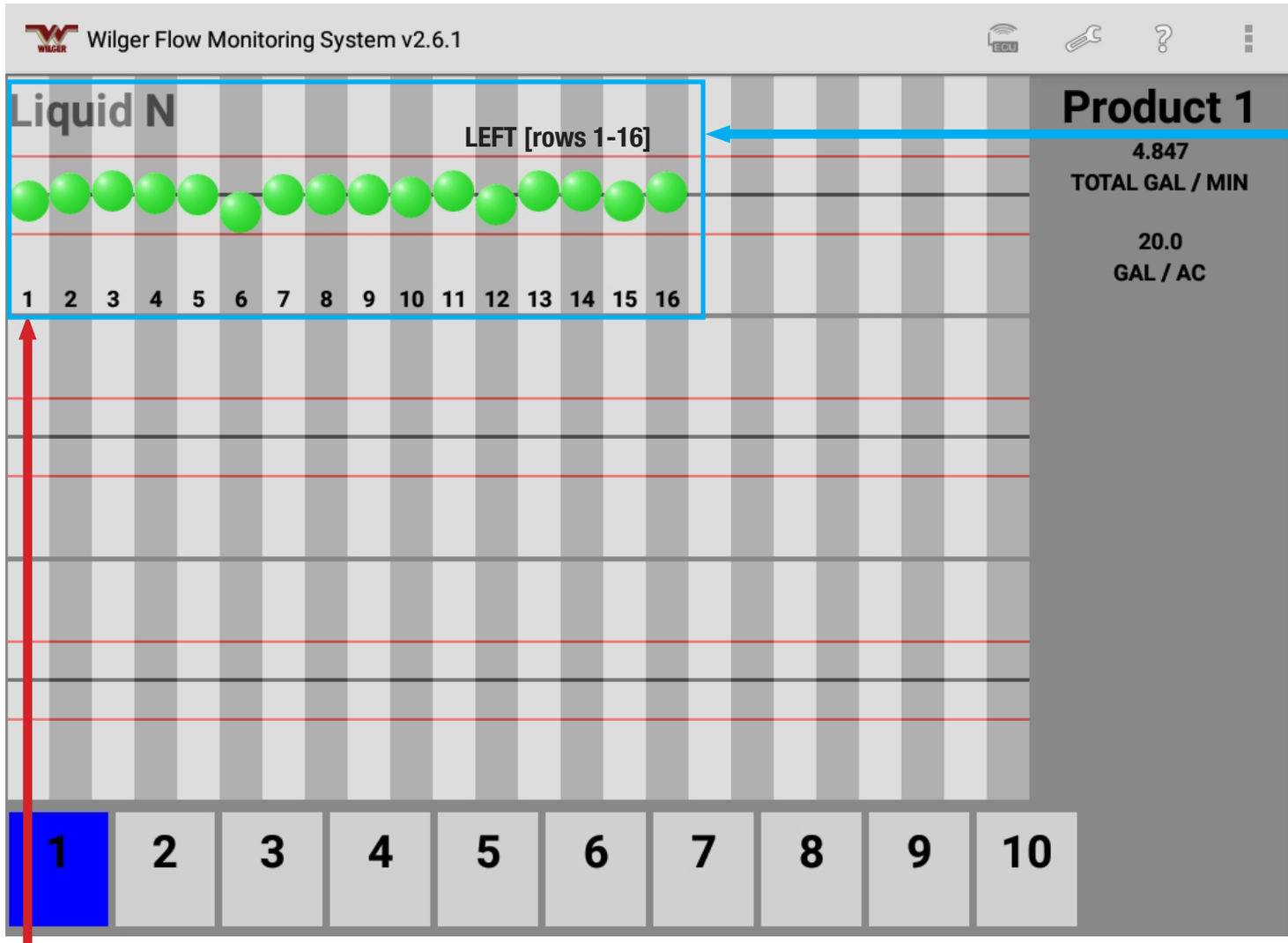
in our example, the first rows are attached to **DIV C**, as shown in the system overviews.

[SNR] SENSOR CABLE LABEL
Depending on the sensor cable's number (1/2/3/4) that is molded into the quad-sensor cable housing, enter the sensor number with the corresponding outlet.

Since our first sensor is capped, in our example, **SNR 1** is the first row of product on the implement.

NOTE: The following may look different depending on app version being used, but in essence, will be the same. Follow the manual for the most up-to-date reflection of the app.

Example Viewing Screen
48-rows, split across 3 sections (16 row/section)

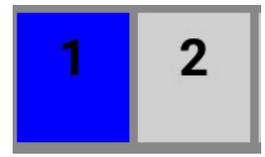


Customization of 'SECTIONS'

If it is not important to show your sections individually, you would be able to show up to 24 rows of product on this page.

This would mean, instead of having 3 pages of 16 rows, you'd have two pages of 24 rows.

To change the section page during view, you can click the bottom of the page or have set 'auto page scroll' to a set interval (in seconds).



Ensure only one reference to each sensor is made, or the system can 'double-count' the flow rate in any accumulated total flow rates/etc.

Refer to the EFM manual, located within the app by clicking the

button on the app main screen

App view of Product 1, ROW 1

This ball is labeled as '1', as it is the first row on the implement, applying product 1, Liquid N.
In actuality, the app is just showing the feedback of the sensor located at **3C1**:
PRODUCT NODE #3
DIVIDER C
SENSOR 1

Part No. EFM Main Screen View, Row 1-16, NODE 3	Rev. 1 Feb 7/20
Item Description Flow Monitoring Manifold System, 48 Total Outlets ORS Manifold Plumbing, 3 Section Layout (16-16-16)	

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