BOOST SMART
CAN BUS EXPANSION MODULE

Table of Contents

STOP: The information in this instruction manual is only valid for the BoostSmart V2. You can determine if you have a BoostSmart V1 or V2 based on the position of the 4-pin power connector on the board. If the 4-pin connector is opposite of the 12 pin IO connector you have a V1 BoostSmart. If the 4-pin connector is next to the 12 pin IO connector then you have a V2 BoostSmart.

WARNING: Never attempt to update your ECU's firmware when a BoostSmart is connected to the ECU's data bus. This will cause the firmware update to fail.

Power/Can & IO Connector Options

Power Harness (Basic & Deluxe)

The standard power harness and the optional T-harness both have a single 4-pin Molex connector on one end and a male connector on the other end that will plug into the CAN connector on your ECU. The T-Harness also includes a pass-through connector that allows connecting additional devices to your ECU without needing to use an additional Y-type splitter. It is important to note that the CAN/POWER connector used on the Holley ECU's is only rated for a maximum of 3.5 amps. If you are powering multiple devices from this connector, it is possible to over load and damage this connector.

Flying Lead wiring harness

If you purchased the optional "Flying Lead" style harness, then the IO connector has already been assembled for you. Each wire is approximately 5 to 6 feet long and can be cut to your desired length as needed. A single 5-volt reference wire and ground reference wire have been provided in this harness. When using more than one input channel, you will need to split the 5-volt reference and ground reference wires to each channel being used.

DIY IO Connector

The basic IO connector for both the Power/CAN and IO connector requires you to supply your own wiring and crimp the included **Molex Mini Fit** terminals(PN# 0039000038). You cannot use standard wire crimpers that are designed for "butt" style wiring connectors to crimp these terminals.

A crimper capable of crimping **Molex Mini Fit** terminals should be used, however crimpers for this style terminal are not always cheap or easy to find. In cases where you do not have the correct crimper and cannot locate one designed for the Mini Fit terminals, a crimper such as IWISS #1424A can be used with a bit of care, however it will not provide an "ideal" crimp for these terminals. In most cases you will however be able to produce a crimp that is "satisfactory" and if you are concerned with the strength of the crimp, you also have the option of soldering the connection as well. The terminals supplied with these connector options are Molex PN 0039000038 and can be ordered from a number of places online.

3D Printed Case

The BoostSmart is now offered with an optional case that has been 3D printed using PET-CF filament. This type of material is very rugged and holds up very well in vehicles compared to most other types of material. We do not make this case ourselves, we have them made for us by a commercial printing company and because of this we are unable to provide any type of design file in the event you wished to make a copy of our case.

If you did not purchase the 3D printed case with your BoostSmart, you will need to design your own case or come up with some type of enclosure that protects the circuit board before using your BoostSmart. Your warranty does not cover physical damage to any part/component on the BoostSmart and the circuit board should be handled with care to ensure it is not damaged while you design your own case/enclosure.

Setup Requirements

The exact requirements to use your BoostSmart will vary depending on what your goals are. However, there are several things that are required regardless of how you plan to use your BoostSmart.

BoostSmart V2 Requirements

- Windows based PC
- Holley Tuning software
- Holley USB to CAN Programming cable
- Terminator ECUs require at least V2 Build 80 or higher firmware
- Dominator ECUs require at least V6 Build 220 or higher firmware

OPTIONAL - BoostSmart Configuration App Settings*

- Lock Flex fuel reading by RPM
- Lock Flex fuel reading by Map KPA
- Set Min flex sensor ethanol reading
- Set Max flex sensor ethanol reading
- Set a default value for Flex sensor out of range/failure condition
- Adjust rate of change for flex sensor out of range reading
- Adjust flex sensor smoothing rate
- Toggle Input channels between Sensor channels and Dial buffered channels

NOTE: If you choose to use the optional BoostSmart Configuration app, you will need to fully understand what you are doing. SwapSmart will not provide support or answer questions regarding the use of the BoostSmart configuration program. The BoostSmart configuration program should be considered a beta release and may contain bugs.

*This program should only be used by experienced tuners who are able to understand what each setting does and how it may impact the engine.

BoostSmart Installation Guidelines

- *Device is not waterproof or splash resistant. Direct contact with water will damage the module.*
- *This device is sensitive to heat and must not be mounted under the hood of your vehicle.*
- *This device is sensitive to RFI and magnetic fields. This means it should not be mounted near anything related to the vehicle's ignition system such as coil packs, spark plug wires, etc. It should also not be mounted near electrical relays or solenoids*.

When installing your BoostSmart, it is important to choose a location where it will be protected from extreme heat, moisture, or direct contact with sunlight. The BoostSmart should **NOT** be mounted in any type of sealed enclosure such as a "project box" or any type of under-hood storage compartment. Ideally you should mount your BoostSmart inside the dash of your vehicle or perhaps in a center console or glove box. Special care should be taken with placement of the module so that it will not interfere with any safety equipment or normal operation of the vehicle. If you are mounting the BoostSmart module in your dash, care should be taken to avoid mounting it in direct contact with any moving parts or parts of the HVAC unit. There are certain parts in most HVAC systems that are capable of reaching temperatures of over 200 degrees in many vehicles. ***If the BoostSmart is mounted near an HVAC box with high temperatures, it can dramatically impact the devices accuracy.***

When routing the wiring for your BoostSmart, you should take special care to avoid routing any of the device's wiring near items that could cause possible interference such as ignition system wiring to the coil packs, spark plug wires, electric motors/pumps, relays, or solenoids

Before mounting your BoostSmart, you should "mock up" its planned location and then carefully check for any possible items that may interfere with its installation. You should also carefully check your intended wire routing prior to making any electrical connections. For most applications, the length of the Flying Lead harness should be more than adequate, but due to an infinite number of possible installation situations, there may be times when the provided wiring will not be long enough to reach all the items you intend to connect. Before you decide to "extend" any of the wiring, you should consider alternative mounting locations that may better position the device so that the wiring is able to reach your planned use location. If you must extend the wiring, you should only do so using a high quality TXL grade (or better) type of wiring.

There are several connectors on your BoostSmart. Each connector can only be connected in one place and in one direction so making the connections is very straight forward. When making connections, the *last* connection made should be to connect the BoostSmart to your ECU's CAN connector. You should **NEVER** attempt to make any connection while the BoostSmart is connected to the ECU or while the Key is turned ON.

Supported Channel Types

The following channel types and speeds are supported.

Input Channels 1 - 3

- CAN 0-5 volt
- CAN 0-20 volt
- Supports Bus Speeds of 1hz - 100Hz

Output Channel 1

- CAN PWM – Fixed Frequency/variable duty cycle
- PWM Frequency supported 1hz to 1Khz
- PWM Duty Cycle supported 1% to 99%
- CAN Ground (Ground Swicthed)
- Supports Bus Speeds of 1hz - 100Hz

Output Channels 2 - 4

- CAN Ground (Ground Swicthed)
- Supports Bus Speeds of 1hz - 100Hz

Flex Fuel Sensor Ethanol Content

- CAN Speed/Frequency
- Supports Bus Speeds 1Hz

Flex Fuel Sensor Temperature

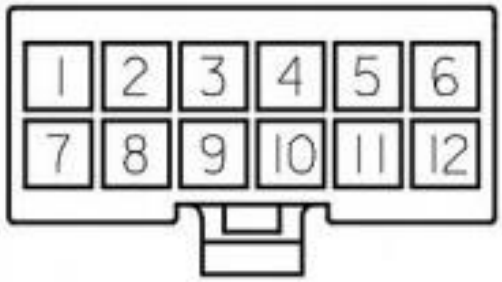
- CAN Thermistor
- Supports Bus Speeds 1Hz

The default CAN ID of the BoostSmart is 42. If you already have a device connected to your ECU that uses this ID, you can use the Swap Smart configuration app to change the devices CAN ID that is used.

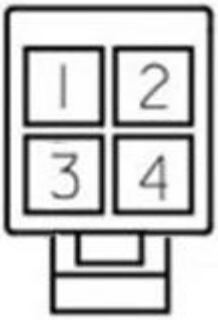
NOTE: *When selecting the BUS Speed frequency for each channel type, you should set the frequency to the lowest possible value that will provide the required sampling rate. Increasing the speed of a sensor's refresh rate will provide more sampling points per second, however it comes at the expense of bandwidth available on the CAN BUS network. Due to the design of the data bus used by Holley, it is possible to overload the data bus by setting the refresh rates at high rates for multiple channels. When the available bus bandwidth limit is reached, everything connected to the data bus will start to experience CAN ERRORS. If this happens data PIDS may display data incorrectly or may display the message "no data" or "data error".*

IO Connector

The following table outlines what each terminal is used for in both the IO connector and the Power/CAN connector. All connector views are taken from the back side of the connector, this is the side that the terminal and wire are inserted into the connector from.



Top Row (Viewed From Back Of Harness Connector)		
Connector #	**Wire Label**	**Flying Lead Wire Color**
#1	Input Channel 2	White/Black stripe
#2	Flex Fuel Sensor Signal	White
#3	Alternator Reference Signal	Tan
#4	Flex Fuel Sensor 12V Supply	Red
#5	Output Channel 4	Gray/Blue stripe
#6	Output Channel 3	Gray/Green stripe
Bottom Row (Viewed From Back Of Harness Connector)		
Connector #	**Device Function**	**Flying Lead Wire Color**
#7	Input Channel 1	White/Blue strip
#8	Dial-A-Boost (Input Channel 3)	Yellow
#9	Ground Reference	Black
#10	5 Volt Reference	Orange
#11	Output Channel 2	Gray/White stripe
#12	Output Channel 1	Gray/Red stripe



Power/CAN Connector(Viewed From Back Of Harness Connector)		
Terminal	**Device Function**	**Power Harness Color**
#1	Ground	Black
#2	CAN Lo	Orange
#3	Ignition 12V	Red
#4	CAN Hi	Orange/White

NOTE: Wire colors reference BoostSmart wiring colors. If you are building your own power harness, make certain you have wired the 4-pin connector correctly **before** connecting it to your BoostSmart. If this connector is wired incorrectly, you **will** void your warranty and cause damage to the BoostSmart.

BoostSmart Software Settings

Below is a matrix that outlines how to configure each channel in the Holley PC Software.

Holley Software Channel Configuration Matrix

CAN Device: Can I/O Module
CAN BUS: CAN BUS 1
CAN ID: 42

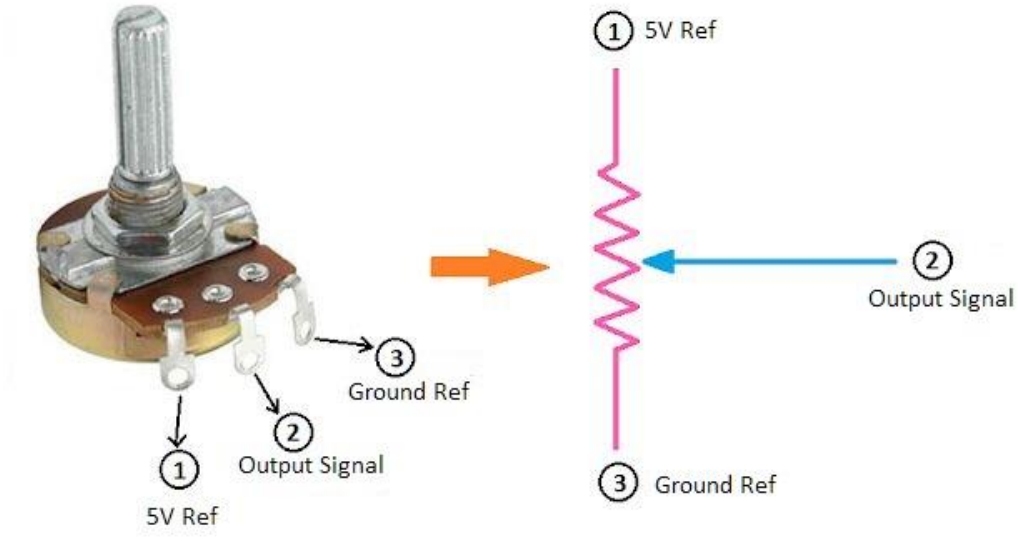
Channel Function	I/O Terminal	Channel Type	CAN Channel	Broadcast Rate
Input Channel (Dial-A-Boost)[1]				
Dial-A-Boost	I/O #8	CAN 5 or 20 Volt	Input #1	1HZ to 100Hz
Flex Fuel Sensor				
Flex Sensor Signal	I/O #2	CAN Speed/Freq	Input #2	1 Hz
Fuel Temperature	N/A	CAN Thermistor	Input #3	1 Hz
Input Channels 1[2]				
Input Channel 1	I/O #7	CAN 5 or 20 Volt	Input #4	1hz to 100Hz
Input Channels 2[2]				
Input Channel 2	I/O #1	CAN 5 or 20 volt	Input #5	1hz to 100Hz
Output Channel 1 [2,3, 5]				
Output Channel 1	I/O #12	CAN Ground/CAN PWM	Output #1	1hz to 100Hz
Output Channels 2-4 [2,3, 4]				
Output Channel 2	I/O #11	CAN Ground	Output #2	1hz to 100Hz
Output Channel 3	I/O #6	CAN Ground	Output #3	1hz to 100Hz
Output Channel 4	I/O #5	CAN Ground	Output #4	1hz to 100Hz

[1]Suggested broadcast rate for Dial-A-Boost channel is 5Hz
[2]Suggested broadcast rate is 1hz to 10hz
[3]Maximum continuous current draw is 250mA per channel switched or 400mA with PWM
[4]This is an ON/OFF type of channel, PWM output is not supported
[5]Supported Fixed Frequency from 1 to 1K hz & 1 to 99% duty cycle

NOTE: *When selecting the BUS Speed(frequency) for each channel, you should set the frequency to the lowest possible value that will provide the required sampling rate. Increasing the speed of a sensor's refresh rate will provide more sampling points per second, however it comes at the expense of bandwidth available on the CAN BUS network. Due to the design of the data bus used by Holley, it is possible to overload the data bus by setting high(fast) broadcast rates on multiple channels. When the available data bus bandwidth limit is reached, everything connected to the data bus will start to experience CAN ERRORS. If this happens data PIDS may display data incorrectly and or may display the message "no data" or "data error. This condition will also prevent channels on the BoostSmart from being read correctly while data bus errors are present.*

Analog “Dial” Wiring Example

Below is an example of how to wire a “dial” or variable resistor with your BoostSmart. The terminal numbers/names will vary based on the brand and type of dial you are using; you should always consult the instructions for your dial you are working with to ensure it has been wired correctly.



Dial-A-Boost Wiring Matrix		
BoostSmart IO Terminal #	**Wire Color**	**Dial Terminal #**
Terminal #10 – 5 Volt Reference	Orange	#1
Terminal #8 – Dial-A-Boost Signal	Yellow	#2
Terminal #9 – Ground Reference	Black	#3

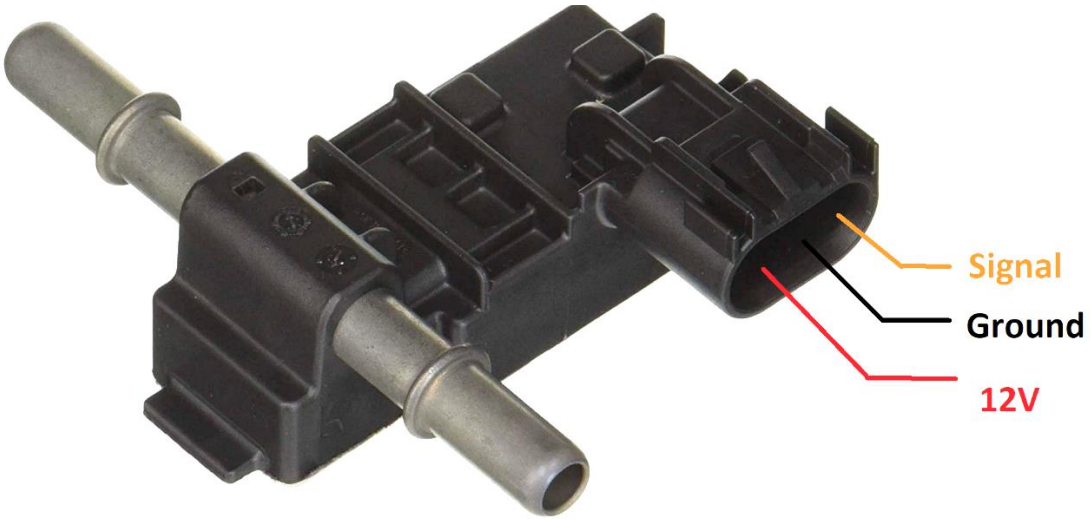
All 3 of the BoostSmarts analog channels are capable of being configured for use as dial inputs, however by default only the channel labeled as “Dial-A-Boost” has this option enabled. If you would like to change this channel to a conventional analog input or would like to change input channels 1 or 2 to work with a dial you can use the BoostSmart configuration app to do this.

When an input channel is configured as a “dial” input, the BoostSmart applies a special conditioning algorithm that allows for more precise control of the input channels voltage reading while also making it less sensitive to sudden changes in the resistance while the dial is being turned. You can control the “speed” that the dial responds with by altering the broadcast frequency in the Holley software for the channel you are working with. The suggested speed to start with is 5Hz. If this feels too sensitive, you can slow it down; if you would like it to feel more responsive, it can be increased. However, most users agree that 5Hz feels perfect. If you find that your dial produces unexpected jumps while being adjusted, the sensitivity of the smoothing algorithm can also be adjusted in the BoostSmart configuration utility.

It is important to make sure you are using a quality dial, a poor-quality dial may have dead spots(no change when moved), produce unpredictable readings or may not provide linear control of the output voltage.

Flex Fuel Sensor Wiring

The BoostSmart been tested using a number of different Continental/GM flex fuel sensors, however the recommended part number is #13507128. To determine if a sensor will be compatible, the sensors must be capable of reading both ethanol content as well as fuel temperature and work with a 50hz to 150hz open drain output signal.



Flex Fuel Sensor Wiring Matrix		
BoostSmart IO Terminal #	**Wire Color**	**Sensor Terminal**
Terminal #4 – 12 Volt Ref	RED	VCC/12V
Terminal #2 – Sensor Signal	WHITE	VOUT/Signal
N/A	Sensor May be Chassis Grounded	GND/Ground

Wiring a Continental/GM flex fuel sensor for the BoostSmart is very simple and does NOT require the use of an external pullup resistor. The pullup resistor has been built into the BoostSmart to simplify wiring. The BoostSmart does not provide a ground reference for the flex fuel sensor, you can simply ground your sensor's pigtail to your vehicle's frame/body near wherever you have the sensor mounted. Make sure to sand the metal surface before making your ground connection and apply a small amount of dielectric grease to the surface to prevent corrosion/rust.

Note: You should ONLY mount the flex sensor in your pressure(supply) line. Mounting the sensor in the return line ***will*** cause the sensors reading to jump around and/or read inaccurately. The return line does not have constant pressure and will allow air pockets to form inside the sensors sampling area. If you are running a high flow fuel system, consider using a flex sensor bypass bracket in your **supply** line. These are available from summit racing in 6an, 8an & 10an sizes and will prevent the issues associated with mounting the sensor in your return line.

Caution: Mounting the flex fuel sensor higher than the fuel tank may cause the sensor to drain back into the fuel tank when the engine is not running. When this happens, the sensor will read inaccurately until the air has been purged from the fuel line.

Input Channel Use and Configuration

The input channels on the BoostSmart V2 have been changed slightly from the previous design. By default, the BoostSmart is configured with 3 channel setup for use with a dial/variable resistor and the other 2 input channels are setup for use as analog input channels for use with various types of sensors. When using the BoostSmart Configuration app, you are able to select mode each input channel will be used as allowing every input channel to be configured as dial inputs or allowing you to use all 3 input channels as sensor input.

When an input channel has been configured for use with a dial/variable resistor, a special algorithm is applied to the channel that provides a “smoother” reading and will be far more stable than if the channel was setup as a sensor input. The amount of smoothing that is applied to each channel can also be configured using the BoostSmart configuration utility. Note: It may be necessary to *slightly* increase or decrease the broadcast speed of a channel after changing its smoothing rate in order to maintain the same rate of adjustment.

When an input channel is configured as a 0 – 5-volt input, the usable voltage range is 0 – 4.95 volts. The input channel will not read higher then 4.95 volts regardless of what the input voltage being supplied to the channel may be. You should ONLY use the BoostSmarts built in 5-volt reference and ground reference wires with any sensor connected to the BoostSmart. Attempting to use a 5-volt reference from any other source may cause damage to either the BoostSmart or the device that was supplying the 5-volt reference voltage. This also applies to the ground reference; you should never chassis ground sensors ground reference or use a ground reference provided by any other source. Doing so may damage the BoostSmart or cause inaccurate sensor readings.

When an input channel is configured as a 0-to-20-volt input channel the maximum voltage the BoostSmart is capable of reading is 20 volts, applying more then 20 volts to any of the BoostSmarts input channels may cause serios damage to the BoostSmart. When a BoostSmart input channel is configured as a 0-to-20-volt input, the built in 5-volt reference is no longer necessary. Unless you are working with a device that specifically requires a voltage range above 5 volts, it is not recommended to use this channel mode as it has a lower resolution due to the increased voltage range.

CAN based channels should NOT be used as any input for anything that is time critical. *There is an inherent amount of input latency due to the nature of the CAN based devices. While the input latency is typically very minimal it will never preform as fast or accurately as an input channel wired directly to the ECU.*

Warning: Failure to verify sensor readings are accurately may result in serious engine damage. *When using the input channels as analog inputs, you will need to verify that your sensor(s) are reading accurately in the Holley Tuning software. In some cases, it may be necessary to implement an offset voltage or remap a sensor’s scaling in the Holley software. It is the installer’s responsibility to verify sensor readings provided by the BoostSmart are accurate.*

Output Channels 1 – 4 Use and Configuration (Swicthed Output)

The BoostSmart provides four user-controlled output channels. These channels are suitable for switching standard 30- or 40-amp automotive style relays. The output channels provided by the BoostSmart are capable of switching a single load that draws up to 250mA. These channels are ***NOT*** capable or intended to drive any type of load directly. ***Attempting to drive multiple relays with a single channel or directly driving a load will likely cause serious damage to the BoostSmart's circuit board and will not be covered under your warranty.***

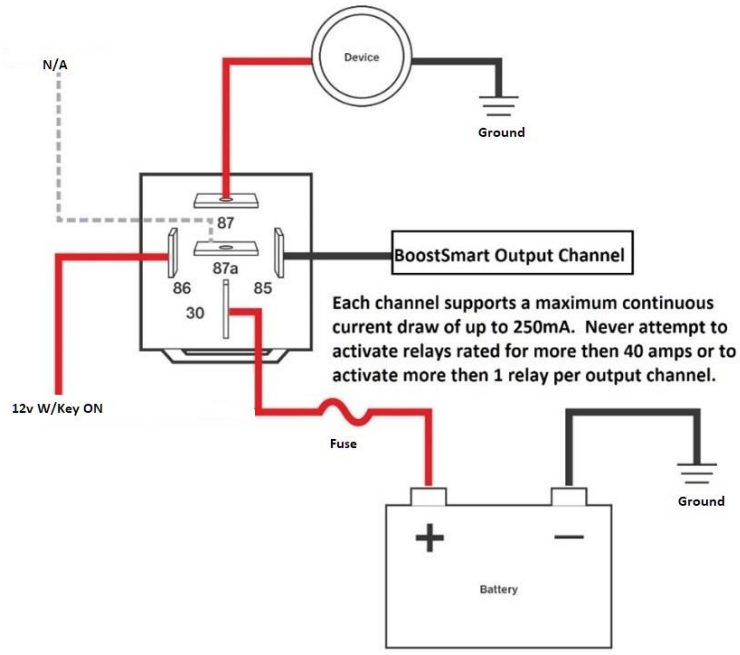
Due to the design of the data bus used by this PCM there is an inherent amount of latency that will always be present and can be very unpredictable. Because of this, any output channels that used over CAN BUS should ***NEVER*** be used to control any type of device that is time sensitive. These channels should ***ONLY*** be used for switching non time-critical devices such as cooling fans or your AC compressor. Every effort has been made to minimize the amount of latency these channels will present, but they will never be able to respond as quickly as an output wired directly to the ECU. ***Therefore, these channels should NOT be used as any output for time critical devices such as a trans brake, line lock or rev limiter if you are in a competitive environment.***

The suggested broadcast setting for these channels is 5Hz. This will provide a response speed of approximately 1/5 of a second and is more than adequate to control most devices with no discernable latency. Attempting to set these channels above 10Hz will greatly increase the load on the CAN BUS and can begin having negative effects, especially when multiple devices are connected to the ECU's data bus.

Below is a wiring diagram that outlines how the BoostSmart output channels should be connected. The BoostSmart output channels will apply a GROUND signal when they are activated. It is very important to pay close attention to the terminal numbers on your relays when making the connections. Many relays will use a clamping diode inside the relay.

Warning: ***If a diode protected relay is wired backwards, it will cause a short circuit across the relay's activation terminals and may damage the output channel(s) on your BoostSmart.***

Normally OFF Relay with a Ground Trigger



Note: *If terminal 86 of the relay is not connected to a switched 12V power source (such as the vehicles ignition switch), the BoostSmart may cause the relay to activate when the BoostSmart is powered off.*

Output Channels 1 PWM Use & Configuration

The #1 output channel on your BoostSmart is capable as being used as a **negative** PWM output channel. This is the ONLY channel that supports PWM, attempting to configure any other channel as a PWM output channel will cause the BoostSmart to lock out that channel and set an error code.

The #1 output channel should not be used to control any PWM device requiring more than 400mA of continues current. If the device you wish to control requires more current than this then it will be necessary to use a solid-state relay that is rated for the amount of current you wish to drive.

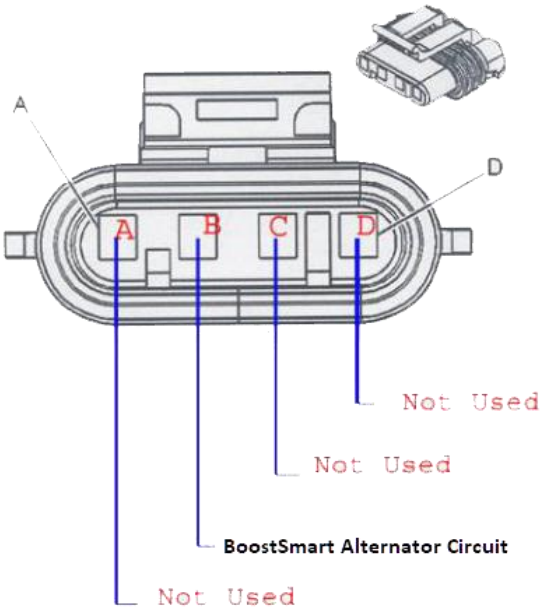
NOTE: Attempting to drive a mechanical relay using a PWM signal will damage the relay may also cause damage to your BoostSmart that is not covered by your warranty.

When configuring the PWM output channel in the Holley PC software there are two options, RPM Derived and Fixed. The BoostSmart currently only supported the fixed frequency option. Any frequency between 1hz and 1,000hz can be set and this is the frequency the channel will output when the output is active. The BoostSmart supports duty cycle values between 1% & 99%, a value of less than 1% will cause the channel to remain inactive(off). A value above 99% will cause the channel to be turned fully “on” and the channel will no longer produce a frequency-based output signal. This is important to note as many PWM devices have a specific frequency range and duty cycle they are designed to operate with in, and when driven outside of that range could damage the device. It is up to the user to ensure that the frequency and duty cycle are configured to match the device being driven.

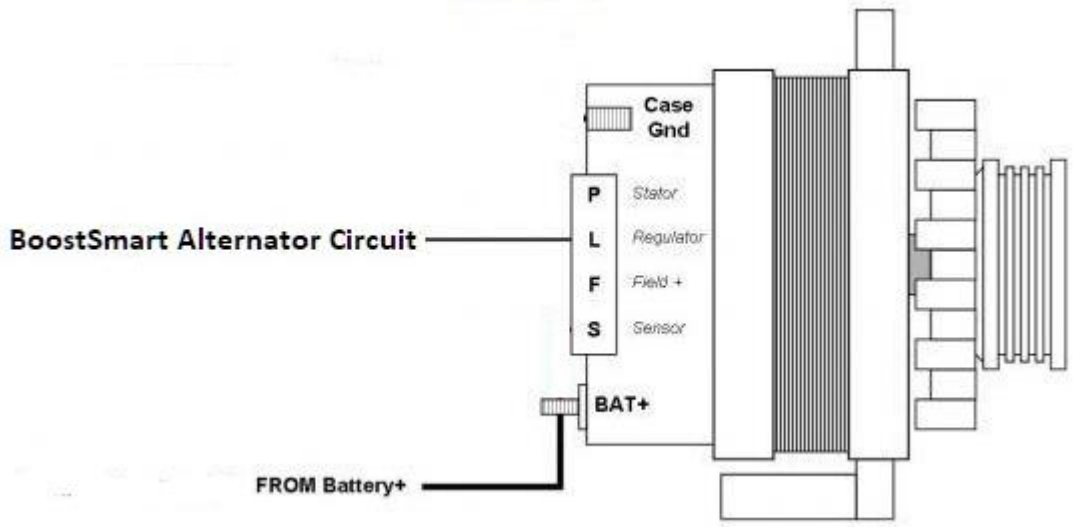
To determine if the device you want to drive can safely be driven directly from the BoostSmarts output channel you will need to determine the devices current draw, many PWM devices list their current use in watts. When working with devices that use a watt rating it is important to note the voltage that rating is listed at when determining the current draw. If you are unsure if the device will require more current then the channel can safely provide, the only correct answer would be to use a solid-state relay. Overloading the output channel may cause damage to the BoostSmart that would not be covered under warranty.

Alternator Channel Wiring

The BoostSmart provides an output channel designed to work with the common GM 4-pin alternator. This circuit uses a 470 Ohm resistor that is built into BoostSmart's circuit board, so an inline resistor is not necessary. This output channel is also protected by a special type of fuse on the BoostSmart's circuit board that works like a circuit breaker, meaning if the circuit is overloaded it will open the circuit until the current draw has returned to normal and the fuse has cooled off. At that point, it will reset itself and reapply power to the alternator.



NOTE: This circuit has ***ONLY*** been tested for compatibility with the 96 and up GM 4-pin style alternators. It is ***NOT*** compatible with the GM 2-pin alternators that are often found in 2003 and newer vehicles. If you are using a style of alternator other than a 96 and newer GM 4-pin, then you will need to verify this circuit meets your alternator's requirement before connecting this circuit. ***Connecting this circuit improperly may cause damage to your vehicle's electrical system, alternator, or the BoostSmart.***



Alternator Circuit Specifications			
BoostSmart Circuit	**In-Line Resistor**	**Fuse Rating**	**Diode Voltage Drop**
Terminal #3 – TAN Wire	470 Ohm – 1 watt	0.5 Amp @16V	0.7 volts

Troubleshooting Steps

Each BoostSmart is assembled, programmed, and tested by hand prior to shipping to ensure the highest possible quality control and to make sure you have a trouble-free installation. There will always be situations where you may run into trouble, and in virtually all situations when something is not working as expected, the issue can be traced back to an incorrect setting in the Holley tuning software or because of a connection issue in your wiring. To assist in troubleshooting potential issues, a comprehensive set of error codes have been built into the BoostSmart using the onboard RGB LED. A breakdown of these error codes is provided on the next page.

Condition: *BoostSmart suddenly stops working and appears as if it was reset.*
Solution: Check the connections on the BoostSmarts power harness where it connects to the Holley CAN connector. The terminals used in the Holley CAN connectors are easily pushed out of the connector where they will intermittently make contact.

Condition: *BoostSmart LEDs turn off or starts flashing while the engine is being cranked*.
Solution: The BoostSmart is designed to operate with as little as 10 volts. If your BoostSmart is rebooting while the engine is being cranked the most common cause is an electrical issue caused by a weak battery or bad connection to the battery. This can also be caused when you are powering your fuel pump directly from your Holley Wiring harness. To correct this issue, you should install a relay for your fuel pump so that the pump pulls power directly from the battery and not the ECU's switched 12-volt source. This can also be caused by a starter that is drawing excessive current. To prevent the BoostSmart from rebooting while the engine is cranked, you will need to maintain at least 10 volts at the BoostSmart's power connector.

Condition: *After changing a channel setting in the Holley PC software, BoostSmart stopped working.*
Solution: Any time a change to a channel setting is made for a CAN channel, the key must be power cycled for at LEAST 10 to 15 seconds. The ECU will only send the new configuration data to the BoostSmart when it is powered ON. Depending on your ECU, it may take as long as 10 seconds to fully power off. This can be seen by viewing the LEDs on your ECU. The ECU has not fully shut down until ALL the lights on the ECU have turned OFF.

Condition: *The BoostSmarts Green LED blinks for 60 seconds and then turns either White or Majenta*
Solution: The BoostSmart is sent a series of setup message when the ECU is initially powered on. If a configuration message for 1(or more) channels on the BoostSmart is NOT detected within 60 seconds of having been turned on, the green LED will stop blinking and either a white or magenta colored LED will turn on indicating that one or more channels was not setup correctly. The reason may simple be that you have not configured one of more channels on the BoostSmart, however if you wish to correct this issue so the BoostSmart indicates a solid green LED you will need to at least configure all the input and output channels. It does not matter if you are using them for anything, simply configuring them so they are being broadcast will resolve this issue.

LED Troubleshooting Matrix		
LED Color	**LED State**	**Cause of Error**
N/A	N/A	BoostSmart does not have power or an output circuit is shorted.
Red	Solid	No CAN BUS is detected or BUS is shorted.
Red	Blinking	CAN BUS network error, try reducing the broadcast frequency of input and output channels to reduce bus load.
Green	Solid	BoostSmart is working normally and all channels have been configured correctly
Green	Blinking	The green LED will blink while the BoostSmart is searching for channel configuration messages. If one or more channels are not setup(in use) after 30 seconds the green LED will stop blinking and the LED will change colors to indicate what channel was not setup. See the table below for more details.

The following LED colors are used for error codes that indicate a channel has not been configured or was configured incorrectly. If there is an error, or 30 seconds after the ECU has powered on if a channels configuration message has not been found the BoostSmart will begin blinking an error code. The error code will be blinked for 30 seconds, after that time the LED will turn to a solid color matching the error code type.

Below is a table that will help you identify the various types of error codes

LED Color	Channel Type	Cause of Error
White	Input Misconfigured	One(or more) input channels is set as a channel type that is not supported by the BoostSmart. Check Input Channel types selected
Magenta	Output Misconfigured	One(or more) output channels is set as a channel type that is not supported by the BoostSmart. Check Output Channel types selected
Yellow	Input Not Configured	One of more input channels have not been configured correctly or are not being used. Check channel CAN ID if channel has been configured
Light Blue	Output Not Configured	One of more output channels have not been configured correctly or are not being used. Check channel CAN ID if channel has been configured

About BoostSmart Error Codes

To read error codes is very simple, the presence of an error code will be indicated by a RED Led that will light up for 2 seconds followed by either a White, Magenta, Yellow or Light Blue colored LED that blinks the channel number. The LED color indicates the error type and the number of blinks matching this color will indicate what channel the error has been detected on.

Example: There is a setup error on input channel 4. In this case the code being shown by the LED would be 4 white blinks followed by a solid red LED for 2 seconds. After 30 seconds the LED would turn solid White and stop blinking.

When an error code is present, only one code will display at a time. If there are any additional error codes they will not be shown until the first error has been corrected. The error code priority is based on the channel number where lower numbered channels will set a code first. There is also a priority based on channel types, output channels are checked before input channels so if you have one input and one output channel that are both not setup(or setup incorrectly), only the code for the output channel would be shown. Once the output channel error was corrected, the code for the input channel would then be shown.

NOTE: When an error code is present, any channel that is not setup correctly will not be enabled however all other channels that are setup correctly will function normally.

Device Specifications	
Device Min Voltage	10 volts
Device Normal Operating Voltage	11-16 volts
Device Maximum Voltage	20 volts
Average Current Draw	30mA
Maximum Current Draw	2.5 amps
Input Channel Voltage Range	0 – 20 volts
Output Channel Max Current	250mA continuous 500mA surge @ 70 degrees ^{F}
Output Channel Overcurrent Protection	NO
Output Channel Type	Ground sink
Flex Fuel Sensor Pullup Resistor	Internal(No External Pullup required)
Flex Fuel 12V Reference	VCC - 0.7 volts
Flex Fuel Sensor Max Current	500mA (Self Resetting Fuse)
5V Reference Voltage (No load)	+/- 5% @ 70 degrees ^{F}
5V Reference Current	75mA continuous/100mA Max
Alternator Reference Voltage	VCC – 0.7 volts
Alternator Reference Resistance	470 ohms @ 1 watt @ 70 degrees ^{F}
Alternator Reference Maximum Current	500mA (Self Resetting Fuse)
Firmware Update’s Supported	YES