[not to scale]

LEFT SIDE
Rows 1-15

RIGHT SIDE
Rows 16-31

Liquid Application Equipment Overview

16CH Product Node Harness

16CH Product Node Harness

Electronic Control Unit (ECU)

16CH Product Node

16CH Product Node

ECU Terminator

Quad-sensor cables
[not to scale]

Quad-sensor cables
[not to scale]

Sensor Cap
(For unused sensors)

FLOW To Outlet

FLOW From Pump

Manifold, 15 Outlets

31x Electronic Flowmeters (EFM)
One per outlet
patent pending

FLOW From Pump

Manifold, 16 Outlets
[Rear View]

FLOW To Outlet

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
2	20621-00	16CH Node Kit	incl. 16CH Node, 16CH Node Harness, 4x Quad-sensor cable
1		Sensor Cap	[Used for single sensor that will not be used]
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
7	20634-00	4 Outlet EFM Manifold Kit	incl. 4-Outlet manifold, 4 EFM assembly kits (incl. jets), 4x Check Valve
1	20633-00	3 Outlet EFM Manifold Kit	incl. 3-Outlet manifold, 3 EFM assembly kits (incl. jets), 3x Check Valve
2	20576-00	ORS Manifold Strainer	One strainer per Manifold Feed.
4	20521-00	ORS Manifold End-cap	Two used per center-fed manifold.
2	20526-00	ORS TEE w/ 1/4" NPT-F*	*1/4" NPT Port comes sealed; must be drilled out to be used.
2	205XX-00	ORS Inlet Fitting	ORS Inlet must be selected from catalog by preference (up to 1").
31	205XX-00	ORS Outlet Fitting	ORS Outlet must be selected from catalog by preference.
31	21500-VXX	ORS Metering Orifice	ORS metering orifice size must be selected by required flow rate.

Each EFM (31 total) 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. 31 Outlet EFM Plumbing Manifold Assembly Overview

Rev. 1

Oct 8/19

Item Description Flow Monitoring Manifold System, 31 Total Outlets
ORS Manifold Plumbing, 2 Section Layout (15-16)

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

Flowmeter Body patent pending
Sensor is inserted into [rear side] housing. Relays pulse feedback to product node.
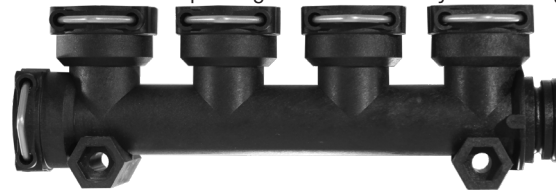
ORS Outlet/Inlet Fittings
A variety of sizes and types of fittings can be used from the O-ring Seal (ORS) outlet family. From Hose Barbs, to threads, to quick-connect tube.

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)

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, 15 Outlets

FLOW

FLOW

[Back View]
No sensor cable

Part No. EFM Plumbing Manifold, 15 Outlet	Rev. 1 Oct 8/19

Item Description Flow Monitoring Manifold System, 31 Total Outlets
ORS Manifold Plumbing, 2 Section Layout (15-16)

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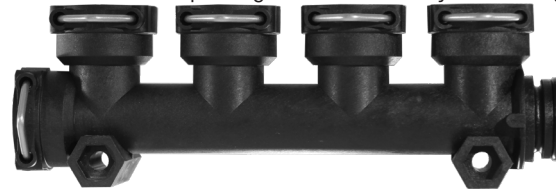
ORS Outlet/Inlet Fittings
A variety of sizes and types of fittings can be used from the O-ring Seal (ORS) outlet family. From Hose Barbs, to threads, to quick-connect tube.

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

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, 16 Outlets

FLOW

FLOW

[Back View]
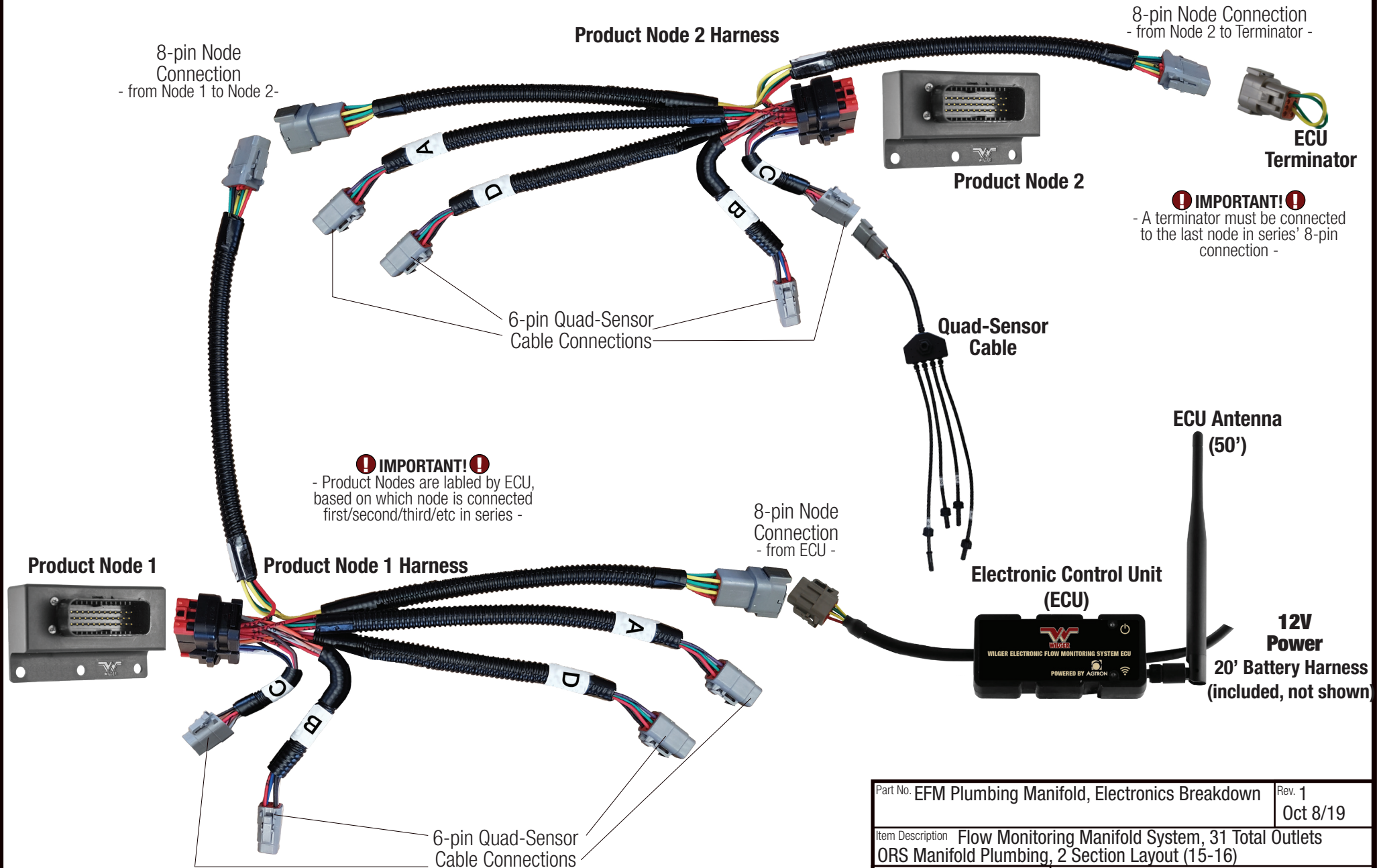No sensor cable

Part No. EFM Plumbing Manifold, 16 Outlets	Rev. 1 Oct 8/19

Item Description Flow Monitoring Manifold System, 31 Total Outlets
ORS Manifold Plumbing, 2 Section Layout (15-16)

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

Product Node 2 Harness

8-pin Node Connection
- from Node 1 to Node 2-

ECU Terminator

Product Node 2

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

6-pin Quad-Sensor Cable Connections

Quad-Sensor Cable

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

ECU Antenna (50')

8-pin Node Connection
- from ECU -

Product Node 1

Product Node 1 Harness

Electronic Control Unit (ECU)

12V Power
20' Battery Harness (included, not shown)

WILGER ELECTRONIC FLOW MONITORING SYSTEM ECU
POWERED BY AGTRON

6-pin Quad-Sensor Cable Connections

Part No. EFM Plumbing Manifold, Electronics Breakdown	Rev. 1 Oct 8/19

Item Description   Flow Monitoring Manifold System, 31 Total Outlets
ORS Manifold Plumbing, 2 Section Layout (15-16)

⚠ **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]

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

16CH Product Node Harness

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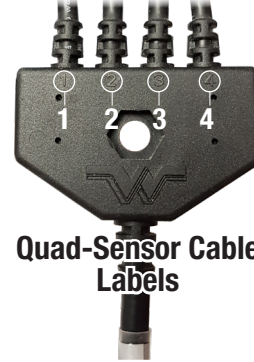- Product Nodes are labled by ECU, based on which node is connected first/second/third/etc in series -

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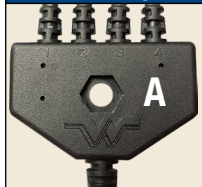- from ECU or previous node in series-

16CH Product Node

Label quad-sensor cables with Node cable letter
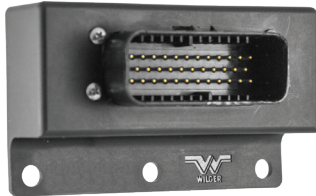
Quad-Sensor Cable

⚠️ **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

Quad-sensor Cable connected to 4 individual EFMs
Each EFM connected to a sensor cable can now be added to the pumbing manifold.
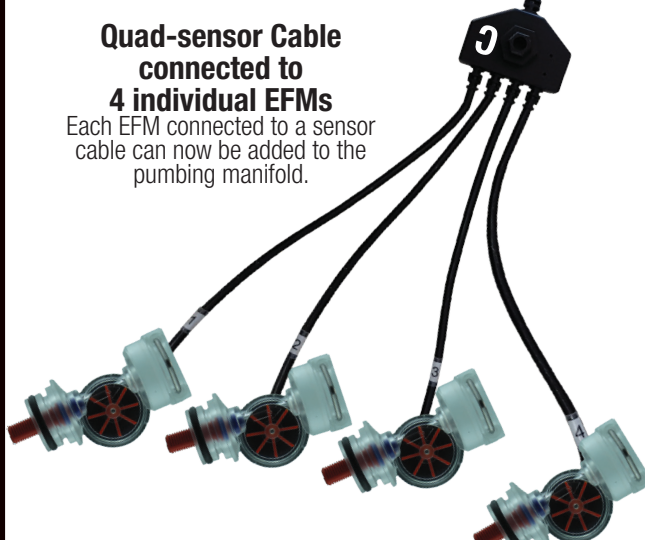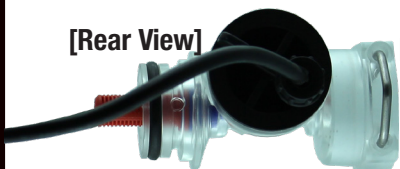
PRO-TIP: Labeling Quad-Sensor Cables

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.

Each EFM (31 total) has a sensor cable plugged into it. When powered, each EFM sends signal through the Product Node Harness, to Product Node, to ECU.

[Rear View]

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,	Rev. 1
	Oct 8/19

Item Description Flow Monitoring Manifold System, 31 Total Outlets
ORS Manifold Plumbing, 2 Section Layout (15-16)

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NOTE: Since a 16 Channel (16CH) node can provide up to 16 sensors, on this 15 outlet manifold, a sensor cap would be used to cover the unused sensor.

Sensor Connections Breakdown - 15 Outlet Manifold

⓵ IMPORTANT! ⓵
- 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

Label quad-sensor cables with Node cable letter
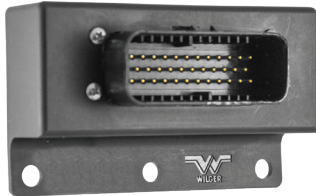
Quad-Sensor Cable

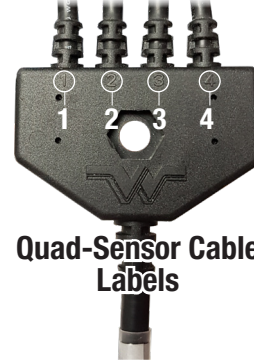## Quad-sensor Cable connected to 3 individual EFMs + 1 Sensor Cap

Each EFM connected to a sensor cable can now be added to the pumbing manifold.
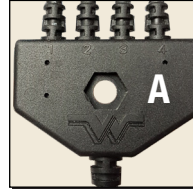Since the 1st sensor is not used, it is required to cap it off.

⓵ For our example, the sensor location NODE 2, DIV C, SNR 1 is capped off, so will not be used in the APP.

⓵ IMPORTANT! ⓵
- 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

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.

Each EFM (31 total) has a sensor cable plugged into it. When powered, each EFM sends signal through the Product Node Harness, to Product Node, to ECU.

[Rear View]

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

Part No. EFM Plumbing Manifold, 15 Outlet, Sensor Connections Breakdown,	Rev. 1
	Oct 8/19

Item Description Flow Monitoring Manifold System, 31 Total Outlets
ORS Manifold Plumbing, 2 Section Layout (15-16)

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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.

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.
For simplicity, for a 31 outlet implement, it will be shown as two 'virtual sections' based on the manifold size, of 15-outlets and 16-outlets.

"Section 1": 15 Outlets

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. -

Electronic Flow Monitoring Sensor Setup

1	2	3	4	5	6	7	8	9	10

Product | 1 | 2 | 3 | **Liquid Nitrogen** | **Change**

	NODE	-	DIV	SNR		NODE	-	DIV	SNR		NODE	-	DIV	SNR
1	2	-	C	2	9	2	-	D	2		N/A	-	A	1
2	2	-	C	3	10	2	-	D	3		N/A	-	A	1
3	2	-	C	4	11	2	-	D	4		N/A	-	A	1
4	2	-	B	1	12	2	-	A	1		N/A	-	A	1
5	2	-	B	2	13	2	-	A	2		N/A	-	A	1
6	2	-	B	3	14	2	-	A	3		N/A	-	A	1
7	2	-	B	4	15	2	-	A	4		N/A	-	A	1
8	2	-	D	1		N/A	-	A	1		N/A	-	A	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 '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 #2 harness, ensure under NODE, it is listed as '2'.

Ensure a sensor's [NODE] corresponds with its correct NODE #. In this example, sensors 1-15 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 2** is the first row of product on the implement.

How to Read the Sensor Location (Eg. Location 2A3)
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 14 is connected to **SENSOR 3 or [SNR 3]** on the quad-sensor cable, on the **Node Harness Cable 'A' or [DIV A]**, which is connected to **Product Node 2 or [NODE 2]**.

Part No. EFM Plumbing Manifold, 15 Outlet, Sensor Connections Breakdown	Rev. 1 Oct 8/19

Item Description Flow Monitoring Manifold System, 31 Total Outlets ORS Manifold Plumbing, 2 Section Layout (15-16)

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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.

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.

For simplicity, for a 31 outlet implement, it will be shown as two 'sections' based on the manifold size, of 15-outlets and 16-outlets.

"Section 2": 16 Outlets

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. -

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Electronic Flow Monitoring Sensor Setup

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

Product | 1 | 2 | 3 | Liquid Nitrogen | Change |

	NODE	-	DIV	SNR		NODE	-	DIV	SNR		NODE	-	DIV	SNR
16	1	-	C	1	24	1	-	D	1		N/A	-	A	1
17	1	-	C	2	25	1	-	D	2		N/A	-	A	1
18	1	-	C	3	26	1	-	D	3		N/A	-	A	1
19	1	-	C	4	27	1	-	D	4		N/A	-	A	1
20	1	-	B	1	28	1	-	A	1		N/A	-	A	1
21	1	-	B	2	29	1	-	A	2		N/A	-	A	1
22	1	-	B	3	30	1	-	A	3		N/A	-	A	1
23	1	-	B	4	31	1	-	A	4		N/A	-	A	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 16**.

[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, sensors 1-16 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.

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 29 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]**.

| Part No. EFM Plumbing Manifold, 16 Outlet, Sensor Connections Breakdown | Rev. 1 Oct 8/19 |

Item Description Flow Monitoring Manifold System, 31 Total Outlets ORS Manifold Plumbing, 2 Section Layout (15-16)

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