



## DSEG4500 Compact Single Genset Controller

## DSEG4501 Compact Single Genset Controller with RS485

Part Number: G4500-01, G4501-01



### Overview

The DSEG4500 Compact Single Genset Controller and DSEG4501 Compact Single Genset Controller with RS485 are part of the next-generation DSEG-Series platform, designed for versatility and performance. User-configurable for Remote Start (RS) or Automatic Mains (Utility) Failure (AMF) applications, they offer a robust feature set tailored to single genset operations.

Selected features include real-time monitoring of generator and load power, engine speed, oil pressure, coolant temperature, frequency, voltage, current, power, and fuel level. All critical data is displayed on a dedicated multi-line, text and icon high-resolution screen.

The DSEG4500 and DSEG4501 support both electronic J1939 (CAN) and non-electronic (alternator frequency sensing) engines, making them compatible with a wide range of fuel types including diesel, gas, and petrol. A generous number of flexible inputs, outputs, and protection features ensure adaptability for diverse applications.

Fully programmable via the DSE Configuration Suite software, the DSEG4500 and DSEG4501 deliver the renowned DSE easy setup experience, providing seamless integration and control.

### Key Features

- Designed to protect and control a genset, genset breakers and mains (utility) breaker.
- Remote Start / AMF functionality in one controller.
- Wide range of control and protection features.
- Flexible connection and communication options.
- Multiple configuration possibilities.
- Simple user interface control.
- Integrated gasket (IP65 protection)
- Separate FPE PIN and maintenance reset PIN
- Manual front panel and automatic control modes
- RS485 communications (G4501-01 only)

### Product Variants

- G4500-01 - Compact Single Genset Controller
- G4501-01 - Compact Single Genset Controller with RS485

### Product Documentation

053-280 – DSEG4500 & DSEG4501 Installation Instructions

057-379 – DSEG4500 & DSEG4501 Operator Manual

057-378 – DSEG4500 & DSEG4501 Configuration Suite PC Manual



**DEEP SEA ELECTRONICS UK**  
T: +44 (0) 1723 890099  
E: sales@deepseaelectronics.com  
W: www.deepseaelectronics.com

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**DEEP SEA ELECTRONICS INDIA**  
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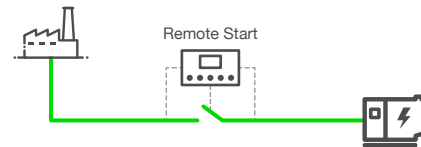
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### Remote Start Controller Key Features

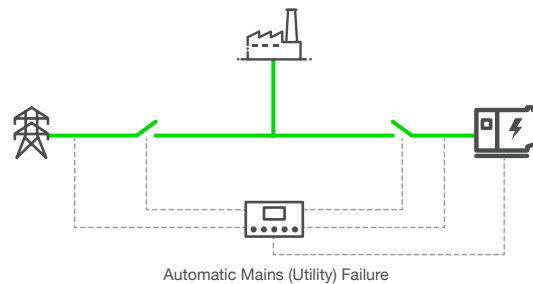
- 3 phase generator sensing
- Digital input, Modbus control key, inbuilt scheduler or manual generator start up

### Typical Applications



### Automatic Mains (Utility) Failure Controller Key Features

- 3 phase generator sensing
- 3 phase mains (utility) sensing
- Mains (utility) failure detection
- Digital input, Modbus control key, inbuilt scheduler or manual generator start up



### Product Documentation

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Part Number: G4500-01, G4501-01

| Specifications                            |                                                                                                                                                                                                                           |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DC Supply                                 |                                                                                                                                                                                                                           |
| Continuous Voltage Rating                 | 8 V to 35 V DC continuous                                                                                                                                                                                                 |
| Cranking Dropouts                         | Able to survive 0 V for 50 ms, providing supply was at least 10 V before dropout and supply recovers to 10 V. This is achieved without the need for internal batteries. Backlight will not be maintained during cranking. |
| Maximum Operating Current                 | 200 mA at 12 V, 120 mA at 24 V                                                                                                                                                                                            |
| Maximum Standby Current                   | 65 mA at 12 V, 35 mA at 24 V                                                                                                                                                                                              |
| Charge Alternator Excitation / Fail Range | 0 V to 35 V                                                                                                                                                                                                               |
| Voltage Measurement                       |                                                                                                                                                                                                                           |
| Number                                    | 2                                                                                                                                                                                                                         |
| Measurement Inputs                        | 3 Phase + Neutral<br><b>Remote Start Controller:</b> Generator Only<br><b>Automatic Mains (Utility) Failure Controller:</b> Generator and Mains (Utility)                                                                 |
| Voltage Range                             | 15 V to 415 V Phase to Neutral<br>25 V to 720 V Phase to Phase                                                                                                                                                            |
| Frequency Range                           | 3.5 Hz to 75 Hz                                                                                                                                                                                                           |
| Resolution                                | 1 V Phase to Neutral<br>2 V Phase to Phase<br>0.1 Hz                                                                                                                                                                      |
| Accuracy                                  | ±1 % Phase to Neutral<br>±2 % Phase to Phase<br>±0.05 Hz                                                                                                                                                                  |
| Current Transformer Measurement           |                                                                                                                                                                                                                           |
| Number                                    | 3                                                                                                                                                                                                                         |
| Measurement Inputs                        | <b>Remote Start Controller:</b> Generator Only<br><b>Automatic Mains (Utility) Failure Controller:</b> Generator or Load                                                                                                  |
| Current Range                             | 0 A to 5 A                                                                                                                                                                                                                |
| Resolution                                | 0.5 %                                                                                                                                                                                                                     |
| Accuracy                                  | ±1 %                                                                                                                                                                                                                      |

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Part Number: G4500-01, G4501-01

| Specifications                         |                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Analogue Inputs                        |                                                                                                              |
| Number                                 | 3                                                                                                            |
| Type                                   | Negative Switching Digital Input, Resistive Analogue Input, Current Analogue Input or Voltage Analogue Input |
| Digital Input Closed Voltage Threshold | Less than 3 V                                                                                                |
| Digital Input Open Voltage Threshold   | Greater than 8 V                                                                                             |
| Resistive Analogue Measurement Range   | <b>Input A, B &amp; C:</b> 0 $\Omega$ to 3 k $\Omega$                                                        |
| Current Analogue Measurement Range     | <b>Input A:</b> 0 mA to 20 mA                                                                                |
| Voltage Analogue Measurement Range     | <b>Input A:</b> 0 V to 10 V                                                                                  |
| Analogue Resolution                    | 1 %                                                                                                          |
| Analogue Accuracy                      | $\pm 1$ %                                                                                                    |
| Digital Inputs                         |                                                                                                              |
| Number                                 | 4                                                                                                            |
| Type                                   | Negative Switching Digital Input                                                                             |
| Closed Voltage Threshold               | Less than 3 V                                                                                                |
| Open Voltage Threshold                 | Greater than 8 V                                                                                             |
| Magnetic Pick-up Input                 |                                                                                                              |
| Voltage Input Range                    | 0.5 V <sub>Peak</sub> to 70 V <sub>Peak</sub>                                                                |
| Frequency Input Range                  | 1 Hz to 10 kHz                                                                                               |
| Resolution                             | 1 Hz                                                                                                         |
| Accuracy                               | $\pm 1$ %                                                                                                    |
| Flywheel Teeth                         | 10 to 500                                                                                                    |

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Part Number: G4500-01, G4501-01

| Specifications            |                                                          |
|---------------------------|----------------------------------------------------------|
| Digital Outputs           |                                                          |
| Number                    | 6                                                        |
| Type                      | Positive Switching DC Outputs                            |
| Positive DC Output Rating | <b>Output A to F:</b> 0.5 A at supply voltage            |
| Auxiliary Supply Output   |                                                          |
| Number                    | 1                                                        |
| Rating                    | 20 mA at 5 V                                             |
| Communications            |                                                          |
| USB B                     | 1 Programming Port                                       |
| CAN                       | 1 CAN Port                                               |
| RS485                     | 1 Fully Isolated RS485 Port (G4501-01 Only)              |
| Temperature               |                                                          |
| Operating Temperature     | -30 °C to +70 °C / -22 °F to +158 °F                     |
| Storage Temperature       | -40 °C to +80 °C / -40 °F to +176 °F                     |
| Dimensions                |                                                          |
| Overall (W x H x D)       | 142.6 mm x 118.6 mm x 48.5 mm / 5.61 " x 4.66 " x 1.91 " |
| Mounting                  |                                                          |
| Type                      | Panel Fascia Mounting                                    |
| Panel Cut-Out (W x H)     | 118 mm x 92.0 mm / 4.65 " x 3.62 "                       |
| Maximum Panel Thickness   | 5 mm / 0.19"                                             |

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| Environmental Testing Standards              |                                                                                                   |
|----------------------------------------------|---------------------------------------------------------------------------------------------------|
| Electro-Magnetic Compatibility               |                                                                                                   |
| BS EN 61000-6-2                              | EMC Generic Immunity Standard for the Industrial Environment                                      |
| BS EN 61000-6-4                              | EMC Generic Emission Standard for the Industrial Environment                                      |
| Electrical Safety                            |                                                                                                   |
| BS EN 61010                                  | Safety of Information Technology Equipment, including Electrical Business Equipment               |
| Temperature                                  |                                                                                                   |
| BS EN 60068-2-1                              | Ab/Ae Cold Test -30 °C                                                                            |
| BS EN 60068-2-2                              | Bb/Be Dry Heat +70 °C                                                                             |
| Vibration                                    |                                                                                                   |
| BS EN 60068-2-6                              | Ten sweeps in each of three major axes<br>5 Hz to 8 Hz at $\pm 7.5$ mm,<br>8 Hz to 500 Hz at 2 Gn |
| Humidity                                     |                                                                                                   |
| BS EN 60068-2-30                             | Db Damp Heat Cyclic 20/55 °C at 95% Relative Humidity 48 Hours                                    |
| BS EN 60068-2-78                             | Cab Damp Heat Static 40 °C at 93% Relative Humidity 48 Hours                                      |
| Shock                                        |                                                                                                   |
| BS EN 60068-2-27                             | Three shocks in each of three major axes<br>15 Gn in 11 ms                                        |
| Degrees of Protection Provided by Enclosures |                                                                                                   |
| BS EN 60529                                  | IP65 - From the front of the module when installed into a control panel (Integrated Gasket)       |

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Part Number: G4500-01, G4501-01

| Remote Start Controller |                           |
|-------------------------|---------------------------|
| Pin                     | Description               |
| 1 to 2                  | DC Supply                 |
| 3                       | Fuel                      |
| 4                       | Start                     |
| 5                       | Charge Alternator         |
| 6 to 9                  | Digital Outputs           |
| 10 to 13                | Analogue Inputs           |
| 14 to 17                | Digital Inputs            |
| 18 to 20                | Engine ECU/ECM            |
| 21 to 24                | Generator Voltage Sensing |
| 25 to 28                | Not Applicable            |
| 29 to 32                | Generator Current Sensing |
| 33 to 35                | Magnetic Pickup           |
| 36 to 38                | RS485 (G4501-01 Only)     |
| Aux                     | Auxiliary Supply Output   |

| Automatic Mains (Utility) Failure Controller |                                  |
|----------------------------------------------|----------------------------------|
| Pin                                          | Description                      |
| 1 to 2                                       | DC Supply                        |
| 3                                            | Fuel                             |
| 4                                            | Start                            |
| 5                                            | Charge Alternator                |
| 6 to 9                                       | Digital Outputs                  |
| 10 to 13                                     | Analogue Inputs                  |
| 14 to 17                                     | Digital Inputs                   |
| 18 to 20                                     | Engine ECU/ECM                   |
| 21 to 24                                     | Generator Voltage Sensing        |
| 25 to 28                                     | Mains (Utility) Voltage Sensing  |
| 29 to 32                                     | Generator / Load Current Sensing |
| 33 to 35                                     | Magnetic Pickup                  |
| 36 to 38                                     | RS485 (G4501-01 Only)            |
| Aux                                          | Auxiliary Supply Output          |

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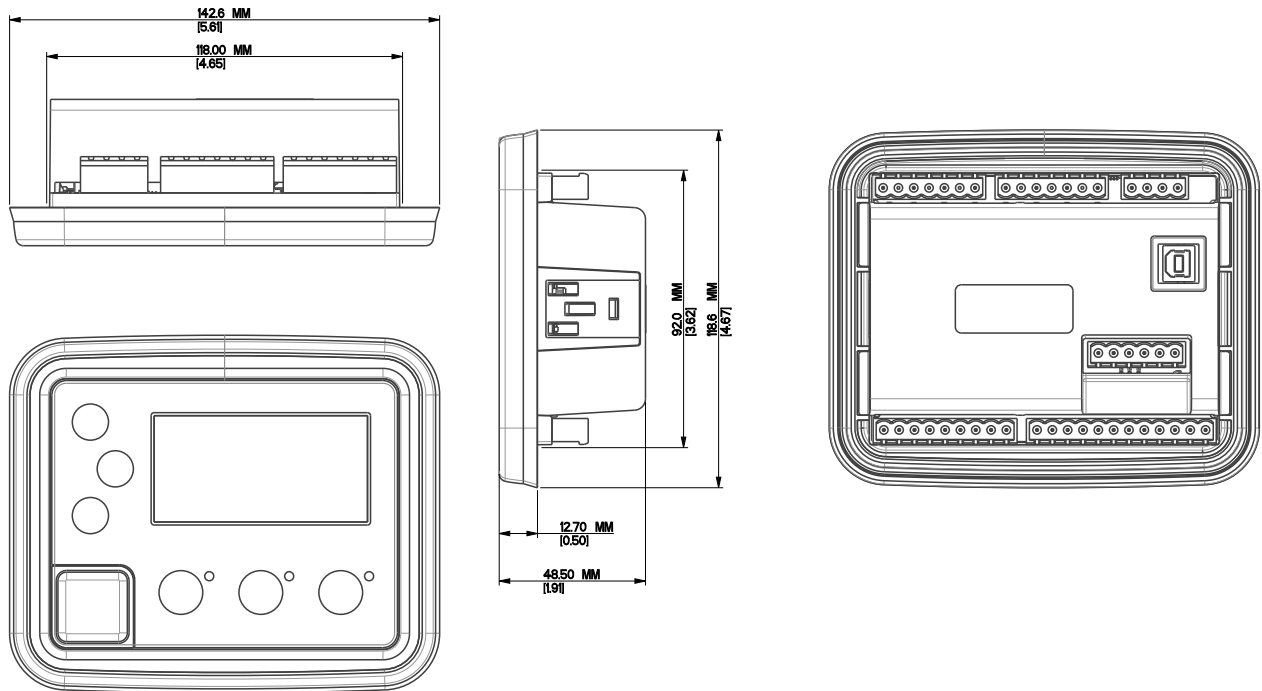


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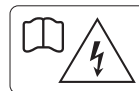
Part Number: G4500-01, G4501-01

### Technical Drawing



### Connection Label

|    |    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|----|
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
|----|----|----|----|----|----|----|----|----|----|----|----|



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|    |    |    |    |    |    |
|----|----|----|----|----|----|
| 33 | 34 | 35 | 36 | 37 | 38 |
|----|----|----|----|----|----|

|   |   |   |   |   |   |   |   |   |    |    |    |    |    |    |    |    |    |    |    |     |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | AUX |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|-----|

DC Supply : 8 V to 35 V, 0.5 A max  
 DC Outputs : 35 V, 0.5 A (T3 to T4, T6 to T9)  
 DC Inputs : 12 V max (T10 to T13), 30 V max (T14 to T17)  
 AC Voltage Inputs : 600 V AC, 50 Hz / 60 Hz, 1 ph to 3 ph  
 AC Current Inputs : 5 A, 50 Hz / 60 Hz, 1 ph to 3 ph  
 Charge Alternator : 35 V DC, 2.5 W max  
 Magnetic Pickup : 70 V peak, 10 kHz max  
 Comms Port : 5 V DC max  
 Auxiliary Supply Out : 5 V DC, 20 mA max

Refer to PIN out description charts for connection information on the operating mode controller is configured for.

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