INSTALLATION INSTRUCTIONS

Field-IQ Crop Input Control System

Section Control Only

- Raven 4x0
- Raven 4x00
- EZ-Boom 2010

Rate and Section Control

- Raven 4x0
- Raven 4x00
- EZ-Boom 2010

Version 1.00
Revision A
May 2010
Part Number 99004-00-ENG

Trimble

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Release Notice

This is the May 2010 release (Revision A) of the *Field-IQ Rate and Section Control System Installation Instructions*, part number 99004-00-ENG. It applies to version 1.00 of the Field-IQ crop input control system.

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Product Limited Warranty

Trimble warrants that this Trimble product and its internal components (the "Product") shall be free from defects in materials and workmanship and will substantially conform to Trimble's applicable published specifications for the Product for a period of one (1) year, starting from the earlier of (i) the date of installation, or (ii) six (6) months from the date of product shipment from Trimble. This warranty applies only to the Product if installed by Trimble or a distributor authorized by Trimble to perform Product installation services.

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Notices

Class B Statement – Notice to Users. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

Notice to Our European Union Customers

For product recycling instructions and more information, please go to: www.trimble.com/ev.shtml

Recycling in Europe: To recycle Trimble WEEE, Call

+31 497 53 2430, and ask for the "WEEE Associate"

Or

Mail a request for recycling instructions to:

Trimble Europe BV
c/o Menlo Worldwide Logistics

Meerheide 45
5521 DZ Eersel, NL

Safety Information

Always follow the instructions that accompany a Warning or Caution. The information they provide is intended to minimize the risk of personal injury and/or damage to property. In particular, observe safety instructions that are presented in the following format:

WARNING – This alert warns of a potential hazard, which, if not avoided, can cause severe injury.

CAUTION – This alert warns of a hazard or unsafe practice which, if not avoided, can cause injury or damage.

***Note** – An absence of specific alerts does not mean that there are no safety risks involved.*

Warnings

WARNING – When you are working on the vehicle's hydraulic systems, vehicle attachments that are suspended can drop. If you are working around the vehicle, you could suffer serious injury if an attachment dropped on you. To avoid this risk, lower all vehicle attachments to the ground before you begin work.

WARNING – If someone else attempts to drive the vehicle while you are working on or under it, you can suffer serious or fatal injuries. To avoid this possibility, install a lockout box on the battery terminal to prevent the battery from being reconnected, remove the key from the vehicle's ignition switch, and attach a "Do not operate" tag in the cab.

WARNING – Agricultural chemicals can pose serious health risks. If the vehicle has been used to apply agricultural chemicals, steam clean the vehicle to remove any chemical residue from the areas of the vehicle where you will be working.

WARNING – Vehicle cabs can be quite high in the air. To avoid potentially serious injury through falling from this height, always use the steps and handrails, and face the vehicle, when you enter or exit it.

WARNING – When the vehicle has been running, parts of the vehicle, including the engine and exhaust, can become extremely hot and can cause serious burns. To avoid burns, allow hot machine parts to cool before you begin working on them.

WARNING – The system installation may bring you into contact with chemical substances, such as oil, which can cause poisoning. Wash your hands thoroughly after you finish working on the system.

WARNING – Battery posts, terminals, and related accessories contain lead and lead compounds, which can cause serious illness. To avoid ingesting lead, wash your hands thoroughly after touching the battery.

WARNING – Always wear protective equipment appropriate to the job conditions and the nature of the vehicle. This includes wearing protective glasses when you use pressurized air or water, and correct protective welder's clothing when welding. Avoid wearing loose clothing or jewelry that can catch on machine parts or tools.

WARNING – Parts of the vehicle may be under pressure. To avoid injury from pressurized parts, relieve all pressure in oil, air, and water systems before you disconnect any lines, fittings, or related items. To avoid being sprayed by pressurized liquids, hold a rag over fill caps, breathers, or hose connections when you remove them. Do not use your bare hands to check for hydraulic leaks. Use a board or cardboard instead.

WARNING – Do not power wash on, or near the Field-IQ™ crop input control system modules.

WARNING – Folding and unfolding the applicator booms can result in damage; make sure there are no people or objects in the path of travel of the booms.

WARNING – Do not alter cable lengths and connections. If you must alter the length of the power cable do not remove the fuse and fuse holder from the cable.

WARNING – Most application equipment have pressurized cabs. If you need to drill a hole in the cab, reseal the hole to maintain the pressurization of the cab; sealing puddy is one option to seal the cab. Trimble recommends Sealing Gum, Size 2 pounds, Permagum Block Grainger item # 4E307, or Virginia KMP, manufacturer's model PP-22. These are available from www.grainger.com.

WARNING – Damage will result to the cable if it is not routed correctly. When routing cables be sure to route them free from areas that may result in damage to the cables including pinching, stretching and rubbing.

Cautions

CAUTION – Be sure to install the hitch connection and cables so they are free of areas that could result in damage to the cable or the Field-IQ system.

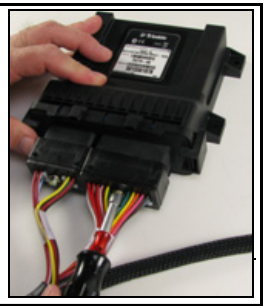
Field-IQ Rate and Section Control Quick Installation Guide – Raven 4x0/4x00

ALL MODELS

Attach the Rate and Section Control module to the supplied bracket and mount the bracket in the cab. Ensure no hidden components are damaged by the drill or the mounting screws.

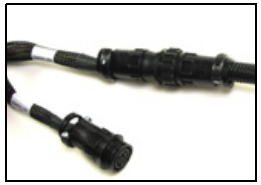
ALL MODELS

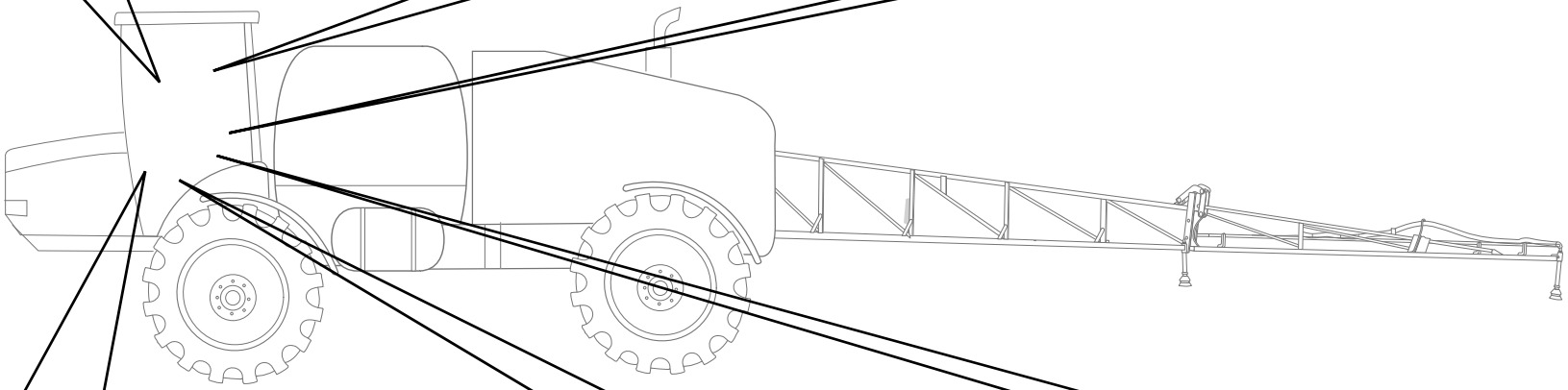
Use a ¼" nut driver to attach both the 18-pin and 30-pin connectors on the adapter cable (P/N 75503) to the Rate and Section Control module.



RAVEN 4x0 RATE AND SECTION CONTROL EZ-BOOM REPLACEMENT

Connect the 16-pin round connector on the Rate and Section Control Module adapter cable (P/N 75503) to the existing *Ag*GPS® EZ-Boom® system or Raven 4x0 harness.

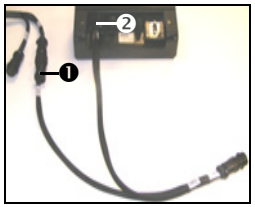




RAVEN 4x0 SECTION ONLY

Connect the 16-pin round connector ❶ on the Rate and Section Control module adapter cable (P/N 75503) to the 16-pin connector on cable P/N 79514.

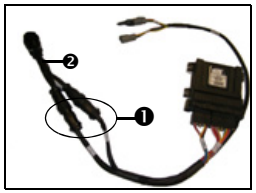
Connect the 16-pin connector labeled Raven ❷ on cable P/N 79514 to the Raven monitor.



RAVEN 4x00 RATE AND SECTION CONTROL

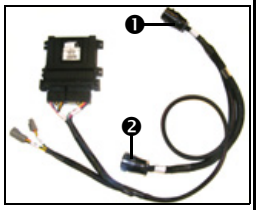
Disconnect the harness from the back of the Raven 4x00 vehicle.

Connect the 16-pin and 14-pin round connectors ❶ on the Rate and Section Control module adapter cable to the Raven 4x00 adapter cable ❷ (P/N 59943) and then connect the Raven 4x00 adapter cable to the existing Raven harness.



RAVEN 4x00 SECTION ONLY

Connect the R1 connector ❶ on the Rate and Section Control module adapter cable to the existing Raven 4x00 harness and then connect the P1 connector ❷ on the Rate and Section Control module adapter cable to the Raven 4x00 controller.



Quick installation instructions

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Introduction

This section includes information on how to install and configure the Field-IQ Rate and Section Control module. For more detailed instructions, see the complete Installation Guide, available at http://agpartners.trimble.com.

Required components

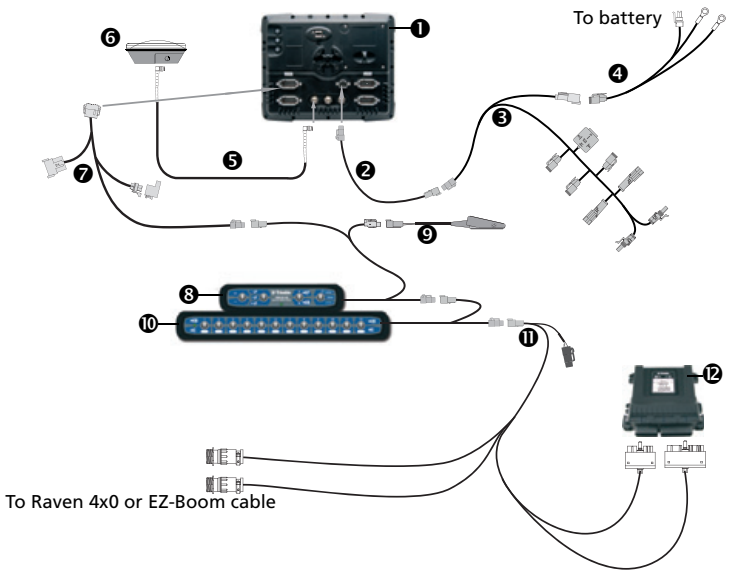
Kits required	Special tools
Field-IQ cab kit for *Ag*GPS FmX® integrated display (P/N 80811-00) Raven 4x0 Rate and Section Control (P/N 99104-00) Raven 4x0 Section Control only (P/N 99104-01) Raven 4x00 Section Control only (P/N 99104-02) Raven 4x00 Rate and Section Control (P/N 99104-03)	¼" socket or ¼" nut driver Volt meter

Preparing the vehicle for installation

1. Park the vehicle on a hard, level surface. Block the front and rear wheels.
2. Align the steering straight ahead. On an articulated vehicle, install the articulation locks.
3. Remove all dirt and debris from the areas of the vehicle where the Field-IQ™ crop input control system will be installed.
4. Open all kit boxes and check the contents of the box against the packing list/s. Lay all of the parts out on a clean workbench.

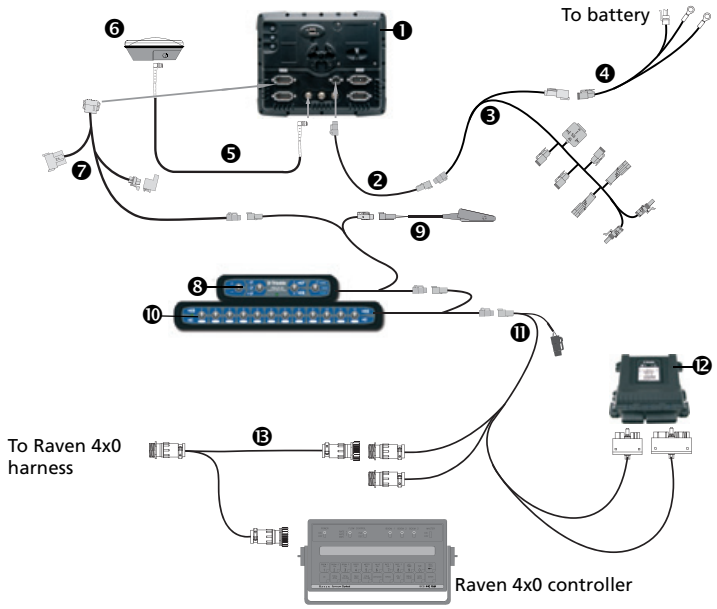
Note – *The left and right sides of the vehicle are referenced while standing behind the unit, facing the normal direction of travel.*

Field-IQ Rate and Section Control with Raven 4x0 or EZ-Boom system cable (P/N 99104-00)



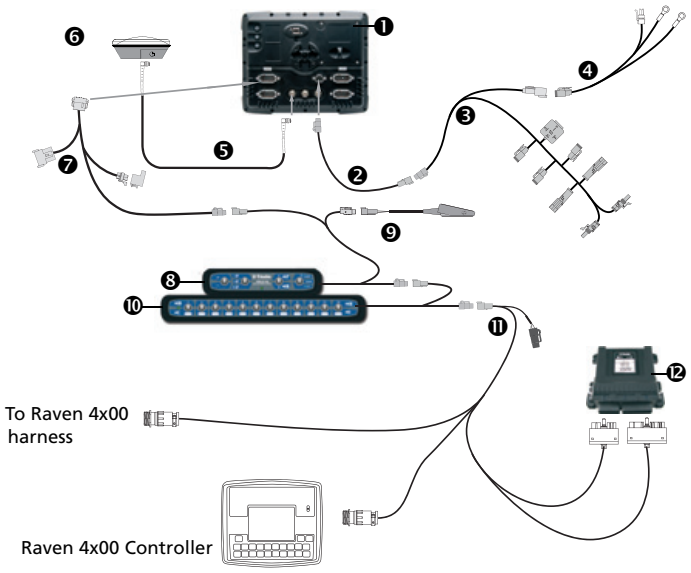
	Description	Trimble P/N
❶	FmX integrated display	93100-01
❷	FmX power cable	66694
❸	Power bus	67259
❹	Basic power cable	67258
❺	8 m GPS TNC/TNC RT angle cable	50449
❻	Ag25 GNSS antenna	68040-00S
❼	Display to Field-IQ cable	75834
❽	Field-IQ master switch box	75050-01
❾	Optional: Remote foot switch	60490
❿	Optional: 12-section switch box	75060-01
⓫	Rate and Section Control module adapter cable	75503
⓬	Rate and Section Control module	75774-00

Field-IQ Section Control only, with Raven 4x0 harness (P/N 99104-01)



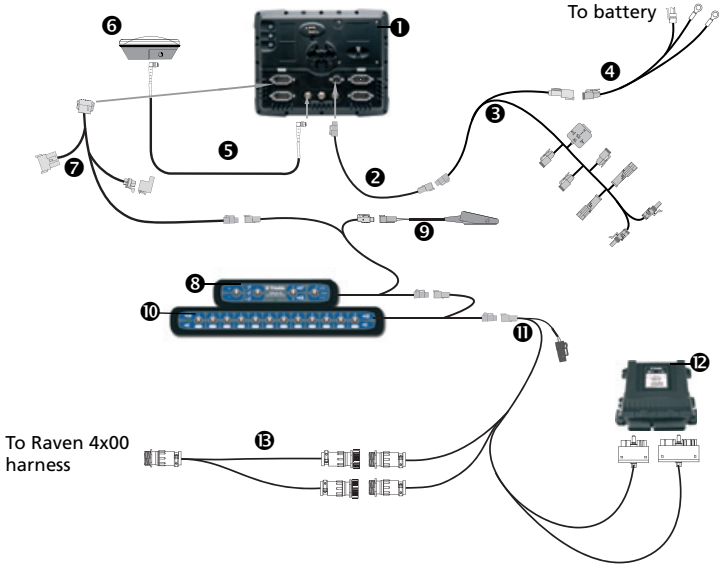
	Description	Trimble P/N
❶	FmX integrated display	93100-01
❷	FmX power cable	66694
❸	Power bus	67259
❹	Basic power cable	67258
❺	8 m GPS TNC/TNC RT angle cable	50449
❻	Ag25 GNSS antenna	68040-00S
❼	Display to Field-IQ cable	75834
❽	Field-IQ master switch box	75050-01
❾	Optional: Remote foot switch	60490
❿	Optional: 12-section switch box	75060-01
⓫	Rate and Section Control module adapter cable	75503
⓬	Rate and Section Control module	75774-00
⓭	Raven to *Ag*GPS EZ-Boom system 4x0 Tee-cable	79514

Field-IQ Section Control only, to Raven 4x00 controller (P/N 99104-02)



	Description	Trimble P/N
❶	FmX integrated display	93100-01
❷	FmX power cable	66694
❸	Power bus	67259
❹	Basic power cable	67258
❺	8m GPS TNC/TNC RT angle cable	50449
❻	Ag25 GNSS antenna	68040-00S
❼	Cable assembly, display to Field-IQ	75834
❽	Field-IQ master switch box	75050-01
❾	Optional: Remote foot switch	60490
❿	Optional: 12-section switch box	75060-01
⓫	Rate and Section Control module adapter cable	79854
⓬	Rate and Section Control module	75774-00

Field-IQ Rate and Section Control with Raven 4x00 harness (P/N 99104-03)



	Description	Trimble P/N
❶	FmX integrated display	93100-01
❷	FmX power cable	66694
❸	Power bus	67259
❹	Basic power cable	67258
❺	8 m GPS TNC/TNC RT angle cable	50449
❻	Ag25 GNSS antenna	68040-00S
❼	Display to Field-IQ cable	75834
❽	Field-IQ master switch box	75050-01
❾	Optional: Remote foot switch	60490
❿	Optional: 12-section switch box	75060-01
⓫	Rate and Section Control module adapter cable	75503
⓬	Rate and Section Control module	75774-00
⓭	Raven to 4x0 to 4x00 harness adapter	59943

Installing the Field-IQ crop input control system

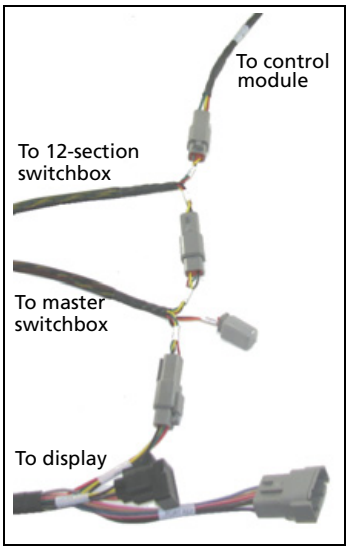
1. Connect the display:

   a. Use a Phillips screwdriver and the supplied screws to attach the master switch box to the display. If the FmX integrated display does not have the mounting option on the bottom of the display, use the flat mounting brackets to secure the switchboxes to the top of the display.

Note – *The optional 12- section switch box is shown.*

   b. Connect the display harness to the switchbox harnesses. Route the cables and connect them to the Field-IQ Rate and Section Control module.

   Optional: Connect the remote foot-switch to the master switchbox harness.



2. Mount and connect the Rate and Section Control module:

CAUTION – To prevent rain damage, do not mount the Rate and Section Control module with the connectors pointing upwards.

   a. Use the provided hardware to secure the Rate and Section Control module in the cab. Torque the mounting screws to a maximum of 10 – 12 in-lbs (1.13 – 1.36 Nm).

CAUTION – Damage to important components can be caused by the drill and/or screws. When mounting the Rate and Section Control module, first verify that there is nothing located behind the area where module is to be installed.

b. Secure the rate and section control cable to the module using a ¼" socket or nut driver. Torque the bolts to a maximum of 15 – 20 in-lbs (1.70 – 2.26 Nm).

c. Connect the remaining 4-pin receptacle to the switchbox harness.

3. Connect to the sprayer control system harness:

   a. Route the module adapter cable to the connectors of the sprayer harness.

   b. Connect the rate and control module adapter cable to the existing sprayer control harness or adapter harness.

Additional pre-application steps

1. Turn on the display and the system and verify communication has been established between the display and the module.
2. Configure the implement and controllers settings.
3. Calibrate the sprayer system to verify correct application.ll

Contents

CHAPTER

1

Introduction

- Technical assistance
- Your comments

This manual describes how to install the Trimble® Field-IQ™ Crop Input Control System.

Even if you have used other Global Positioning System (GPS), or application control products before, Trimble recommends that you spend some time reading this manual to learn about the special features of this product. If you are not familiar with GPS, visit the Trimble website (www.trimble.com) for an interactive look at Trimble and GPS.

Technical assistance

If you have a problem and cannot find the information you need in the product documentation, contact Trimble technical support:

1. Go to the Trimble website (www.trimble.com).
2. Click the **Support & Training** link at the top of the screen, select *Support* and then select *Support A–Z list of products*.
3. Scroll to the bottom of the list.
4. Click the *submit an inquiry* link. A form appears.
5. Complete the form and then click **Send**.

Your comments

Your feedback about the supporting documentation helps us to improve it with each revision. Email your comments to ReaderFeedback@trimble.com.

CHAPTER

2

Display Installation

In this chapter:

This chapter describes how to install the display.

Note – *This chapter is not required if the display was installed earlier.*

Preparing the FmX integrated display

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Step 1

Locate the Trimble FmX integrated display, the RAM mount, and the RAM mount clamp.

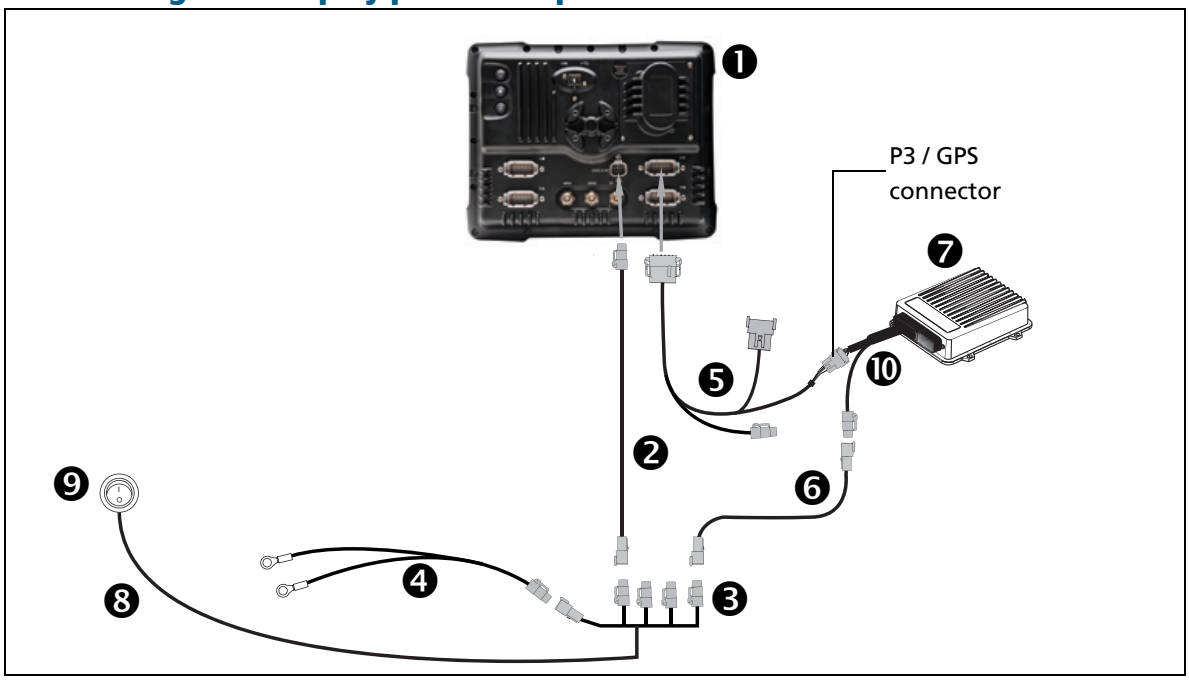
Step 2

Use the provided metric hardware to attach the RAM mount to the rear of the display.

Installing the display power harness

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

FmX integrated display power components

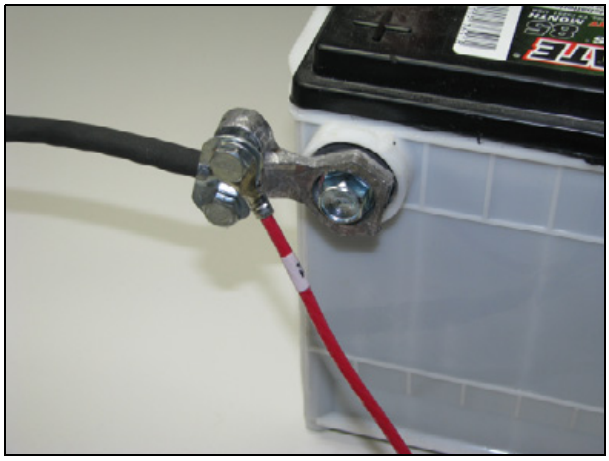


Item	Description	Trimble part number
❶	FmX integrated display	93100-02
❷	FmX power cable	66694
❸	FmX power cable with relay and switch (power bus)	67259
❹	Basic power cable	67258
❺	FmX to NavController II cable with port replicator	65522
❻	2 pin DTM to 2 pin DT power adapter	67095
❼	NavController II	55563-00
❽	External switch cable included with kit	Part of 67259
❾	External switch included with kit	Part of 67259
❿	Main NavController II cable	54601

Power bus installation

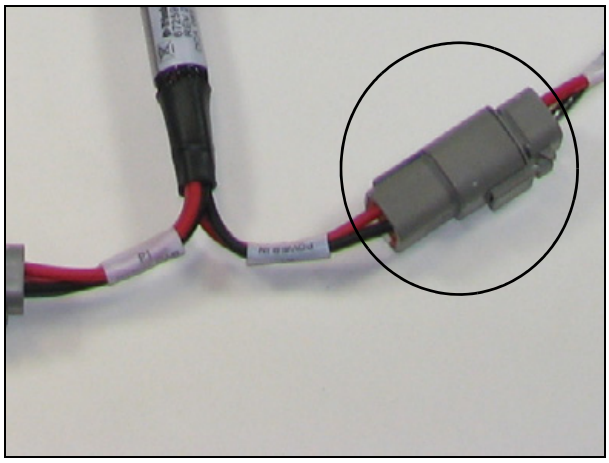
Step 1

Connect the basic power cable to the vehicle battery and then route the cable into the cab.



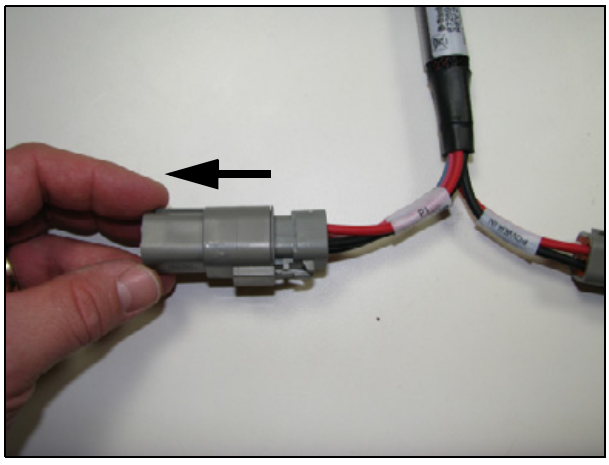
Step 2

Locate and connect the 4-pin Deutsch DTP receptacle on the power bus to the 4-pin Deutsch DTP plug on the basic power cable.



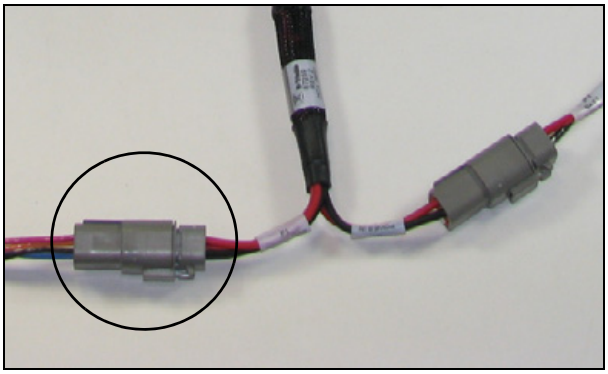
Step 3

Remove the protective receptacle from the power bus.



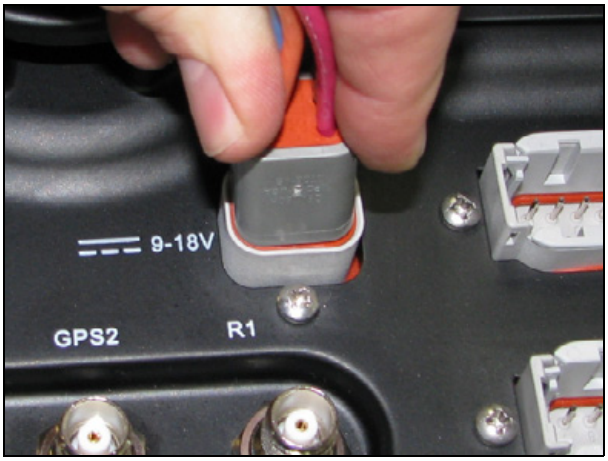
Step 4

Locate and connect the 4-pin Deutsch DTP receptacle on the FmX integrated display power adapter to the 4-pin Deutsch DTP plug on the power bus.



Step 5

Route the FmX integrated display power adapter to the display mounting location and then connect it to the display.



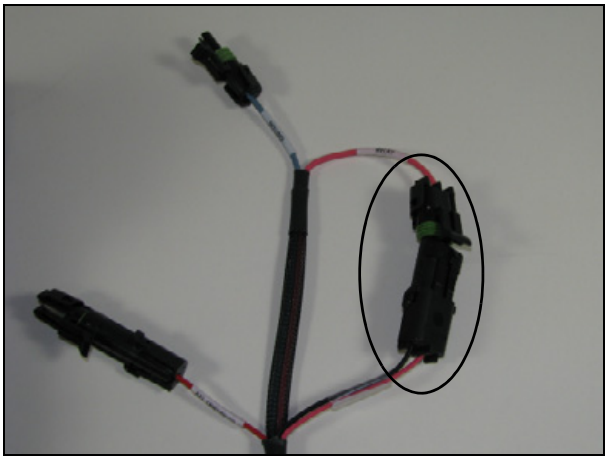
Configuring the power bus options for the display

When you use the power bus cable, use one of the following configuration methods to turn on the system:

- Use the FmX integrated display power button, see below.
- Use an external switch to turn on the FmX integrated display.

Using the FmX integrated display power button to turn on the system

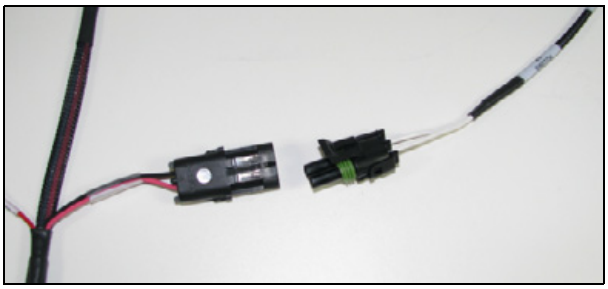
Connect the 2 pin connectors labeled R2 and P2 on the power bus.



Using the external switch to turn on the FmX Integrated display

Step 1

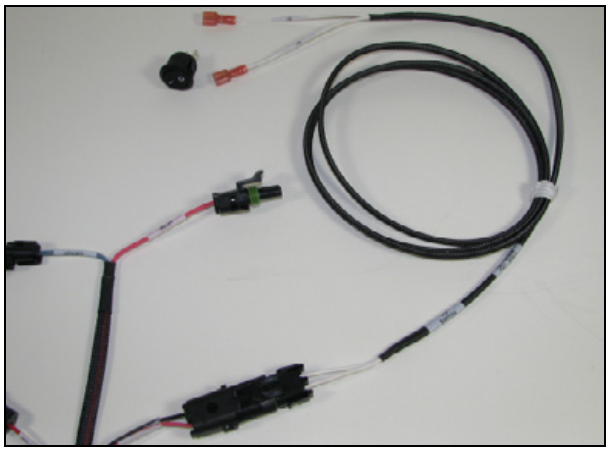
Connect the R7 cable switch (included with the power bus) to the P2 connector on the power bus.



Step 2

Route the R7 cable to a switch location.

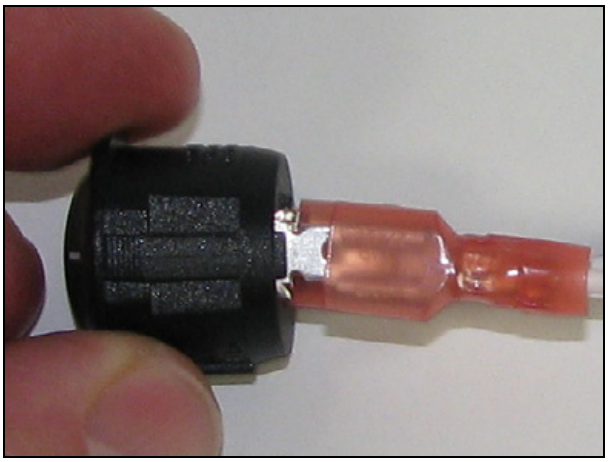
Note – *To install the switch provided, drill a ¾" hole.*



Step 3

Connect the R7 cable to the switch pins.

Note – *Polarity is not important.*



CHAPTER

3

Switch Box Installation

In this chapter:

This chapter describes how to install the cab components of the Field-IQ application control system.

Installing the Field-IQ switch boxes

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

The Field-IQ system requires that a 4-switch master switch box is connected and installed. The master switch box is used to control the system.

The optional 12 section switch box is not required. This switch box allows for manual control of individual sections.

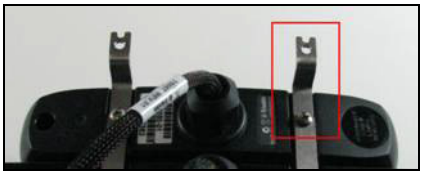
Installing the master switch box

Step 1

Locate the master switch box and mounting hardware.

Step 2

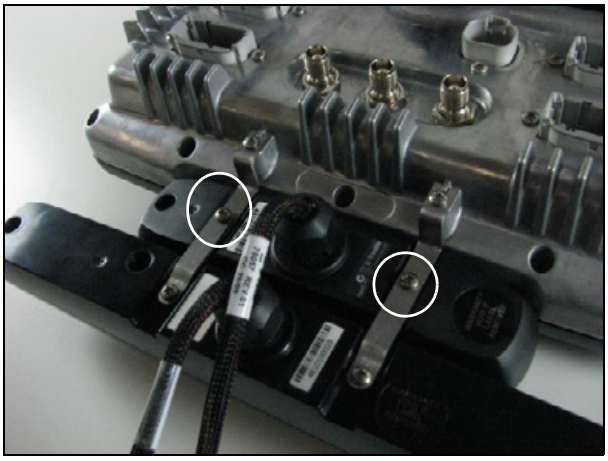
Use a Phillips screwdriver to secure the two mounting brackets to the master switch box with the supplied screws.



Step 3

Use a Phillips screwdriver to secure the master switch box to the bottom of the display with the supplied screws.

If the display does not have the mounting option on the bottom of the display, use the flat mounting brackets to secure the switch boxes to the top of the display.

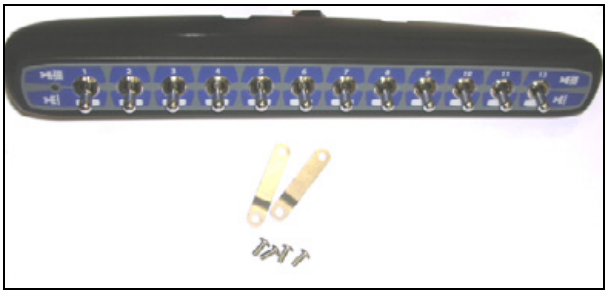


Note – *The image shows both the master switch box and the optional 12-section switch box.*

Installing the optional 12-section switchbox

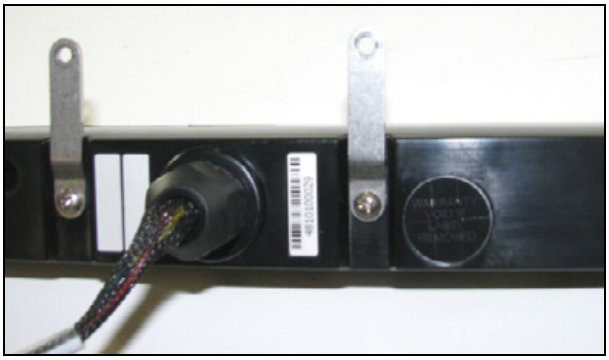
Step 1

Locate the 12-section switch box and installation hardware.



Step 2

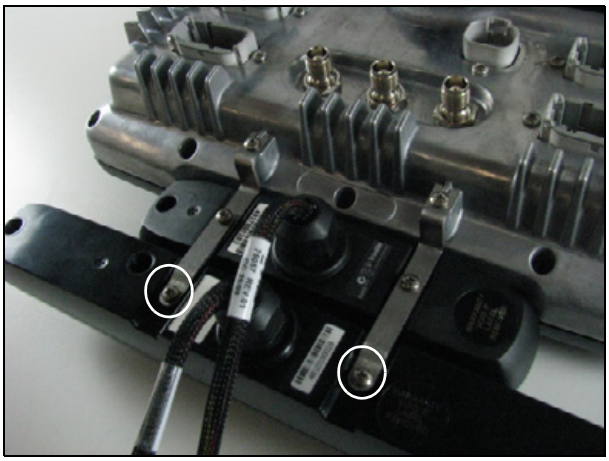
Use a Phillips screwdriver to secure the mounting hardware to the switch box with the supplied screws.



Step 3

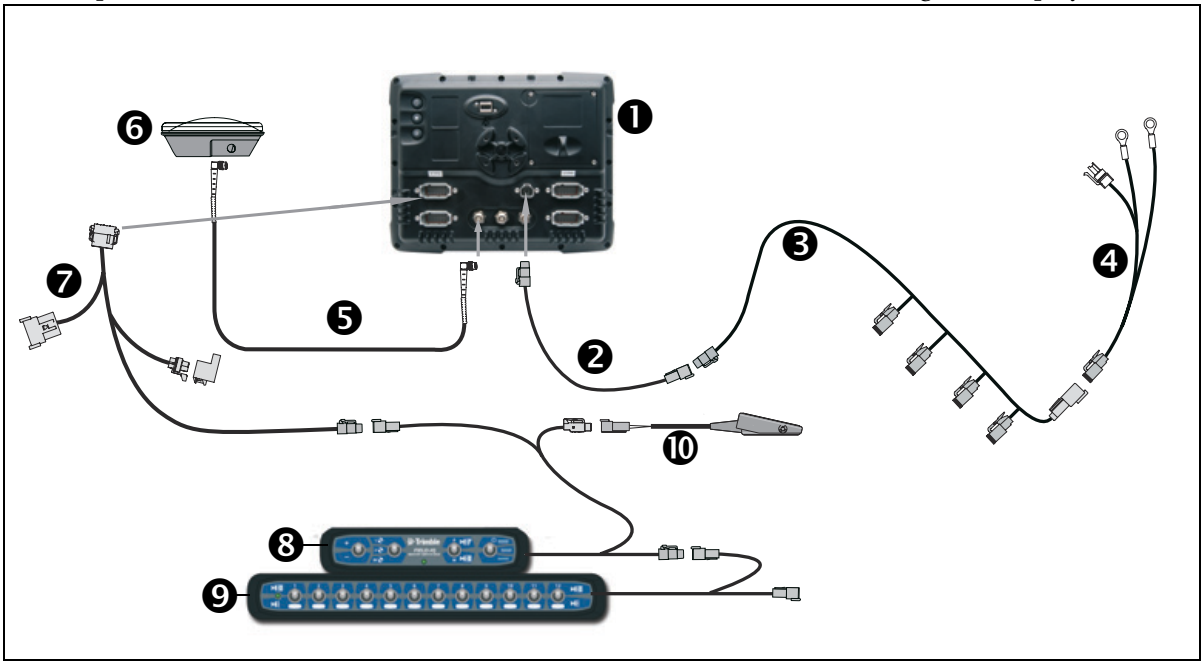
Use a Phillips screwdriver to secure the 12-section switch box to the master switch box.

You must remove the screws from the master switch box to mount the 12-section switch box.



Field-IQ cab kit installation

The procedure describes how to install the Field-IQ cab kit for the FmX integrated display.



Item	Description	Trimble part number
❶	FmX integrated display	93100-01
❷	FmX power cable	66694
❸	Power bus	67259
❹	Basic power cable	67258
❺	8 m GPS TNC/TNC RT angle cable	50449
❻	Ag25 GNSS antenna	68040-00S
❼	Cable assembly, display to Field-IQ	75834
❽	Field-IQ master switch box	75050-01
❾	Optional: 12-section switch box	75060-01
❿	Optional: Remote foot switch	60490

Note – *This procedure provides general guidance for connecting the cables. Cable routing depends on the vehicle and individual preference and is not described.*

CAUTION – When routing the Field-IQ cables be sure to avoid areas of the vehicle that may cause damage to the cable and possibly the Field-IQ system.

To connect the FmX integrated display and switch boxes to the Field-IQ system components, do the following:

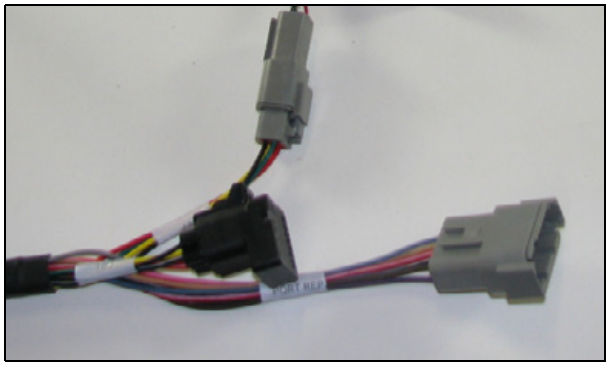
Step 1

Connect the 12-pin DTM plug on the display harness to the rear of the display.

Ensure that the harness is plugged into either the A or B port.

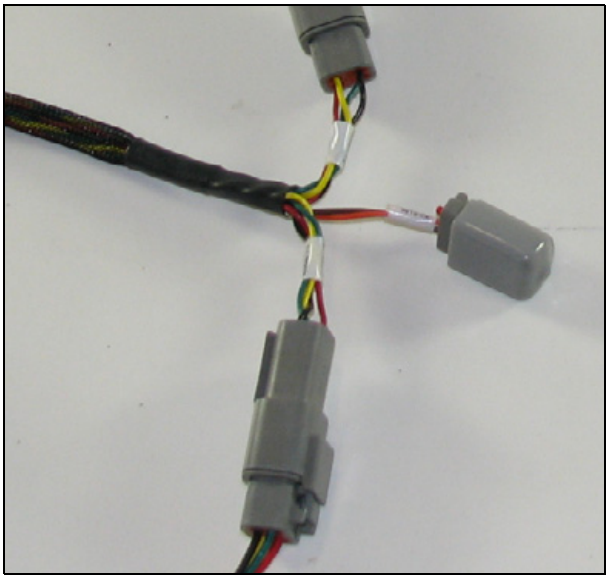
Step 2

Connect the CAN terminator to the R2 connector on the display cable.



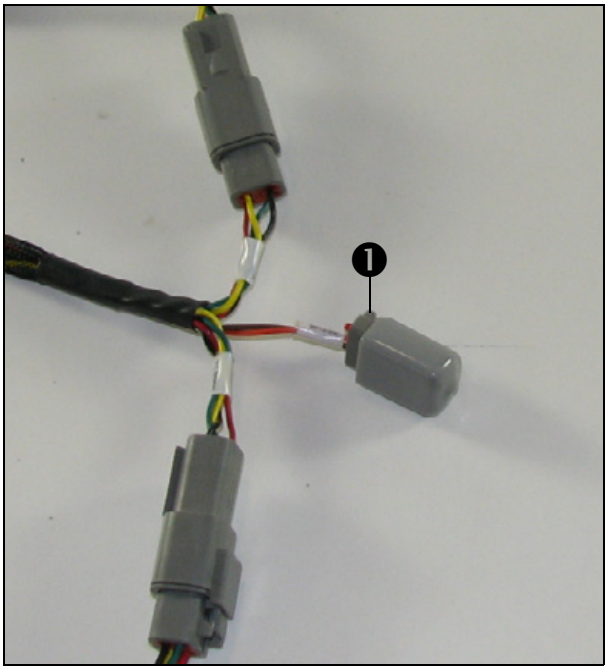
Step 3

Locate the 4-pin CAN plug connection on the display cable and then insert the connector into the 4-pin receptacle on the master switch box harness.



Optional step

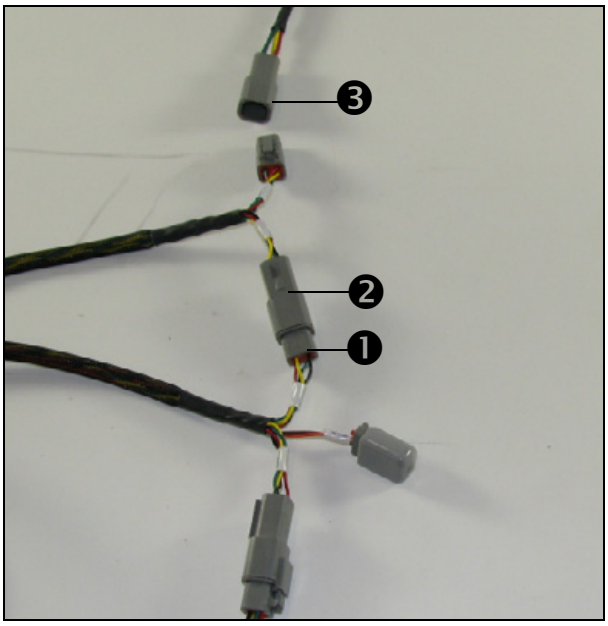
Connect the optional remote foot switch to the P4 connector ❶ on the master switch box harness. You can use the foot switch to remotely control the master on/off switch.



Step 4

If the 12-section switchbox is used, you must connect the P3 4-pin plug ❶ on the master switch box harness connector to the 4-pin receptacle ❷ on the 12 section switch box harness.

Note – *If the 12-section switch box is not required, connect the 4-pin plug to the R1 4-pin receptacle ❸ located on the Rate and Section Control module adapter harness.*



CHAPTER

4

Replacing existing EZ-Boom and Raven systems

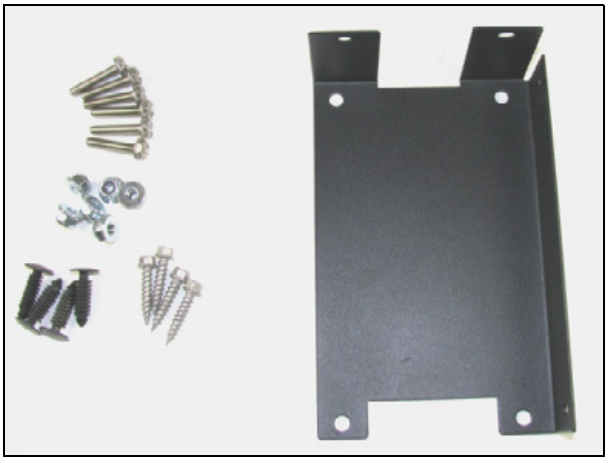
In this chapter:

This chapter describes how to connect the Field-IQ Rate and Section Control module to existing Raven and EZ-Boom system harnesses.

Mounting the Rate and Section Control module in the cab

Step 1

Locate the Rate and Section Control module mounting bracket and hardware.



Step 2

Use the hardware provided to mount the Rate and Section Control module to the bracket.

Note – *Torque the mounting screws to a maximum of 10 – 12 in/lbs (1.13 – 1.36 Nm).*

Step 3

Use one of the bracket's mounting tabs to mount the Rate and Section Control module in a secure location in the cab.

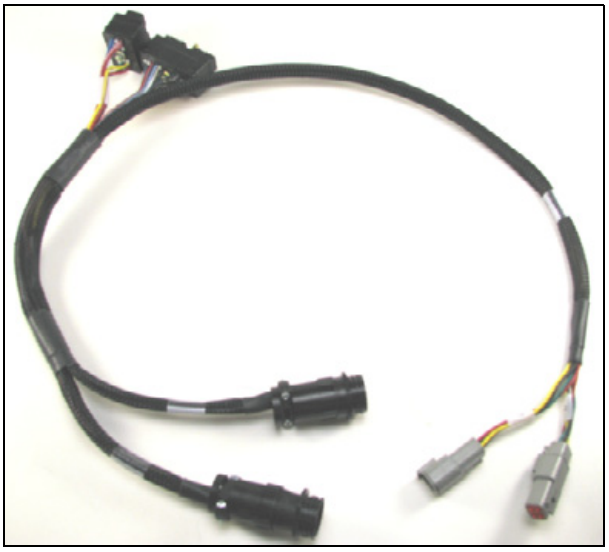
CAUTION – To prevent rain damage, do not mount the Rate and Section Control module with the connectors pointing upwards.

CAUTION – Damage to important components can be caused by the drill and/or screws. When mounting the Rate and Section Control module, first verify that there is nothing located behind the area where module is to be installed.

Connecting the Rate and Section Control module

Step 1

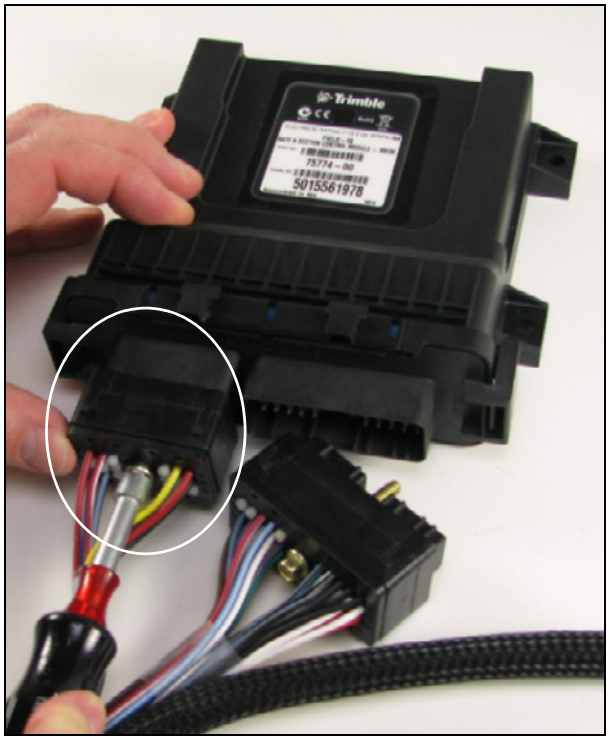
Locate the Rate and Section Control module and the adapter cable.



Step 2

Use a ¼" socket or nut driver to connect the 18-pin connector on the adapter cable to the Rate and Section Control module.

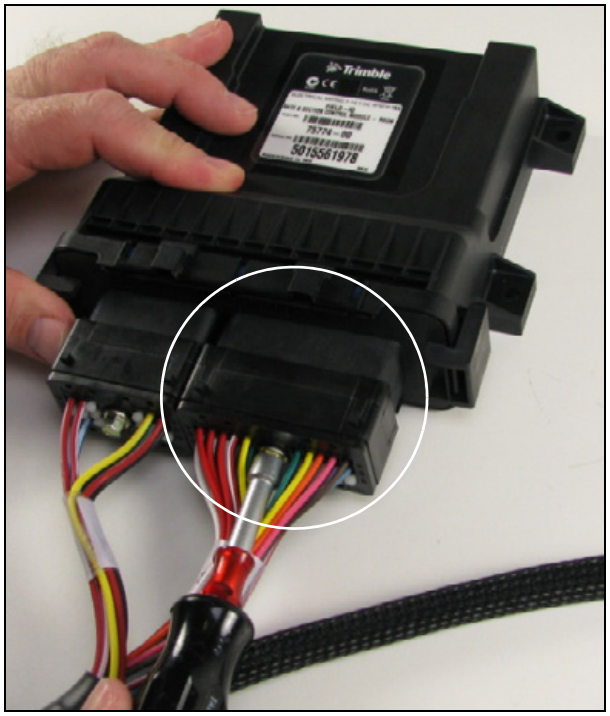
Note – *Torque the bolt to a maximum of 15 – 20 in-lbs (1.70 – 2.26 Nm).*



Step 3

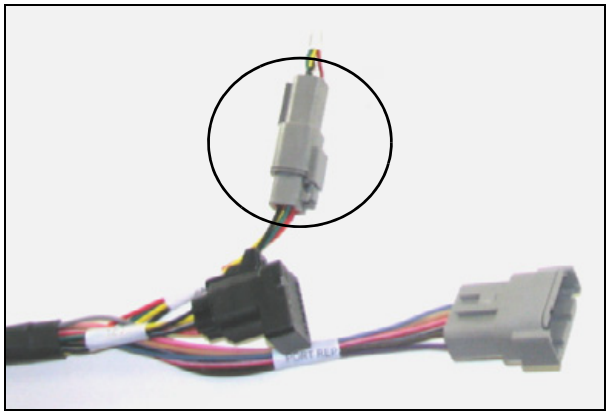
Use a ¼" socket or nut driver to connect the 30-pin connector on the adapter cable to the Rate and Section Control module.

Note – *Torque the bolt to a maximum of 15 – 20 in-lbs (1.70 – 2.26 Nm).*



Step 4

Connect the 4-pin connector to the display harness.



Connecting to the EZ-Boom automated application control system

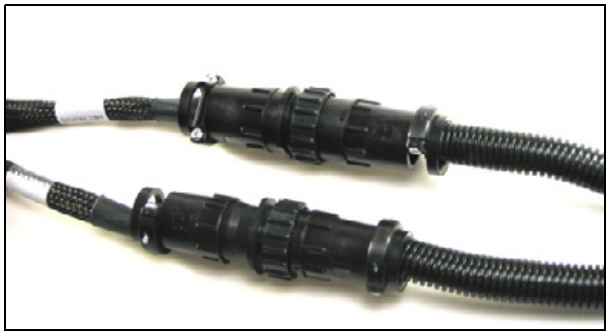
Step 1

Connect the 16-pin round connector on the Rate and Section Control module adapter cable to the existing EZ-Boom harness.

Step 2

Connect the 14-pin round connector on the Rate and Section Control module adapter cable to the existing EZ-Boom harness.

Note – *This connection may not be required for some installations.*

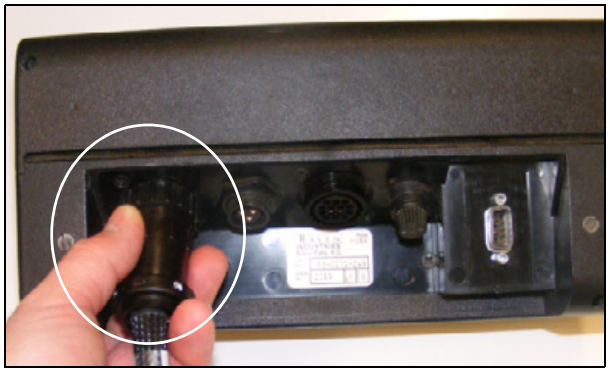


Connecting to an existing Raven 4x0 harness

Rate and section control

Step 1

Disconnect the harness from the back of the Raven 4x0 controller.



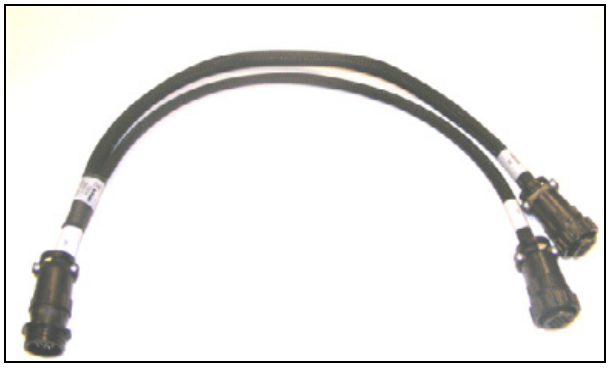
Step 2

Connect the 16-pin round connector on the Rate and Section Control module adapter cable to the existing Raven harness.

Section Control only

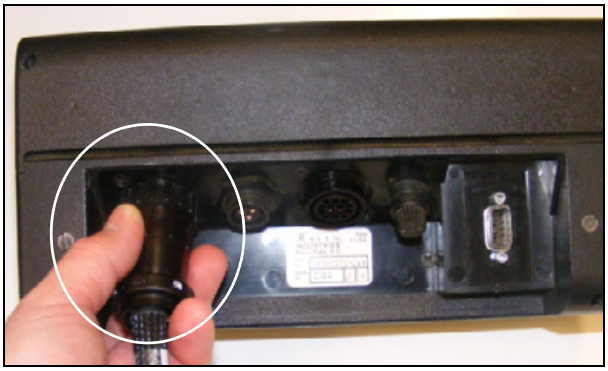
Step 1

Locate the Section Only adapter (P/N 79514).



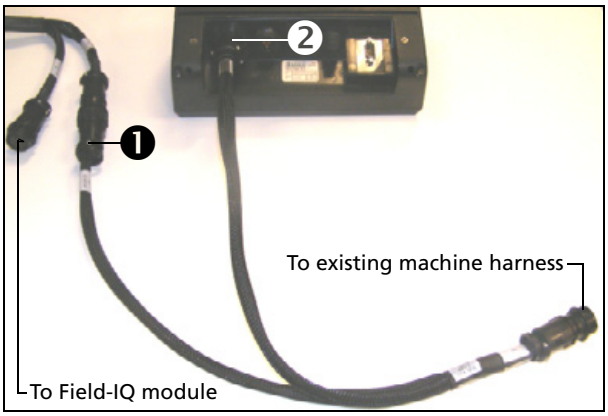
Step 2

Disconnect the harness from the back of the Raven 4x0 vehicle.



Step 3

Connect the 16-pin round connector ❶ on the Rate and Section Control module adapter cable to the 16-pin mating connector on cable P/N 79514 and then connect the 16-pin connector labeled Raven ❷ on cable P/N 79514 to the Raven monitor.



Step 4

Connect the 16-pin connector labeled P1 on cable P/N 79514 to the Raven harness.

Connecting to an existing Raven 4x00 harness

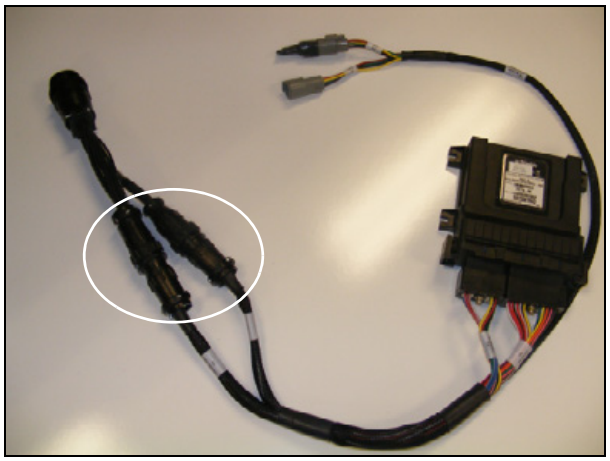
Rate and section control

Step 1

Disconnect the harness from the back of the Raven 4x00 controller.

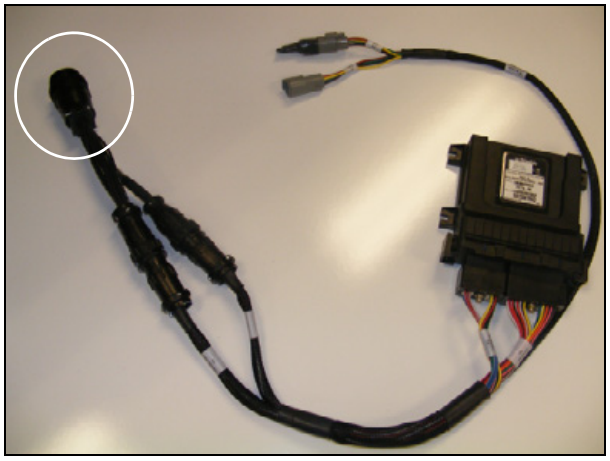
Step 2

Connect the 16-pin and 14-pin round connectors on the Rate and Section Control module adapter cable to the Raven 4x00 adapter cable.



Step 3

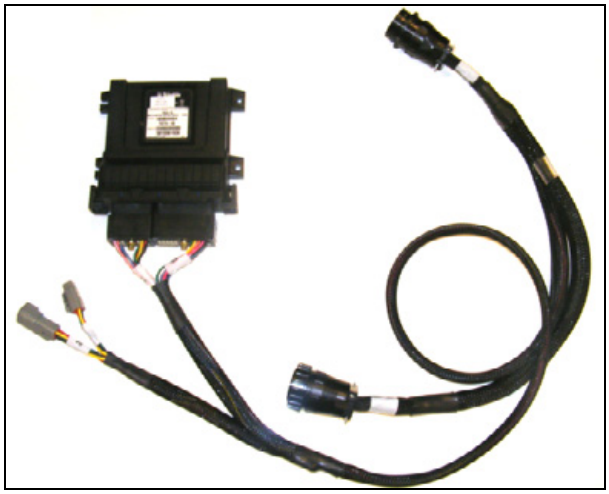
Connect the Raven 4x00 adapter cable to the existing Raven harness.



Section control only

Step 1

Locate the Rate and Section Control module and Raven 4x00 Section Control only adapter cable (P/N 79854).

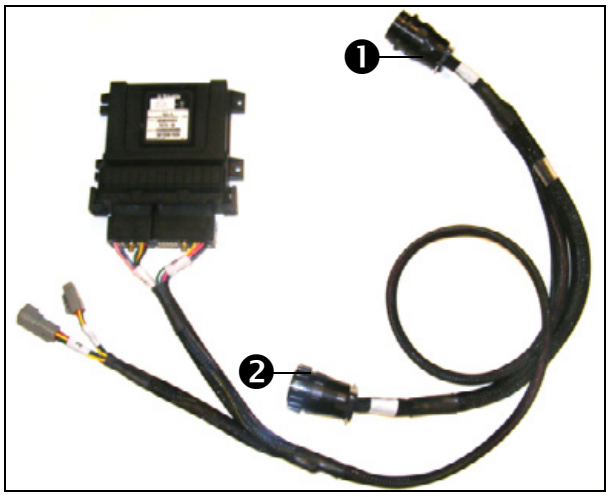


Step 2

Disconnect the harness from the back of the Raven 4x00 controller.

Step 3

Connect the R1 connector ❶ on the Rate and Section Control module adapter cable to the existing Raven 4x00 harness and then connect the P1 connector ❷ on the Rate and Section Control module adapter cable to the Raven 4x00 controller.



Connecting the power options

As power to the Rate and Section control module is supplied by the harness to the Raven controller, additional power connections are not required.

For more information

For more information and machine specific instructions, see Quick installation instructions, page 6.

CHAPTER

5

Final Machine Check

In this chapter:

This chapter describes how to perform a final check of the vehicle.

Performing the final machine check

WARNING – To avoid potentially serious personal injury or illness, and to prevent damage to equipment, make sure that you read and understand the Safety Information chapter.

Step 1

Connect the battery.

Step 2

Run system to verify operation. Use the steps in the display User Guide to calibrate the system.