



CEN Smart Regulators optimize battery charging profiles based on battery voltage and temperature and can broadcast system readings when used with a compatible harness. The following instructions apply to all CEN J1939/Temperature/Voltage sense harnesses coupled with any CEN Smart Regulator equipped with a 10-pin communication connector.

## Harness Installation

1. Before installing sense harness, remove regulator mounting hardware and turn regulator over to expose voltage select switch. Verify that set point of switch is appropriate for type of battery used in vehicle. If necessary, change switch set point. See Figure 1 and Table 1 for voltage set point options.

### NOTICE

Switch position 4 is 29.0V flat (14.5V for 14V systems) regardless of whether or not harness is connected. This setting will override temperature and voltage compensation.

2. Install regulator on alternator or remotely as required by application and torque included regulator mounting screws to 8.5 Nm/75 lb. in.
3. Remove connector cap from regulator (if present) and securely plug J1939/Temperature/Voltage sense harness into regulator 10-pin connector. See Figure 2.
4. Route harness directly to battery bank. Coil up any excess harness cabling. If harness length must be modified:
  - a. **Black wire (B-):** Do not modify unless absolutely necessary. If necessary, cut off first 6 inches from

terminal end (terminal contains temperature sensor) and save to reattach. Trim remaining harness black wire or extend as required with same gauge and color wire and butt splice. Reattach terminal pigtail with butt splice.

- b. **Red wire (B+):** Trim or extend wire as necessary and reconnect ring terminal with butt splice or crimp new ring terminal to end of wire.
5. Connect black wire directly to negative battery terminal and torque to battery manufacturer's specification.
  6. Connect red wire directly to 28V positive battery terminal (or 14V positive terminal for 14V systems) and torque to battery manufacturer's specification.
  7. If using J1939 feature, connect 3-socket connector to appropriate J1939 backbone as required by vehicle manufacturer. Otherwise cap off or seal connector.
  8. Secure harness and wires with cable ties within 300 mm (12 inches) of connection points and as necessary for the remaining length of harness.

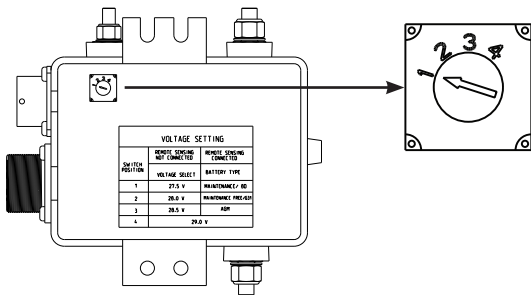


Figure 1: Regulator Voltage Selection Switch

Position	Default Set Point with Harness Not Connected	Optimized Battery Charging Profile with Harness Connected
1	27.5 V or 13.8 V	Maintenance (D category)
2	28.0 V or 14.0 V	Maintenance-free (Group 31)
3	28.5 V or 14.3 V	AGM
4	29.0 V Flat or 14.5 V Flat	

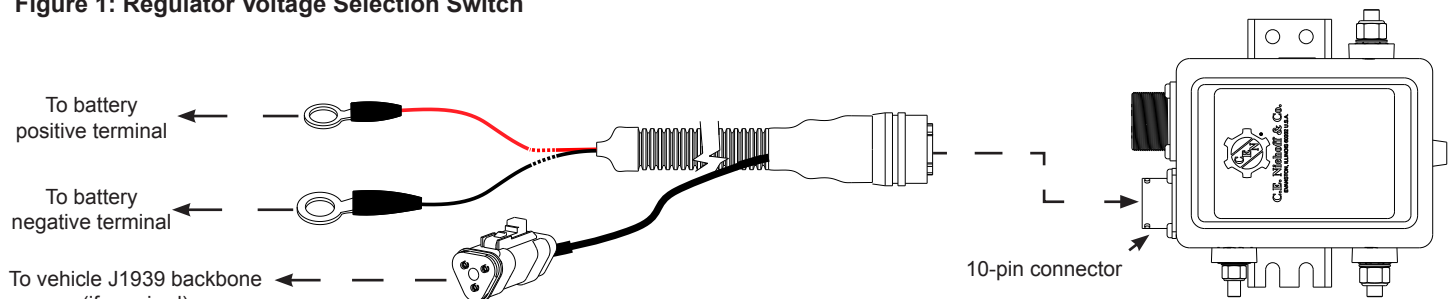


Figure 2: J1939/Temperature/Voltage Sense Harness Connections

If you have questions about your alternator or any of these instructions, or if you need to locate a Factory authorized Service Distributor, please contact us at:  
 C. E. Niehoff & Co. • 2021 Lee Street • Evanston, IL 60202 USA  
 TEL: 800.643.4633 USA and Canada • TEL: 847.866.6030 outside USA and Canada • FAX: 847.492.1242  
 E-mail us at [service@CENiehoff.com](mailto:service@CENiehoff.com)