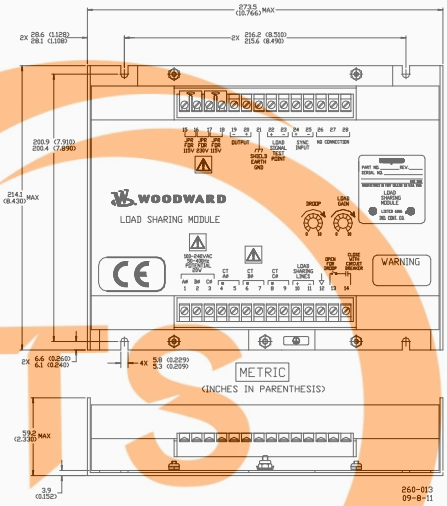
Load Sharing Module

Applications

Woodward makes models of its Load Sharing Module for use with engines equipped with speed controls that accept a ±3 Vdc speed setting input, a 0.5 to 4.5 Vdc input, or a PWM (pulse-width-modulated) input. The Load Sharing Module allows use of Woodward power generation accessories and allows load sharing between engines equipped with speed controls that are not manufactured by Woodward and engines controlled with Woodward electronic controls, or controls using other Woodward load sharing modules.

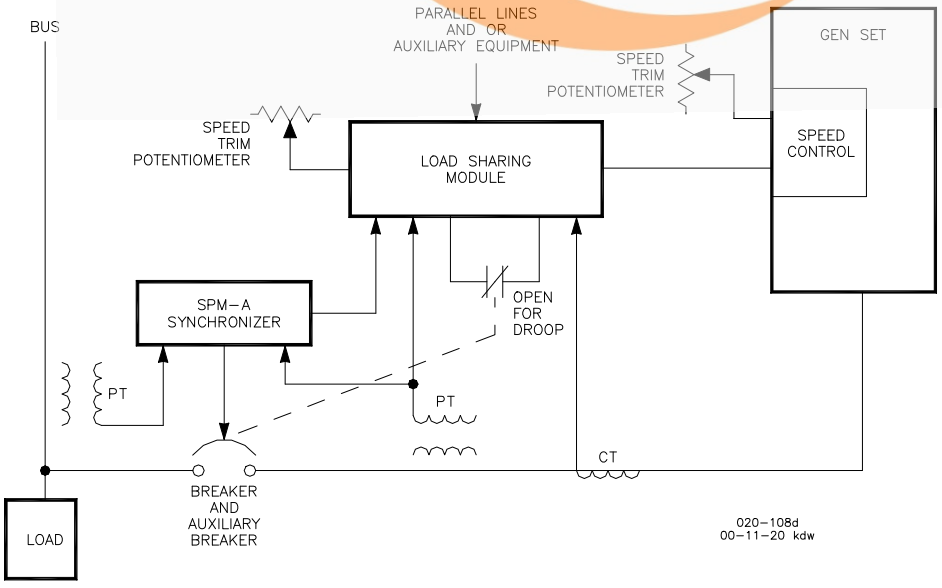
Description

The Load Sharing Module provides isochronous and droop load-sharing capability for engines in generator set applications. Additional equipment in the control system can include the Woodward SPM-A Synchronizer, SPM-D Synchronizer, Automatic Generator Loading Control (AGLC), and Automatic Power Transfer and Loading Control (APTL).



- Allows load sharing with Woodward and non-Woodward equipped engines
- Isochronous and droop load sharing
- EC Compliant
- UL/cUL Listed

Output Type	Supply Voltage	Part Number	Manual Number
±3 Vdc analog	115/230 Vac	9907-173	26011
+0.5 to +4.5 Vdc analog	24 Vdc	9907-252	02035
PWM/Caterpillar	24 Vdc	9907-838, 9907-175	02036
PWM/GenDec™	115/230 Vac	9907-174	26012



Typical System Using a Load Sharing Module

Specifications

Power Supply	
DC Models	18–32 Vdc, approximately 5 W.
AC Models	Jumper selectable for 95–130 or 190–260 Vac line-to-line, 50–400 Hz, approximately 10 W.
Inputs	
3-phase PT Inputs	95–130 or 190–260 Vac line-to-line, 50–400 Hz. PT input burden is 1.6 W per phase at 240 Vac, 0.4 W per phase at 120 Vac.
3-phase CT Inputs	3–7 Arms at full load, CT input burden at full load is 0.1 VA per phase.
Load Sharing Input	0–3 Vdc into 25 kA impedance in isochronous mode, open circuit in droop mode.
Sync Input	Compatible with optional Woodward SPM-A synchronizer.
Speed Trim	Allows manual adjustment of output level with an external 10 kA potentiometer (not available on part number 9907-173).
Droop Switch	The external droop switch is to be wired in series with the auxiliary circuit breaker contact. Droop mode is selected when either the droop switch or the auxiliary circuit breaker is open.
Outputs	
Load Signal	DC signal proportional to total real current sensed by the Load Sharing Module. Used to adjust load gain.
Output to Speed Control	+0.5 to +4.5 Vdc analog, ±3 Vdc analog, or PWM, depending on model.
Adjustments	
Droop	Provides for output reduction between no-load and full-load conditions.
Load Gain	Provides adjustment of the load on an individual generator when two or more generators are paralleled. Adjusts specified full load condition from 3 to 7 Arms.
Environmental	
Operating Temperature	–40 to +70 °C (–40 to +158 °F).
Salt Fog	Tested at 5% NaCl, 35 °C, 47 hrs wet, 47 hrs dry.
Humidity	Tested at 95% RH, 65 °C, non-condensing, 5 cycles at 24 hrs/cycle.
Vibration	Swept sine: Tested at 4 G, 5 mm, 5–2000 Hz, 3 hr min/axis, including 4 30-minute dwells at resonant frequencies.
Shock	40 G, 11 ms sawtooth pulse.
Installation Overvoltage Category	Category III.
Air Quality	Pollution Degree 2.
Mounting	Any orientation, any convenient location, but not on engine. IP43 protective enclosure required for compliance with EU Low Voltage Directive.
Physical Characteristics	
Dimensions	Length: 273.6 mm (10.77 in.) Width: 214.1 mm (8.43 in.) Height: 59.2 mm (2.33 in.)
Weight/Mass	1398 g (49.3 oz.) approximate, dc models 1488 g (52.5 oz.) approximate, dc models

Safety and EMC Standards Compliance

Conforms to EMC Directive 89/336/EEC. Conformity established by testing to EN 50081-2, EN 50082-2.

Conforms to Low Voltage Directive 73/23/EEC when used in accordance with instructions. Conformity established by testing to EN 50178, 1997, and EN 61010-1, 1993, +A1.

Listed to UL and cUL Industrial Control Equipment (UL508).