Blue Sky Network

HAWKEYE 5500 INSTALLATION GUIDE

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HawkEye 5500

Installation Guide

Version 4.1

Part Number: 300500

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REVISION HISTORY

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15 Feb. 2020	1.1	CR	Update diagnostic section to match new commands
17 Feb. 2020	3.0	CR	Added wiring diagrams to appendix C
18 Feb. 2020	3.1	CR	Added photos; expanded installation requirements
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12 Oct. 2020	3.5	CR	Added diagrams for emergency switch
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1 Jan. 2024	4.0	MZ	Updated format, logos, & wording
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INTRODUCTION

This installation guide details the process of installing the HawkEye 5500 in a vehicle.

About HawkEye 5500

HawkEye 5500 by Blue Sky Network is a dual-mode vehicle management solution offering real-time tracking and global connectivity. Leveraging high-speed local cellular networks and the cutting-edge Iridium satellite system, HawkEye 5500 delivers reliable coverage for advanced asset tracking and communication. This powerful device can be utilized with a variety of accessories and antenna kits to provide the preferred configuration for each user.

Installation Components

The list below describes some of the most common options available in the kit or purchased. Parts may be purchased separately, and custom cable lengths can be specified during ordering. Please contact us for more information.

- Power cable assembly
  - 2’ Pigtail
- Audio cable assembly (optional)
  - 6’ Pre-assembled
  - Self-assembly kit
- Emergency/IO cable assembly (optional)
  - 6’ Pre-assembled
  - Self-assembly kit
  - Splitter kit (2/4-way split)
- Vehicle cable assembly (standard OBD connector) (optional)
  - 1’ Pre-assembled
  - Extension Kit
  - Commercial/heavy duty adapter
- Driver identification RFID reader (optional)
  - 3’ Pre-assembled
  - Self-assembly kit
- GPS/Iridium dual-band antenna
  - Dash mount patch antenna
  - Roof mount installed antenna (multiple options available)
- GPS/Iridium/cellular tri-Band antenna
  - Dash mount patch antenna
  - Roof mount installed antenna (multiple options available)

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EXTENDING WIRING ASSEMBLIES

All wiring assemblies come with a cable length that is acceptable for typical installations. If a longer length is needed, you can order cables made to an appropriate length or extend them by cutting the middle of the cable harness and applying soldered or solderless (e.g., crimped) extensions.

Please ensure that the extension wire is the same or thicker gauge wire to prevent possible issues with wire overheating.

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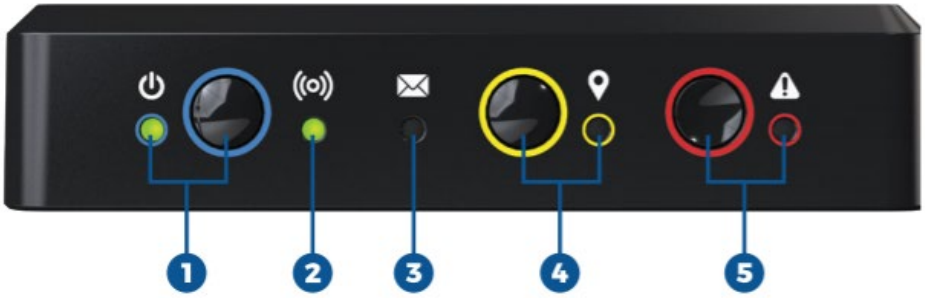
Control Panel Description



The control panel contains multiple LED indicators and buttons that enable unit operations. The descriptions below reference the photo above in accordance with the numerical value.

1. **Power / Charging Button LED**
   - Green = Power on & good
   - Yellow = Battery < 50%
   - Red = Battery < 15%
   - Red blink = Dead battery
   - Blinking = Charging
   - Pink blink = Unit in bootloader mode

2. **Signal Status LED**
   - Green = Cellular mode
   - Purple = Iridium mode
   - Yellow = Poor signal
   - Red = Bad signal
   - Red Blink = No network route

3. **Message Waiting LED**
   - Green = Unread message

4. **Action Button & Transmit LED**
   - Green = Message pending transmit
   - Blinking = Message transmitting

5. **Emergency Button / LED**
   - Red Blink = Emergency requested
   - Red Solid = Emergency active

NOTE: During power up, the Signal Status LED will briefly show RED as the unit acquires signal. If the LED remains RED for long periods of time, or turns RED during normal operation, signal has been lost.

POWER ON UNIT VIA FRONT PANEL

Power on the unit via the front panel by holding the power button until the power light ceases to blink and becomes solid. **NOTE**: Pressing the button for too short of a period will cause the unit to power off immediately.

SEND A WAYPOINT

Press the yellow waypoint button until you hear the beep. The transmit pending light will then light up and the unit will immediately attempt to transmit a waypoint message.

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ACTIVATE & DEACTIVATE AN EMERGENCY VIA FRONT PANEL

To activate an emergency via the front panel, hold the emergency button until you hear the beep. The emergency light will illuminate and begin flashing. Once the emergency message is registered as received by SkyRouter, the light will turn solid.

To deactivate, hold the button up to 5 seconds until you hear the beep. **NOTE:** Once the emergency is activated, transmission of the initial emergency message cannot be canceled.

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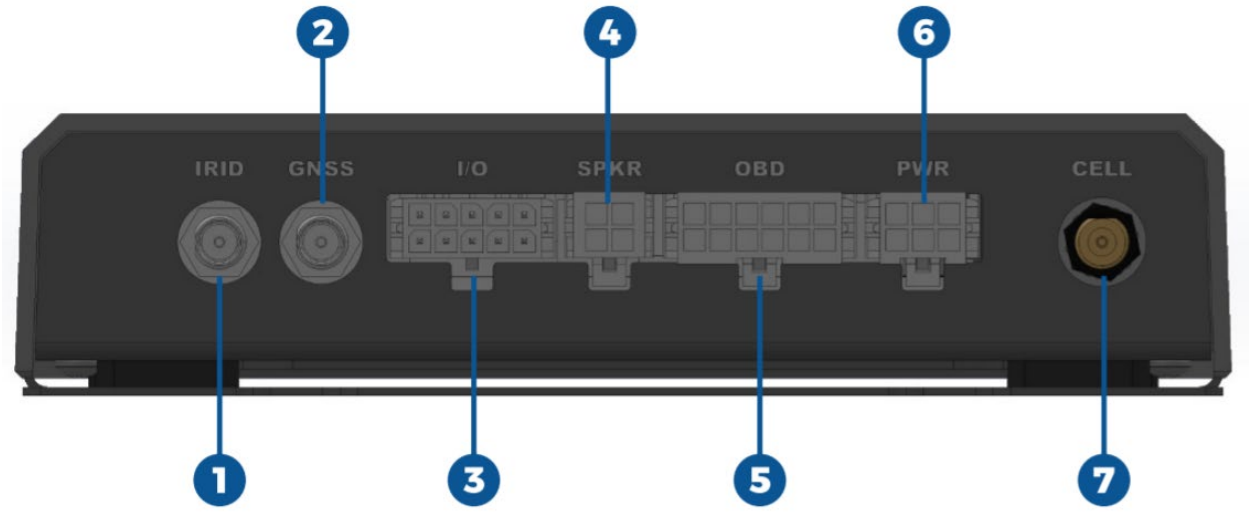
Bottom Panel Description



The bottom panel contains information for unit identification and activation. If you experience issues with the unit, this information will be necessary to work with support.

#1, 2, & 7 Antennas	
1	Cellular (Optional External Antenna)
2	Iridium
7	GPS (Active)

#3 Emergency Switch & IO		
1	Emergency switch +	
2	Analog IN	
3	Emergency switch IN	
4	Digital IN #1	2.5VDC = Active
5	Emergency switch LED	
6	Digital IN #2	2.5VDC = Active
7	Emergency switch ground	
8	1-Wire	
9	RS-232 OUT	
10	RS-232 IN	

#4 Audio Out	
1	+10-32 VDC power
2	Speaker -
3	Speaker +
4	Ground

#5 OBD (Vehicle Interface)	
1	Single-wire CAN (GMW 3089)
2	SAE J1850 bus +
3	MS CAN high
4	Chassis ground
5	Signal ground
6	CAN (J-2234) high
7	ISO 9141-2 (K-Line)
8	SAE J1850 bus -
9	MS CAN low
10	CAN (J-2243) low
11	ISO 9141-2 (L-Line)
12	Battery power

#6 Power & Ignition	
1	+10 – 32 VDC IN
2	Power ground
3	10 – 32 VDC ignition IN
4	Digital OUT #1
5	Spare
6	Digital OUT #2

NOTE: See the Cable Diagrams section for information on cable construction requirements.

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MOUNTING & INSTALLATION

HawkEye 5500's mounting holes allow for straps and ties to secure the unit to the vehicle. An optional mounting plate can be purchased to provide easy access to attach and detach the unit. The mounting plate provides strap guides as well as screw locations for complete secure installation.

Installation Equipment

The following equipment may be useful to have during installation.

- Wire ties (i.e., zip ties)
- Wire crimper tool
- 18-gauge wire of various colors
- Crimp wire splices
- T-tap wire splices
- Plastic trim prybar
- Self-taping plastic screws
- Voltmeter
- Electrical tape
- Tamper indication liquid
- Mini fuse circuit tap
- Screwdriver & socket set

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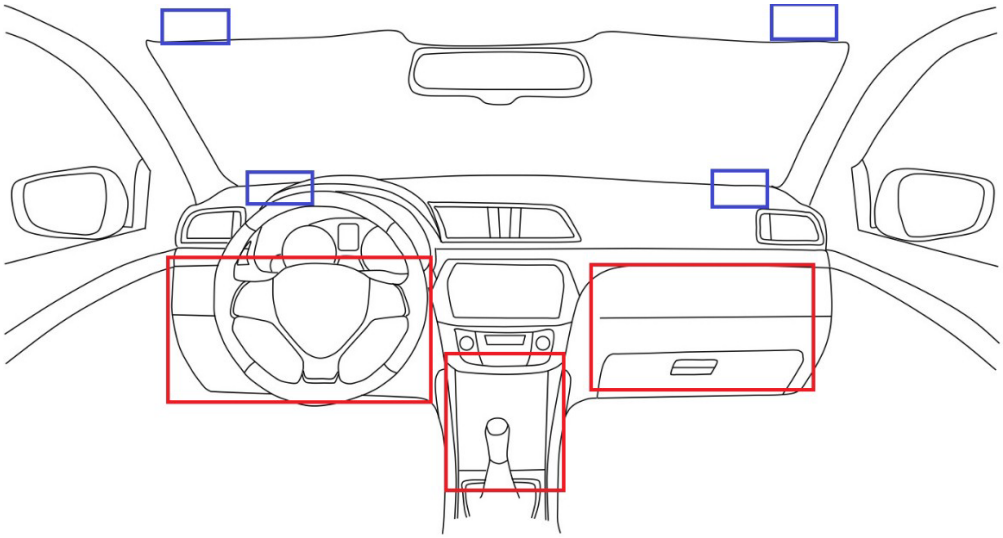
Location Requirements

The following must be observed when mounting / installing HawkEye 5500.

- Do not place the unit in a location where it may become a hazard when operating the vehicle or in the event of a crash (e.g., placing the unit in a location that prevents free operation of the gear selector, steering wheel, or airbags).
- The unit should be securely fastened to the vehicle to ensure that accelerometer features function properly. Failure to do so could cause stress on the wiring harness and cause accidental reports.
- Care should be taken to protect the unit from moisture and excessive heat.
- Do not install the unit where the front panel buttons could accidentally trigger.
- Ensure the unit's rear connectors are in contact with another object that may place stress on them or the wires directly coming out.
- Ensure the antennas cables do not exceed their bend radius limit.
- Route cabling and wires through locations where they will not be damaged by operator use of the vehicle. (e.g., routing cables through the driver footwell).
- **Do not mount the unit vertically to ensure proper operation of the crash and rollover feature.**

Location Suggestions

Unit location suggestions are in RED. Antenna location suggestions are in BLUE.



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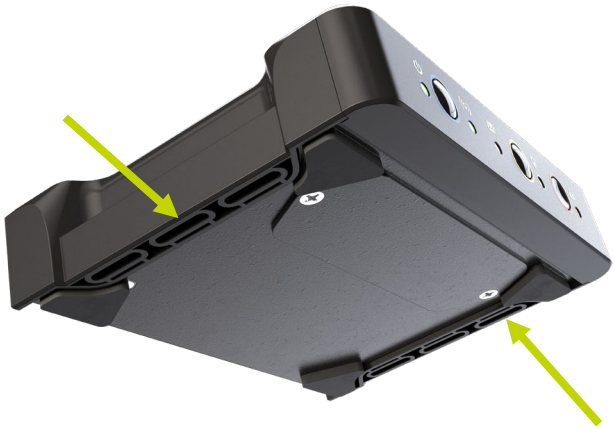
Mounting

HawkEye 5500 should be securely fastened to ensure proper operation of features such as crash and rollover detection. Failure to do so may cause these features to become unstable and unusable. There are 2 methods of fastening the unit to a vehicle, with bracket mounting being preferred:

MOUNTING WITH JUST UNIT

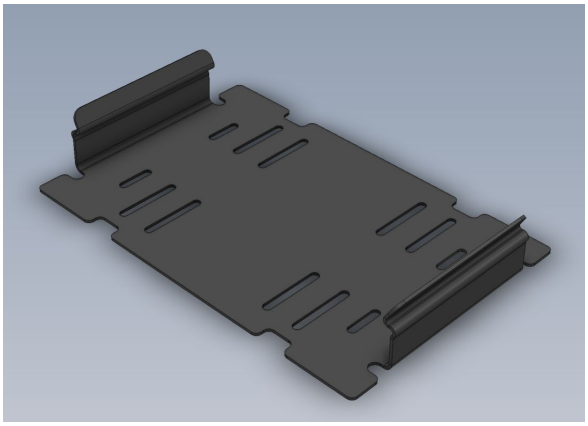
Each side contains holes that can be used to affix the unit via tie straps.



MOUNTING WITH BRACKET

HawkEye 5500 has an optional mounting bracket that can be secured to a vehicle using screws or tie straps. The unit then clips into the bracket for easy installation and removal. The bottom plate can also be combined with other adhesives (e.g., Velcro).

NOTE: There is limited room between the bottom of the bracket and the bottom of the unit. Ensure that you have low enough profile screws and thin enough ties before proceeding with installation.



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INSTALLATION PROCEDURE

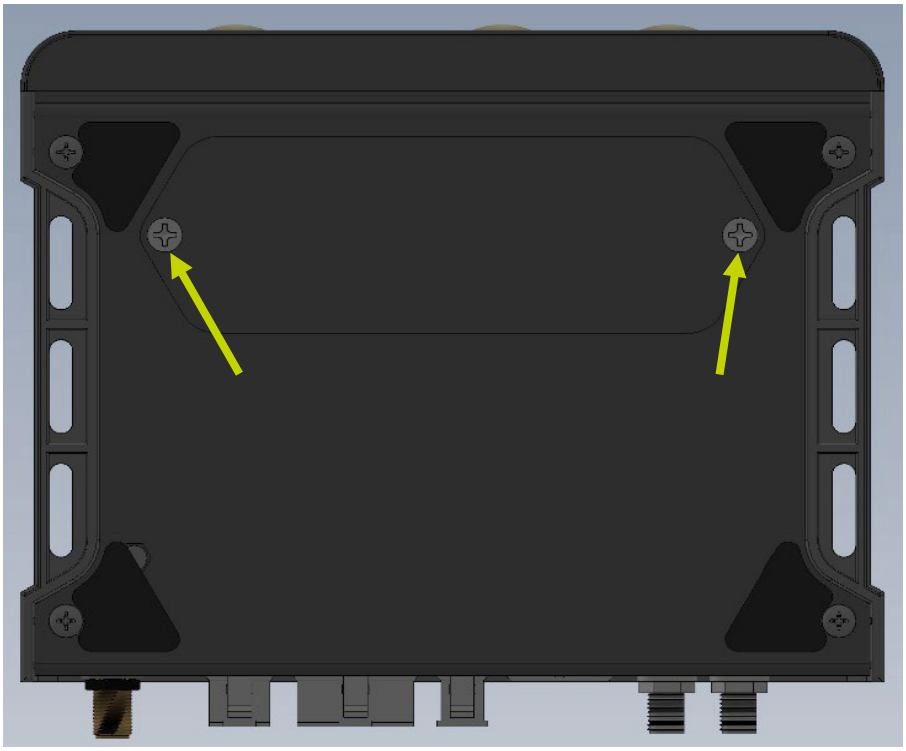
NOTE: Blue Sky Network can produce cables based on your installation needs. Please contact us for more details.

Step 1 – Install Battery & SIM

Due to shipping limitations on lithium powered electronics, the HawkEye 5500 battery may not be installed in the unit. To install, remove the 2 screws holding the battery plate on the bottom of the unit and insert the battery with orientation described on the battery carrier.

The unit will briefly power on to indicate proper installation. For more information about battery operation see the section on replacing or removing the battery.

While the battery door is removed, install the SIM if necessary. Unless otherwise specified in your order, a global SIM will be installed and configured in the unit. See the section on replacing the SIM for more information about using your own cellular provider.



Complete the battery and SIM installation by reinstalling the screws on the bottom of the unit. If you are installing a SIM not provided by Blue Sky Network, you may need to perform additional configuration steps described in the replacing the SIM section.

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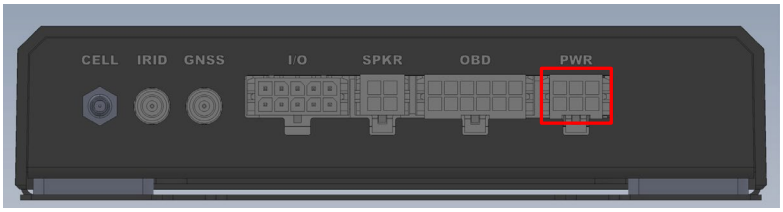
Step 2 – Attach Power



To avoid potential discharge of static damaging the unit, confirm that the unit is off prior to beginning the installation sequence.

NOTE: To prevent issues with the power supply, we suggest that these connections be soldered and not installed using connectors. Fluctuating power supply will cause the unit to behave erratically.

PIN 1

PIN 1 is used for running the unit and charging the battery. Fuse it with a 3-amp inline fuse and connect it to constant vehicle power as close to the battery as possible. HawkEye 5500 can be attached behind a master battery cutoff switch, if necessary, as the internal unit will run on backup battery if required.

PIN 2

This pin should be connected to a good and safe ground point, ideally as close to the negative terminal of the battery as possible.

PIN 3

PIN3 should be attached to ignition-switched power. No current is pulled through this line as it is used for powering off and on the unit with the vehicle. This PIN must be powered for the unit to remain on. As soon as power is lost, the unit will begin its shutdown timer.

There are typically 2 types of switched power in a vehicle:

1) **Ignition Power:** Power that is only turned on when the engine is running. Use this type if you want the unit to only report when the engine is on. This is the preferred method of powering the unit.

2) **Accessory Power:** Power that comes on when the key is turned to the accessory position, but the engine is not necessarily started. This is what systems such as a radio run off and may be easier to locate. Use this type if you want to report or utilize the Bluetooth functionalities before the vehicle is started.

   WARNING: Using this mode will prevent the 'idle' event from properly functioning.

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A vehicle electronics installation technician can help locate the best source of switched power available. Typically, there are 2 locations power can come from.

1) The ignition switch itself
2) The interior fuse panel which is usually located in the driver side footwell

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Step 2 – Attach Antennas

HawkEye 5500 requires the use of external GPS and Iridium antennas. In its default configuration, the unit contains the cellular and Bluetooth antenna internally. Blue Sky Network does offer an external cellular antenna configuration if cellular reception is not possible inside the vehicle due to armor plating or other blocking material. Please contact us if you need an external cellular antenna.

NOTE: Care must be taken to prevent damage to the antennas and cables. Do not route cables near sources of heat or where they may be damaged by vehicle occupants or cargo.

WARNING: Antenna cables have specific limits to how much they can be bent before experiencing severe signal quality loss. Consult the specification sheet for your cabling to learn more about this requirement.

TAMPER INDICATOR

For secure installation, we recommend applying a tamper indicator to the tightened antenna connections to not only prevent accidental loosing, but also as a tampering indicator. Tamper indicators come in all forms, but we suggest a highly visible orange color such as *Cross Check Tamper Proof Torque Mark.*

EXTERNAL ANTENNA REQUIREMENTS

Below are the HawkEye 5500 external antenna requirements. Blue Sky Network can provide antenna kits for most scenarios. Please contact us if you have any questions or need an antenna.

Iridium Antenna

- Passive antenna
- Frequency: 1616 – 1626.5 MHz
- Impedance: 50 ohms
- Polarization: RHCP
- Operating temperature: -40 to +85°C
- SMA male connector

Cellular Antenna

- GSM (2G) Bands:
  - 850,900,1800,1900 (quad band)
- UMTS (3G) Bands: (3G variant)
  - 800,850,900,1900,2100
- LTE Cat M1/NB1 Bands: (LTE variant)
  - 2, 3, 4, 5, 8, 12, 13, 20, 26, 28

GNSS Antenna

- Active antenna: 3V – 5V
- Frequency: 1575 – 1609MHz
- Impedance: 50 ohms
- Polarization: RHCP
- Operating temperature: -40 to +85°C
- SMA male connector

NOTE: We recommend following the max attenuation requirements for the coax cable and connectors that link the antenna to HawkEye 5500. The signal loss budget, including the antenna cable and all connectors, from the antenna to HawkEye 5500 is < 2dB @1626MHz. Blue Sky Network installation kits include a low-loss coax antenna cable sized to meet this requirement.

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IRIDIUM & GPS ANTENNA

The HawkEye 5500 Iridium and GPS antennas are external to the unit. Both antennas should be positioned in a location where they have clear visibility of the sky and should not be angled at a degree greater than 8° in reference to the horizon.

Iridium antennas have strict limits on cable loss and often require thick or specially shielded cables that may have limits on the types of cable bends necessary for vehicle installation. If you have any questions regarding cable selection, bend limits, or cable length limits, please contact us.

The Iridium satellite constellation is comprised of 66 low-earth orbit (LEO) satellites that traverse the sky every 8 to 10 minutes. At any given time, there may be 1 to 3 satellites in view at varying locations in the sky, at times as low as the horizon.

IMPORTANT: Transmission from the antenna may be affected by, and can affect, the operation of other systems. It is the operator's responsibility to evaluate the location for any possible RF interference. The antennas should be positioned at least 12 inches (0.30 meter) from any L-band antennas, particularly GPS, TCAS, and transponder antennas.

CELLULAR ANTENNA

HawkEye 5500 comes in 2 configurations: internal wide band cellular antenna and external antenna connection. The default configuration is with the internal wideband antenna.

If using the internal antenna, please ensure the unit is installed in a location where it is not surrounded by thick or heavy metal, as it may affect antenna performance. If you are installing in a scenario where heavy shielding may be employed around the unit (e.g., armored vehicle) it may be beneficial to use an external antenna.

Please contact us if you have questions regarding retrofitting units to use an external antenna.

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Step 4 – OBD Vehicle Bus Integration

HawkEye 5500 supports tight vehicle installation using a connection to the standard On Board Diagnostics (OBD) interface. This interface differs depending on vehicle type (e.g., passenger vs commercial), so be sure to order the appropriate cable relevant to your installation scenario.

If you purchase the wrong connector type for your installation, please contact us so we can provide a replacement cable or direct you to an appropriate adapter cable.

PASSENGER VEHICLES

Locate the OBD port near the driver footwell (typically). Firmly press the cable into the receptacle and connect the other end of the cable to the appropriate HawkEye 5500 port.

COMMERCIAL VEHICLES

In the vehicle, locate the J1939 port (consult the vehicle manual for the exact location) and connect the cable. Connect the other end of the cable to the appropriate HawkEye 5500 port.

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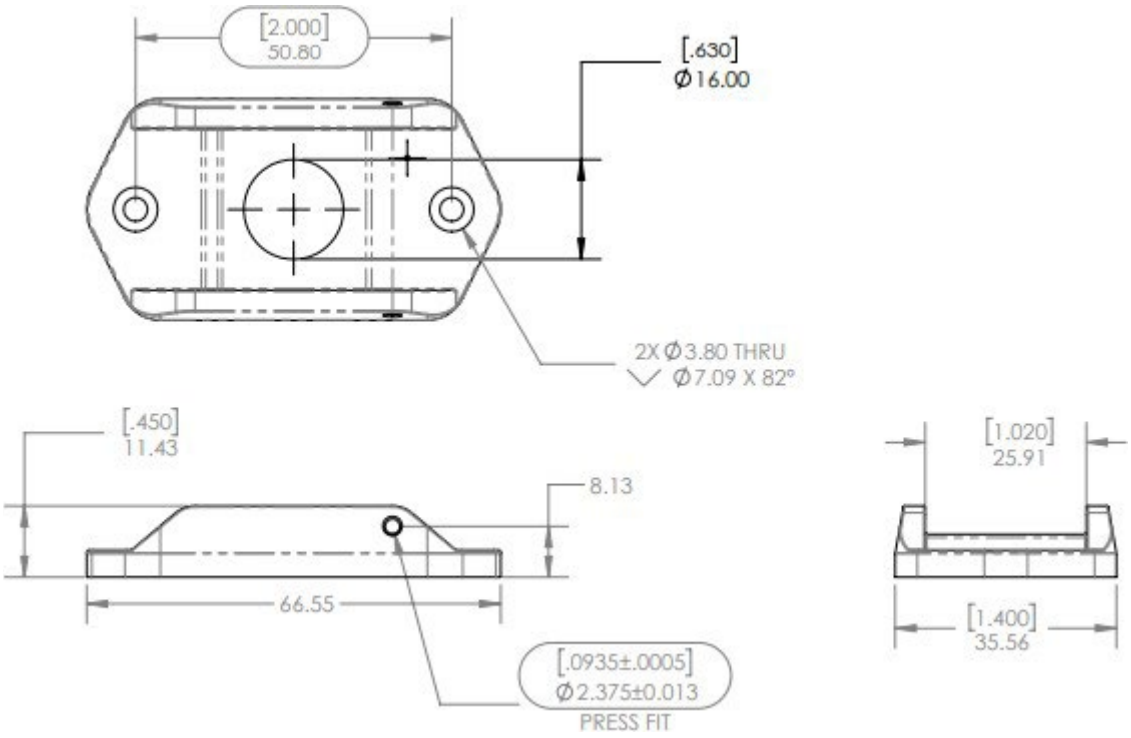
Step 5 – Install the Emergency Switch

HawkEye 5500 supports the Blue Sky Network-branded emergency switch that has lighted indication of operation and protection against accidental activation. The switch comes pre-wired for plug-and-play compatibility and can also be wired in parallel with up to 4 separate switches.

To install the switch:

1) Locate an appropriate place for installation with 1.5 in (3.8 cm) of space behind for wiring.
2) Use a 16mm (5/8) drill bit to create the main center hole for the switch.
3) Install the switch using the 2 self-tapping (#6 x 0.75 in) screws provided.
4) Route the cable to the unit and plug into the appropriate connection. If using a splitter cable that allows for up to 4 independent switches, connect that cable first and then plug the splitter into the unit.



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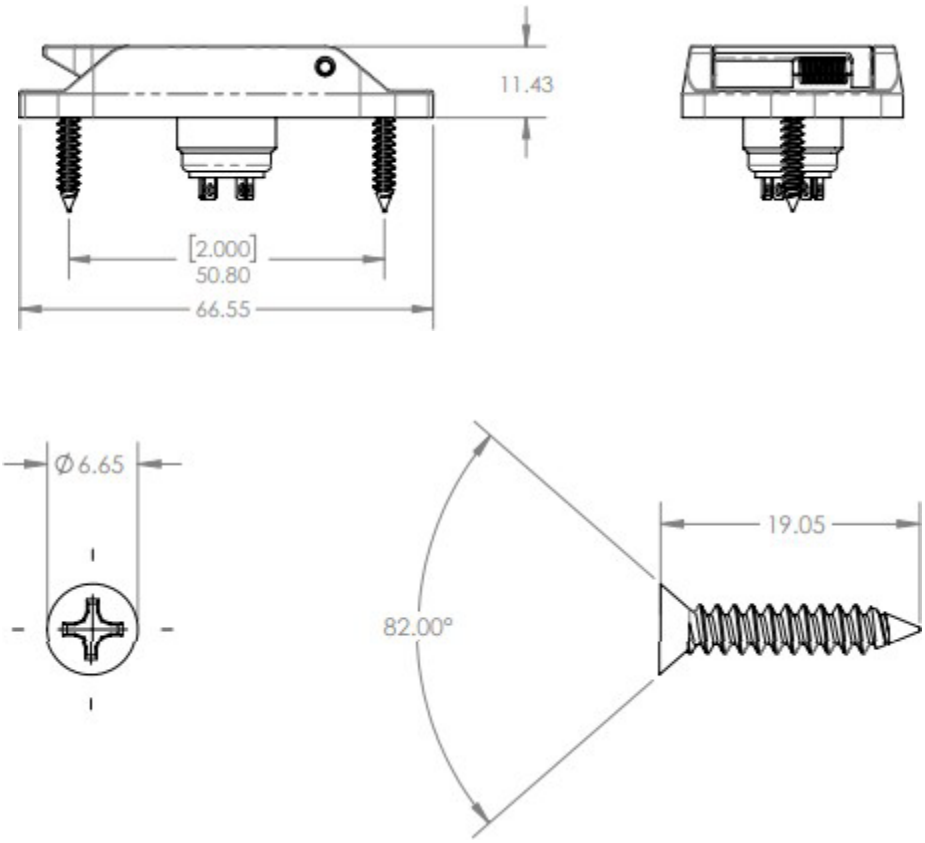

Custom emergency switches can be utilized with HawkEye 5500 if needed. If you do not find the stock emergency switch meets your operational requirements, please contact us so we can advise on appropriate wiring for an alternative switch.

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Step 6 – Digital & Analog Input/Output & 1-Wire & RS-232

HawkEye 5500 can take in signals from various sensors onboard the vehicle. This functionality can be tied to custom events and behaviors using the 'Smart Events' feature.

The unit has support for analog sensors (e.g., fuel level or temperature) and digital sensors (e.g., seatbelt sensor, door ajar, and alarm activated). This allows for the unit to interact with outside systems that may have complex functionality.

Because installation of this is highly dependent on the sensors and systems being integrated, please contact us for specialized instructions regarding installation.

For more information on this feature and what type of sensors are supported, please contact us.

Step 7 – Attach Speaker Output

While HawkEye 5500 has an internal speaker for basic tones, it can be attached to an external speaker in order to provide louder feedback to the vehicle operator when certain conditions occur. Blue Sky Network offers several pre-wired speakers that allow for plug-and-play installation. Please call us if have any questions or wish to explore speaker options.

NOTE: The unit supports standard speaker (+) and speaker (-) which allows for installation into already-present onboard speaker systems. For installation scenarios like this, please refer to the manufacturer audio head unit wiring diagram.

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FIRST POWER ON PROCEDURE

Once installation is complete, the first power on procedure can then be followed to ensure installation has been completed successfully.

Activate Unit

By default, all installed Blue Sky Network tracking units are shipped to customers in an un-activated state. **Your HawkEye 5500 unit must be activated prior to use.**

All activation requests must be submitted by the Blue Sky Network SkyRouter Administrator on file. An activation request can be submitted through our website by using the link below:

https://blueskynetwork.com/contact/activate-service/

You should receive an immediate email confirmation that your request has been submitted and another email once the requested services have been activated. Please make sure your contact details are accurate so that we can contact you if there are any problems processing your request.

Power On

When powering on HawkEye 5500, the unit should be in a position to acquire good signal strength to lessen the time for the device to acquire its first satellite and GPS lock. The unit can power on via:

1) Sense of ignition power through the wiring harness. When using this method, the front panel button will have no effect and the unit will report 'Ignition On' instead of 'Power On.'

2) Manual press of the blue front panel button (button must be held until unit powers on). When using this method, the ignition line will have no effect on unit power and the unit will report 'Power On' instead of 'Ignition On.'

NOTE: It may take up to 30 mins to acquire the GPS almanac the first time the unit is powered on in a location that is far from its previous location. This can be determined once the status LED turns from RED to another color.

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Configure

Before using your HawkEye 5500, it is recommended that you take time to check and update the device parameters to prevent unexpected data usage. By default, the unit's default setting is 2 min reporting while moving and 10 min when stationary.

HawkEye 5500 system parameters are managed using the SkyRouter portal. SkyRouter administrators can customize the parameters from the portal interface and update devices remotely (the device must be powered on and have sufficient signal strength to receive the update). Please review the SkyRouter User Guide for specific information about sending parameter updates.

Confirm Unit Status

There are 3 ways to confirm that the unit is operating as expected.

1) Read the LED patterns as described in the control panel description.
2) Check SkyRouter to ensure that reports are generated correctly.
3) Confirm the operational status of the unit locally via the HawkEye Link iOS/Android Bluetooth application.

NOTE: The HawkEye Link application must be used to complete setup if utilizing a different SIM than the one provided by Blue Sky Network.

Power Off

To turn the unit off, press the blue power button or remove ignition power. The power LED will turn purple, then all LED lights will turn off. Press the power button repeatedly to force the unit off.
NOTE: Ignition power MUST be removed for the unit to power down.

Shutdown time can be configured remotely via SkyRouter; by default, it is set to 30 seconds. During this time, the unit will attempt to send a Power Off/Ignition event and all remaining stored positions. If it is unable to do so within the timeframe, the device will power off without sending an event.

By default, the unit will not generate new position messages during the power down sequence. This can be overridden in SkyRouter if the device is powered on via ignition, allowing the unit to continue generating new reports for a period of time after vehicle shut down.

A common use case for this is a delivery vehicle that makes frequent stops and wishes to keep Bluetooth communication running while the vehicle is in its off state.

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REPLACING THE SIM

HawkEye 5500 contains a cellular modem which provides increased bandwidth and responsiveness in scenarios where Iridium may be low quality or not the most reliable. A good example of this is a city where cellular coverage is widespread.

Blue Sky Network ships all units with global cellular SIM cards and provides competitive service plans that work in nearly every country on the planet. Please contact us for more information.

By default, you do not have to configure anything in order to get cellular working with the internal SIM card. If you choose to use a different carrier, the SIM card slot is found in the battery compartment.

To replace the SIM card, remove the battery door and then remove the battery. Press in on the SIM card and release it to have the SIM card pop out. Insert the replacement SIM card with the proper orientation and press in to lock the SIM in place.

To complete setup, configure the APN, username, and password through the HawkEye Link Bluetooth application.

Configure Cellular Settings

If you use a different SIM than one provided by Blue Sky Network, the cellular connection settings may need to be altered to properly connect to a cellular network. To do this, follow the diagnostic procedure for connecting to the CMD Server. The following commands need to be issued:

- GSM.APN:<your APN here>
- GSM.USER:<your APN username here (if applicable)>
- GSM.PW:<your APN PW here (if applicable)>
- GSM.MNO:<value (if required)>

To send the commands simply send the command with the <...> replaced with your value.

If the command is completed successfully, the value will be displayed back in the application or sent back as an SMS. Once configured, the unit must be rebooted for the settings to take effect.

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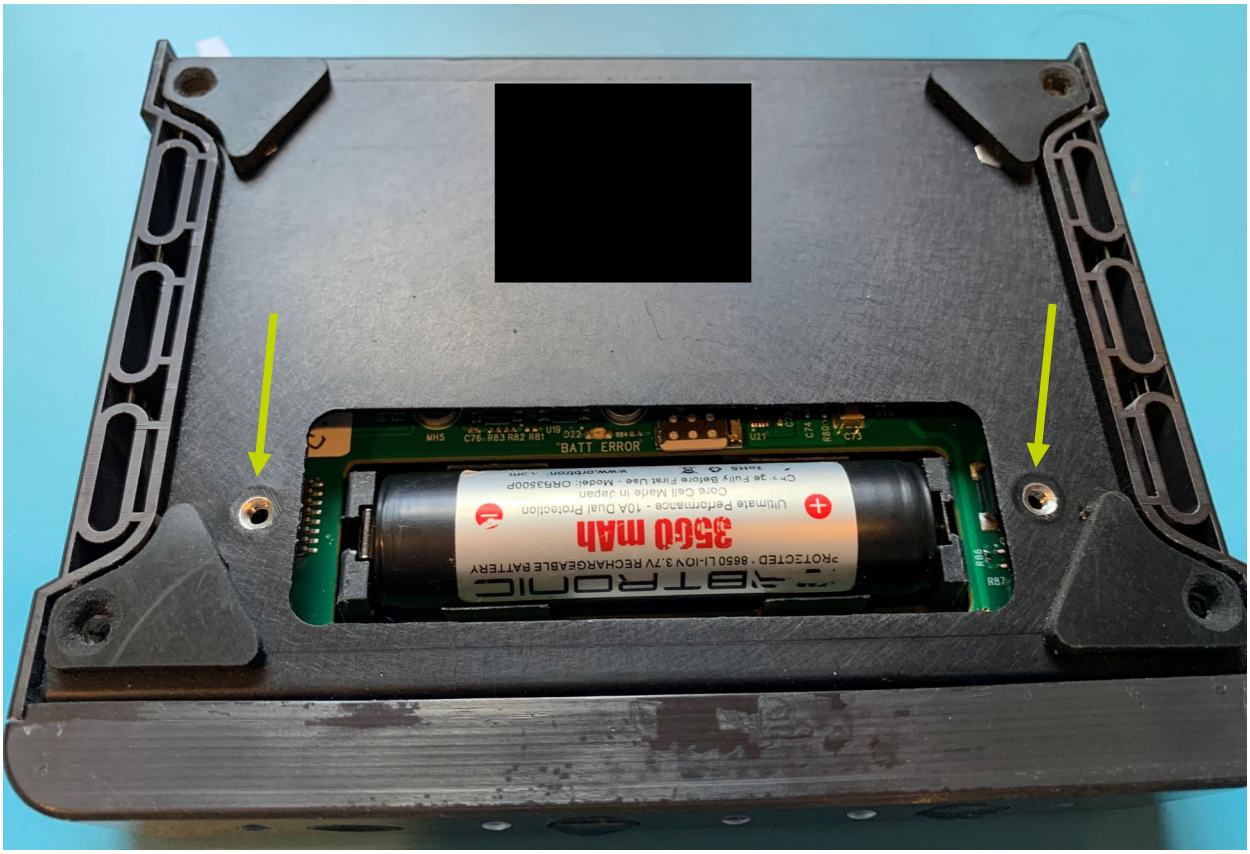
REPLACING OR REMOVING THE BATTERY

HawkEye 5500 uses a standard-sized 18650 battery that can be recharged in any standard Lithium-Ion battery charger. Remove the screws on the door on the bottom of the unit to access the user-replaceable battery. Note that the unit will not function if the battery is inserted incorrectly.



WARNING: While the battery used by the HawkEye 5500 may look generic, it is a very specific type of protected cell that is necessary for proper operation and unit safety. Please contact us if you would like to purchase additional batteries.

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INSTALLING HAWKEYE LINK

To access additional features, download and install the Blue Sky Network HawkEye Link application on your Apple iOS or Android mobile device, available on the iTunes store (Apple iOS) and the Google Play store (Android).

The HawkEye Link App uses your mobile device's Bluetooth module to connect to the HawkEye 5500 unit. Once connected, you gain access to the following:

- Status information
- Current location information
- Diagnostic information
- Two-way messaging (free form text)
- Customizable on-demand location waypoints
- Digital forms
- Unit configuration & setup
- Firmware updates
- Operator login
- Geofence & speeding violation alerts

NOTE: The HawkEye 5500 has an inbox size of 10 inbound text or raw messages.

For more information, please see the HawkEye Link User Guide at https://support.blueskynetwork.com/.

WARNING: Using some of the app's features, such as sending and/or receiving email, forms, and ShortCodes, will use service plan data when sent or received from HawkEye 5500.

The HawkEye 5500 contains an Iridium 9603N transceiver that utilizes Iridium's satellite network to transmit and receive satellite messages anywhere on the planet.

Performing Diagnostics

To perform a diagnostic inspection, launch the HawkEye Link application (or the appropriate client-specific application). Navigate to 'Settings' and scroll down to 'Command Server'. Please see the HawkEye 5500 User Guide for more information on what commands are available.

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TROUBLESHOOTING

DIAGNOSTIC TESTS

These procedures are intended to assist with diagnosing a HawkEye 5500 portable unit that is not reporting to the SkyRouter servers.

Once the troubleshooting procedures below have been performed, please do not hesitate to forward your test results to https://support.blueskynetwork.com/ for review.

PERFORM A POWER-UP TEST

With the unit powered on, connect to the command server, and issue the 'TEST' command. The unit will then do the following:

1) Cycle all LEDs
2) Play tone over internal speaker
3) Play tone over external speaker
4) Enter emergency mode and report, then exit emergency mode.

If the device passes all tests and you can see position reports on SkyRouter, you should assume that the device is functioning as expected. To end the test, issue the 'TEST' command again.

FORCE THE UNIT INTO A FACTORY RESET MODE

If the unit becomes inoperable and will not take a new firmware image via Bluetooth or cellular, it may be necessary to force the unit into factory reset mode. Once in this mode, a new firmware can be loaded.

To force the unit into factory reset mode, power on the unit while pressing the yellow waypoint button for 10 seconds. Once the unit is in bootloader mode, the power LED will blink PINK/PURPLE.

From here, you can install a new core firmware utilizing the Bluetooth method.

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FREQUENTLY ASKED QUESTIONS

We've compiled a list of frequently asked questions and answers here. If you are still unable to resolve your issue, please contact Blue Sky Network Support and we will be happy to help!

1) HawkEye 5500 won't turn on.
    - Try fully charging your HawkEye 5500 (at least 4.5 hours) and then attempt to power on the unit again. When charging, the charging LED light will change from red to yellow to green to indicate that it has passed 15% charged and 50% charged. The power LED will stay solid GREEN when unit is fully charged.

2) HawkEye 5500 turns on, the power LED flashes, and then it turns off.
    - Try charging your HawkEye 5500 unit. When the HawkEye 5500 battery is too low, it will turn itself off automatically.

3) HawkEye 5500 turns on and the power LED continuously flashes PURPLE.
    - The unit is in bootloader mode. This can be because of hardware failure or by powering the unit on while pressing the waypoint button. Remove power from the unit and power it down via the power button, then attempt to power on again. If it exhibits the same condition, contact support for further troubleshooting.

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CABLE DIAGRAMS

Blue Sky Network can produce cables or create cable diagrams for specific installations upon request. Please contact us for more details or if you need more extensive diagrams.

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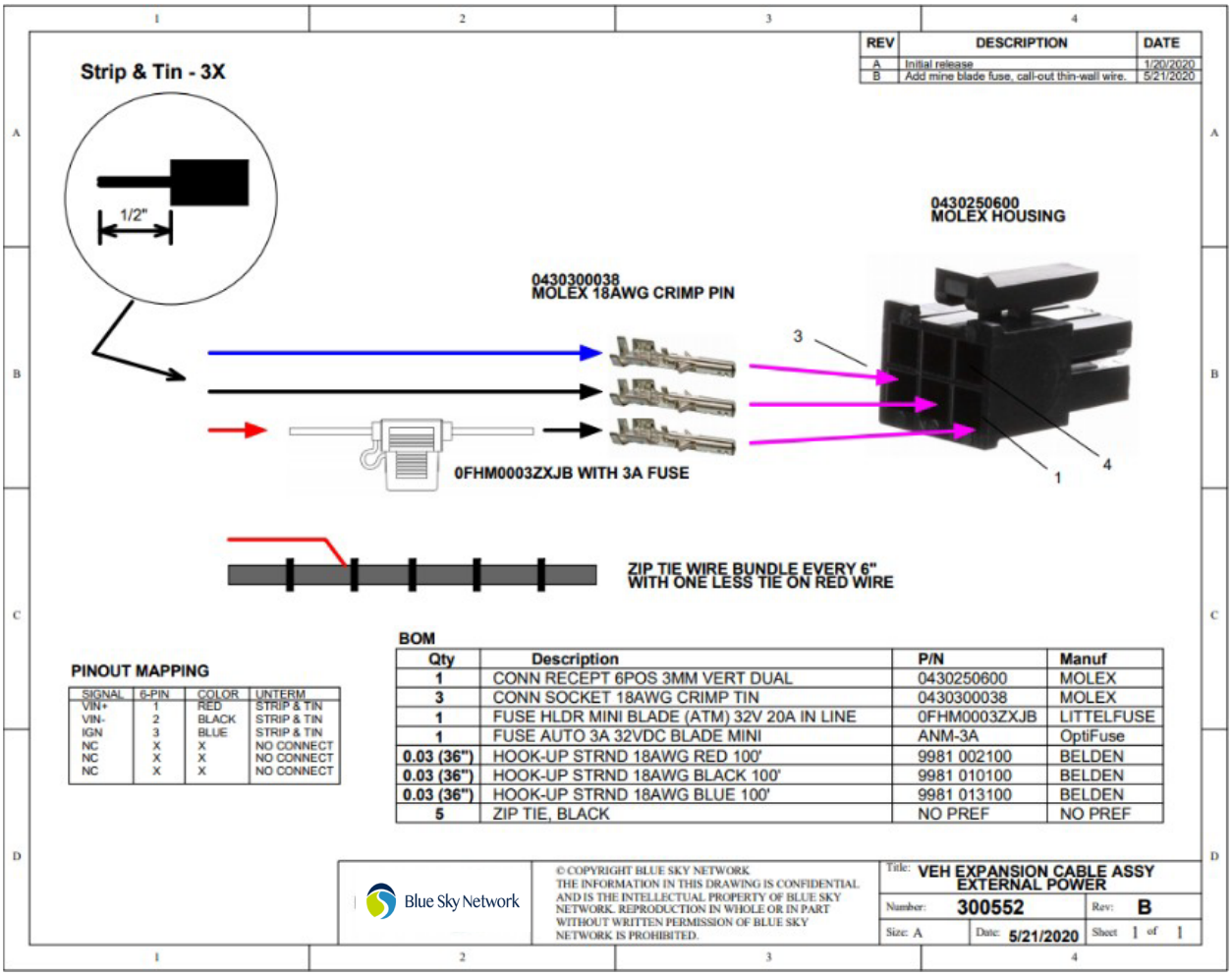

REV	DESCRIPTION	DATE
A	Initial release	1/20/2020
B	Add mine blade fuse, call-out thin-wall wire.	5/21/2020

PINOUT MAPPING

SIGNAL	6-PIN	COLOR	UNTERM
VIN+	1	RED	STRIP & TIN
VIN-	2	BLACK	STRIP & TIN
IGN	3	BLUE	STRIP & TIN
NC	X	X	NO CONNECT
NC	X	X	NO CONNECT
NC	X	X	NO CONNECT

BOM

Qty	Description	P/N	Manuf
1	CONN RECEPT 6POS 3MM VERT DUAL	0430250600	MOLEX
3	CONN SOCKET 18AWG CRIMP TIN	0430300038	MOLEX
1	FUSE HLDR MINI BLADE (ATM) 32V 20A IN LINE	0FHM0003ZXJB	LITTELFUSE
1	FUSE AUTO 3A 32VDC BLADE MINI	ANM-3A	OptiFuse
0.03 (36")	HOOK-UP STRND 18AWG RED 100'	9981 002100	BELDEN
0.03 (36")	HOOK-UP STRND 18AWG BLACK 100'	9981 010100	BELDEN
0.03 (36")	HOOK-UP STRND 18AWG BLUE 100'	9981 013100	BELDEN
5	ZIP TIE, BLACK	NO PREF	NO PREF

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Title: VEH EXPANSION CABLE ASSY EXTERNAL POWER
Number: 300552 Rev: B
Size: A Date: 5/21/2020 Sheet 1 of 1

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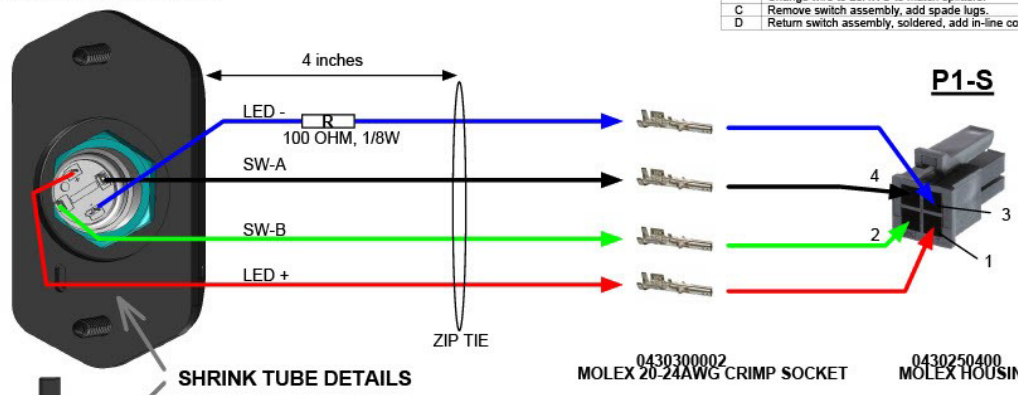
REV	DESCRIPTION	DATE
A	Initial release	1/20/2020
B	Change Molex from 8-pin to 10-pin. Revise & color code wiring. Change wire to 20AWG to match splitters.	5/22/2020
C	Remove switch assembly, add spade lugs.	6/25/2020
D	Return switch assembly, soldered, add in-line connector.	1/19/2021

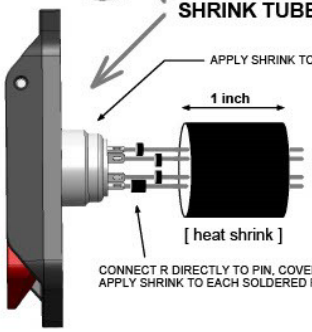
300510
SOS SWITCH POD ASSEMBLY



0430300002
MOLEX 20-24AWG CRIMP SOCKET

0430250400
MOLEX HOUSING

SHRINK TUBE DETAILS



PINOUT MAPPING

SIGNAL	SWITCH POD PIN	P1-S	WIRE COLOR	LENGTH
nSWITCH	SW-B	2	GREEN	6 inch
+3.3V	LED +	1	RED	6 inch
LED CONTROL	LED -	3	BLUE	6 inch
GND	SW-A	4	BLACK	6 inch

BOM (1 OF 2)

Qty	Description	P/N	Manuf
1	SOS SWITCH POD ASSEMBLY (SEE NOTE)	300510	BSN
1	CONN RECEPT 4POS 3MM VERT DUAL	0430250400	MOLEX
4	CONN SOCKET 20-24AWG CRIMP GOLD	0430300002	MOLEX
1	RES 100 OHM 1/8W 1% AXIAL	RNF18FTD100R	STACKPOLE
6"	HOOK-UP STRND 20AWG RED 100'	9982 002100	BELDEN
6"	HOOK-UP STRND 20AWG BLACK 100'	9982 010100	BELDEN
6"	HOOK-UP STRND 20AWG GREEN 100'	9982 005100	BELDEN
6"	HOOK-UP STRND 20AWG BLUE 100'	9982 013100	BELDEN
5	HEAT SHRINK TUBING (SEE DETAILS)	NO PREF	NO PREF
1	ZIP TIE, BLACK	NO PREF	NO PREF

NOTE: SWITCH P/N = PV6F240DD-311-R

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Title: **VEH EXPANSION CABLE ASSEMBLY SOS SWITCH**
Number: **300553** Rev: **D**
Size: A Date: **1/19/2021** Sheet 1 of 2

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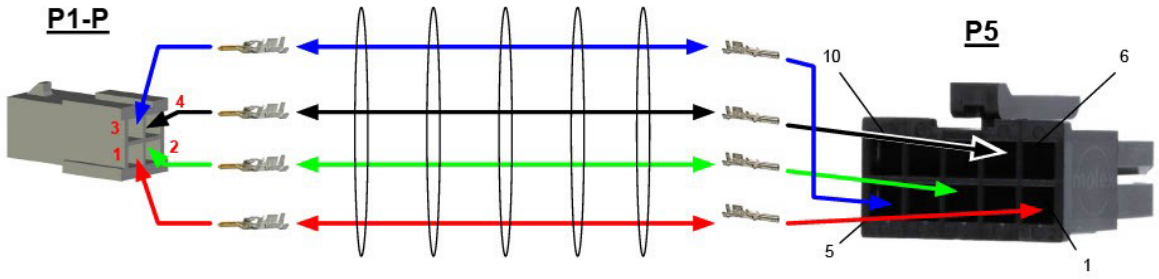
REV	DESCRIPTION	DATE
A	Initial release	1/20/2020
B	Change Molex from 8-pin to 10-pin. Revise & color code wiring. Change wire to 20AWG to match splitters.	5/22/2020
C	Remove switch assembly, add spade lugs.	6/25/2020
D	Return switch assembly, soldered, add in-line connector.	1/19/2021

ZIP TIES EVERY 1 FT.



0430200401 MOLEX HOUSING
0430310002 MOLEX 20-24AWG CRIMP PIN
0430300002 MOLEX 20-24AWG CRIMP SOCKET
0430251000 MOLEX HOUSING

PINOUT MAPPING

P1-P	P5	WIRE COLOR	LENGTH
1	1	RED	5.5 FT.
2	3	GREEN	5.5 FT.
3	5	BLUE	5.5 FT.
4	7	BLACK	5.5 FT.

BOM (2 OF 2)

Qty	Description	P/N	Manuf
1	CONN PLUG 4POS 3MM VERT DUAL	0430200401	MOLEX
4	CONN PIN 20-24AWG CRIMP GOLD	0430310002	MOLEX
1	CONN RECEPT 10POS 3MM VERT DUAL	0430251000	MOLEX
4	CONN SOCKET 20-24AWG CRIMP GOLD	0430300002	MOLEX
5.5'	HOOK-UP STRND 20AWG RED 100'	9982 002100	BELDEN
5.5'	HOOK-UP STRND 20AWG BLACK 100'	9982 010100	BELDEN
5.5'	HOOK-UP STRND 20AWG GREEN 100'	9982 005100	BELDEN
5.5'	HOOK-UP STRND 20AWG BLUE 100'	9982 013100	BELDEN
5	ZIP TIE, BLACK	NO PREF	NO PREF

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Title: VEH EXPANSION CABLE ASSEMBLY SOS SWITCH
Number: 300553 Rev: D
Size: A Date: 1/19/2021 Sheet 2 of 2

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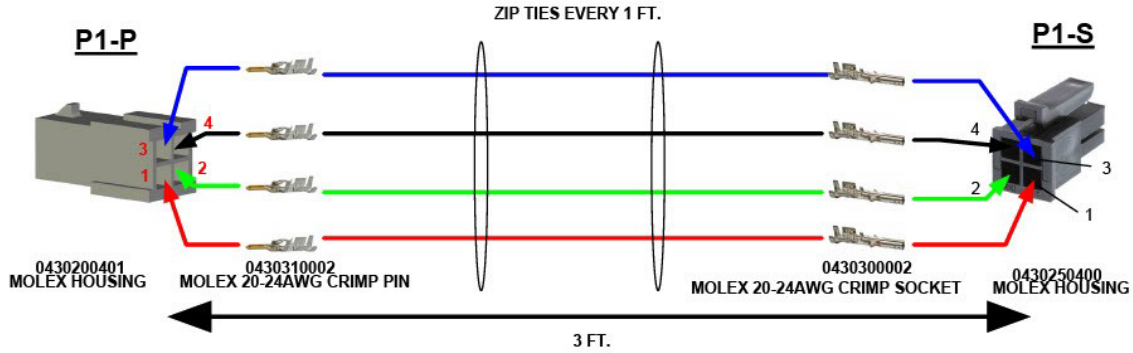
REV	DESCRIPTION	DATE
A	Initial release	1/19/2021



WIRING IS 1:1

BOM

Qty	Description	P/N	Manuf
1	CONN PLUG 4POS 3MM VERT DUAL	0430200401	MOLEX
4	CONN PIN 20-24AWG CRIMP GOLD	0430310002	MOLEX
1	CONN RECEPT 4POS 3MM VERT DUAL	0430250400	MOLEX
4	CONN SOCKET 20-24AWG CRIMP GOLD	0430300002	MOLEX
3'	HOOK-UP STRND 20AWG RED 100'	9982 002100	BELDEN
3'	HOOK-UP STRND 20AWG BLACK 100'	9982 010100	BELDEN
3'	HOOK-UP STRND 20AWG GREEN 100'	9982 005100	BELDEN
3'	HOOK-UP STRND 20AWG BLUE 100'	9982 013100	BELDEN
2	ZIP TIE, BLACK	NO PREF	NO PREF

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Title: VEH EXPANSION CABLE ASSEMBLY SOS SWITCH EXTENDER
Number: 300560 Rev: A
Size: A Date: 1/19/2021 Sheet 1 of 1

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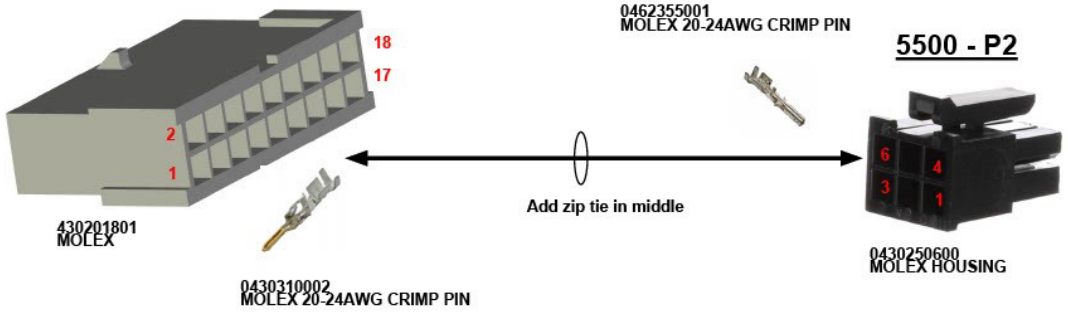
REV	DESCRIPTION	DATE
A	Initial release	10/22/2020
B	Change 18-pin to crimp pins.	1/12/2021

5300 (C4-D)

NOTE: 5300 PINOUT IS DIFFERENT THAN MANUF SPECS



WIRING

SIGNAL	5300	5500
VIN+	18	P2.1
VIN-	17	P2.2
IGN SNS	16	P2.3

BOM

Qty	Desc	P/N	Manuf
1	CONN PLUG 18POS 3MM VERT DUAL	430201801	MOLEX
3	CONN PIN 20-24AWG CRIMP GOLD	0430310002	MOLEX
1	CONN RECEPT 6POS 3MM VERT DUAL	0430250600	MOLEX
3	CONN SOCKET 20-24AWG CRIMP GOLD	0462355001	MOLEX
3	WIRE, BLACK STRANDED, 24 AWG, 12" LENGTH	NO PREF	NO PREF
1	ZIP TIE, BLACK	NO PREF	NO PREF

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Title: VEH EXPANSION ADAPTER CABLE TO 5300 (C4-D)
Number: 300558 Rev: B
Size: A Date: 1/12/2021 Sheet 1 of 1

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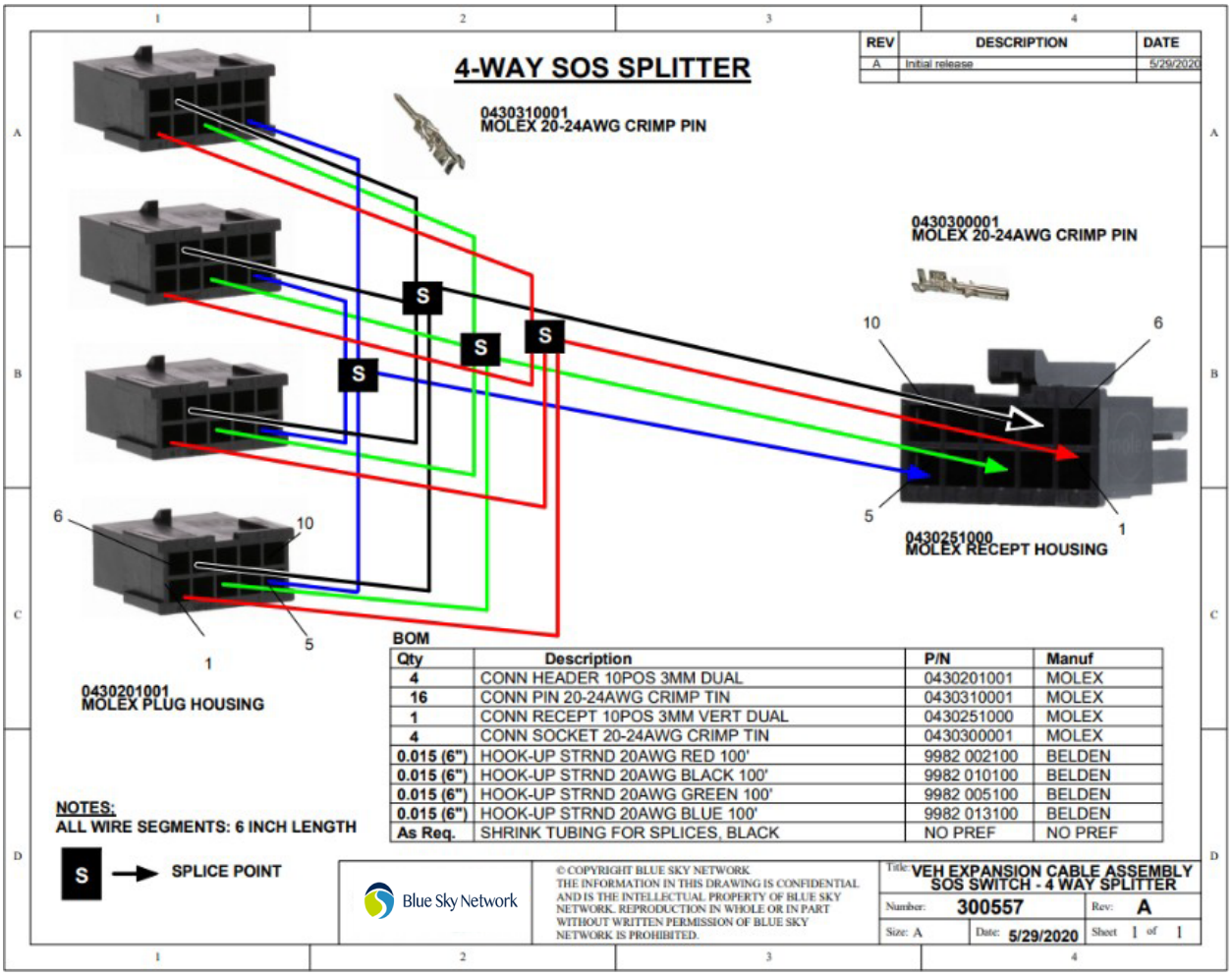

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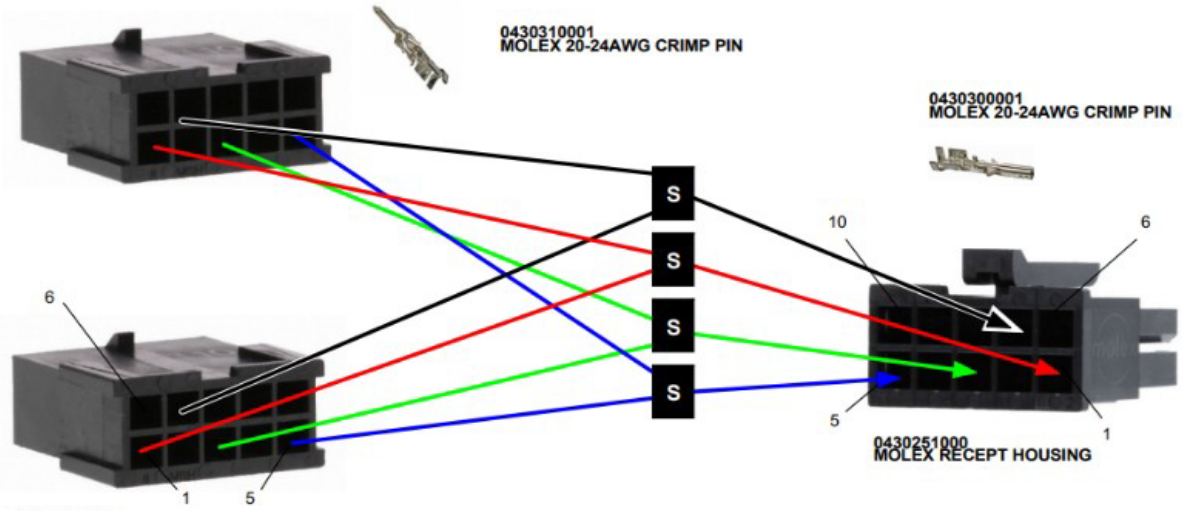
REV	DESCRIPTION	DATE
A	Initial release	5/29/2020

2-WAY SOS SPLITTER



BOM

Qty	Description	P/N	Manuf
2	CONN HEADER 10POS 3MM DUAL	0430201001	MOLEX
8	CONN PIN 20-24AWG CRIMP TIN	0430310001	MOLEX
1	CONN RECEPT 10POS 3MM VERT DUAL	0430251000	MOLEX
4	CONN SOCKET 20-24AWG CRIMP TIN	0430300001	MOLEX
0.015 (6")	HOOK-UP STRND 20AWG RED 100'	9982 002100	BELDEN
0.015 (6")	HOOK-UP STRND 20AWG BLACK 100'	9982 010100	BELDEN
0.015 (6")	HOOK-UP STRND 20AWG GREEN 100'	9982 005100	BELDEN
0.015 (6")	HOOK-UP STRND 20AWG BLUE 100'	9982 013100	BELDEN
As Req.	SHRINK TUBING FOR SPLICES, BLACK	NO PREF	NO PREF

NOTES:
ALL WIRE SEGMENTS: 6 INCH LENGTH

S → SPLICE POINT

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Title: VEH EXPANSION CABLE ASSEMBLY SOS SWITCH - 2 WAY SPLITTER
Number: 300556 Rev: A
Size: A Date: 5/29/2020 Sheet 1 of 1

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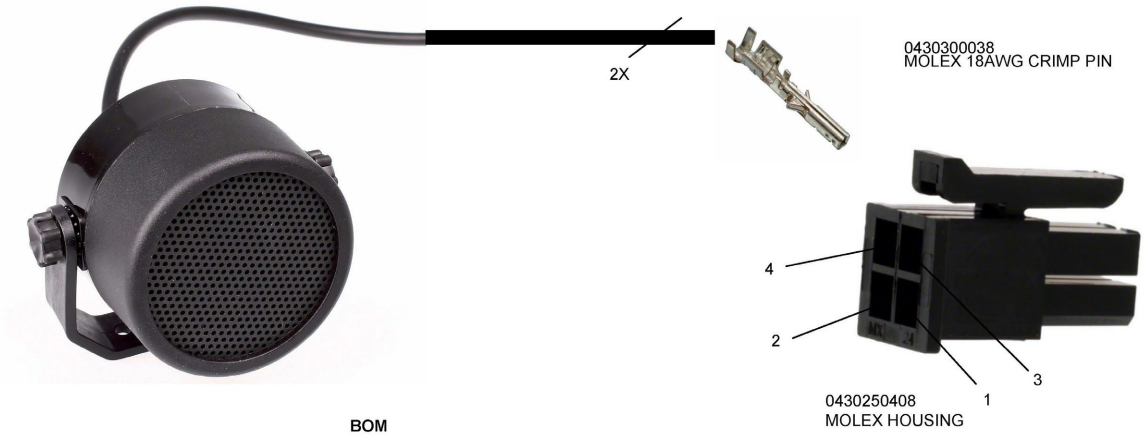
REV	DESCRIPTION	DATE
A	Initial release	1/20/2020



BOM

Qty	Desc	P/N	Manuf
1	4 OHM DYNAMIC LOUDSPEAKER, 2M CABLE LENGTH	KL1-4	PEI TEL
1	CONN RCPT HSG 4POS 3.00MM	0430250408	MOLEX
2	CONN SOCKET 18AWG CRIMP TIN	0430300038	MOLEX

PINOUT MAPPING

SIGNAL	SPKR	COLOR	4-PIN
LS+	1	WHITE	3
LS-	2	BLACK	2

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Title: VEH EXPANSION CABLE ASSY EXTERNAL PASSIVE SPEAKER
Number: 300554 Rev: A
Size: A Date: 1/29/2020 Sheet 1 of 1

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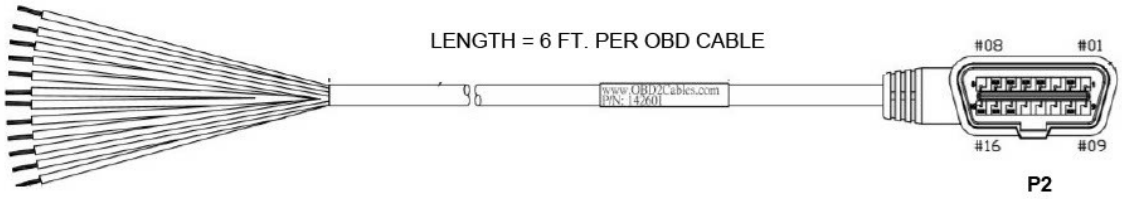
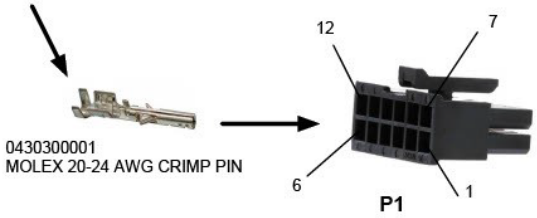
REV	DESCRIPTION	DATE
A	Initial release	1/15/2020
B	Change to flat cable.	3/31/2020
C	Change crimp pins for 28AWG wire.	7/2/2020
D	Change to 6' cable with 24AWG wire.	12/4/2020

142601
OBD2CABLES.COM

LENGTH = 6 FT. PER OBD CABLE



P2



0430300001
MOLEX 20-24 AWG CRIMP PIN

0430251200
MOLEX HOUSING

P2 PIN OUT

P2		P2	
6	CAN High (J-2284) WHITE/BLACK	8	GREEN
14	CAN Low (J-2284) GREEN/BLACK	9	BLUE
10	J1850 Bus - YELLOW/BLACK	11	PURPLE
2	J1850 Bus + BLUE/BLACK	12	GRAY
1	LIGHT BLUE	13	WHITE
3	ORANGE	15	PINK
4	BLACK	16	RED
5	BROWN		
7	YELLOW		

PINOUT MAPPING

SIGNAL	P2 (OBD2)	COLOR	P1 (MOLEX)
SW_CAN	1	LT. BLUE	1
J1850_BUS+	2	BLUE/BLK	2
MS_CAN_HI	3	ORANGE	3
GND	4	BLACK	4
GND	5	BROWN	5
HS_CAN_HI	6	WHITE/BLK	6
K-LINE	7	YELLOW	7
X	8	N/A	X
X	9	N/A	X
J1850_BUS-	10	YELLOW/BLK	8
MS_CAN_LO	11	PURPLE	9
X	12	N/A	X
X	13	N/A	X
HS_CAN_LO	14	GREEN/BLK	10
L-LINE	15	PINK	11
DLC_RAW	16	RED	12

BOM

Qty	Desc	P/N	Manuf
1	Cable, J1962M Right Angle to Open, 6ft	142601	OBD2CABLES.COM
1	CONN RECEPT 12POS 3MM VERT DUAL	0430251200	MOLEX
12	CONN SOCKET 20-24AWG CRIMP TIN	0430300001	MOLEX

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Title: VEH EXPANSION CABLE ASSY OBD-II
Number: 300555 Rev: D
Size: A Date: 12/4/2020 Sheet 1 of 1

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SUPPORT

Blue Sky Network is committed to providing the highest level of service and support. If you have any questions or concerns, please feel free to contact us by email or phone; contact information is available at the bottom of this page. For self-help, please visit https://support.blueskynetwork.com/.

Thank you for choosing Blue Sky Network!

Blue Sky Network

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