

System settings

Your Altion Voltage Regulator uses a web-based interface for configuration. Follow the steps below to connect and access the configuration settings.

You must have your regulator correctly wired and installed according to the Altion Installation Instructions before proceeding with configuration.

Connecting to the Regulator

1. **Power on:** Make sure your Altion regulator is correctly installed and receiving power.
2. **Locate the Wi-Fi network:** Out of the box, your regulator will create an open Wi-Fi network. The name will look like "Revatek-xxx" (where "xxx" is a random number). Use your Wi-Fi device (phone, tablet, or PC) and look for this network in your available Wi-Fi connections.
3. **Connect to the network:** Connect to the "Revatek-xxx" network. Since it's an open network, you won't need a password.
4. **Access the web interface:** Open your web browser and type **192.168.0.1** into the address bar and press enter. This will take you to the regulator. Click on the configuration navigation link.

The url address 192.168.0.1 only applies to Altion-hosted networks. If you connect the Altion to an external Wi-Fi or Ethernet network, the Altion will be assigned another network address. Find this address from your router, or if using a PC type the network name in the address bar that you provided in settings to connect to the Altion. The default network name is 'regulator'.

Configuration settings

You'll see a configuration form with three sections:

1. Alternators

- **Alternators regulated (Altion Max only):** Choose whether you have one or two alternators connected to your regulator. For the standard Altion regulator, this option will not appear.
- **Battery connected to alternator (Altion Max only):** If you have more than one battery bank, the regulator needs to know which one this alternator directly charges. Most setups will only have one battery bank. For the standard Altion regulator, this option will not appear.
- **Max field voltage:** The maximum field voltage the regulator will allow, typically set at the bulk charging voltage. This protects your alternator. Use this setting to derate your alternator.

To derate your alternator, reduce this setting. For example, if you want to limit an alternator that bulk charges at 14v to operate at 50% field power, set this at half the bulk charge voltage, i.e., 7v. Many 48v alternators operate their field at ~12v. Consult your alternator's data sheet.

- **Field polarity:** Most modern alternators are "P-type", but check your alternator's documentation if unsure.

- **Target temperature:** The ideal operating temperature for your alternator. The regulator will adjust its output to help maintain that temperature.
- **Startup delay:** Allows a brief delay after engine start before the regulator begins charging, giving the engine time to settle. Leave blank to disable setting.
- **Stator sensor installed:** Select this if you have a stator sensor attached to your alternator. If you make this selection, you will see additional options for configuring how the regulator uses the stator sensor data to optimize charging and manage engine load (RPM).
 - **Engine : Alternator pulley diameter ratio:** The ratio of the pulley diameters of the engine to alternator. For example, if engine the pulley is 6 inches in diameter and the alternator pulley is 3 in diameter, the ratio is 2.
 - **Number of poles:** The number of alternator poles. Check your alternator manual or contact the manufacturer.
 - **Reduce power draw at specified RPM:** This allows you to derate the alternator at various RPM levels. This is most commonly used at idle and high RPM. This setting will be combined with any derating applied by the Max field voltage setting. For example, if you set max field voltage at 25% of your battery voltage, and you reduce power draw at a given RPM by 50%, the regulator will power the field at 12.5%, which is 25% x 50%.
 - **Boost mode:** Intelligently boosts charging power whenever engine speed is stable, maximizing alternator output across all RPM ranges. Automatically adjusts back to normal operation when RPM fluctuates, ensuring optimal balance of propulsion and charging.

2. Batteries

Battery type matters! These settings are heavily dependent on whether you have a lead-acid, AGM, lithium, or other battery type. Consult your battery manufacturer or a battery professional for recommended values to enter here.

- **Prepopulate battery bank specifications:** Save time if you know your battery type, model and voltage – simply select these from the dropdown lists.
- **Battery voltage sense installed:** Select this if you've installed a sensor that lets the regulator directly monitor battery voltage.
This is highly recommended for accurate charging.
- **Temperature sense installed:** Select this if you have a temperature sensor on your battery. The regulator uses this to protect batteries during charging, especially critical for lithium batteries.
If selected: Enter the temperature range the regulator should use to control charging (protects against damage from extreme temperatures).
- **Temperature compensation slope:** Allows for fine-tuning of the charging voltage in response to changes in ambient temperature. This setting automatically increases the charging voltage when the temperature is below 25°C and decreases it when the temperature is above 25°C. This optimizes battery charging and longevity, especially for lead-acid batteries which are sensitive to temperature variations. *This input should be one or greater millivolts per degree Celsius, otherwise leave blank to disable setting.*
- **Current shunt installed:** Select this if you have a device that lets the regulator accurately measure current flow in/out of the battery bank. Highly recommended for advanced battery monitoring and health.
If selected, you will need to specify the shunt's capacity (amps) and voltage rating, along with other battery details to optimize charging.
- **Charging profile:** Your battery goes through different stages to ensure it gets fully charged, stays healthy, and isn't overcharged. This subsection lets you fine-tune how your Altion regulator handles those stages.
- **Bulk + Absorb**
 - **Charging Voltage:** The main target voltage the regulator will try to reach. Higher voltage = faster charging, but you must make sure this is safe for your battery type.
 - **Minimum Time in Charging Stage:** Prevents the regulator from switching to the next stage too quickly, even if the voltage target is reached. This helps if your battery was deeply discharged.

Leave blank to disable setting.

- **Maximum Time in Charging Stage:** A safety feature - after a certain time, the regulator will move to the next stage even if the voltage target hasn't been hit. This prevents endless charging if something isn't right. Leave blank to disable setting.
- **Field Power Target Min Until Transitioning to Float:** Lets you control switching from Bulk/Absorb to Float based on how much power the alternator is generating. This setting applies only if no shunt is installed.
- **Current Min as Percent of Battery Capacity:** Lets you control when the regulator moves to Float based on how much current is flowing into the battery. This setting applies only if a shunt is installed.
- **Use Additional Absorb Stage (Post CV):** Less common setting, as most setups won't need this. It adds a second "Absorb" stage to top the battery off without risk of overcharging.

- **Float**

- **Charging Voltage:** A low voltage meant to maintain your battery charge once it's full. The goal is to compensate for any small usage, without over stressing the battery long-term.
- **Minimum/Maximum Time:** Lets you set time limits in Float mode for additional safety or customization. Leave blank to disable setting.
- **Go to Previous Phase if Voltage Drops:** If the battery voltage falls too low in Float (could mean a heavy load), the regulator will go back to actively charging. Leave blank to disable setting.
- **Go To Previous Phase if Field Power Target Exceeds:** If the alternator is having to maintain significant power just to maintain a voltage, the regulator will go back to actively charging. This setting applies only if no shunt is installed. Leave blank to disable setting.
- **Go to Previous Phase if Amp Hour Draw Exceeds:** If the batteries drain this percentage of their capacity, the regulator will go back to actively charging. This setting applies only if a shunt is installed. Leave blank to disable setting.

- **External alternator charge cutoff installed:** Check this box if you have an external charge cutoff device wired to your regulator. This section allows you to connect an external device that will automatically stop the regulator from charging the battery bank under specific conditions. This can be used for over-temperature protection: If your batteries have a built-in safety mechanism, you can connect it to trigger a cutoff if temperatures get too high. It can also be used for system-level controls: You might have a more sophisticated battery management system that wants to stop charging under certain circumstances.

Configuring this incorrectly could lead to unexpected behavior or damage.

If selected, you will need to indicate the charge cutoff polarity: The signal type that will tell your regulator to stop charging. Make sure your external charge cutoff device is compatible with the signal type you select here.

- **Low signal:** Recommended. Charging will occur when the input is HIGH (receiving voltage), and charging will DISABLED when the input goes LOW (grounded by the external device).
- **High signal:** Charging will occur normally when the input is LOW (grounded), and charging will DISABLE when the input goes HIGH (receives voltage from the external device)

3. Network

- **Regulator hosted Wi-Fi:** Your regulator can create its own Wi-Fi network for configuration and monitoring.
- **External Wi-Fi:** Join the regulator to an existing Wi-Fi network for reliable connectivity and system integration.
- **Ethernet:** For wired connections to an existing network with maximum robustness and reliability.

Submitting and Saving Configurations

- **Submit button:** Once you've entered your settings, click "Submit" to send them to the regulator.

- **Import configuration:** Click "Import Configuration" and select a previously saved configuration file to easily load settings.
- **Export configuration:** Click "Export Configuration" to save your current configuration as a file for backup or to use on multiple regulators.

If you have any problems with the configuration process and must start over, not to worry! You can easily factory reset the device by holding down the factory reset button on the right side of the device for 15+ seconds.

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