# Installation and Operation Instructions
# Serial Interface Box (SIB)

**IMPORTANT! Read all instructions before installing and using. Installer: This manual must be delivered to the end user.**

**WARNING!**
**Failure to install or use this product according to manufacturer's recommendations may result in property damage, serious injury, and/or death to those you are seeking to protect!**

**Do not install and/or operate this safety product unless you have read and understood the safety information contained in this manual.**

1. **Proper installation combined with operator training in the use, care, and maintenance of emergency warning devices are essential to ensure the safety of emergency personnel and the public.**
2. **Emergency warning devices often require high electrical voltages and/or currents. Exercise caution when working with live electrical connections.**
3. **This product must be properly grounded. Inadequate grounding and/or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or severe vehicle damage, including fire.**
4. **Proper placement and installation is vital to the performance of this warning device. Install this product so that output performance of the system is maximized and the controls are placed within convenient reach of the operator so that they can operate the system without losing eye contact with the roadway.**
5. **Do not install this product or route any wires in the deployment area of an air bag. Equipment mounted or located in an air bag deployment area may reduce the effectiveness of the air bag or become a projectile that could cause serious personal injury or death. Refer to the vehicle owner's manual for the air bag deployment area. It is the responsibility of the user/operator to determine a suitable mounting location ensuring the safety of all passengers inside the vehicle particularly avoiding areas of potential head impact.**
6. **It is the responsibility of the vehicle operator to ensure daily that all features of this product work correctly. In use, the vehicle operator should ensure the projection of the warning signal is not blocked by vehicle components (i.e., open trunks or compartment doors), people, vehicles or other obstructions.**
7. **The use of this or any other warning device does not ensure all drivers can or will observe or react to an emergency warning signal. Never take the right-of-way for granted. It is the vehicle operator's responsibility to be sure they can proceed safely before entering an intersection, drive against traffic, respond at a high rate of speed, or walk on or around traffic lanes.**
8. **This equipment is intended for use by authorized personnel only. The user is responsible for understanding and obeying all laws regarding emergency warning devices. Therefore, the user should check all applicable city, state, and federal laws and regulations. The manufacturer assumes no liability for any loss resulting from the use of this warning device.**

## Specifications:

| | |
|---|---|
| **Size:** | 3.75" X 4.00" |
| **Input Voltage:** | 12-24 VDC |
| **Temp. Range:** | -40ºC to 65ºC<br>-40ºF to 149ºF |

**Additional Matrix Resources**
Product Information: www.code3esg.com/us/en/products/matrix
Training Videos: www.youtube.com/c/Code3Inc
Matrix Software: http://software.code3esg.global/updater/matrix/downloads/Matrix.exe

## Unpacking and Pre-Installation:

Carefully remove the product and place it on a flat surface. Examine the unit for transit damage and locate all parts. If damage is found or parts are missing, contact the transit company or Code 3. Do not use damaged or broken parts.

Ensure the product voltage is compatible with the planned installation.

## Installation and Mounting:

### Mounting

Before proceeding with installation, plan all wiring and cable routing. Select the mounting location for the product on a flat, smooth surface.

**Caution:**
**When drilling into any vehicle surface, make sure that the area is free from any electrical wires, fuel lines, vehicle upholstery, vehicle support members, etc. that could be damaged.**

## Wiring Instructions:

**Notes:**

1. **Larger wires and tight connections will provide longer service life for components. For high current wires it is highly recommended that terminal blocks or soldered connections be used with shrink tubing to protect the connections. Do not use insulation displacement connectors (e.g., 3M Scotchlock type connectors).**
2. **Route wiring using grommets and sealant when passing through compartment walls. Minimize the number of splices to reduce voltage drop. All wiring should conform to the minimum wire size and other recommendations of the manufacturer and be protected from moving parts and hot surfaces. Looms, grommets, cable ties, and similar installation hardware should be used to anchor and protect all wiring.**
3. **Fuses or circuit breakers should be located as close to the power takeoff points as possible and properly sized to protect the wiring and devices.**
4. **Particular attention should be paid to the location and method of making electrical connections and splices to protect these points from corrosion and loss of conductivity.**
5. **Ground termination should only be made to substantial chassis components, preferably directly to the vehicle battery.**
6. **Circuit breakers are very sensitive to high temperatures and will “false trip” when mounted in hot environments or operated close to their capacity.**

**Caution:**
**Disconnect the battery before wiring up the product, to prevent accidental shorting, arcing and/or electrical shock.**

The Serial Interface Box (SIB) is shown in Figure 1. This device acts as a central node on the Matrix network and provides a USB interface for system configurability via PC.

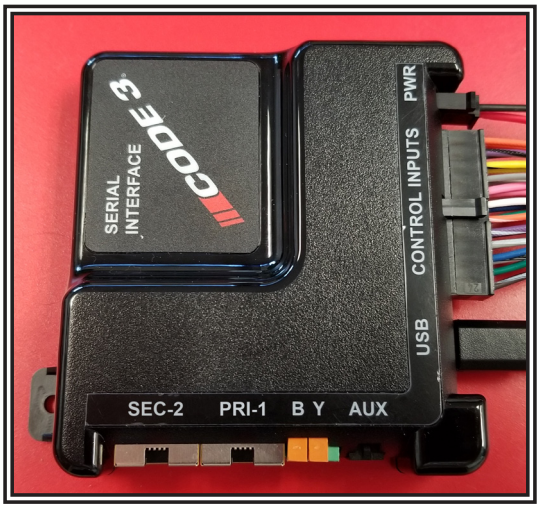


**Figure 1**

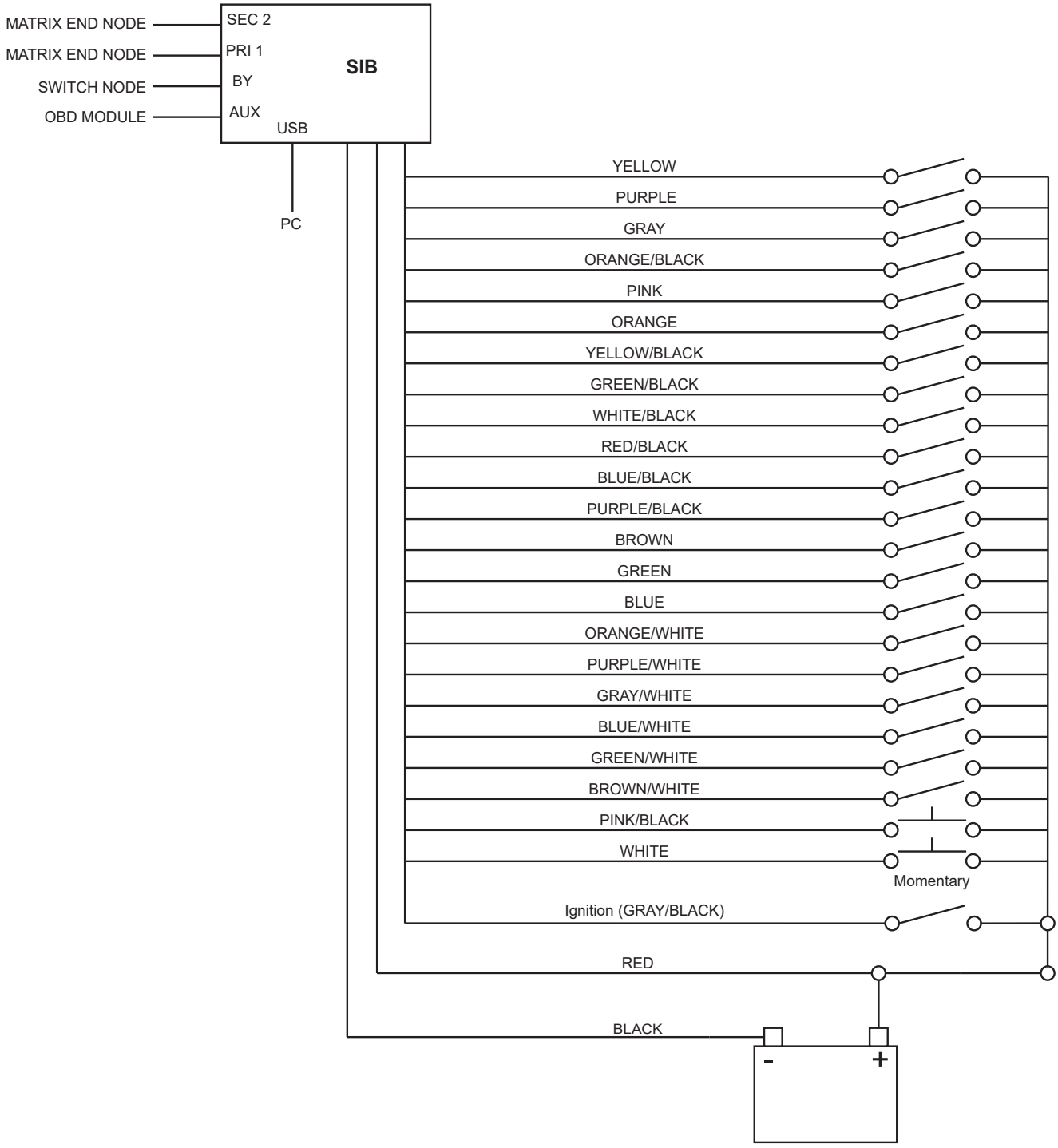


**Figure 2**

Connect the red (power) and black (ground) wires from the SIB to a nominal 12 / 24 VDC supply, as shown in Figure 2. Although fusing is likely required for other products in the system, the SIB itself provides its own internal, resettable PTC fuse. The SIB also provides the user with discrete wire system inputs. In order to activate these inputs, apply power to them. An example setup can be seen in Figure 2. End nodes are connected via RJ45 conectors on the SIB. A Switch node can be added by the two wire can connection BY, and a OBD module can be connected via the four pin connection on the SIB. The use of any control wire or in-line switch is optional, with one exception. The gray / black (ignition) wire is required to be connected as described in Table 1. Cap and isolate any other unused wires.

All other Matrix compatible products can connect to the SIB using one or more of the four provided connections, labeled AUX, B Y, PRI-1, and SEC-2. For example, a Matrix compatible serial lightbar can connect to the PRI-1 port with a CAT5 cable. Please note, the PRI-1 port must be utilized first, before additional products can be connected to the SEC-2 port.

The following table indicates the default function of all SIB control inputs. These inputs activate functions on other Matrix compatible products, connected to the SIB. But this does not guarantee that all listed default functions are available on all Matrix products. Some functions are product specific. Please note, the default operation of the Level inputs is independent. However, these can easily be reconfigured in the Matrix Configurator as desired. In fact, all default input combinations and functions can be modified, with the exception of the ignition wire input. See software user manual 920-0731-00 for details.

**Table 1 - Control Inputs**

| Wire Color | Default Function | Notes |
|---|---|---|
| Orange | Arrowstik Right (Build Fast) | |
| Purple | Right Scene (Alley + Corners) | Steady |
| Yellow | Left Scene (Alley + Corners) | Steady |
| Gray | Takedown/Alley Flash | Single Flash 150 - Alternating |
| Pink | Arrowstik Left (Build Fast) | |
| Blue | System Dim | 30% Dim setting |
| Green | Cruise (Primary Color Full Bar) | |
| Brown | Left Timed Cut | |
| Red w/ Black | Level 3 | Pursuit |
| White w/ Black | Level 2 | Triple Flash 115 |
| Green w/ Black | Level 1 | Sweep |
| Blue w/ Black | Rear Cut | |
| Orange w/ Black | Takedown | Steady |
| Purple w/ Black | Front Cut | |
| Yellow w/ Black | Arrowstik Flash (Simultaneous Fast) | Quad Flash 115 |
| Gray w/ Black | Ignition | Not configurable; Always on or ignition switched |
| Pink w/ Black | Front Scene | |
| Orange w/ White | **Red** Rear Steady | Tow LE's, both sides if **Red** available |
| Orange + Pink | Arrowstick Center Out (Build Fast) | Building Fast |
| Green w/ Black + White w/ Black | Level 1+2 | Triple Flash 115 |
| Green w/ Black + White w/ Black + Red w/ Black | Level 1+2+3 | Pursuit |
| Green w/ Black + Red w/ Black | Level 1+3 | Pursuit |
| White w/ Black + Red w/ Black | Level 2+3 | Pursuit |

**Note: All other individual wire colors and wire combinations should have no default assigned to them.**

## Wiring Diagram Example: SIB connection to the Xcel Siren

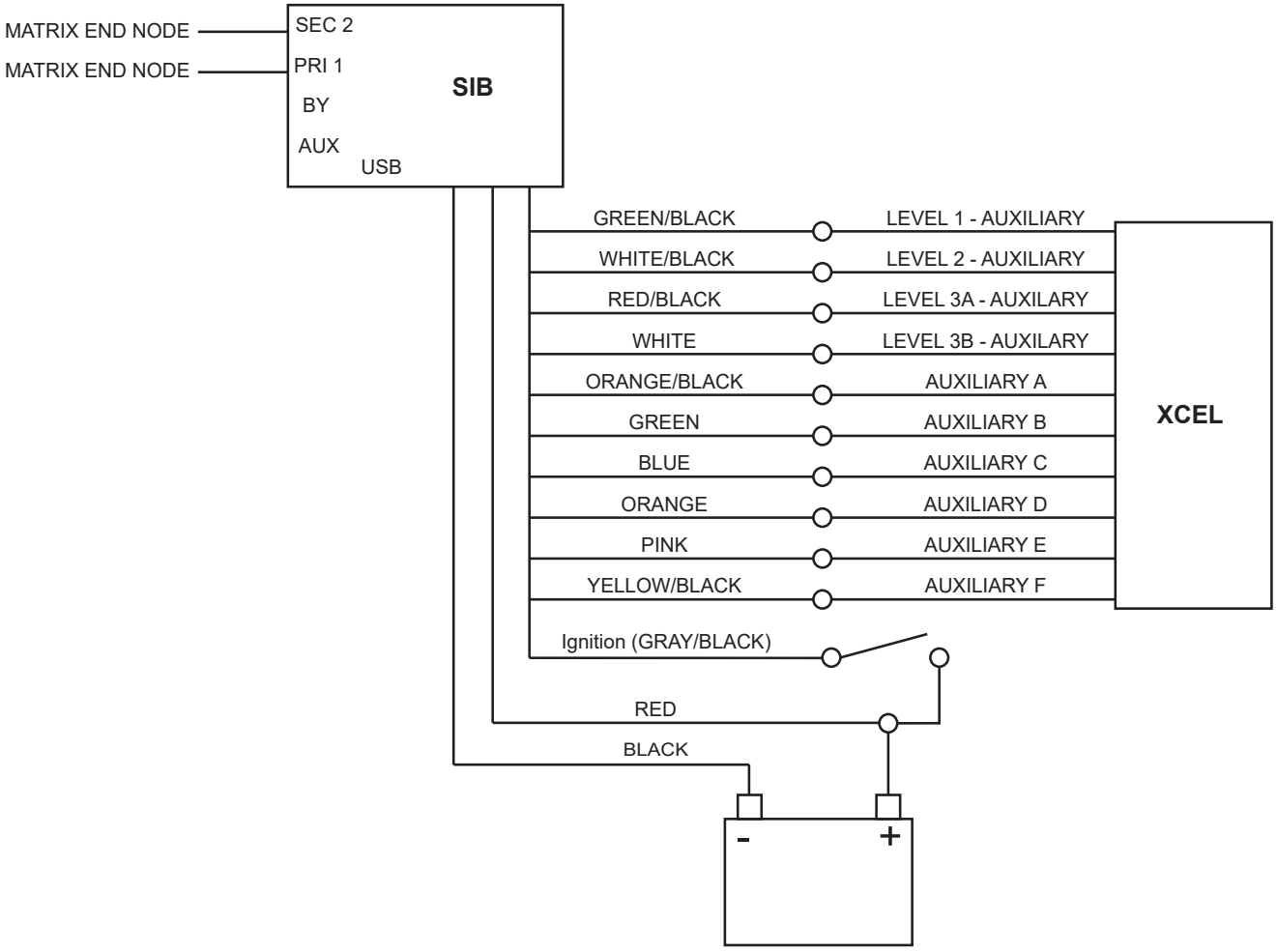


**Figure 3**

## Troubleshooting:

All products are thoroughly tested prior to shipment. However, should you encounter a problem during installation or during the life of the product, follow the guide below for troubleshooting and repair information. If the problem cannot be rectified using the solutions given below, additional information may be obtained from the manufacturer – contact details are at the end of this document.

| Table 2 - Troubleshooting | | |
|---|---|---|
| **Problem** | **Possible Cause(s)** | **Comments / Response** |
| No power | Faulty wiring | Ensure power and ground connections to the SIB are secured. Ensure input voltage does not exceed the range of 10-32 VDC. Remove and reconnect the red / black power wire harness to the SIB. |
| | Blown fuse | The SIB may be powered alongside another device that has blown an up-stream fuse. Check and replace fuse if necessary. |
| | Ignition input | **The ignition wire input is required to bring the SIB out of a sleep state.** A small, green LED to the left of the USB connection indicates device status. A slow, dim blink indicates that the device is in sleep state. A much brighter blink indicates normal activity. **Ensure that the ignition wire is connected properly.** Note that if the SIB is powered, but the ignition wire is turned off, the SIB will revert to a sleep state after a default 1 hour time period. Driving the ignition wire high again will resume active operation. Also, connecting the SIB to the Matrix Configurator via USB will keep the network active indefinitely. |
| No communication | Connectivity | Ensure that all other Matrix devices are securely connected to the SIB. For example, ensure that the CAT5 cable(s) are fully seated into the RJ45 jack with positive lock. |

## Notes:

## Warranty:

### Manufacturer Limited Warranty Policy:

**Manufacturer warrants that on the date of purchase this product will conform to Manufacturer's specifications for this product (which are available from the Manufacturer upon request). This Limited Warranty extends for Sixty (60) months from the date of purchase.**

**DAMAGE TO PARTS OR PRODUCTS RESULTING FROM TAMPERING, ACCIDENT, ABUSE, MISUSE, NEGLIGENCE, UNAPPROVED MODIFICATIONS, FIRE OR OTHER HAZARD; IMPROPER INSTALLATION OR OPERATION; OR NOT BEING MAINTAINED IN ACCORDANCE WITH THE MAINTENANCE PROCEDURES SET FORTH IN MANUFACTURER'S INSTALLATION AND OPERATING INSTRUCTIONS VOIDS THIS LIMITED WARRANTY.**

### Exclusion of Other Warranties:

**MANUFACTURER MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED. THE IMPLIED WARRANTIES FOR MERCHANTABILITY, QUALITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, USAGE OR TRADE PRACTICE ARE HEREBY EXCLUDED AND SHALL NOT APPLY TO THE PRODUCT AND ARE HEREBY DISCLAIMED, EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW. ORAL STATEMENTS OR REPRESENTATIONS ABOUT THE PRODUCT DO NOT CONSTITUTE WARRANTIES.**

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**This Limited Warranty defines specific legal rights. You may have other legal rights which vary from jurisdiction to jurisdiction. Some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages.**

### Product Returns:

**If a product must be returned for repair or replacement*, please contact our factory to obtain a Return Goods Authorization Number (RGA number) before you ship the product to Code 3®, Inc. Write the RGA number clearly on the package near the mailing label. Be sure you use sufficient packing materials to avoid damage to the product being returned while in transit.**

*Code 3®, Inc. reserves the right to repair or replace at its discretion. Code 3®, Inc. assumes no responsibility or liability for expenses incurred for the removal and /or reinstallation of products requiring service and/or repair.; nor for the packaging, handling, and shipping: nor for the handling of products returned to sender after the service has been rendered.

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