HRN-RW04S4 (Differential Harness) Installation Guide

Introduction
This harness is designed for assets that have a reference voltage other than an ignition signal relative to battery ground. The signal voltage between D+ and D- determines the ignition state. When the voltage of D+ is more than 1.5 Volts than D- the ignition state will turn on.

Use Cases:
• RPM detection using sensor
• Negative Battery disconnect

Figure 1: The harness and wiring table.

<table>
<thead>
<tr>
<th>Pin number</th>
<th>Pin color</th>
<th>Pin definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Black</td>
<td>Ground</td>
</tr>
<tr>
<td>4</td>
<td>Brown</td>
<td>Reference (D-)</td>
</tr>
<tr>
<td>9</td>
<td>Yellow</td>
<td>Differential (D+)</td>
</tr>
<tr>
<td>12</td>
<td>Red</td>
<td>Battery</td>
</tr>
</tbody>
</table>

RPM Detection using a sensor:

GO Rugged

Red

Yellow Reference D+

Brown Reference D-

Black

Oil pressure switch grounds when engine is running
Example

Step 1: Find the best location for your source connection. If possible, keep the sources close to minimize wiring length in the engine compartment.

MAP Sensor Pin # 3 Reference Voltage Yellow wire Oil Pressure Switch Single wire Deferential wire Brown wire.

Step 2: Locate the differential source for the brown wire. In this example, the signal wire at the oil pressure switch provides a ground when ignition is on (Reference D-). This is what we use to detect ignition on.

Step 3: Locate the reference voltage for the yellow wire. In this example, it is found on pin 3 of the manifold absolute pressure (MAP) sensor (Reference D+).

⚠️ IMPORTANT: When ignition is on, the reference voltage (approximately 5 V) is the same as the oil pressure switch. When the engine starts, the oil pressure switch will ground. This voltage differential triggers an “ignition on” signal to the device.

Step 4: Locate the constant power supply. If possible, this should be located close to the other two connections in the engine compartment to minimize wiring length. In addition, locate a ground point, which should be on the negative battery or body ground.

Negative Battery Disconnect: