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).

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

Typical System Using a Load Sharing Module

- Allows load sharing with Woodward and non-Woodward equipped engines
- Isochronous and droop load sharing
- EC Compliant
- UL/cUL Listed
**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 kΩ 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 kΩ 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.
Listed to UL and cUL Industrial Control Equipment (UL508).