

# DSEPOWER® SHARING WITH SIMPLICITY.



## DSE7520

AUTO MAINS (UTILITY) FAILURE & INSTRUMENTATION CONTROL MODULE



The DSE7520 is an Automatic Mains (Utility) Failure Control Module designed to provide advanced load share functionality for diesel and gas generating sets that include non electronic and electronic engines. The module also provides excellent engine monitoring and protection features.

The module monitors the mains (utility) supply and upon detection of a loss in power automatically starts the generating set.

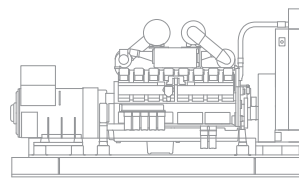
The module's synchronising functions include automatic synchronising with built in synchroscope and closing onto dead bus. Direct and flexible outputs from the module are provided to allow connection to the most commonly used speed governors and automatic voltage regulators (AVRs).

The module has the ability to monitor generator under/over volts, over current, generator under/over frequency, under speed, over speed, charge fail, emergency stop, low oil pressure, high engine temperature, fail to start, low/high DC battery volts, fail to stop, generator short circuit protection, reverse power, generator phase rotation error, earth fault protection, loss of speed signal, fail to open, fail to close, out of sync, open circuit failure, negative phase sequence and loss of excitation.

### FEATURES

- Electronic engine capability
- RS232 or RS485 remote communications
- Modbus RTU
- Pin number protected front panel programming
- Exercise timer
- Back-lit LCD 4-line text display
- Multiple language options
- Voltage measurement
- Configurable inputs (9)
- Configurable outputs (5)
- Automatic start
- Manual start
- Audible alarm
- LED indicators
- Built-in governor and AVR control for easy operation and panel engineering
- Engine history event log
- Engine protection
- Fault condition notification to a designated PC
- Front panel mounting
- PC configuration
- Mains (utility) failure detection
- Configurable alarm timers
- Configurable start & stop timers
- Automatic load transfer
- SMS alert messaging
- Multi set communications
- Front panel mounting
- Remote control and monitoring
- Dedicated load test button
- KW overload alarms
- Engine temperature alarms
- MV-LV synching
- Mains (utility) decoupling test mode

## NEW RELEASE



### ELECTRONIC ENGINE CAPABILITY

### LOAD SHARE FEATURES

- No-break transfer
- Peak shaving/peak lopping
- KW on mains (utility) level
- Mains (utility) decoupling test mode
- Manual speed/frequency adjust
- Phase locking
- ROCOF & vector shift
- Dead bus sensing
- Direct governor & AVR communication
- Volts & frequency matching
- KW and Kvar load sharing
- Manual voltage adjust

### BENEFITS

- Sends SMS messages to engineers to notify specific engine problems (GSM Modem and SIM card required)
- On-site and remote module configuration (Modem required)
- In-built engine diagnostics removes the requirement for service equipment
- Full engine protection & instrumentation without the need for additional senders (Electronic engines only)
- Remote monitoring of the module using comprehensive DSE PC software
- License free PC software
- No-break return capability

## SPECIFICATION

**DC SUPPLY**  
8V to 35V continuous

**CRANKING DROPOUTS**  
Able to survive 0V for 50mS, providing supply was at least 10V before dropout and supply recovers to 5V. This is achieved without the need for internal batteries

**MAXIMUM OPERATING CURRENT**  
460mA at 12V. 245mA at 24V

**MAXIMUM STANDBY CURRENT**  
375mA at 12V. 200mA at 24V

**ALTERNATOR INPUT RANGE**  
15V(L-N) to 333V AC (L-N) absolute maximum

**ALTERNATOR INPUT FREQUENCY**  
50Hz - 60Hz at rated engine speed (Minimum: 15V AC L-N)

**MAGNETIC PICK-UP VOLTAGE RANGE**  
+/- 0.5V to 70V Peak

**MAGNETIC INPUT FREQUENCY**  
10,000 Hz (max)

**MAINS (UTILITY) SENSING RANGE**  
15V(L-N) to 333V AC (L-N) absolute maximum

**MAINS (UTILITY) SENSING INPUT FREQUENCY**  
50Hz-60Hz (Minimum: 15V AC L-N)

**START RELAY OUTPUT**  
15A DC at supply voltage

**FUEL RELAY OUTPUT**  
15A DC at supply voltage

**AUXILIARY RELAY OUTPUTS**  
Three outputs 2 Amp DC at supply voltage  
Two outputs volt free 8 Amp at 250V AC

**GENERATOR LOADING RELAY OUTPUT**  
8A AC 250V

**MAINS (UTILITY) LOADING RELAY OUTPUT**  
8A AC 250V

**CHARGE FAIL/EXCITATION RANGE**  
0V to 35V

**BUILT-IN GOVERNOR AND AVR CONTROL**  
Fully Isolated  
Minimum Load Impedance:  
1000Ω  
Gain Volts: 0V-10V DC  
Offset Volts: +/- 10V DC

**DIMENSIONS**  
240mm x 172mm x 57mm  
9.4" x 6.8" x 2.2"

**PANEL CUTOUT**  
220mm x 160mm  
8.7" x 6.3"

**ENCLOSURE PROTECTION**  
IP65 (with optional gasket)  
IP42 (without gasket)

## ENVIRONMENTAL TESTING STANDARDS

### ELECTRO MAGNETIC CAPABILITY

BS EN 61000-6-2  
EMC Generic Emission Standard for the Industrial Environment  
BS EN 61000-6-4  
EMC Generic Emission Standard for the Industrial Environment

### ELECTRICAL SAFETY

BS EN 60950  
Safety of Information Technology Equipment, including Electrical Business Equipment

### TEMPERATURE

BS EN 60068-2-2  
Test Ab to +70°C 60067-2-2 Hot  
Test Ab to -30°C 60068-2-1 Cold

### VIBRATION

BS EN 60068-2-6  
Ten sweeps in each of three major axes  
5Hz to 8Hz @ +/-7.5mm, 8Hz to 500Hz @ 2gn

### HUMIDITY

BS 2011 part 2.1 60068-2-30  
Test Cb Ob Cyclic  
93% RH @ 40°C for 48 hours

### SHOCK

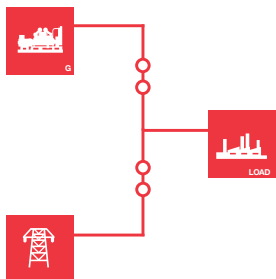
BS EN 60068-2-27  
Three shocks in each of three major axes  
15gn in 11mS

## TIMERS & INPUT FUNCTIONS

The module has been designed to include the following timers and input functions:

- Start delay timer
- Stop delay timer
- Crank timer
- Crank rest timer
- Engage attempt & manual crank limit timers
- Safety on delay timer
- Warm up timer
- Cooling timer
- Energise to stop hold timer
- Pre-heat timer
- Pre-heat bypass timer
- Smoke limiting control timer
- Fail to stop timer
- Over speed over shoot timer
- Breaker pulse control timers
- DC battery alarm delay timers
- Sync/fail to sync timer
- Mains (utility) transient delay
- Transfer time
- Mains (utility) fail to open/close
- Parallel run time

## TYPICAL LOAD SHARE APPLICATION



## OPERATION

The module is operated using the front STOP/RESET, MANUAL, AUTO and START pushbuttons. Three of these push buttons include an LED indicator. Additional pushbuttons provide LCD display scroll, lamp test, mute functionality and breaker control.

## BUILT-IN FUNCTIONS

- Alternator under/over volts
- Alternator under/over frequency
- Warning or shutdown on engine temperature, over/under speed, oil pressure
- Warning, shutdown or electrical trip on battery volts or over current
- Shutdown or electrical trip on reverse power, phase rotation or short circuit fault
- Earth fault shutdown
- Adjustable crank cycle/attempts
- Full remote control and telemetry
- 9 configurable digital inputs
- 5 configurable and 2 fixed relay/FET outputs
- System lock input
- Load switching control push-button inputs
- Restricted access to programming via PIN number
- Loss of excitation
- Negative phase sequence
- ROCOF/vector shift (mains (utility) decoupling)
- Peak lopping
- Peak shaving
- Mains (utility) reverse power

## INSTRUMENTATION AND ALARMS

The DSE7520 module provides advanced metering and alarm functionality via the LCD display. The information can be accessed using the display scroll pushbuttons. The table below shows the instrumentation and alarm features the module provides.

Engine Speed  
Engine Oil Pressure  
Coolant Temperature  
Battery Voltage  
Charge Alt Volts  
Engine Run Time  
Number of Starts  
Additional instrumentation as provided by the electronic ECU  
Next Maintenance (if enabled)  
Fuel Level  
Generator Volts (L-N)  
Generator Volts (L-L)  
Generator Hz  
Generator Amps  
Generator Earth Current  
Generator kW (L1,L2,L3)  
Generator Total kW  
Generator pf (L1,L2,L3)  
Generator Average pf  
Generator Total kVAR  
Generator kWh  
Generator kVAh  
Generator kVAh  
Generator Phase Sequence  
Synchroscope  
Mains (utility) Volts (L- N)  
Mains (utility)Volts (L-L)  
Mains (utility)Hz  
Mains (utility)Amps  
Mains (utility)kW  
Mains (utility)kVA  
Mains (utility)pf  
Mains (utility)kVAh  
Mains (utility)Phase Sequence  
Generator kVA

## TELEMETRY

The module gives the user full telemetry facilities when using the optional communications software. The module can be connected to a PC using the DSE810 PC interface or by using a suitable modem.

The PC software is Microsoft Windows™ based. All access into the module can be configured to become password protected to prevent unauthorised entry. The PC software allows the module to be controlled from a remote location.

## COMMUNICATIONS

The DSE7520 has a number of different communication capabilities:-

### SMS Messaging

When the module detects an alarm condition, it has the ability to send an SMS message to a dedicated mobile number, notifying an engineer of the problem. (GSM Modem and data enabled SIM Card required).

### Remote Communications

When the module detects an alarm condition, it dials out to a PC notifying the user of the exact alarm condition (modem required).

### Building Management

The module has been designed to integrate with new and existing building management systems.

### SCADA/PC Software

The module has the ability to be controlled, configured and monitored from a remote PC, using the DSE810 interface.

### EVENT LOG

The module includes a comprehensive event log that shows the 25 most recent alarm conditions and the date and time that they occurred. This function assists the user when fault finding and maintaining a generating set.

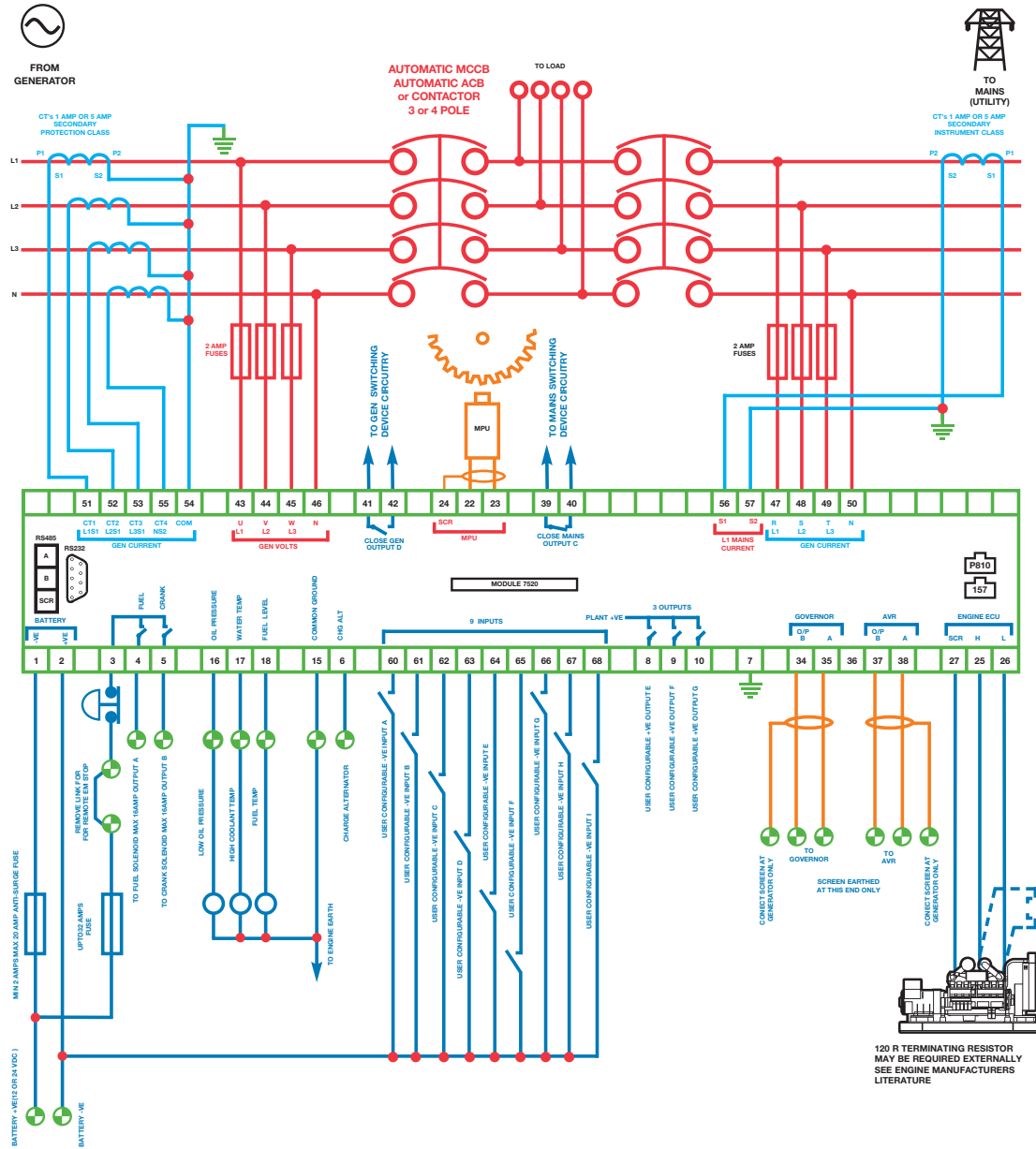
### EXPANSION MODULES

DSE157 Relay Output Expansion Module  
DSE545 & DSE548 Remote Annunciation Expansion Module  
DSE130 Input Expansion Module

### ELECTRONIC ENGINE COMPATIBILITY

- Cummins
- Deutz
- John Deere
- MTU
- Perkins
- Scania
- Volvo
- Generic
- Plus additional manufacturers

# DSE7520



## RELATED MATERIALS

| TITLE                               | PART NO'S |
|-------------------------------------|-----------|
| DSE7520 Manual                      | 057-089   |
| DSE7520 Installation Instructions   | 053-053   |
| DSE75xx PC Software Manual          | 057-078   |
| DSE7510 Data Sheet                  | 055-065   |
| DSE7560 Data Sheet                  | 055-067   |
| DSE123 Data Sheet                   | 055-044   |
| DSE810 Manual                       | 057-052   |
| Load Share Design and Commissioning | 057-047   |
| Guide to Synchronising and Load     |           |
| Sharing                             | 057-045/6 |
| CAN and DSE Wiring Guide            | 057-004   |
| DSE850 Comms Software Data Sheet    | 055-072   |

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