

GO Device Rail Service Vehicle Install Guide

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Kit Contents

GO device kit:

1. Instruction manual
2. Serial number stickers
3. Serial number zip tie
4. GO device



Either a (A) light-duty or (B) heavy-duty T-harness:



(Optional) IOX-AUXM harness:



(Optional) Hi-rail magnetic sensor (either 03-01-0005 or 03-69-0116 – for more information, see [Hi-rail wiring](#)):



Prerequisites

Before installing the GO device, you should:

- Inspect the vehicle
- Determine the best location to install everything, taking customer needs into consideration
- Receive client sign-off regarding the installation plan

Step 1: Recording Vehicle & Device Information

Be sure to record the following information before proceeding with the installation. This information is required during the [install check](#).

- Serial number of the GO device (pictured below)
- Vehicle fleet number or license plate
- Vehicle year/make/model and VIN
- Odometer & engine hours (if available)



Step 2: Finding a Suitable Mounting Location

Locate an unexposed and dry place to mount the GO device, typically under the dash.

The device must be mounted to a solid part of the vehicle, either the chassis (frame) or any other solid surface that will not move or vibrate during normal use of the vehicle.

(Optional) Step 3: Telemetry Interfacing & Wiring for IOX-AUXM

Install and interface the GO device to telemetry sensors as required.

IMPORTANT NOTES:

- The IOX **must** be plugged into the GO device or the IOX chain **before** powering the GO device. This ensures that the IOX is recognized.
- For about 30 minutes after powering on the GO device for the first time (all 3 LEDs flash and 6 swift beeps are heard), the device enters **debug** mode, and attached IOX-AUXMs enter input **learning** mode.
 - For consistent learning results, have all telemetry inactive or off **before** powering the GO device. Then start the vehicle engine, and once all 3 LEDs are on, cycle through all applicable telemetry for 15 seconds. For example, turn PTO on for 15 seconds and then turn it off, move the hi-rail down for 15 seconds and then back up, and so on.
 - While in learning mode, the GO device beeps X times for each change in state where X is the AUX number. For example, if the hi-rail is wired to AUX2, the device will beep twice when the hi-rail is lowered or raised.
- Make a note of which telemetry sensors you connected, because this information is required during the [install check](#).

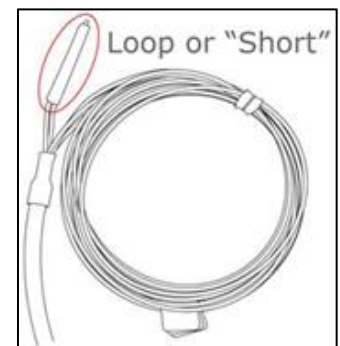
Wire	Telemetry	Wire Color	Loop (Red & Black)	Active (Input Level)	Inactive (Input Level)
AUX1	Power take-off (PTO)	Blue	Short	On (Power)	Off (Float)
AUX2	Hi-rail	Orange	Short	Down (Ground)	Up (Float)
AUX3	Crane	Green	Short	Up (Ground)	Down (Float)
AUX4	Compressor	White	Short	On (Ground)	Off (Float)
AUX5	Generator	Blue	Cut loop	On (Power)	Off (Float)
AUX6	Welder	Orange	Cut loop	On (Ground)	Off (Float)
AUX7	Tool circuit	Green	Cut loop	On (Power)	Off (Float)
AUX8	Panic	White	Cut loop	On (Power)	Off (Float)

NOTE: Red & black wires covered by heat shrink must be cut for IOX to operate as AUX 5 through 8.

Expanding your IOX-AUXM

To expand from 4 to 8 auxiliaries, simply plug in a second IOX-AUXM into the expansion port of the first and then follow the steps below. You will need to remove the zip-tie from the original IOX-AUXM.

In order for the second IOX-AUXM to report as AUX 5 through 8, you will need to locate the **red** and **black** loop, or “short”, on the IOX-AUXM and cut the wires. This will configure the IOX to act as AUX 5 through 8.



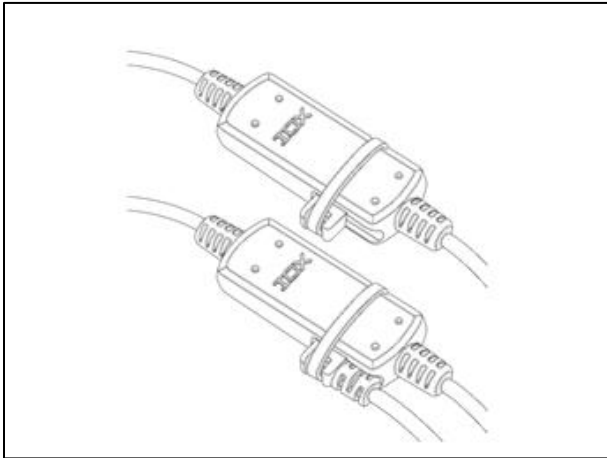
NOTE: By cutting the loop, this IOX-AUXM will always report as AUX 5-8, regardless of whether or not there is an AUX 1-4 installed. This loop must be cut before connecting the IOX to the chain.

Termination Shunt

You may notice your IOX comes with a termination shunt installed in the expansion port. If you are installing more than one IOX in a daisy chain, you will need to remove the shunt from each device in line, with the exception of the last IOX connected. That shunt must remain in the last IOX and should be secured with a zip tie.

The use of the shunt in the last IOX is necessary for the GO device to detect and configure the IOX as effectively as possible.

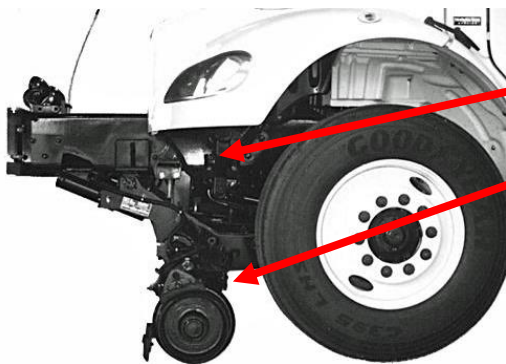
NOTE: Failing to install the shunt in the last IOX could affect IOX communication. It is recommended that you secure the shunt using a zip-tie.



Hi-rail wiring

This section describes how to wire hi-rail sensors to the GO device in hi-rail vehicles (also known as road-rail vehicles, high-rail, hy-rail, hyrail, etc.).

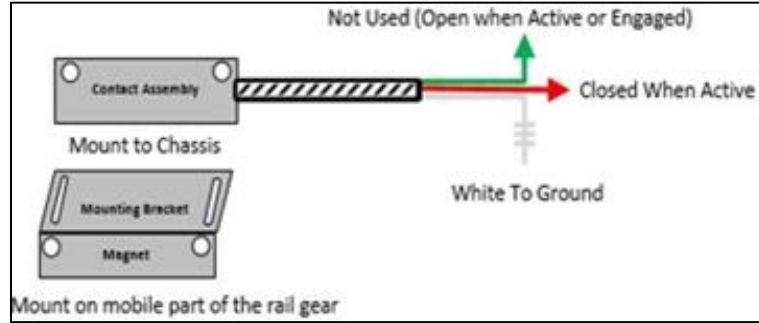
BSM has two different models of hi-rail sensors, both of which have a **contact assembly** (magnetic switch) and a **mounting bracket** (magnet). Check which model you received in the shipment and refer to the wiring diagrams on the next page.



Contact assembly (magnetic switch)

Mounting bracket (magnet)

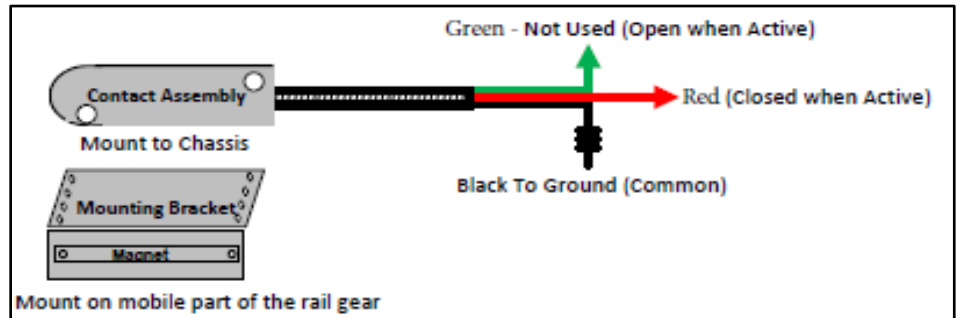
Wiring for hi-rail sensor 03-01-0005



Red connects to the AUX2 (**orange**) hi-rail input on the on the IOX cable. There must be a negative signal when the hi-rail is down and no connection when the hi-rail is up or locked. When the hi-rail is up (on road), the sensor and magnet should be within ½” to 1 ½” in distance. When the hi-rail moves down (on rails), the sensor and magnet move away from each other, allowing the sensor to send a ground on the **red** wire back to the GPS unit.

NOTE: A wire is typically run from the sensor to the inside of the cab, such that the **white** wire of the magnetic sensor can be grounded at the same location as the GPS unit. It is not recommended to ground the **white** wire of the magnetic sensor to the outside frame of the vehicle to avoid corrosion that may result from extreme weather conditions. The same applies to the hi-rail sensor.

Wiring for hi-rail sensor 03-69-0116



Red connects to the AUX2 (**orange**) hi-rail input on the on the IOX cable. There must be a negative signal when the hi-rail is down and no connection when the hi-rail is up or locked. When the hi-rail is up (on road), the sensor and magnet should be within ½” to 1 ½” in distance. When the hi-rail moves down (on rails), the sensor and magnet move away from each other, allowing the sensor to send a ground on the **red** wire back to the GPS unit.

NOTE: A wire is typically run from the sensor to the inside of the cab, such that the **black** wire of the magnetic sensor can be grounded at the same location as the GPS unit. It is not recommended to ground the **black** wire of the magnetic sensor to the outside frame of the vehicle to avoid corrosion that may result from extreme weather conditions. The same applies to the hi-rail sensor.

Power take-off (PTO) wiring

The power take-off connects to the AUX1 wire on the IOX cable.

When the PTO is engaged, there must be a negative or positive signal.

When the PTO is disengaged, the signal must be the opposite of the above (or float). For more information, see Input Logic Levels in the [IOX-AUXM Specifications](#) table.

The mechanical gearbox is mounted on the transmission, but in most cases, a PTO switch or relay circuit inside the cab can be utilized.

Step 4: Performing an Install Check

Once you're done, perform an install check by calling the BSM support team at:

- **1-888-776-3333**
- Mon – Fri, 7AM – 9PM EST

Be sure to have the following information readily available:

- Serial number of the installed GO device
- Vehicle fleet number or license plate
- Vehicle year/make/model and VIN
- Odometer & engine hours (if available)
- A list of any telemetry connections that were made (if applicable)

IOX-AUXM Specifications

Inputs Available	AUX1, AUX2, AUX3, AUX4 or AUX5, AUX6, AUX7, AUX8
Input Absolutes	-40V to +40V
Resistance	Input Impedance of each AUX: 30.3 kΩ to 37 kΩ
Input Logic Levels	GND — Float, Low: Floating, High: <100 mV Float — Driven, Low: Floating, High: >3.3 V GND — Driven, Low: <100 mV, High: >3.3 V
Input Type Detection	Automatically identifies GND-Float, Float-Driven and GND-Driven driving circuits with capacitive loading of <200pF