

Gizmo Troubleshooting Guide – Rev 1.0

Decoding Power Status LEDs (6)

Color/State	LED	Status Indication	Action Required
OFF	Board Power (Yellow)	Gizmo battery is unplugged or connected wrong.	Check main battery and power switch.
ON		Gizmo board is receiving power.	
OFF	PICO Power (White)	PICO 3.3v power off. Protection circuit tripped.	ASK HUB to Check PICO seating. ASK HUB to Check PICO power pins for shorts.
ON		PICO 3.3v power is good.	
OFF	GPIO Power (Blue)	GPIO 3.3v power off. Protection circuit tripped.	Check for GPIO pin short. Wait up to 2 minutes for polyfuse to reset.
ON		GPIO 3.3v power is good.	
OFF	Motor Bank A Power (Green)	Motor Bank A Battery Voltage is off. Protection circuit tripped.	Check for Motor Bank A pin short. Wait up to 30 seconds for polyfuse to reset.
ON		Motor Bank A Battery power is good.	
OFF	Motor Bank B Power (Red)	Motor Bank B Battery Voltage is off. Protection circuit tripped.	Check for Motor Bank B pin short. Wait up to 30 seconds for polyfuse to reset.
ON		Motor Bank B Battery power is good.	
OFF	Neopixel Power (Orange)	Neopixel 3.3v power is off. Protection circuit tripped.	Check for Neopixel pin short. Wait up to 2 minutes for polyfuse to reset.
ON		Neopixel 3.3v power is good.	
OFF	Servo Bank Power (Emerald)	Servo Bank power is off. Protection circuit tripped.	Check for Servo Bank pin short. Wait up to 30 seconds for polyfused to reset.
ON		Servo Bank power is good.	

Each protection circuit is a self-resetting poly-fuse. It may take up to 2 minutes for the fuse to reset and power to be restored. For Motors and Neopixel, the protection circuit can trip when too much current is being drawn. After fuse reset, the peripherals will return to their off state and normal operation can resume. For other power busses, it is a good idea to power down and inspect for possible short circuits before attempting to resume or the protection circuit may trip again.

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Decoding System Status LEDs (3)

OFF	Network	No system firmware loaded.	Load Gizmo firmware.
RED		Gizmo cannot find a driver's station or network to join. Not bound.	Bind the Gizmo with a driver's station.
YELLOW		Gizmo & driver's station are connected but data is not being received.	Contact hub. Verify GSS and Driver Station firmware are correct matching versions
GREEN		Gizmo & driver's station are connected & data is transmitting.	

OFF	Field*	No system firmware loaded.	Check main battery and power switch. Load Gizmo firmware.
WHITE		Practice Mode	Flashes once per second indicating faux Field 1
RED		Red field position assigned to this robot. Flashing indicates the assigned field number.	If the indicated field number and position (color) do not match the current position on the field, notify the referee.
YELLOW		Yellow field position assigned to this robot. Flashing indicates the assigned field number.	
GREEN		Green field position assigned to this robot. Flashing indicates the assigned field number.	
BLUE		Blue field position assigned to this robot. Flashing indicates the assigned field number.	
FAST BLINK PURPLE		Gizmo needs binding to Driver Station.	First time to bind. Connect Gizmo to driver's station via USB cable.
FAST BLINK RED		Gizmo waiting on Source to bind.	Check driver station power or USB connection to Gizmo.
STEADY		Bad binding; Gizmo needs reset.	Unplug USB cable, cycle power switch on Gizmo.

*When connected to a field, this LED indicates the field # and quadrant color assigned to this team. The light will blink the number and display the color.
















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OFF	Battery Voltage**	Powered off or no system firmware is loaded.	Check main battery and power switch. Load Gizmo firmware.
RED		Insufficient Voltage	Replace/charge robot battery.
YELLOW		Low Voltage	Prepare to replace/charge robot battery.
GREEN		Good Voltage	

**The LED will change color during normal use of the Gizmo. The state of the LED when nothing is using power is the most important indicator.

The useful graphic below will help you decode the System Status LEDs.

Gizmo Status Lights

	Not bound	Bound No WiFi	Connected Missing data	Ready Practice mode
Network				
Field				
Battery				
Battery light				
		> 7V	6.5 - 7V	< 6.5V



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Troubleshooting Special Conditions

Dump System Processor Logs via USB

We will use a serial terminal connected to the System Processor (SP) USB port to capture information from the SP logs during its execution. This information and its sequencing can be very useful in debugging what the SP is up to and why it may or may not be acting as expected.

To begin, you need a serial terminal application or you can use Google Chrome as your terminal by using this site (<https://www.serialterminal.com/>) .

The System Processor will power on and begin operations even without the 7.2v Robot Battery; only the USB power is needed for the SP to boot and begin searching for a connection (wifi or tether). So, as soon as you plug in a USB cable to the SP, it will start dumping/logging information out the USB port back to the computer it is connected to.

Step 1. Power-on your Driver Station.

- Turn on your Driver Station and wait about 30 seconds for it to complete booting.
- Since you are debugging communications between the Driver Station and Gizmo (either wireless or wired/tethered), having the Driver Station up and running is a requirement.

Step 2. Open Google Chrome as a serial terminal for Gizmo.

- Open Google Chrome on your PC. Go to the url <https://www.serialterminal.com>. Ensure that Baud=9600.

Step 3. Connect the USB cable from the computer running the Google Chrome serial terminal to the Gizmo System Processor.

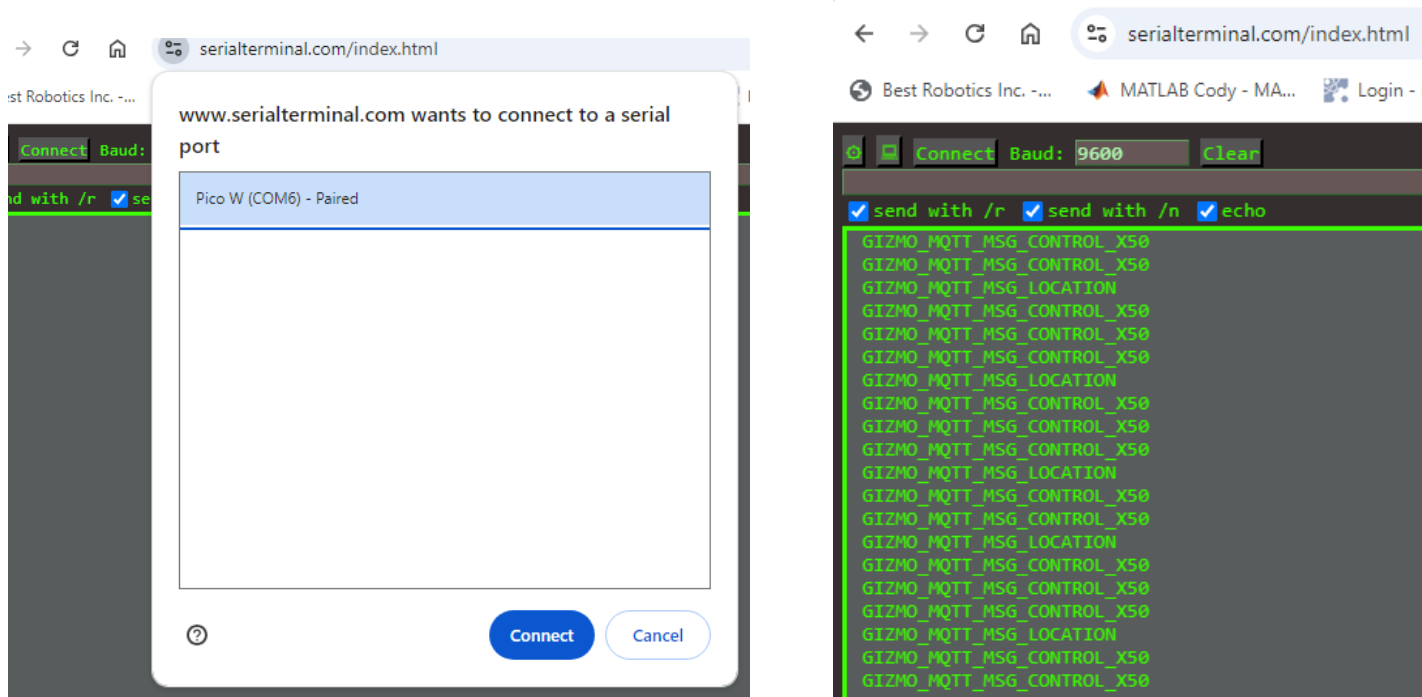
Step 4. Connect Google Chrome serial terminal to Gizmo.

- Click on “Connect” on the top of the terminal, near the Baud setting.
- A COM port should be identified. Click on this port to select it and click “Connect”.

Step 5. Stream the logged data.

- You should begin to see the logged messages from the System Processor in the terminal window.

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Dump Driver Station Logs via HDMI

You can use an HDMI monitor to capture data that the Driver Station logs during its execution. The Driver Station is a very small single board computer (Raspberry PI Zero) complete with USB, Ethernet and HDMI ports. Simple connect a monitor to the HDMI port and power on the Driver Station. You will see data on the monitor related to the boot sequence and its execution as it begins to search for and initiate a connection to the Gizmo. Average users will not understand the data but it can prove useful when trying to get technical help with an issue.