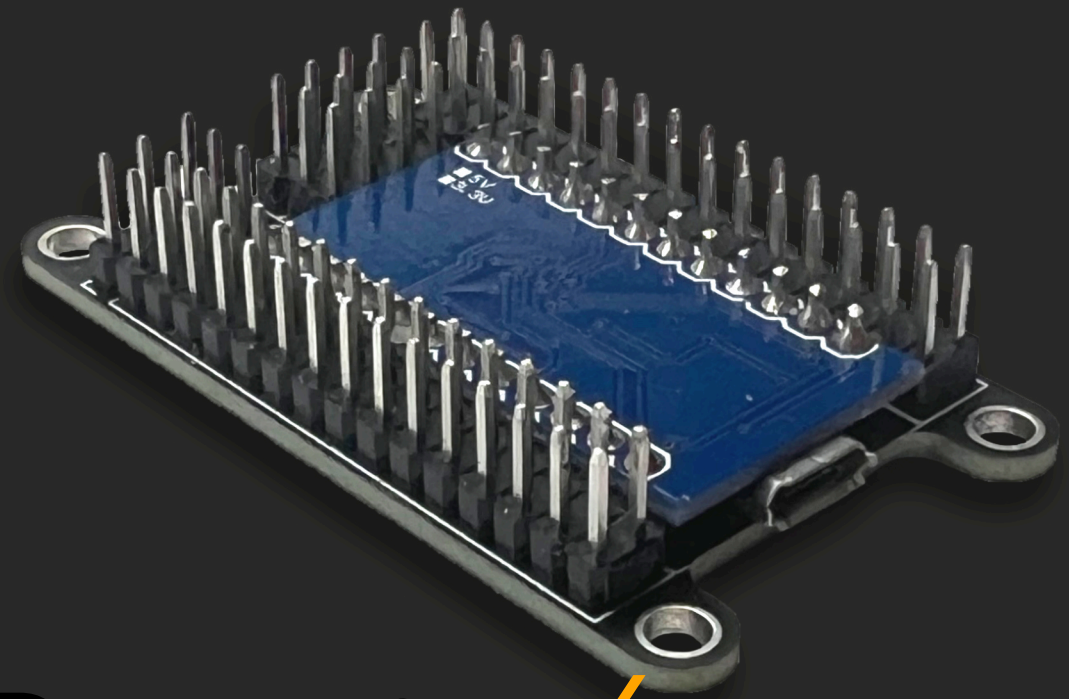


iFLAG
set-up

Penguin r/c SIMULATION

PSUSB_32xia

Universal HID Controller

Connection and Default Settings:

Connection to the PSUSB_32xia can be made using a standard Micro USB cable (not included):

The PSUSB_32xia uses standard USBHID interfacing with serial communication for user set-up. The device is fully compatible with Mac and Windows computers, however, custom setup can only be done via the iFlag Program (**Penguin***r/c* version) with the **Penguin***r/c* Extension for Windows*. All device settings are stored on this device.

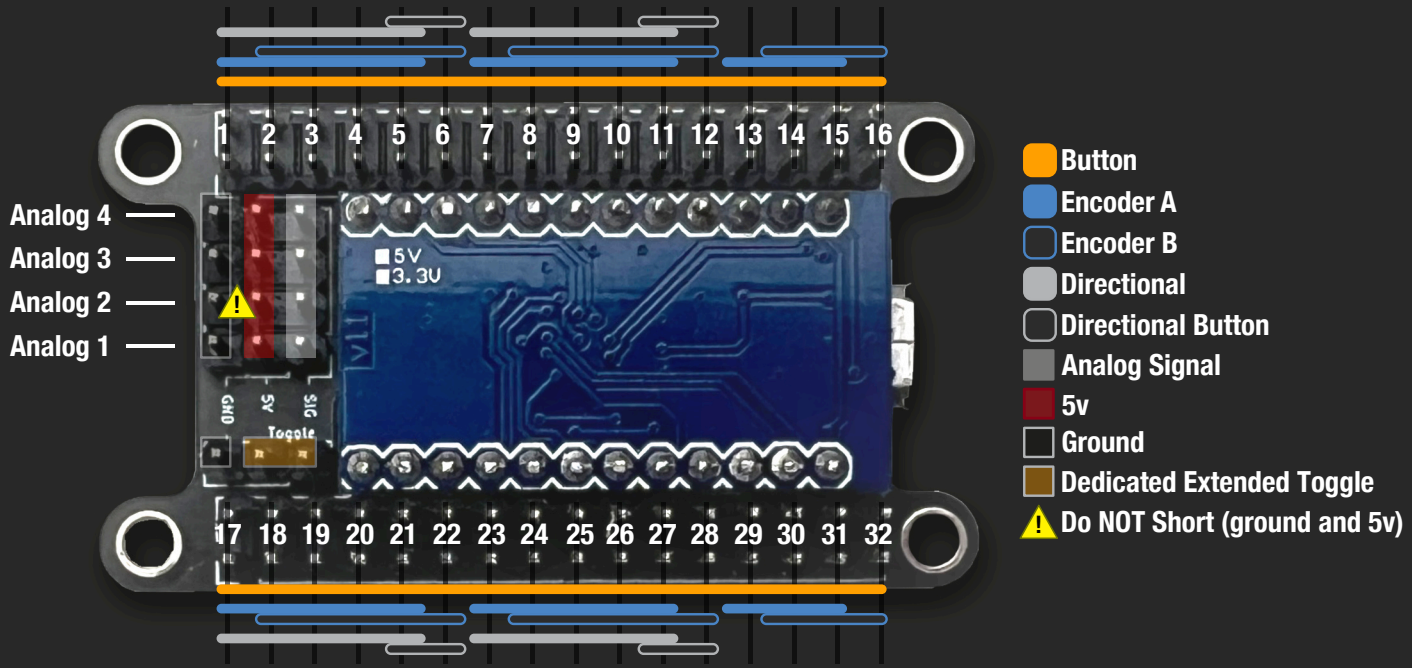
The iFlag program (if needed) can be downloaded from www.penguinrc.com or shop.penguinrc.com. If you were the original purchaser of this product you may log into your account and re-Download from the “Downloadable Products” Section in your account information.  This program and extension are free to download.

Upon first use the PSUSB_32xia is set to the following default configuration:

- Extended Mode - Disabled
- Shift Button Location - Dedicated “Button 0”
- Inputs (1 - 32) - Momentary Press Buttons (extended enabled)
- Analogs 1 - x axis (output enabled)*
- Analogs 2 - y axis (output enabled)*
- Analogs 3 - Slider 1 (output enabled)*
- Analogs 4 - Slider 2 (output enabled)*

* Output of analog Axis may be noisy when signal is not connected to an Analog resistance, it is recommended to disable output when not in use to avoid this noise interfering with calibration systems in some programs.

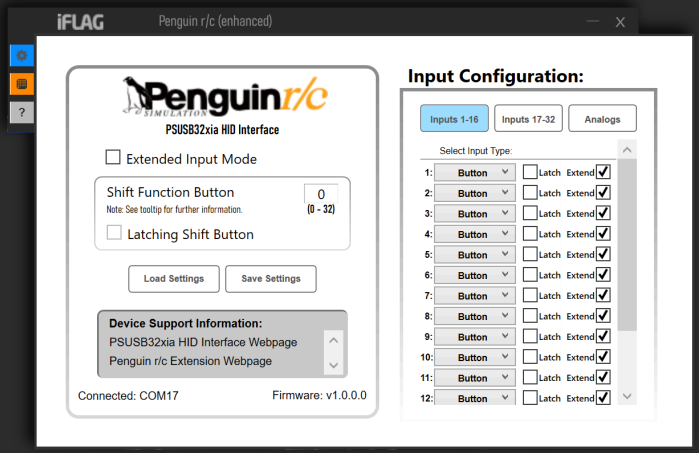
Physical Device Connections:

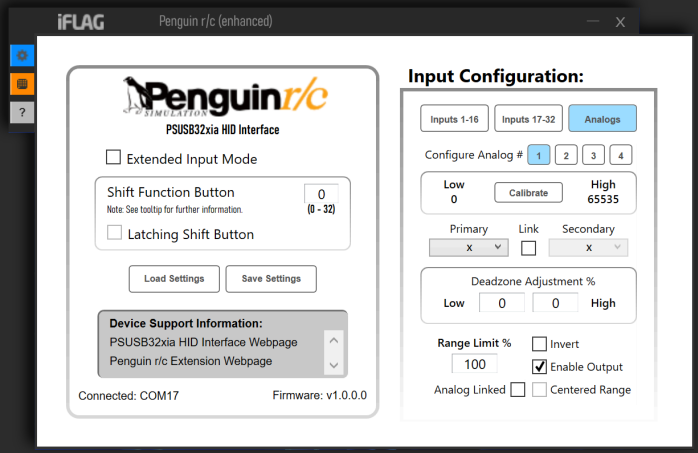


Custom Setting via iFlag: (Interface Overview)

iFlag allows you to customize the PSUSB_32xia through the use of the **Penguin***r/c* Extension. The primary user interface for set-up can be accessed via selecting the PSUSB_32xia HID Interface via the Orange Device menu within the iFlag program. The Interface consists of several sections:

- **Primary Device Settings** - Includes Extended mode settings, Device information, and Load/Save syncing.
- **Input Configuration** - Allows input setting via 3 primary pages “Inputs 1-16”, “Inputs 17-32”, and “Analogs”. The Analog Input page allows for independent selection and setup of the 4 analog inputs the PSUSB_32xia provides.





Custom Setting via iFlag: (Extended Mode and Basic Settings)

The following settings are available from the main device page within the **Penguin***r/c* iFlag program with the **Penguin***r/c* Extension:

- **Extended Input Mode** - This setting allows every input type that is set to be extended enabled to act as a secondary fully independent input located 32 positions away from the original location. This gives the PSUSB_32xia 64 completely independent HID outputs.

- **Shift Function Button** - Set this to the input number that you wish to use for toggling extended mode. This can be dedicated button input location on the PSUSB_32xia (set button to “0”) or any other input number (button type only). If the input number is associated with an encoder the system will automatically disable extended mode as pulsing inputs cannot provide input shifting.

- **Latching Shift Button** - This setting allows the shift button latching capability to allow extended enabled inputs to remain primary until the button is pressed again.

Load & Save settings Buttons - These buttons are to allow you to keep your PSUSB_32xia settings synced to what is shown on screen. While the device loads settings at startup. You can find yourself changing settings but NOT saving them causing the iFlag settings to be out of sync with the device until the device is restarted.

Reset the PSUSB_32xia *(default)* - To reset the device to its default settings, hover your mouse over the Connected: COM port.. This will reveal the reset device button. Click here to reset…

Custom Setting via iFlag: (Input Type)

The PSUSB_32xia has 32 independent digital binary inputs. Inputs are independently set for different types along with whether the input is Latching, Can be extended, or has additional settings. The PSUSB_32xi functions on an underlying diode separate matrix system. This does limit which input types can be used in which input locations.

The following input types can be set:

- Button (Latching, Extended Enable) - up to 32 inputs can be allocated.
- Encoder (Extended Enable, Pulse Per Detent) - up to 16 input pairs can be allocated.
- 7-way(funky) (Extended Enable + Latching for Button) - up to 4 input sets (5 positions) can be allocated.

Input Type Notes:

- **Buttons -** When using a physically latching button do not enable latching for that input. Latching option is an electronic latch for momentary buttons.

- **Encoders -** Most encoders are 4 pulse per detent (default setting), however, 2 pulse per detent encoders do exist (7-way - funky encoder). Using the wrong pulse setting for your encoder type may result in incorrect processing of the encoder resulting in missed and/or doubled output. Encoders MUST use input pairs placed next to each other on the PSUSB_32xia with a common ground attached to one of the two inputs to work properly. If using an encoder "switch" (1 pulse per detent) you should use Button Inputs for proper use. Encoder switches do not require encoder grey code processing.

- **7-Way** (funky) - Setting this device on the PSUSB_32xia only sets the directional and button aspects of the device as these inputs require a single common ground for the 5 inputs. The encoder on a 7-Way (funky) is designed to be wired independently of the main directional as a normal encoder with a 2-pulse per detent processing setting.

Custom Setting via iFlag: (Analog Inputs)

The PSUSB_32xia has four independent Analog Axis inputs. Each input is independently calibrated with full range 16bit interpolated output.

Each analog input provided by the PSUSB_32xia features:

- Automated Calibration - Detection of Analog Extents (default 0 to 65535)
- Selectable Analog Channel *(x, y, z, Rx, Ry, Rz, Slider 1, or Slider 2)*
- Linked Channel option
- Low and High DeadZone adjustments up to 60% of available range
- Range Limit 0% to 100% output (analog adjustable with linked channel)
- Inverted Output
- Enabled Output (turns off output to USB)*
- Centered Range *(currently NOT implemented)*

* If an analog resistance device is not connected, it is recommended to disable output to avoid noise interfering with calibration systems in some programs.

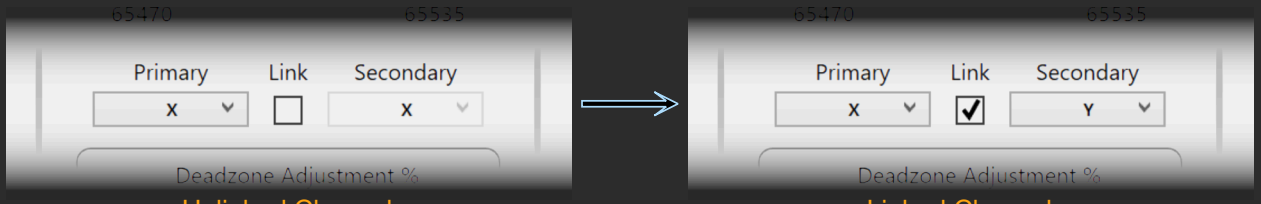
Calibration:

To calibrate your analog input “click” on the “Calibrate” button for the input you wish to set. iFlag will guide you through the process. You will have 5 Seconds to run the analog input to the extents of the device range. You may short calibrate if you wish but it is not necessary if being used to remove any extent noise due to the ability to set dead zones at each extent of analog travel.

Custom Setting via iFlag: (Analog Inputs continued…)

Analog Channels & Linking:

The **Penguin***r/c* PSUSB_32xia allows you choose which channel you would like each of the 4 available analog inputs to output on. This is done by selecting the “Primary” channel from the dropdown menu. While it is possible to select the same channel for two analog inputs it is not recommended as each output sends position individually which could lead to erratic output.



Unlinked Channels

Linked Channels

Linking Channels - The PSUSB_32xia allows you to link two different analog inputs together to create a combined output on the primary analog input channel. To accomplish this click on the “Link” checkbox and set the “Secondary” channel of the primary input to the “Primary” channel of the analog input you wish to use in conjunction with the Analog input that you are setting up. When linked the “Primary” Channel will output the greater positional value of the linked inputs.

Note: If the “Enable Output” checkbox is not de-selected on analog input associated with the “Secondary” channel. The linked Analog Input will send its positional value output to its associated channel in addition to the linked channel output.

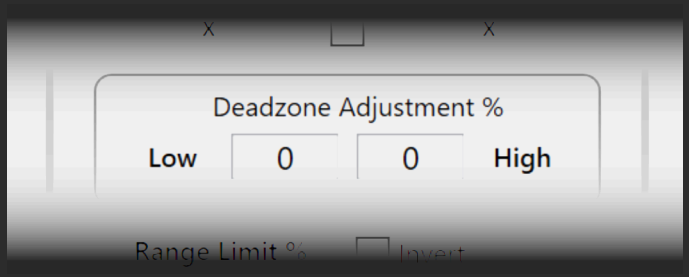
Custom Setting via iFlag: (Analog Inputs continued…)

Dead zone Adjustment *(low and high)*:
The PSUSB_32xia allows for dead zone settings at both the low and high limits at up to 60% of the calibrated range.

Dead zones are used for a many reasons however the most common are:

1. **Noise reduction** - If you have a noisy analog device when at the extremes having a dead zone can help eliminate this noise allowing for a cleaner more stable signal to be transmitted to the computer.

2. **Absolute Analog extents** - You can also use the dead zone to make sure that when the device is at its Maximum or Minimum position output is guaranteed to be 0 or 100%. By using a larger dead zone you can have absolute output over a greater portion of the analog device range.



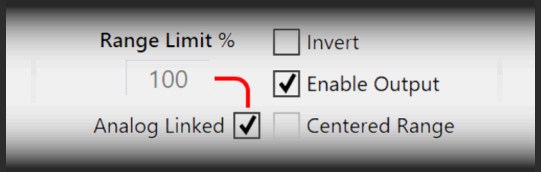
Note: If both the low and high dead zones add up to greater than 99% (switch output) unexpected results could occur.

Custom Setting via iFlag: (Analog Inputs continued…)

Range Limit & Range Limit Analog Linking *(usable %)*:

Range Limit: This setting clips the output of the set Analog Channel to the value selected (based on percentage). This setting can be useful if you want the analog channel to only ever output a certain level regardless of the positioning of the physical input. This works differently than the High Deadzone in that it does not map the output to full range it will stop output at whatever level is set. *(i.e. if the calibrated range of the analog is from 0 → 5000 and you set the Range Limit at 40% your output will stop at 40% (2000))*.

Range Limit Analog Linked: When selected this setting allows the Range Limit % to be controlled by the linked channel. This overrides the normal linked channel behavior and automatically disables the output of the linked channel and the manual adjustment of the limit% as the internal control of this function should not be output to any game device.



Invert Checkbox: This setting inverts the output of the channel to correct for the physical Analog device outputting opposite of expected.

Enable Output Checkbox: This setting enables or disables output of the channel to the HID system. Used mainly with the linked channels to suppress output where needed or when the input is not being used to prevent crosstalk.

Centered Range Checkbox: Currently not implemented. *(may allow range to be centered when implemented)*

Setting up linking for clutch input:

Single Clutch *(with adjustable limit)***:** This can be used as an on the fly alteration to clutch bite power.

1. Select Primary Channel
2. Link to Secondary Channel
3. Enable “Analog Linked” Range Limit

Dual Clutch: This is most simple method of dual clutch setup. This procedure links two channels at full range. This can also be done within some games directly without having to ever link channels within the PSUSB_32xia.

1. Select Primary Channel
2. Link to Secondary Channel
3. Disable output via the Enable Output Checkbox on the secondary channel

Dual Clutch *(with secondary clutch limit)***:** This method of dual clutch setup uses the same initial set-up as the standard Dual Clutch system but adds a limit to the second clutch to set a lower bite point for a more controlled standing launch

1. Set up Linking as indicated in the “Dual Clutch” method.
2. On the Secondary clutch channel adjust the “Range Limit%” to the bite point you wish to have the secondary clutch set to for launch control.

Dual Clutch *(with secondary clutch adjustable limit)***:** This method of dual clutch setup uses the same initial set-up as the standard Dual Clutch system but adds an analog adjustable limit to the second clutch to set an active lower bite point for a more controlled standing launch and adjustability on the fly to change the bite point based on conditions.

1. Set up Linking as indicated in the “Dual Clutch” method.
2. On the Secondary Analog channel link to a Third Analog channel different from the other two.
2. On the Secondary Analog input Enable “Analog Linked” Range Limit.

Troubleshooting:

PSUSB_32xia does not function or functions temporarily :

You may have another program that claims devices not allowing them to function properly. Programs known to do this are SimHub, some USB HID emulation systems, and some systems that read serial data. These programs will claim and then not release the COM port a device is on rendering it inoperable.

1. Check to see if the PSUSB_32xia is connected to your computer but not functioning by checking the "Devices and Printers" system control panel.
2. If the PSUSB_32xia is shown, right click on the device to get to the device properties.
3. Under the Hardware Tab make note of which COM Port the PSUSB_32xia is connected to "USB Serial Device (COM xx)"
4. Enter the program which is conflicting with the PSUSB_32xia and set the program, if possible, to ignore or not scan the COM port that the PSUSB_32xia is on. For SimHub *(the most common culprit)* this can be found under Arduino/My Hardware / Scan Settings / (radio) Never scan selected ports →
   Select the port of the PSUSB_32xia and unplug, reconnect, or restart.

PSUSB_32xia works properly but does not show up in iFlag Device list for set-up:

1. If PSUSB_32xia COM port is listed under "Uninitialized Devices" in the iFlag System Settings page under the blue systems menu.
   a. Roll over the COM port to see what the tooltip indicates. If the tooltip says:
      - "iFlag Device, Extension Not Detected" →
        Verify installation or install the Penguin r/c iFlag Extension.
      - "No Ping Detected" or "Incompatible Ping Detected" →
        Unplug, reconnect, or restart PSUSB_32xia as it may have registered mid-ping.

Troubleshooting *(continued)*:

PSUSB_32xia Analog outputs are noisy or jumpy:

Under some circumstances unused analog inputs can cause crosstalk between open output channels. If you are experiencing this make sure that you have turned off the output for the channels that are not connected to an analog device.

PSUSB_32xia does not function when connected :

If PSUSB_32xia is blinking to the left and right near the analog inputs then the device has not initialized properly. Cycle the power by either removing and reinserting the USB or if you have a powered hub cycle the power. This process should restart the Firmware on the device and reinstate proper functionality.

Any additional issues with regard to this device you may contact us in the following manner for Support:

1. **email** - *support@penguinrc.com* or click the link on the device page in iFlag.
2. **Website** - *https://shop.penguinrc.com/contactus* - fill out the contact us form for help.
3. **Discord** - *https://discord.gg/qUcarHvR5R* - Join and place a message in out Troubleshooting forum.

Warranty and Repair:

All Penguin r/c Products carry a lifetime warranty which provides differing levels of repair service depending upon the age, issues present, and perceived condition of the device. (I.e. overly abused items may be denied warranty service due to apparent mis-use). Warranty is transferable to resold items at described in our complete warranty details on our website :

https://shop.penguinrc.com/warranty-information

PSUSB_32xia Dimensions and Installation:

PSUSB_32xia Mounting:

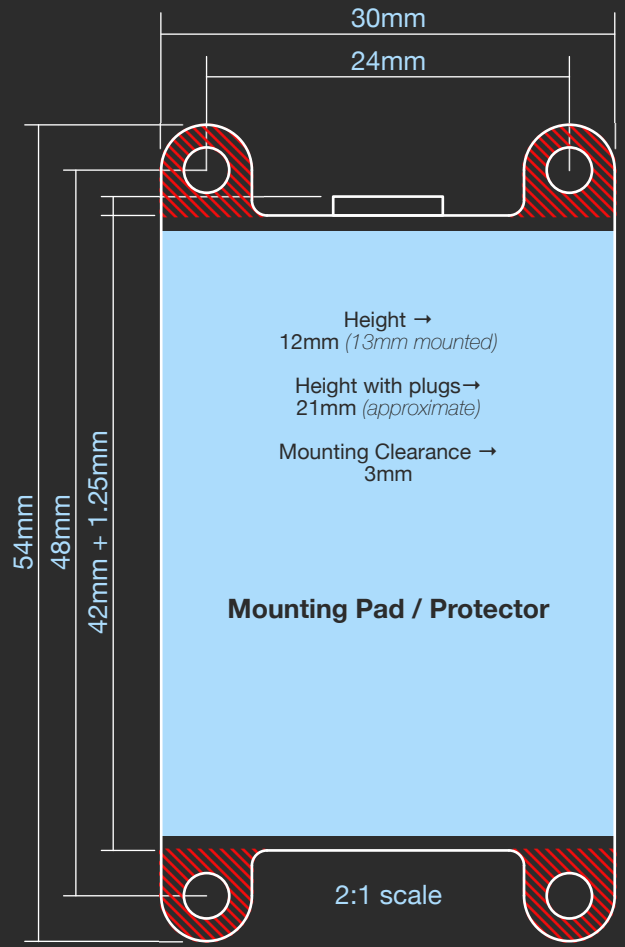
3mm *(grounded)* mounting holes are provided on the PSUSB_32xia. These mounting tabs may also be removed *(CAREFULLY - where shown)* if the controller needs to be placed in a smaller location.

The PSUSB_32xia provides an onboard grounding pin next to the dedicated “Shift” button should you still need to ground the controller with the mounting tabs trimmed.

Provided with the PSUSB_32xia is a double sided adhesive protector / mounting pad *(30x40mm)*. This pad is not required if the mounting tabs are used with mounting clearance spacers. *(placement shown in diagram)*

To use as a Protector:
If you plan on mounting the PSUSB_32xia against a surface that with conductive properties, remove the film on one side of the mounting pad and place on the back of the controller. Leave the remaining film attached to the pad.

To use as Mounting:
Remove the film on one side of the mounting pad and place on the back of the controller. Remove the remaining film and place controller on the surface of your choice.



Penguin r/c
SIMULATION

Package Contents:

PSUSB_32xia USB Controller board
Double Sided Mounting Pad / Protector

1230-P North Jefferson Street • Anaheim California 92807 • https://www.penguinrc.com