



Signal Training Bulletin

**COMMITTEE G: Education & Training
Communication & Signal Division, AAR**

B-12 DC-DC Converter

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The Signalman's Journal

Notes:

Definition: A device for changing one value of direct current to another value of direct current.

Symbol: None

Description: The general term converter covers a wide variety of equipment. This training bulletin deals only with dc-dc converters.

Three types of dc-dc converters are:

- 1- Motor-generator
- 2- Dynamotor
- 3- Solid state

In certain respects, the dynamotor is actually a motor-generator. It consists of an electric motor driving a generator. However, a motor-generator set usually uses separate units; in a dynamotor, the units are always contained in a common housing and the armature windings are both wound on the same shaft.

A solid state converter is a power supply used to convert battery voltages or other dc input voltages to one or more different dc output voltages. The units are normally housed in compact, space saving, sheet steel enclosures and may be designed for rack mounting.

General Information: Dynamotors and motor-generators are normally used for converting low dc input voltages, usually supplied by batteries, to high dc output voltages.

With motor-generators, a low dc voltage drives the motor, turning the generator, which then produces the higher dc voltage. Since dynamotors have both motor and generator on the same shaft, low voltage is, in effect, applied to one side of the unit and high voltage is taken from the other side.

Solid state converters are used as centralized traffic control office and field code power supplies and in train carried systems such as cab signals, train control and in some cases, train radio. The equipment eliminates maintenance problems, such as lubrication, vibration, etc., usually associated with mechanical devices. Most units are designed to operate continuously in an ambient temperature of -40 deg C (-40 deg F) to 71.1 deg C (160 deg F).

Converter manufacturers have instruction, installation and trouble shooting manuals available for their equipment. Refer to appropriate manual when installing or troubleshooting.

NOTE: This bulletin is for general information only. For specific applications consult the rules, standards & instructions published by your railroad.