

Generator Terminal Labeling

1. **Scope**—This SAE Recommended Practice recommends a common naming convention to be used to designate the terminals on automotive generators found in internal combustion engine road vehicles. The intent is to standardize the terminology in use. This document is not intended to include hybrid and/or electric vehicles.
2. **References**
 - 2.1 **Applicable Publication**—The following publication forms a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.
 - 2.1.1 SAE PUBLICATION

SAE J2232—Vehicle System Voltage—Initial Recommendations
 - 2.2 **Related Publication**—The following publication is for informational purposes only and is not a required part of this document.
 - 2.2.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

SAE J56—Road Vehicles—Alternators with Regulators—Test Methods and General Requirements
3. **Definitions**
 - 3.1 **Generated Voltage**—The voltage of the vehicle's generator, which is output under normal operating conditions (i.e., 14 V for a 12-V battery, 28 V for a 24-V battery, 42 V for a 36-V battery, etc.) and is the vehicle's charging voltage, as described in SAE J2232.
 - 3.2 **Stored Voltage**—The maximum voltage supplied by the vehicle's battery(s). This voltage may differ from generated voltage depending on battery and charging technologies used.

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4. Recommendations

- 4.1** The nomenclature shown in Table 1 shall be used (where applicable in each design) in all discussions and documentation, including standards and field service publications.
- 4.2** All parts shall include markings, which follow the nomenclature in Table 1, to show all power output and control connections made external to the generator assembly.
- 4.3** The analog warning lamp signal (refer to Number 9 in Table 1) described here should be of the type where the terminal is at high/open circuit voltage for normal operation and switches the connection to a low or ground state to light the lamp.
- 4.4** If a bi-directional communication link is used (refer to Number 12 in Table 1), an industry standard communication protocol shall be used.
- 4.5** The signal on the field monitor pin (refer to Number 6A in Table 1) shall be positive logic (i.e., a high output signal at pin 6A indicates a high field current exists).

**TABLE 1—RECOMMENDED TERMINAL LABELS
(SEE FIGURE 1 FOR REFERENCE SCHEMATIC)**

Ref No.	Description	Examples of Today	Recommendation	Optional
1	Power output to Battery (+)	B, BAT	B14, B42, B ⁽¹⁾	+14, +42
2	Power Return for Isolated Generator Output (–)		CG ⁽¹⁾	
3	Generator case ground	(case), E, B–	GND	
4	Sense input	S, A	S	⁽²⁾ S ⁽¹⁾
5	Regulator connection to field (+)	F, FM, DF+	F+	
6	Regulator connection to field (–)	DF–	F–	
6A	Field Monitor	F, FR, SIG, DFout	FM	F
7	Phase sensing output	P, R, W, STA	P	
8	Stator/neutral sense connection	S	User Defined	N (neutral)
9	"Warning Lamp" signal	L, D+	L	⁽³⁾
10	Generator/Regulator enable in	I, IGN, E, D+	I	⁽³⁾
11	Reg input command to establish set-point	L, I, RC, RVC	R	⁽³⁾
12	Serial Communication Link (bi-directional)		C	
13	User Defined - For Example, Temperature Sensing at Battery, Temperature Sensing at Alternator, Multi-battery, Multi-sense inputs		User Defined	

1. = Generated voltage.
2. = 1 if sense lead is for battery #1
= 2 if sense lead is for battery #2
= 3 if sense lead is for battery #3 and so on.
3. = L if connected to a warning lamp,
= I if used as an enable function,
= D+ if used as an output function,
= ID if used as enable and output,
Or any combination to accurately describe function.