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ISOBUS - Virtual Terminal

ISOBUS Retrofit Installation Instructions

2006458 - ISOBUS Retrofit Kit - Generic Tractor (InCommand)

2006304 - ISOBUS Retrofit Kit - Generic Tractor (Integra/Versa)

2005992 - ISOBUS Display Cable (Integra/Versa)

ISOBUS Retrofit Kit Generic Installation - Line Art (Integra/Versa)

Content last reviewed on: 05/24/17
Reviewed by: AMJ
The list of supported (tested) ISOBUS ECUs is ever expanding. The most up-to-date can be found here: TESTED ISOBUS ECUs otherwise refer at a glance below.

**IMPORTANT:** Ag Leader is compatible with the ISO 11783 Virtual Terminal specification. Any equipment compliant or compatible with Virtual Terminal should function with our display whether or not listed below. If we discover areas within our hardware that do not follow the standard, appropriate action is taken to resolve functionality issues to the best of our ability. As opportunities arise to qualify new systems and verify field functionality of existing systems, either through our dealer network or internal testing efforts, we will update this list accordingly.

## ISOBUS EQUIPMENT

<table>
<thead>
<tr>
<th>Equipment</th>
<th>ECU Version</th>
<th>Virtual Terminal Field Functionality Verified</th>
<th>Task Controller Field Functionality Verified</th>
<th>Additional Information</th>
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<td><strong>AGCO CHALLENGER</strong></td>
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<tr>
<td>Challenger Round Baler Control</td>
<td>2.68</td>
<td>Yes</td>
<td>No</td>
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<td>Challenger Square Baler Control</td>
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<td>No</td>
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<td><strong>AGROTRONIX</strong></td>
<td></td>
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<tr>
<td>Agrontronix Sprayer</td>
<td>1.0</td>
<td>Yes</td>
<td>Bench Tested****</td>
<td>Bench Tested****</td>
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<td><strong>AMAZONE</strong></td>
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<tr>
<td>Amazone Cirrus Seeder</td>
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<td>Yes</td>
<td>Bench Tested****</td>
<td>Bench Tested****</td>
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<tr>
<td>Amazone UX Sprayer (Single Nozzle Control, tested with 78 sections)</td>
<td>1.08.01</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes***</td>
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<tr>
<td>Amazone ZA-TS Spreaders</td>
<td>1.08.01</td>
<td>Yes</td>
<td>Yes</td>
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<td>Bench Tested***</td>
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<td>1.08.01</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes**</td>
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</table>

**InCommand display firmware v2.2 or higher required. (AutoSwath support for sections between 37.5 and 50 cm. Usage of Load 'n Go is required to build a configuration with more than 36 sections.)**

| ARAG | Arag IBX100 (Sprayer ECU) | 0.0.0.b102 | Yes | No | Bench Tested*** |
| Arag GCS3200 (Sprayer ECU) | 3.2.0.b3 | Yes | No | Bench Tested*** |
| Arag Explorer Joystick | 0.0.0.A.2 | Yes | No | Bench Tested*** |

**BOGBALLE**

| Bogballe (Professional and Super Professional) | 2.00b | Yes | Yes | No |
| Bogballe Calibrator (TeeJet ECU) | 2.11 | Yes | Bench Tested*** | Bench Tested*** |

**BREDAL**

| Bredal Spreader (TeeJet IC38 ECU) | 1.00R | Yes | Bench Tested*** | Bench Tested*** |

| Case 2280 Precision Air Cart | 1.05 | Yes | Yes | Yes |

Supported ISOBUS ECU (TESTED)
<table>
<thead>
<tr>
<th>Model</th>
<th>ECU Version</th>
<th>Supports Rate Control</th>
<th>Supports Task Controller</th>
<th>TC Functionality</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Case 2330 Precision Air Cart</td>
<td>2.5.0.0</td>
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<td>Case 500T Precision Disk/Drill</td>
<td>1.09</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>Case RB565 Baler Control</td>
<td>2.01</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>CHD Eefting</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>CHD F4133 Trailed Sprayer (Mueller Sprayer</td>
<td>V64i</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
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<tr>
<td>Job Computer</td>
<td></td>
<td></td>
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<tr>
<td>CHD F7039 Sprayer Muller Spray Control Max</td>
<td>V72p.1</td>
<td>Yes</td>
<td>Yes</td>
<td>No***</td>
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<tr>
<td>i 3 with EDS (78 sections, single nozzle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>control)</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Dammann Sprayers (All ISOBUS Models)</td>
<td>V67b</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>(Mueller Sprayer Job Computer)</td>
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<tr>
<td>DICKEY-john IntelliAg Seeder</td>
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<td>Bench Tested****</td>
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<td>DICKEY-john LIQIV (Sprayer ECU)</td>
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<td>DICKEY-john PDCE (Planter/Seeder ECU)</td>
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<td>Yes</td>
<td>No</td>
<td>No</td>
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</table>

Supported ISOBUS ECU (TESTED)
<table>
<thead>
<tr>
<th>Supported ISOBUS ECU (TESTED)</th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Model</th>
<th>Version</th>
<th>AutoSwath</th>
<th>Inc. ECU</th>
<th>Inc. Rate</th>
<th>ISOBUS</th>
<th>Notes</th>
</tr>
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<tbody>
<tr>
<td>Digi-Star SL 100 and SL130</td>
<td>1.38</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
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<td></td>
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<tr>
<td>Dubex Sprayers (Vector, Mentor, Stentor) (Mueller Sprayer Job Computer)</td>
<td>V64i</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
<td></td>
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<tr>
<td>Fliegl Weighing System</td>
<td>1.1</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Great Plains Planter (DICKEY- john) PDCGY Additional DICKEY- john adapter cable (DJ-Harness JDGS2 DJISO SWITCH P.N.467980335) is required for support of ISO switch box in cab and must be ordered separately through a DICKEY- john dealer.</td>
<td>4.00</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>GRIMME</td>
<td></td>
<td></td>
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<tr>
<td>Grimme Matrix</td>
<td>9.11</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes**</td>
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<tr>
<td>Grimme Potato Planter</td>
<td>7.20</td>
<td>Yes</td>
<td>Bench Tested****</td>
<td>Bench Tested****</td>
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Issue stems from different interpretations of the ISOBUS standard between manufacturers. Ag Leader has implemented a change beginning with the upcoming version 4.5 firmware release to address this issue and not log data with a non-zero flow when sections are off.
<table>
<thead>
<tr>
<th>Model Name (Model #)</th>
<th>Version</th>
<th>Compatibility</th>
<th>Functions</th>
<th>Notes</th>
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<tr>
<td>HEADSIGHT</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Headsight Horizon (w/Truesense+) and (w/Truesight 2)</td>
<td>2.11.0</td>
<td>Yes</td>
<td>Yes**</td>
<td>N/A</td>
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<td>Horsch Express 3TD Seeders</td>
<td>TBD</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>Horsch Leeb Sprayer (Mueller Sprayer Job Computer)</td>
<td>V67p</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Horsch Sprayer (Horsch ECU used on all new Horsch sprayers)</td>
<td>1.0</td>
<td>Yes</td>
<td>Bench</td>
<td>Bench Tested****</td>
</tr>
<tr>
<td>Horsch Maestro Planter (Mueller E Manager)</td>
<td>9.6</td>
<td>Yes</td>
<td>Yes</td>
<td>Bench Tested****</td>
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<tr>
<td>Horsch Pronto Drill</td>
<td>9.65b9</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes**</td>
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<td>Horsch Anderson 500i Air Cart (Horsch Branded Agrtron ISOBUS System)</td>
<td>1.21</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<td>Inuma Professional Sprayers (Mueller Sprayer Job Computer)</td>
<td>V65i</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>John Deere 1910 Air Cart</td>
<td>2.1</td>
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<td>John Deere Baler</td>
<td>7.01</td>
<td>Yes</td>
<td>No</td>
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<td>John Deere 1890 Drill w/ Blockage Sensors</td>
<td>5.00</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>John Deere 1990 CCS Air Drill</td>
<td>3.00</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
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<tr>
<td>John Deere iSprayer (700i, 800i, 900i)</td>
<td>3.14</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td>John Deere SeedStarXP (All Planters)</td>
<td>11.00</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*Note: Compatibility and functions may vary depending on specific model configurations and software updates.*

**Common ISOBUS ECU Issues:**
- Item lists aren’t shown intuitively. These are used to change the on-screen readouts to monitor functionality like vacuum pressure, ground speed, area, etc...
- In the middle of the run screen press the icon representing vacuum pressure, speed, and area to activate a list that can be used to change the view.

**Supported ISOBUS ECU (TESTED)**
### John Deere SeedStar2 (All Planters)
- **Version**: 8.00
- **Rate Control**: Yes
- **Row Control**: Yes
- **No Rate Change**: No

#### Kinze 3000 Planter
- **Versions**: 1.05
- **Rate Control**: Yes
- **Row Control**: Yes
- **Bench Tested**: Yes

#### Kinze 4900 Planter
- **Version**: 1.00.19
- **Rate Control**: Yes
- **Row Control**: Yes
- **No Rate Change**: Yes

#### Kockerling Boxer Air Seeder
- **Version**: 1.35
- **Rate Control**: Yes
- **Row Control**: No
- **No Rate Change**: No

#### Krone Big Pack 1290 HDP Baler
- **Version**: 200812870
- **Rate Control**: Yes
- **Row Control**: No
- **No Rate Change**: N/A

#### Kuhn Rauch Axis Spreaders
- **Version**: 2.04
- **Rate Control**: Yes
- **Row Control**: Yes
- **No Rate Change**: Yes

#### Kuhn ISO Planter
- **Version**: 1.3
- **Rate Control**: Yes
- **Row Control**: Bench Tested
- **No Rate Change**: Bench Tested

#### Kuhn Sprayer
- **Version**: 1.0
- **Rate Control**: Yes
- **Row Control**: Bench Tested
- **No Rate Change**: Bench Tested

#### Kverneland Spreader EDW-2 ISO
- **Version**: 1.07
- **Rate Control**: Yes
- **Row Control**: Yes
- **No Rate Change**: Yes

#### Kverneland-RauXtrack Sprayers
- **Version**: 1.06
- **Rate Control**: Yes
- **Row Control**: Yes
- **No Rate Change**: Yes

---

**Supported ISOBUS ECU (TESTED)**
<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model Description</th>
<th>ISOBUS</th>
<th>Precision</th>
<th>Rate</th>
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<tr>
<td>Kverneland</td>
<td>Accords - drill Seeders</td>
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<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
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<td>Kverneland</td>
<td>Accord Monopill Seeders</td>
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<td>Kverneland</td>
<td>U-Drill</td>
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<td>Bench</td>
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<td>Kverneland</td>
<td>Accord Optima 6m PH e-drive II (Planter)</td>
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<td>Bench</td>
<td>Tested****</td>
<td>Bench</td>
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<td>LEMKEN</td>
<td>Lemken MegaSpray</td>
<td>1.03.03</td>
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<td>Bench</td>
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<td>Bench</td>
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<td>MONOSEM</td>
<td>Monosem (ECU for Eground driven planters)</td>
<td>4.12</td>
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<td>Mueller Sprayer Job Computer</td>
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<td>6.00</td>
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<td>Yes</td>
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<td>Mueller Multifunction Grip</td>
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<td>5.03</td>
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<td>Homburg ISO Bridge Module</td>
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<td>ISOBUS</td>
<td>Yes</td>
<td>Yes**</td>
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<td>New Holland 2085P Disk/Drill</td>
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<td>POTTINGER</td>
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<td>3.92</td>
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<td>Tested****</td>
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<td>Tested****</td>
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<td>RAUCH</td>
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<td>Rauch Axis-H EMC Spreader</td>
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<td>3.10</td>
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<td>Bench</td>
<td>Tested****</td>
<td>Bench</td>
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<td>Rauch Axis-M Spreader (Muller ECU used on Mechanical Axis spreaders)</td>
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<td>AutoBoom UltraGlide System</td>
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<td>ISO CAN Product Controller</td>
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<td>Yes</td>
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<td>Sidekick Pro ISO</td>
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<td>Yes</td>
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<tr>
<td>Reichhardt</td>
<td>PSR SKY (Steering via GPS)</td>
<td>602-117</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
<td>N/A</td>
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<td>Reichhardt</td>
<td>PSR TAC (Steering via tactile sensor)</td>
<td>602-072</td>
<td>Yes</td>
<td>Yes</td>
<td>N/A</td>
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<tr>
<td>Reichhardt</td>
<td>ISO Control Auxiliary Joystick</td>
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<td>Yes</td>
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Supported ISOBUS ECU (TESTED)
<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>ECU Model</th>
<th>ECU firmware</th>
<th>TC Field Functionality Verified</th>
<th>Explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td>SULKY</td>
<td>Sulky Spreader (RDS ECU)</td>
<td>104002rev10</td>
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<td>TeeJet Sprayer</td>
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</tbody>
</table>

**TC Field Functionality Verified Explanations**

*N/A = No Task Controller functionality

**Yes = Task Controller functionality has been verified in actual field conditions

***No = Task Controller functionality has not been tested in actual field conditions. Additional field testing is required before Ag Leader is confident in the system's performance.

****Bench Tested = Task Controller functionality has only been bench tested with manufacturer ECU. Field conditions and implement inputs have been simulated to the best of our ability, but system still remains untested in actual field conditions.
Loading the Universal Terminal on 3rd Party Displays

How to load the Universal Terminal for Ag Leader ISO modules on 3rd party displays

Case IH AFS® Pro700 Display

John Deere GreenStar® 3 2630 Display

Trimble® TMX2050™ Display

All marks belong to their respective owners.

Content last reviewed on: 11/20/15
Reviewed by: SSW
Line-Art ISOBUS Dual Retrofit Adapter

Dual ISOBUS Retrofit Kit (Ag Leader® Integra/Versa)

Dual ISOBUS Retrofit Kit (InCommand displays)

Content last reviewed on: 12/08/15
Reviewed by: SSW
ISOBUS RETROFIT - AGCO CHALLENGER INSTALLATION
ISOBUS from JD Display to an Ag Leader Display - Loading VT on Multiple Displays in the Cab

Button presses on the John Deere monitor to send the Virtual Terminal information to the Ag Leader display.

When to change the instance function on the Ag Leader display

As the object pool travels, it is looking for a display to call "home." The instance function defines which display the ECU should send its object pool to first. Leave this value at 0 unless there are multiple displays on the bus. Set instance function to 1 if there are 2 displays, 2 if there are 3 VT displays, etc.

John Deere instance function values

With an Ag Leader display on a John Deere bus, leave the instance function value on the AL display at 0. On the John Deere display, change their instance function from 1 to 2 as outlined in the attached article. This tells the bus that the AL display is the first in the series.

Changing the instance function on the Ag Leader display

Navigate to the console setup by pressing the wrench from the homescreen and then the console button in the lower right corner. From the general tab, press ISOBUS settings.
From ISOBUS settings, press function instance underneath Virtual Terminal.

Using the keypad, enter a value for function instance. Leave this value at 0 if on a John Deere bus. Change this value to 1 if there are 2 ISO displays in the cab, change value to 2 if there are 3 displays, etc.
ISOBUS - Task Controller FAQs

What new features will Task Controller provide my Ag Leader display, when hooked to an ISOBUS implement? The following features, assuming the ECU supports task controller: AutoSwath control, Data Logging, and Variable Rate control.

Is an unlock required to enable Task Controller on an Ag Leader display? Yes. However, the InCommand 1200 comes standard with Universal Terminal and Task Controller functionality. The InCommand 800 requires an ISOBUS unlock, which enables both Universal Terminal and Task Controller. The Compass requires an ISOBUS unlock to enable Universal Terminal, Compass does not support Task Controller.

What machines are supported with Task Controller? Multi-channel and single channel ISOBUS sprayers, spreaders, planters and seeders are supported with Task Controller. Ag Leader maintains a list of known compatible systems.

What version of Task Controller is supported? Task Controller Version 2

The ISOBUS system I use now uses tasks/jobs, will Ag Leader’s task controller support them? The InCommand 1200, InCommand 800 and Compass displays can be set to use Events or Ag Leader’s usual Grower/Farm/Field management.

The ISOBUS system I use now imports and exports XML files. Will Ag Leader’s task controller support them? Ag Leader does not support Task Controller Basic or ISOBUS File Server. Ag Leader InCommand display can export logged data in XML format and in AgData format, the InCommand can import AgSetup format and for instance SHP.

If I connect to an ISOBUS implement with Ag Leader’s task controller, will it auto-populate any data within the display? Yes. InCommand's Load and Go feature grabs information from implement’s ECU to build the display configuration.

Content last reviewed on: 10/20/16
Reviewed by: SSW
ISOBUS System Layout Drawings

Generic Tee-in/ParaDyme/OnTrac2 Layout

ISOBUS Retrofit Layout

NORAC UC5 ISOBUS Interface Layout
Q: Will I need a switchbox for Task Controller functionality?

**Question:** Will I need a switchbox for Task Controller functionality?

**Answer:** It will depend on if the particular ECU will support an external switchbox or not. Some will and others will transmit user input through the virtual terminal. For Spring 2014, supported Task Controller planters cannot utilize switchbox input.

More commonly used is the switchbox for external input with product application ECUs. Ag Leader does not maintain a list of ECUs that support switchbox input.

The Ag Leader switchbox will work with Task Controller. To enable this functionality, mark the auxiliary module support setting. Then, set the switch functionality in auxiliary input.

![ISOBUS Settings](image-url)
Q: What unlocks do I need for planter Task Controller functionality?

**Question:** What unlocks do I need for planter Task Controller functionality?

**Answer:** Specific unlocks required for Task Controller will vary based on the display being used and the implement to be controlled. For instance, to control a Kinze 4900 planter the display will require a Multi-product unlock. Assuming the ISOBUS ECU supports Task Controller functionality; features include section control, data logging and variable rate control.

**Unlocks by display**

- The InCommand 1200 and Ag Leader® Integra displays come with the Universal Terminal and AutoSwath unlock standard, so it is ready to run Task Controller. However, certain ECUs will also require the use of a Multiple Product unlock. As always, it is still needed for growers wanting to apply or plant multiple products and/or varieties.

- The InCommand 800 and Versa displays will need the Universal Terminal unlock, AutoSwath unlock and the Multiple Product unlock, depending on the implement to be controlled or the products to be logged, applied.

- The Compass display does support ISOBUS through a Universal Terminal unlock but does not support Task Controller functionality. Universal Terminal supports multiple ECUs without the need for a Multiple Product unlock.

**Unlocks by planter ECU**

- The Kinze 4900 planter ECU will require the Universal Terminal, AutoSwath and Multiple Product unlocks.

- The John Deere planter ECU will require the Universal Terminal and AutoSwath unlocks, though the Multiple Product unlock will be needed if the grower wants split planter, fertilizer or pesticide application functionality. If the John Deere planter has 2 or more hydraulic drives, a Multiple Product unlock will be required, regardless if only one variety will be logged.

- Other planter ECUs: Other 3rd party planter ECUs will require the Universal Terminal and AutoSwath unlocks. A Multiple Product unlock will be needed if the grower wants split planter, fertilizer or pesticide application functionality. If the Device Description of the planter ECU is defined as 2 or more hydraulic drives or “meters,” a Multiple Product unlock will be required, regardless if only one variety will be logged. To learn more about Device Description and Task Controller setup please reference the Task Controller Display Configuration Guides (https://dealer.agleader.com/kbp/index.php?View=entry&EntryID=1453)
Q: What unlocks do I need for planter Task Controller functionality?
CAN B (ISOBUS) Extension Cables

CAN B extension cables are available from Ag Leader. Part number 4002585-10 or 4002585-18 provides the connection between the display cable and the Ag Leader retrofit IBBC or any other application where the distance between the 4 pin Duetsch connectors is too great. In applications other than the retrofit IBBC, the Weather Pack power connections on the end of this cable will not be used.

Refer to the attached line art drawings below to see the 4002585's location in the ISOBUS layout.
Q: Is the John Deere Active pneumatic down force controllable through the Ag Leader VT?

**Question:** Is the John Deere Active pneumatic down force controllable through the Ag Leader Virtual Terminal?

**Answer:** Yes. The Ag Leader® InCommand 1200 and 800, Integra and Versa UT/VT screen will control John Deere's Active pneumatic down force just as a GreenStar display would.

Content last reviewed on: 11/16/16
Reviewed by: JW
Getting Vehicle Speed Information to your ISOBUS Implement

The ISOBUS implement’s ECU speed settings may have multiple speed source options to choose from. Depending on the type of speed source required by the implement, this will dictate which ISO speed source setting you select.

ISOBUS Speed Settings Defined

**Broadcast Display Speed (ISO GBSD)**
Checking this box allows speed source currently being utilized by the display to be broadcast over the ISOBUS to the implement.

**Broadcast GPS (J1939)**
Checking this box allows GPS data being supplied by the GPS receiver to be broadcast over the ISOBUS to the implement ECU. The J1939 broadcast is sending the GPS speed data via J1939 format. The "GPS" speed setting within the implement ECU will need to be able to read the J1939 format for this to work. Not all ECUs will have this ability, contact manufacturer for details.

As an example for utilizing the J1939 format, the Kinze 4900 electric drive planter’s ECU will detect ISO GBSD speed but requires the J1939 speed source for turn compensation planter functionality.

How to Verify ISOBUS is Receiving Speed
Check the Virtual Terminal to ensure the vehicle speed reading is present and is accurate.
Additional Considerations

If an implement's ISO harness is plugged into an ISO ready tractor and also being ran through the vehicle's communication bus, the vehicle may also be broadcasting a speed over the ISOBUS. It's important to consider what speed sources and how many speed sources are being sent to the implement ECU.
ISO GBSD and J1939 Functionality

ISO GBSD (ground based speed) and j1939 (GPS) are features that can be turned on to feed speed and/or GPS position to an ISO based controller on Ag Leader displays. For all instances the speed that shows up on the display should match what the controller receives when setup properly. Below outlines a few normal circumstances a customer may run across when using this feature.

**How messages are handled based on display configuration**

- If a configuration is loaded and no GPS is present, the configuration backup speed source will be broadcast to the ISO controller.
- If no configuration is loaded but GPS is present, both messages will continue to broadcast the GPS speed.
- If no configuration is loaded and GPS is not present, both messages stop being sent.

**When Serial GPS is the primary display speed source**

- The Ag Leader display intentionally filters speeds below .4mph (.65kph). This is done to prevent the display icon from rotating because of GPS drift when sitting still. When the display does this, the ISO GBSD and j1939 messages are still being sent but will be showing zero speed.

**When a ParaDyme, GeoSteer, SteerCommand is connected to the display**

- There is no speed limit on the GBSD and j1939 messages being sent. It has been confirmed to work down to at least .05mph (.082kph).

*Note:* In some circumstances the ISO rate controller may have its own speed limitations that are different than the Ag Leader display.
What is ISOBUS? What is Universal Terminal (Virtual Terminal)? What is Task Controller?

What is ISOBUS?

- A standardized communication protocol for devices to communicate in the Ag Industry.
  - Devices are for instance: Terminals, Joysticks, Switchboxes, Electronic Control Units and Tractor Electronic Control Units.
  - ISOBUS also standardizes physical components such as connectors and cables.

What is Universal Terminal (Virtual Terminal)?

- The Universal Terminal displays the User Interface of the Electronic Control Unit (ECU).
  - Replaces the implement specific display, and provides the capability of operating an implement with any terminal.
  - The Universal Terminal can be used to display and operate multiple implements at the same time.
  - The Universal Terminal does not know what it displays. There is no direct link between the data displayed in the Universal Terminal and the Ag Leader map screen.
  - Does not log data, has not AutoSwath functionality, and is not capable of running prescriptions.

What is Task Controller?

- Task Controller is the link between the ECU and the Ag Leader maps screen.
  - Task Controller is used for Section Control (AutoSwath), Rate Control, running prescriptions, and Data Logging.
  - Ag Leader can control up to 8 products at the same time via Task Controller.

The diagram below shows the roll of Universal Terminal and Task Controller in ISOBUS.
What is ISOBUS? What is Universal Terminal (Virtual Terminal)? What is Task Controller?
InCommand - IBBC Tee Cable

This cable (PN: 4005236-X) is used for "hijacking" an ISO ready vehicles IBBC. Using this cable separates the implement BUS from the vehicle BUS, effectively letting the InCommand display only communicate with ECU's on the implement BUS.

Applications this cable is used for:

- Utilizing existing vehicle IBBC to allow SureDrive, Individual Row Down Force, ISO liquid, or other 3rd party ISO controllers to communicate with the Ag Leader InCommand display.
- Separating the vehicle BUS and implement BUS if there are communication problems between the two
ISOBUS Troubleshooting

For steps on troubleshooting ISOBUS system and cabling in general and ISOBUS Retrofit Kit, see ISO Retrofit Feature User Guide.

Content last reviewed on: 8/28/17
Reviewed by: JW
Ag Leader Power/Data ISOBUS Cables - Comparison

Ag Leader offers two cable options that provides an IBBC connection for an ISOBUS implement harness.

1. Gen2 Power/Data (4004093-X)
2. Power/Data - Battery ECU Power (4005237-X)

These cables can be used as a more affordable option vs. installing an ISOBUS Retrofit Kit. The power/data cables however come with limitations and have some differences.

**Gen2 Power/Data**

- Can only be used with Ag Leader displays.
- Can only be used with an Ag Leader ISO implement harness.
- Not supported with SureDrives or Individual Row Down Force.
- ECU power comes from display.
- 6-pin metripack connection to display cable.
- For line art, click HERE.

**Power/Data - Battery ECU Power**

- Can only be used with an InCommand display.
- Can only be used with an Ag Leader ISO implement harness.
- With SureDrives and/or Individual Row Down Force, supports up to 16 planter rows.
  - If planter has more than 16 rows, an ISOBUS Retrofit or factory vehicle IBBC is required.
- ECU power comes from battery.
- 6-pin duetsch connection to display cable.
- For line art, see images below:
Known Raven ISO Incompatibilities

**Issue:** When utilizing a Raven ISO Module for applying anhydrous Ag Leader cannot select NH3 or any liquid product when loading a Task Controller Configuration

**Reason:** The Raven ISO Module applies product in lbs instead of gallons. Ag Leader cannot control a liquid product in lbs. In order to control Anhydrous with the Raven ISO Module the Controller must be set up as a Generic ISOBUS and controlling a Granular Product. (Generally users create a Fertilizer for Product Type and then Choose Other for the Fertilizer Name and Control in lbs) When doing this it is important to make sure the user has the flow meter and prescription are set properly to prevent misapplication. If the customer is applying in lbs of N then the lbs of N from the flow meter tag needs to be entered into the Raven ISO Flow Meter Calibration Number. If using prescriptions the prescription must also be written in lbs of N.

**Issue:** When utilizing a Raven ISO Module for applying anhydrous Ag Leader cannot load a Task Controller Configuration with Raven Sidekick Injection

**Reason:** The Raven ISO Module must be setup as a Granular Controller and apply a Granular Product. The Raven Sidekick Injection cannot be loaded when the main carrier product is set to a Granular Product.

**Issue:** Raven Sidekick Injection will not work correctly with Ag Leader ISO Ready Sprayer kits that utilize Raven ISO Module.

**Reason:** The Ag Leader display can build and load a configuration with the Raven Sidekick Injection. However, the mapping and AutoSwath will not work correctly which results in misapplication of products.

Content last reviewed on: 5/16/19
Reviewed by: ATB
ISO Liquid and Serial Bridge Module

ISOBUS Liquid Product Control Auxiliary Assignment Setup

2006034 ISO Auxiliary Assignments (InCommand)

2006011 ISO Liquid Rate Control for GS3 Display

2006012 ISO Auxiliary Assignments (Ag Leader® Integra/Versa)

2006013 ISO Pro700 Auxiliary Input Setup

Content last reviewed on: 2-10-16
Reviewed by: SSW
ISO Liquid Module Features and Cabling Presentation

Presentation given by Jay Rauk to Support, March 2014

Outlines:

System Details
Inputs/Outputs
Feature Comparison
Auxiliary Input Options
Vehicle Cabling Options
Implement Cabling Options
Component Cabling Options
ISOBUS Serial Bridge Module

Presentation given by Jay Rauk to Support, March 2014.

Outlines:

Serial Bridge Module Comparison
Cabling
Setup
Operation
Settings
Sales Information
ISO Liquid User Interface and Calibrations

Presentation given by Jay Rauk to Support, March 2014

Outlines:

Configurations
Map Screen Items
Tools
Setup Items
Auxiliary Inputs
Calibrations
How to Use the Tube Check Feature for NH3 Application Configurations

The NH3 tube check feature allows the operator to check for plugged knives or over-all obstructions with the toolbar raised. To access the tube check feature, press the toolbox button:

From the tools menu, press tube check:
This warning states that the system will dispense product without regard to the typical requirements for product application. The master switch will still need to be in the ON position, though. Acknowledge the warning.
Press and hold the tube check button to dispense product for the purpose of checking the system for plugs.
Press and hold the tube check button to check for plugged knives.

TUBE CHECK
Adding a Non-Ag Leader Temperature Sensor to the ISO Liquid Module

The DirectCommand ISO liquid module supports the use of a temperature sensor for Nh3 and sprayer configurations. This article will outline how to install and calibrate a Non-Ag Leader temperature sensor. (Ag Leader Temperature Sensor is PN 4004619)

Installation

The temperature sensor is to be installed in the pressure sensor #3 location only. Pinout on the #3 pressure sensor lead will need to be changed, contact Support for details of the pin position on the connector. (Changing the pinout is not required with an Ag Leader temperature sensor)
The temperature sensor calibration can be found under the calibration menu, accessed by pressing the cog icon button. Then press temperature sensor to access the sensor calibration main page.
At the calibrate temperature sensor main page, enter the milliVolt per Celsius rating found on the temperature sensor label, or from the sensor manufacturer. (Current Loop type sensors are also supported). If the millivolt per Celsius figure is unknown, press derive sensor calibration to determine it. Otherwise, press the proceed arrow to enter the temperature set-point and proceed to the record set-point portion of this document.

**Entering Sensor Characteristics**
To determine the mV/C rating, enter in these settings which should be available from the temperature sensor manufacturer. Press calculate when finished.
The mV/C rating will then be determined based on the settings entered. Press check to proceed on to the temperature set-point calibration step.

Record Set-point
Enter the current ambient temperature reading into this screen and press record set-point.
Press reset to redo the temperature set-point, or press the proceed arrow to finish the calibration.
Temperature set-point complete

Content last reviewed on: 3/3/2016
Reviewed by: AMJ
Controller Time Delay Setting

Description
Controller time delay compensates for any latency in the control system when changing between different product flow rates during variable rate application. The typical setting range for this is 0-1 seconds.

This setting is available on InSights as well as the Ag Leader® Integra and Versa display. On version 6.3 Integra and Versa, the naming was updated to "Rate Change Look-Ahead" to better communicate what the setting actually does.

This setting can be thought of as a "look ahead" value when using a variable rate prescription. The display will send the signal to change rates before hitting a transition line so that the applied rate is correct when crossing into the new management zone.

Setting Location
This setting is found within the Configuration Setup menu under the Equipment Settings button:

Where Used
This setting is available on planting and application configurations, including serial control and ISO, in which variable rate applications are possible. Modules supported are; hydraulic seed rate, stepper seed rate, liquid product control, 3&5 channel granular, spreader stepper, strip till, app rate module (serial control) and any ISO module capable of rate control through task controller.

Practical Application
This value can be increased in 1 second intervals if transitioning between different management zones in a prescription and the controller is taking too long to achieve a target rate. A key thing to remember is this parameter should only need changed if controller settings are known to be proper and working well for holding a single target rate.

Most hydraulic based rate controllers have the ability to change very quickly and don't often need this setting adjusted. This setting is most useful when running liquid product control at higher speeds and servo/PWM based controllers that have less time to react.

Example
The below picture shows a good example of how controller time delay functions. Note the difference in map between the top, middle, and bottom sections in which the time delay setting had different values. The higher the setting was, the sooner the rate changed between zones creating a "castle effect" with the map. Similar to autoswath seeing a castle effect doesn't always correlate to improper control. Some form of in-field verification or "dig test" would be needed to confirm proper function.
Switchbox Re-assignment after Updating ISO Modules

After an Ag Leader ISO module firmware update, users are required to go into the VT screens and re-assign all switches related to the updated ISO module to their switchbox. ISO module firmware updates can take place via display firmware or can be updated individually using the Ag Leader Reprogramming tool. Also note that module firmware does not always update with every display firmware update.

The need to reassign switches to a switchbox after updating is and will be an expected behavior across all Ag Leader ISO modules going forward. This is done to make sure that switches are assigned and function properly after an update.

For ISO module updates, keep an eye on display firmware release notes and the Ag Leader Knowledgebase.
Rate Change Look Ahead Setting

Description

Rate Change Look-Ahead compensates for any latency in the control system and is designed to provide control valves additional time to fully adjust and achieve its new rate when transitioning between flow rates during variable rate application. Typical setting range is 0-1 second.

This setting changed name from Controller Time Delay in version 6.3 Ag Leader® Integra and Versa firmware to better communicate what the setting actually does.

This setting can be thought of as a "look ahead" value when using a variable rate prescription. The display will send the signal to change rates before hitting a transition line so that the applied rate is correct when crossing into the new management zone.

Location

This setting is found within the Configuration Setup menu under the Equipment Settings button:
Where Used

This setting is available on planting and application configurations, including serial control and ISO, in which variable rate applications are possible. Modules supported are; hydraulic seed rate, stepper seed rate, liquid product control, 3&5 channel granular, spreader stepper, strip till, app rate module (serial control), and any ISO module capable of rate control through task controller.

Practical Application

This value can be increased in 1 second intervals if transitioning between different management zones in a prescription and the controller is taking too long to achieve a target rate. A key thing to remember is this parameter should only need changed if controller settings are known to be proper and working well for holding a single target rate.

Most hydraulic based rate controllers have the ability to change very quickly and don't often need this setting adjusted. This setting is most commonly used when running liquid product control at higher speeds and servo/PWM based controllers have less time to react.

Example

The below picture shows a good example of how Rate Change Look-Ahead setting functions. Note the difference in map between the top, middle, and bottom sections in which the look-ahead setting had different values. The higher the setting was, the sooner the rate changed between zones creating a "castle effect" with the map. Similar to AutoSwath seeing a castle effect doesn't always correlate to improper control. Some form of in-field verification or "dig test" would be needed to confirm proper function.
Rate Change Look Ahead Setting
Pressure Based Product Application

With the release of the DirectCommand ISOBUS Liquid Control Module, Ag Leader now has the ability to use pressure based control or flow based control for product application.

Pressure based control is a method of product application that bases product control on main line pressure readings instead of pulses from a flow meter. One isn't necessarily better than the other; it's primarily that overseas machinery has historically been pressure based while North American machinery is typically flow based. Using either method allows the module to be more flexible to account for a sprayer's specific machine setup.

One area that pressure based flow control excels at are in low flow situations such as having only one section on or low target rates. Some flow meters cannot accurately register flow at these low rates as well as a pressure gauge. One of the many valuable features of the ISOBUS liquid module is the Pressure Fallback feature that will operate in flow based control and then automatically switch to pressure based control at these lower thresholds*. The module will switch to Pressure Fallback based on a user defined threshold value (gal/min).

*If system is equipped with a main pressure gauge.

To use the Pressure Fallback feature, enable it in the Channel Configuration page:

Then in the Pressure Settings page, set the fallback threshold value:
Pressure Based Product Application
DirectCommand ISOBUS Injection Raven Sidekick Pro Kit

Raven Sidekick Pro ISOBUS Interface kit features include the following:

Note: Sidekick Pro (non-ISO) and Sidekick Pro ICD are not supported.

- Direct ISOBUS communication with the Raven Sidekick Pro ISO Direct Injection module and pump.
- Easy-to-use set up and operation that allows for Task Controller functionality when connected to an Ag Leader display.
- Operation of up to 3 direct injection pumps.
- Support of up to 12 sections of Direct Injection control.
  - Ag Leader ISOBUS Liquid Module sections need to match Direct Injection sections.
- Simple Installation.
- Simplified, user-friendly pump calibration wizard.

Parts Required for ISOBUS Direct Injection:

- Ag Leader ISOBUS Liquid Control Module.
- 4200133 Cable Kit - DirectCommand - Raven ISOBUS Direct Injection.
- Optional High Current Extension Cables.
- Optional ISOBUS Extension Cables.
- Multiple Product Unlock.

Content last reviewed on: 3/6/17
Reviewed by: JW
Q: What switchbox/switch inputs can I use with the ISOBUS Liquid Control Module?

**Question:** What switchbox/switch inputs can I use with the ISOBUS Liquid Control Module?

**Answer:** There are many available options for switch input with the ISOBUS liquid control module. Operators can use the 10 section Ag Leader CAN switchbox, the Auxiliary Input module to tie into OEM switches, or the ISO WSM switchbox. The Ag Leader CAN switchbox can only be used with Ag Leader displays. The same goes for using the Aux Module and OEM switch cable. When using a non-Ag Leader display (e.g. Pro700, 2630, etc.), you will need to use the ISO WSM Switchbox.

The Ag Leader ISO WSM Switchbox
Q: What parts will I need to consider when installing the ISO module on a machine with a non-Ag Leader VT compatible display?

**Question:** What parts will I need to consider when installing the ISO module on a machine with non-Ag Leader UT/VT compatible display?

**Answer:** A switchbox rail mounting kit, module 3rd party unlock, any cabling/IBBC hardware from the vehicle manufacturer to get the vehicle up to ISOBUS spec from the display to the IBBC breakaway. The non-Ag Leader display should already be connected to the tractors ISO connection. If the tractor does not have the IBBC connection, then the customer will need to contact that manufacture to make it ISO ready. The Ag Leader retrofit kit will not work with other displays.

Content last reviewed on: 11/16/16
Reviewed by: JW
Q: When should I use the ISOBUS retrofit kit? The Power/Data cable option?

**Question:** When should I use the ISOBUS retrofit kit? The Power/Data cable option?

**Answer:** The ISOBUS retrofit kit can be used with an Ag Leader display to bring the non-ISO vehicle up to spec for use with any ISO implement.

The power/data cabling is an affordable option for customers wanting to control an Ag Leader ISOBUS module with an Ag Leader display. This is typically used for pull behind machines when the modules are on the implement. If the modules are mounted in the cab, like a self-propelled machine, then the CAN B to ISO cable would just be needed. Again, the power/data cabling option is only compatible with an Ag Leader display.
Temperature Sensors

When utilizing a temperature sensor and pressure sensor for Anhydrous Ammonia application, the ISO Liquid Control Module can provide vapor state monitoring. This document serves as a guide for installing and calibrating the Ag Leader temperature sensor.

NOTE: Your particular installation may differ as Ag Leader does not provide any fittings or adapters with the temperature sensor. Always refer to your anhydrous control system operators manual before performing and maintenance or modifications to it.

Installing and Utilizing Temperature Sensor for NH3 State Monitoring

Content last reviewed on: 2/6/15
Reviewed by: LM
Ag Leader has recommended validation steps that need to be performed on a sprayer to determine if the liquid control system can support more than 24 sections. These validation steps will determine if the liquid control system can accurately control flow on small width boom sections at varying speeds and AutoSwath scenarios. If a boom section has too small of a width, the liquid control system may not have the ability to lock onto rate. This will be more prevalent with high capacity sprayers.

Ag Leader recommends these steps be taken for all sprayer control types, other than calibrated reflow. Through testing, calibrated reflow control systems can accurately control flow up to 36 boom/nozzle sections. Validation steps can be found on the Ag Leader Knowledgebase. Please refer to the "How To" document attached to this article.

Content last reviewed on: 2/5/16
Reviewed by: SSW
## ISOBUS Serial Bridge Module Line Arts

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Content last reviewed on: 8/17/16  
Reviewed by: SSW
For steps on troubleshooting ISOBUS system and cabling in general and ISOBUS Retrofit Kit, see ISO Retrofit Feature User Guide.
What is Pressure / Flow out of Relationship with ISO Liquid? What causes the error?

Possible causes for the Pressure / Flow out of Relationship message with ISO Liquid are below:

- Incorrect nozzles in use
- Incorrect nozzle settings
- Worn out/failing nozzle(s)
- Leak(s) in the system
- Plugged Strainer(s)
- Failing pressure sensor
- Pressure sensor calibration issue
- Incorrect flow meter settings
- Worn out/failing flow meter
Task Controller

Generic ISOBUS - Task Controller Display Configuration Guides

InCommand - Building a Generic Task Controller Configuration:

ISO Seeder
ISO Sprayer
ISO Planter
ISO Spinner Spreader

Integra/Versa - Building a Generic Task Controller Configuration:

ISO Seeder
ISO Sprayer
ISO Airboom
ISO Planter
ISO Spinner Spreader

Content last reviewed on: 7/21/17
Reviewed by: CG
Q: What unlocks do I need for planter Task Controller functionality?

**Question:** What unlocks do I need for planter Task Controller functionality?

**Answer:** Specific unlocks required for Task Controller will vary based on the display being used and the implement to be controlled. For instance, to control a Kinze 4900 planter the display will require a Multi-product unlock. Assuming the ISOBUS ECU supports Task Controller functionality; features include section control, data logging and variable rate control.

**Unlocks by display**

- The InCommand 1200 and Ag Leader® Integra displays come with the Universal Terminal and AutoSwath unlock standard, so it is ready to run Task Controller. However, certain ECUs will also require the use of a Multiple Product unlock. As always, it is still needed for growers wanting to apply or plant multiple products and/or varieties.

- The InCommand 800 and Versa displays will need the Universal Terminal unlock, AutoSwath unlock and the Multiple Product unlock, depending on the implement to be controlled or the products to be logged, applied.

- The Compass display does support ISOBUS through a Universal Terminal unlock but does not support Task Controller functionality. Universal Terminal supports multiple ECUs without the need for a Multiple Product unlock.

**Unlocks by planter ECU**

- The Kinze 4900 planter ECU will require the Universal Terminal, AutoSwath and Multiple Product unlocks.

- The John Deere planter ECU will require the Universal Terminal and AutoSwath unlocks, though the Multiple Product unlock will be needed if the grower wants split planter, fertilizer or pesticide application functionality. If the John Deere planter has 2 or more hydraulic drives, a Multiple Product unlock will be required, regardless if only one variety will be logged.

- Other planter ECUs: Other 3rd party planter ECUs will require the Universal Terminal and AutoSwath unlocks. A Multiple Product unlock will be needed if the grower wants split planter, fertilizer or pesticide application functionality. If the Device Description of the planter ECU is defined as 2 or more hydraulic drives or "meters," a Multiple Product unlock will be required, regardless if only one variety will be logged. To learn more about Device Description and Task Controller setup please reference the [Task Controller Display Configuration Guides](https://dealer.agleader.com/kbp/index.php?View=entry&EntryID=1453)
Q: What unlocks do I need for planter Task Controller functionality?
Getting Vehicle Speed Information to your ISOBUS Implement

The ISOBUS implement’s ECU speed settings may have multiple speed source options to choose from. Depending on the type of speed source required by the implement, this will dictate which ISO speed source setting you select.

**ISOBUS Speed Settings Defined**

**Broadcast Display Speed (ISO GBSD)**
Checking this box allows speed source currently being utilized by the display to be broadcast over the ISOBUS to the implement.

**Broadcast GPS (J1939)**
Checking this box allows GPS data being supplied by the GPS receiver to be broadcast over the ISOBUS to the implement ECU. The J1939 broadcast is sending the GPS speed data via J1939 format. The "GPS" speed setting within the implement ECU will need to be able to read the J1939 format for this to work. Not all ECUs will have this ability, contact manufacturer for details.

As an example for utilizing the J1939 format, the Kinze 4900 electric drive planter’s ECU will detect ISO GBSD speed but requires the J1939 speed source for turn compensation planter functionality.

How to Verify ISOBUS is Receiving Speed
Check the Virtual Terminal to ensure the vehicle speed reading is present and is accurate.
Additional Considerations
If an implement's ISO harness is plugged into an ISO ready tractor and also being ran through the vehicle's communication bus, the vehicle may also be broadcasting a speed over the ISOBUS. It's important to consider what speed sources and how many speed sources are being sent to the implement ECU.
ISO Section/Rate Compatibility

This setting determines how often the Display’s ISO Task Controller should send the target rate message to an ISO ECU. This setting was added in Ag Leader Integra/Versa v7.0 and InCommand v1.2

- When unchecked, the target rate message is only sent when it is changed on the display.
  - Example: When changing from Target Rate 1 to Target Rate 2, a new target rate message is sent.
- When checked, the target rate message is sent at regular intervals.
  - This is a non-standard ISO setting. Leave this setting off unless the ISO ECU has an issue with the target rate resetting to Zero on its own.

Content last reviewed on: 6/14/16
Reviewed by: JMD
InCommand Load and Go - Generic ISOBUS Mismatch

Overview

InCommand displays controlling ISO/Task Controller ready implements where the Generic ISO Controller created by Load and Go will display a Generic ISOBUS Mismatch and not load to the run screen after a power cycle.

Issue

Load and Go created configurations use part of the device description called the "Structure Label" that is sent by the implement ECU (see Figure 1 below). It is used as an identifier for the Generic ISO configuration. The Structure Label should only change if the ISO ECU setup (in the UT screen) gets changed by the user. In some instances the Structure Label is changing upon power cycles of the display and implement ECU. When the Structure Label changes, the current Generic ISO configuration no longer recognizes the implement ECU (Configuration Mismatch is displayed with a red X). A new configuration and controller will need to be built.

Resolution

Instead of making a new Generic ISO configuration with the Load and Go feature, the configuration will need to be made manually. When making a new configuration and Load and Go presents you with the pre-made controller, delete this controller. Now manually make a new Generic ISO controller to match the implement ECU. (This is the same way a Generic ISO controller is made on an Integra, since it does not have the Load and Go feature). This configuration will work through power cycles of the InCommand.

Notes:

- This problem has typically been witnessed with Planter ISO ECUs (primarily with White planters).
- The Structure Label is a part of the ISO implement ECU.
ISOBUS Load and Go - InCommand Displays

This article explains what ISOBUS Load and Go is, how it works, and what is required to make it function properly.

What is Load and Go?

Load and Go is a function of InCommand displays that will automatically load configuration information from an ISOBUS controller. Prior to load and go, the user was required to enter specific settings into the display, based on the ISOBUS ECU in setup. Without Load and Go, configuration setup times increased along with more occurrences of user error.

How does Load and Go work?

Load and Go will automatically detect and load configuration information such as sections and channels during Display configuration setup, based on information provided by an ISOBUS controller.

What is required to make Load and Go work properly with Task Controller?

1. InCommand display
2. Universal Terminal enabled. See InCommand Operator’s Manual for instructions on how to enable UT.
3. InCommand display connected and communicating with ISOBUS ECU
   - Universal Terminal screens will populate if properly connected and communicating

Content last reviewed on: 8/15/17
Reviewed by: JW
ISOBUS Troubleshooting

For steps on troubleshooting ISOBUS system and cabling in general and ISOBUS Retrofit Kit, see ISO Retrofit Feature User Guide.

Content last reviewed on: 8/28/17
Reviewed by: JW