



bluePRINT[®]

TRAINING

CERTIFICATION

manual

Addendum #1 - October 2019

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Lightbar Changes - The following changes were made to the SoundOff Signal Lightbar Configurator.

- Support added for the upcoming nFUSE lightbar.
- nFUSE™ and mpower® lightbars now have a second cruise mode.

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bluePRINT Programming Manual - Addendum #1.3 - Printed February 2020

bluePRINT Components & Connectivity

bluePRINT Sync®

bluePRINT Sync is the newest component to the bluePRINT family. With bluePRINT Sync installed, bluePRINT synchronizes displayed patterns between vehicles that are commonly equipped with bluePRINT Sync utilizing GPS technology. Any time two or more vehicles are displaying the same pattern, they will be synchronized.

bluePRINT Sync adds the most functionality when paired with bluePRINT Link®. Using this pair together allows for additional functionality by using vehicle data to further enhance bluePRINT's function. Factors such as speed or ambient light can help control patterns, which lights are active, and how bright they are while keeping

two or more vehicles in perfect synchronization.

For more information on programming bluePRINT Sync, please refer to the section in the appendix on page 99.

Just like bluePRINT Link, bluePRINT Sync is connected on the **Control Panel Bus**.



bluePRINT Sync®

bluePRINT Best Practices: Ignition Security System (ISS)

Theft of public safety vehicles is far too common and poses a significant risk to the public. Almost every public safety vehicle theft results in damage to multiple vehicles and many of these incidents result in serious injury and even death to innocent motorists. On August 26, 2019, in Dayton, Ohio, a stolen police car crashed into a family's mini-van. Two 6 year-old girls were killed and several other family members were injured.

Tragically, these incidents are largely preventable. A good prevention strategy includes use of an anti-theft device. SoundOff Signal's bluePRINT Intelligent Control System has a unique capability to be configured to provide an Ignition Security System (ISS) feature. This feature is easily wired into most police vehicles at no extra cost. Many departments are using bluePRINT's ISS capability to protect their fleet every day.

bluePRINT's ISS function generally works as follows (configuration-dependent):

- If the vehicle is in park and the operator activates a momentary input trigger, such as an accessory switch, then the key can be removed from the ignition switch and bluePRINT will continue to provide power to the ignition & accessory circuits, allowing the vehicle to continue running.
- bluePRINT "kills" power to the ignition & accessory circuits if the brake pedal is pressed, causing the vehicle to stall. This prevents theft by turning the vehicle off before the vehicle can be shifted out of park, as well as keeping the steering wheel lock engaged.

When configuring bluePRINT for ISS, we recommend technicians consider the following:

- Connect only to the host vehicle's ignition and accessory wires located in the wire harness for the key switch. Use proper connection techniques. No Scotch-Loks!
- Use the Central Controller's diode-isolated outputs #15 & #24, or any two relay outputs on the 480 siren amplifier for the ignition and accessory wire connections.
- We strongly recommend that ISS be configured so that it is activated only when the vehicle's parking or emergency brake is set. This adds additional anti-theft security, eliminates the need to add a switch, and requires a deliberate act by the officer to engage and disengage. Also, this prevents the vehicle from rolling in the unlikely event a person was able to press the brake and shift quickly before the ISS stalled.
- You will have to locate a + or - signal that is active when the parking brake is set. This is most easily done using bluePRINT Link, which captures CAN Bus data from the vehicle.
- For added protection from theft attempts technicians should consider interrupting the shift interlock circuit, disabling it entirely when ISS is active. This requires discreet wire connections to the circuit and a relay or other interrupt device being added.

- Because ISS allows the vehicle to continue running unattended, you must protect the vehicle against overheating or running out of fuel. bluePRINT Link makes this easy, allowing you to write your ISS matrix so it cancels under the following circumstances:
 - a. Brake pedal is engaged.
 - b. Engine coolant temperature is greater than 113°C*.
 - c. Engine oil lamp is on.
 - d. Fuel level is 10% or less.
- Consideration must be given and agency executives should be consulted on what other vehicle functions or features they might want to enable or disable when ISS is active, such as gunlock release buttons.

It is important to note that bluePRINT's ISS must be enabled or activated each time the feature is needed. Should the vehicle operator forget to activate ISS, the system would not provide theft protection. SoundOff Signal believes it is a good practice to configure the ISS to activate through a process the operator routinely uses and that operators be trained on how the system works, as well as when it should be used.

For additional safety and to prevent carbon monoxide poisoning, ISS should NEVER be used in an indoors setting, such as a garage or parking structure. Finally, use of ISS is at the discretion of the technician, the agency, and the individual officer. SoundOff Signal makes no guaranties, implied or otherwise, as to the security of vehicles using bluePRINT's ISS feature.

If you need additional information or assistance in configuring your fleet's bluePRINT solution to provide Ignition Security System functionality, please contact:

If you need additional information or assistance in configuring your fleets bluePRINT solution to provide Ignition Security System Functionality, please contact:

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bluePRINT Best Practices: bluePRINT Sync Programming Considerations

bluePRINT Sync is SoundOff Signal's proprietary, subscription-free technology which allows for same pattern synchronization and coordinated visual warning messages amongst similarly-equipped vehicles. bluePRINT Sync enhances bluePRINT's ability to manage patterns, colors, and flash-rates, helping to reduce the distracting, overpowering effects of today's high-intensity, LED warning lights.

Simple to install, bluePRINT Sync utilizes a universal timing convention to ensure lights flash in phase with no car-to-car communication. Anytime two or more vehicles are on the same pattern they will be synchronized, regardless of range.

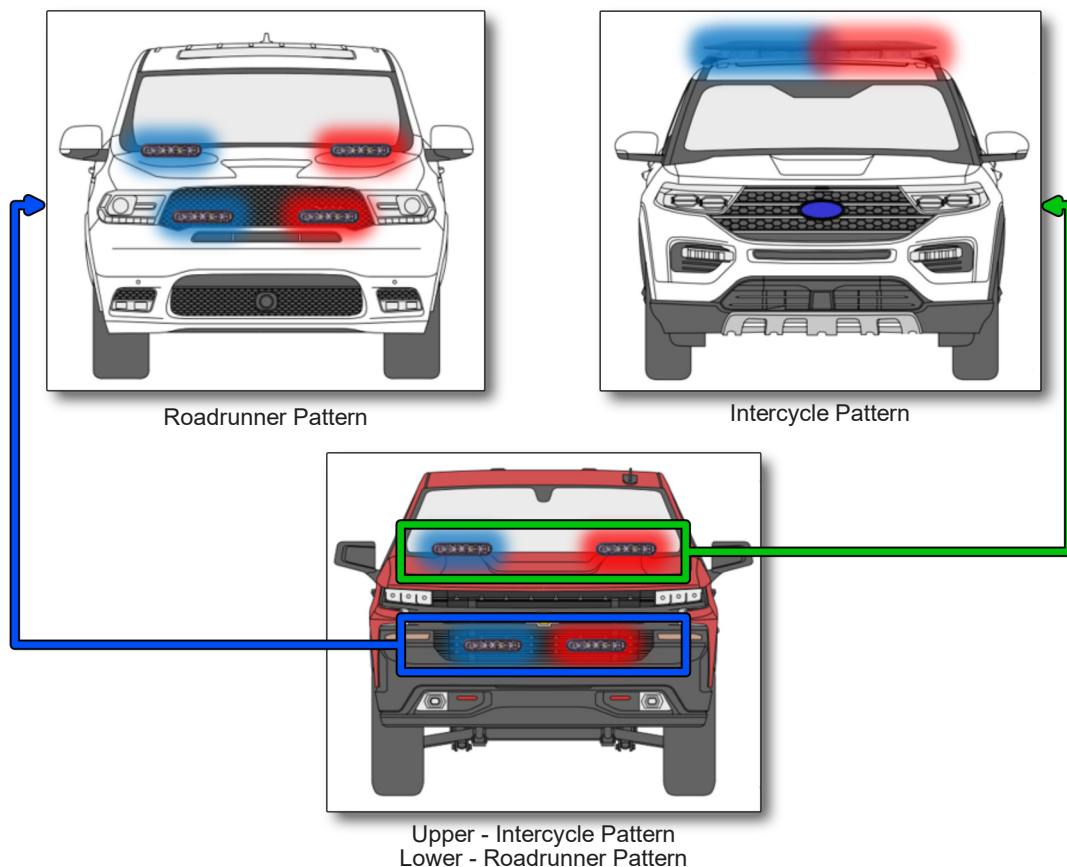
Because bluePRINT Sync uses pattern specific synchronization, it is possible for vehicles with two

or more active patterns to be in sync with one another. For example, fleets could use different patterns on their lightbars and secondary lights and vehicles would sync those patterns respectively.

In the illustration below, the red Silverado truck synchronizes with both the Durango and the Police Interceptor using two different patterns.

To maximize bluePRINT Sync's advantages, it is necessary that the vehicle warning systems have the same flash pattern priority programming and active priority (flash patterns) should primarily be dependent on vehicle inputs (or virtual inputs), versus button or slide switch inputs.

Consider a traditional bluePRINT setup where each subsequent slide switch introduces faster flash patterns. In a bluePRINT Sync build, this might create a situation where two or more vehicles are on scene with different active patterns because of operator switch selection. In such a case, the vehicles will not be in synchronization.



Instead, consider using factors other than the slide switch to dictate the active pattern. With bluePRINT Sync this would be far more important and useful to ensure vehicles performing similar tasks in similar circumstances used similar patterns. Factors like vehicle speed, ambient lighting, brakes, and more be used to specify which pattern is active.

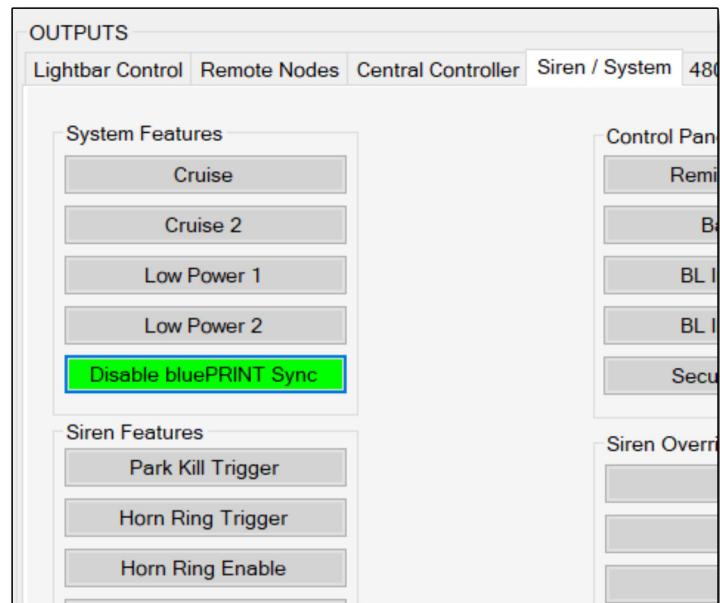
Here's an example: Vehicle speed can be used to create scenarios (matrices) where at a certain speed range the pattern is the same regardless of the slide switch position. Perhaps all vehicles below 10mph use a default Road Runner pattern. Then if above 10mph in slide switch position #2, the pattern switches to Intercycle. Then, if the vehicle is traveling more than 60mph, a more aggressive pattern might activate.

In that way, vehicles on a traffic stop would be synchronized and vehicles responding would be synchronized, but each would be visually different with patterns that help others distinguish their speed and urgency when needed. Likewise, vehicles parked on scene could all be associated visually, while providing calming effects through slower, coordinated patterns.

Ambient light can be used to further modify patterns as situationally appropriate, with a different patterns during the day and during the night, also speed-dictated. Patterns like Flicker Cruise, or slow patterns with cruise lights running in the background can provide a powerful nighttime advantage.

Lastly, there are benefits when using bluePRINT Sync for:

- Organized movements
- VIP details
- Crowd control
- Special events
- Multi-agency scene management



Disabling bluePRINT Sync

The enhanced visual presence offered by bluePRINT Sync helps project a more uniform appearance at all times to improve department image. Consistent patterning directly related to scene intensity and vehicle activity stands to improve public response to emergency vehicles over time. bluePRINT Sync provides a less-chaotic viewing experience for other roadway users, improving on-scene safety for first responders.

Troubleshooting & Tips

Erratic Lightbar Operation

- Make sure the lightbar data wire (Pin 5 on the BOB) is not connected to LIN data on the Central Controller (4 pin plug, yellow)
- Check that the lightbar data wire is not shorted to ground or hot.
- Control Panel doesn't work
- Make sure the program matches the control panel type and is using the matching data port (Control Panel or Siren).
- If using a control panel on the siren port, make sure there is a 400 series siren on the port to provide power to the control panel.

bluePRINT Link doesn't work

- Verify with SoundOff Signal Technical Support that the proper firmware is loaded for the vehicle type.
- Make sure bluePRINT Link is connected to the Control Panel port. Since control panels can be connected to either the Siren or Control Panel ports, it is common to mistakenly connect bluePRINT Link to the control panel on the Siren port.
- bluePRINT Link doesn't work with bluePRINT 2.

bluePRINT Sync doesn't work

- Verify that both vehicles are on the same pattern.
- Check the hardware troubleshooting tips in the bluePRINT Sync instructions; make sure bluePRINT Sync has received GPS lock.

- Make sure bluePRINT Link is connected to the Control Panel port. Since control panels can be connected to either the Siren or Control Panel ports, it is common to mistakenly connect bluePRINT Link to the control panel on the Siren port.
- bluePRINT Sync doesn't work with bluePRINT 2.

BOB as an input node not working

- Verify "Set BOB as Input Node (Controlled by bluePRINT)" is checked on the BOB file. See page @@ for more.
- Make sure only one BOB file has this checked.
- Make sure the input node type is set to BOB. See page 68 for more information.

Park Kill Tips

- Park Kill must be mapped when using an input from the input node, remote node, or bluePRINT Link.
- We recommend not using the Park Kill wire on the siren amplifier. This overrides any programmed bluePRINT functionality.
- If no siren tones are being produced check the following: wired input for park kill polarity, other inputs that may have mappings to park kill, or a microphone that is keyed up.
- If the siren will not shut down check the following: Siren override tones are mapped, park kill polarity, an input with higher priority is deactivating park kill.

Horn Ring Tips

- Horn ring wired through the amplifier can be setup as positive or negative polarity on the Siren Setup main tab. Most vehicles use

negative horn ring between the horn switch and the BCM.

components to be serviced later comfortably and also reduces stress on any wiring.

- We do not recommend connecting the horn ring between the BCM and the horn itself. The amperage requirements may blow the fuse in the siren.
- A discrete input and a 10a output can be used to control the horn if needed. This will require mapping when “Horn Ring Enable” is active.
- Horn ring cannot be by bluePRINT when park kill is active. If there is a requirement to see horn ring while in park, run a redundant input from the horn ring input to an input on the Input Node/BOB or Remote Node.

Custom Harness Tips

- Custom harnesses can pose issues when they are pinned incorrectly. If using a harness that was custom pinned be sure to check all wires are pinned correctly.

Service Loop Tips

- Always leave some service loop with any electronic components. This allows

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CA Proposition 65 Warning **What is CA Proposition 65?**

In November 1986, California voters approved a ballot initiative to address concerns about exposures to toxic chemicals. That initiative became The Safe Drinking Water and Toxic Enforcement Act of 1986, better known by its original name, Proposition 65.

Our posted warning is as follows:

WARNING: Chemicals known to the state of California to cause cancer, or birth defects, or other reproductive harm may be present in products sold by SoundOff Signal® or SoundOff Commercial Vehicle Solutions®.

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