

- Isochronous Load Sharing
- Adaptable for Single Phase
- Main Bus Power Management

- Power Control Circuit
- Load Anticipation
- Load Sensitivity Circuit

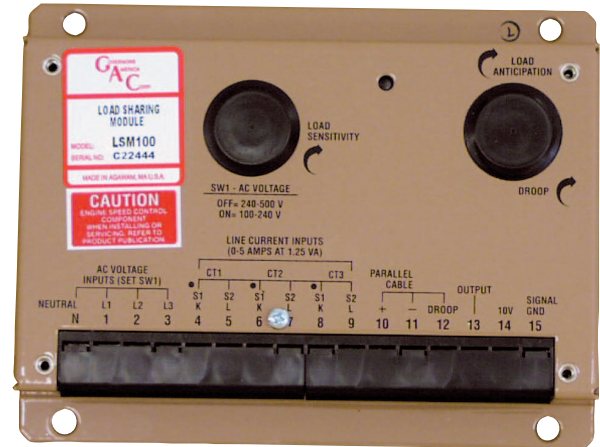
## INTRODUCTION

The function of a Load Sharing Module is to proportionally share load between two or more generator sets while the system frequency is held constant. As an accessory to the Electronic Governing System, the LSM100 measures the true power current, and through a parallel cable interconnection, continuously controls the governing system. The all-electronic power sensing circuits of the LSM100 increase the accuracy of measuring the true power current over conventional methods. This modern method discriminates more closely between real and reactive current so that the governor will respond to the real portion only. By using various droop and power control connections, the Load Sharing Module can parallel and share load with the utility's main bus. In addition to its primary function of load sharing, a load anticipation circuit is included to maximize performance in single or parallel engine generator operation.

## DESCRIPTION

Engine generator sets with isochronous governors maintain the requested speed very precisely. If synchronous generators are electrically paralleled to increase their load carrying capability, a system to apportion the load is required. Even the finest electric governors will have minor frequency differences among units to be paralleled. For this reason, one generator set will continuously increase the power it produces, while the other sets will decrease the power they produce. This condition eventually leads to the motorizing of one or more of the generator/engines. The load sharing system continuously adjusts the governor speed settings so that no average power difference exists. The generators are locked together through synchronizing torques, and they act as though they are tightly connected through a gear drive.

The Load Sharing Module measures the power that the generator supplies to a common load. Voltage inputs accept a wide range of three phase voltages and cover most applications (See Specifications).

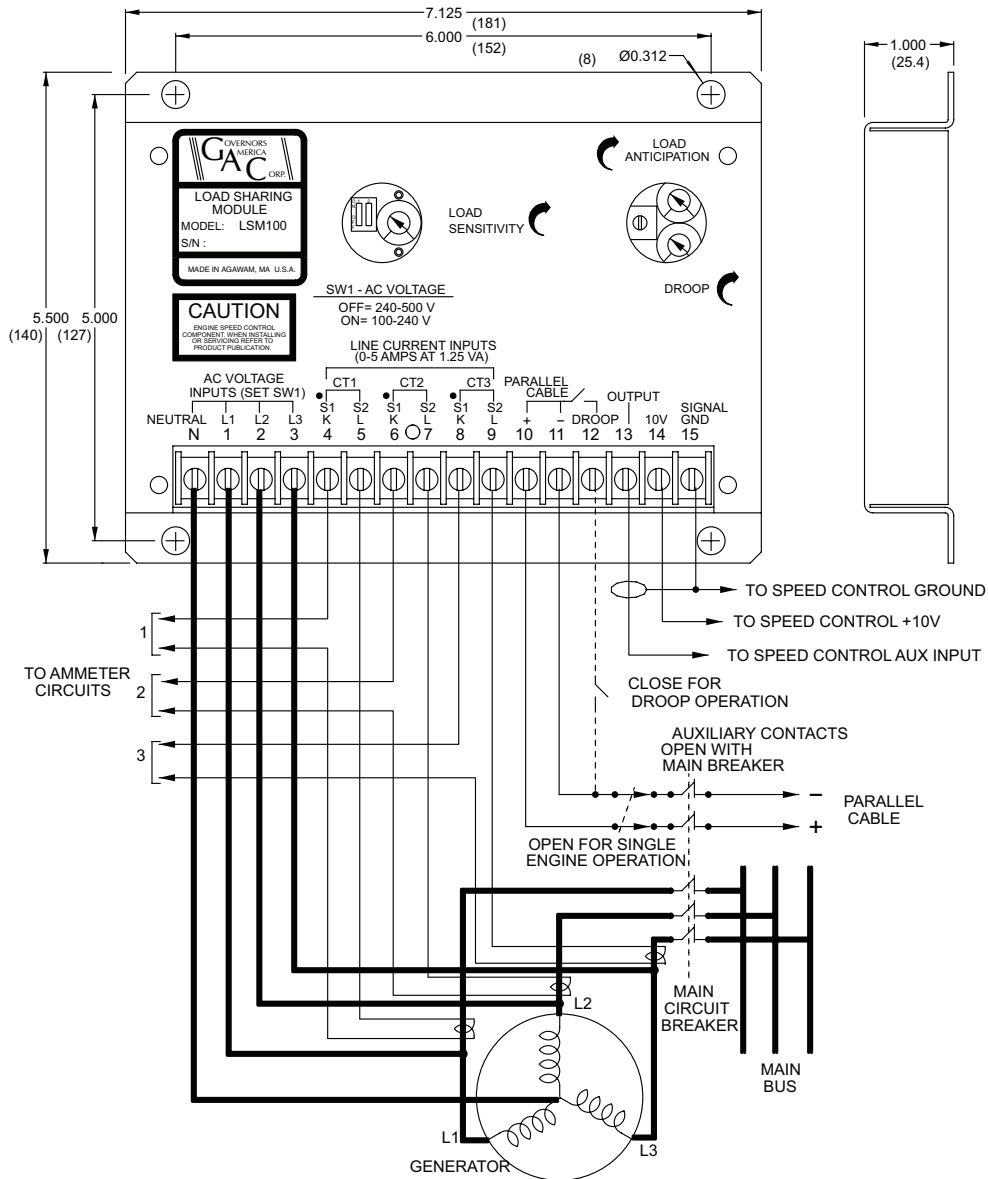


The line current measurements are usually taken from Current Transformer's (CT) existing in the equipment such as those used for ammeters. The load sharing module adds a small additional burden of only 1.25 VA to each transformer. Added cabling may also increase the burden. For example, a 0.1 ohm cable resistance is an additional 2.5 VA.

The all-electronic power measurement circuit develops a signal across the parallel cable. The magnitude and sensitivity of the load sharing is adjustable through the SENSITIVITY control in the module. Test points adjacent to this control may be used to measure the polarity and magnitude of the signal on the parallel cable. This measurement is very important when initially installing a system and these test points may also be used in troubleshooting the system. A measurement of 0 to 7 VDC represents zero load to full load (5 Amps in CT's) for 3 phase systems. The SENSITIVITY adjustment can control the parallel cable and test point voltages over the same 0 to 7 VDC range.

The load anticipation feature (load pulse) provides a signal that is a derivative function. A clock-wise (CW) adjustment of the LOAD ANTICIPATION will make the governor more responsive to transient loads on the generator by quickly moving the fuel rack as load is changed.

# DIAGRAM 1 SYSTEM WIRING AND OUTLINE



## SPECIFICATIONS

### PERFORMANCE

Load Sharing.....Adjustable to within +1- 2% between sets  
 Performance.....Isochronous and droop paralleling and power control  
 Power Output Signal.....0 to 7 Volts DC representing no load to full load  
 All performance specifications are based on 5 amps from the current transformer (CT) secondaries at full load

### POWER INPUT

AC SIGNAL.....SW1 "ON" for 100-240 VAC, SW1 "OFF" for 240-500 VAC nominal line to line, 5 amp CT's with a minimum 1.25 VA rating (Internal 0.05 ohm burden resistors)  
 DC Supply.....+10 VDC from speed control  
 Polarity.....Negative ground (case isolated)  
 Power Consumption......20 mA typical

### ENVIRONMENTAL

Temperature Range.....-40° to 185°F (-40°C to +85°C)  
 Relative Humidity.....up to 100%  
 All Surface Finishes.....Fungus proof and corrosion resistance  
 Agency.....RoHS Compliant

### PHYSICAL

Dimensions.....See Diagram 1  
 Weight.....1.2 lb (0.56 kg)  
 Mounting.....Any Position, vertical preferred

### RELIABILITY

Vibration.....5G @ 20-500 Hz  
 Testing.....100% Functional Testing before and after potting

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 Caution: None of GAC products are flight certified controls including this item.