



# Single Genset Controller

## **SGC 410**



|  |    |
|--|----|
| <b>1. Product description</b>                        |    |
| 1.1 About SGC 410.....                               | 3  |
| 1.2 Product overview.....                            | 3  |
| 1.3 Overview of controller buttons.....              | 4  |
| <b>2. Safety instructions</b>                        |    |
| 2.1 General safety instructions.....                 | 5  |
| 2.2 Electrical safety.....                           | 5  |
| 2.3 In operation safety.....                         | 5  |
| <b>3. Alarms</b>                                     |    |
| 3.1 Alarms.....                                      | 6  |
| <b>4. Technical specifications</b>                   |    |
| 4.1 Electrical specifications.....                   | 10 |
| 4.1.1 Power supply.....                              | 10 |
| 4.1.2 Genset voltage and frequency measurements..... | 10 |
| 4.1.3 Genset current measurements.....               | 11 |
| 4.1.4 Earth leak measurements.....                   | 11 |
| 4.1.5 Digital inputs.....                            | 11 |
| 4.1.6 Analogue resistive sensor inputs.....          | 11 |
| 4.1.7 Analogue inputs used as digital inputs.....    | 12 |
| 4.1.8 Site battery inputs.....                       | 12 |
| 4.1.9 Magnetic pick-up (MPU) input.....              | 13 |
| 4.1.10 D+ Charger alternator.....                    | 13 |
| 4.1.11 Sensor common point.....                      | 13 |
| 4.1.12 Communication ports.....                      | 14 |
| 4.1.13 Digital outputs.....                          | 14 |
| 4.2 Terminal details.....                            | 15 |
| 4.3 Approvals.....                                   | 17 |
| 4.4 Dimensions.....                                  | 17 |
| <b>5. Legal information</b>                          |    |
| 5.1 Legal information.....                           | 18 |

# 1. Product description

## 1.1 About SGC 410

SGC 410 is a modern genset controller with user friendly HMI, full graphics LCD, and a highly versatile software. Extensive inputs and outputs support a wide variety of industry standard features in diesel/gasoline genset applications.

SGC 410 offers Site battery monitoring which significantly reduces fuel consumption. The controllers support Shelter temperature monitoring, Auto (Remote start /stop, Cyclic and Exercise mode), Manual and Test modes.

The DEIF Smart Connect software offers flexibility to configure each individual input and output for a specific function or application. All parameters can also be configured on the controller.

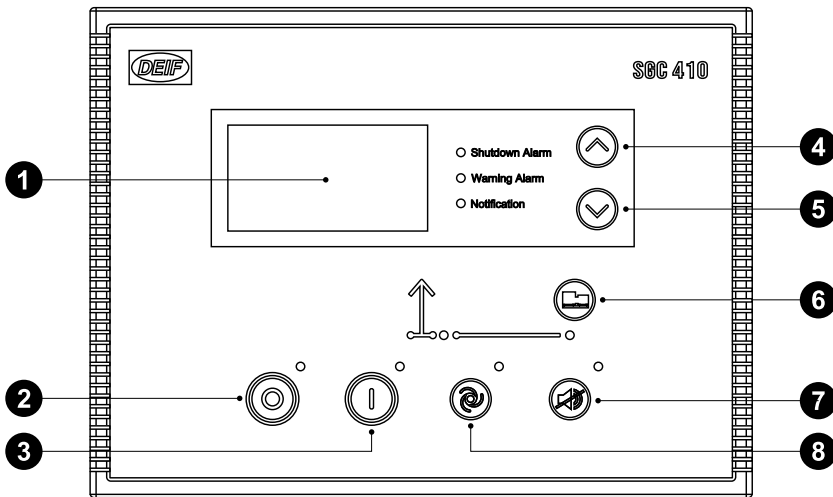
The powerful micro controller in SGC 410 supports a range of complex features, for example:

- LCD display
- True RMS voltage and current monitoring
- RS-485 base communication
- Monitoring of engine and alternator parameters
- Configurable inputs and outputs for a wide range of functions

## 1.2 Product overview

| Features   | Specifications |
|--|----------------|
| Digital switch input   | 9              |
| Analogue resistive inputs  | 5              |
| Analogue current/voltage inputs                                  | 2              |
| Differential input ( $\pm 60$ V DC) for Site battery voltage     | Yes            |
| DG alternator voltage input, D+ charging alternator I/O          | Yes            |
| Digital outputs  | 7              |
| Event logs   | Yes            |
| USB port for PC based configuration                              | Yes            |
| RS-485 for Modbus communication                                  | Yes            |
| Operating battery supply voltage (with -32 V reverse protection) | 8 to 32 V DC   |
| Operating temperature range ( $^{\circ}$ C)                      | -20 to 65      |
| Protection class with gasket (included)                          | IP65           |
| Warning auto clear enable/disable                                | Yes            |
| Fuel reference selection input                                   | Yes            |

## 1.3 Overview of controller buttons



1. Display
2. Stop/Config button
3. Start button
4. Menu navigation up button
5. Menu navigation down button
6. Genset contactor latching button
7. Acknowledge button
8. Mode selection button

## 2. Safety instructions

### 2.1 General safety instructions

This document includes important instructions that should be followed during installation and maintenance of the controller.

Installation and maintenance must only be carried out by authorised personnel, and always in accordance with all applicable state and local electrical codes. Efficient and safe operation of the controller can be acquired only if the equipment is correctly operated, configured and maintained.

The following notations found in this document can indicate potentially hazardous conditions to the operator, service personnel or the equipment.

**NOTE** Highlights an essential element of a procedure to ensure correctness.



**CAUTION**

Indicates a procedure or practice, which could result in damage or destruction of equipment, if not strictly observed.



**WARNING**

Indicates a procedure or practice, which could result in injuring personnel or loss of life, if not followed correctly.

### 2.2 Electrical safety

- Electric shock can cause severe personal injury or death.
- Ensure that the genset is grounded before performing any installation or service.
- Generators produce high electrical voltages, and direct contact with it can cause fatal electrical shock. Prevent contact with terminals, bare wires, connections, etc., while the generator and related equipment are running. Do not tamper with interlocks.
- To handle the maximum electrical current, the wires used for electrical connections and wirings must be of appropriate size.

### 2.3 In operation safety

- Before installing the controller, ensure that all power voltage supplies are positively turned off at the source. Disconnect the generator's battery cables and remove the panel fuse to prevent accidental start up. Disconnect the cable from the battery post, indicated by a NEGATIVE, NEG, or (–) first. Reconnect the negative cable last. Failure to do so will result in hazardous and possibly fatal electrical shock.
- Remove the electric power supply before removing the controller or touching other electrical parts.
- Use extreme caution when working on electrical components. High voltage can cause injury or death.
- With floors of metal or concrete, use rubber insulation mats placed on dry wood platforms when working near the generator or other electrical equipment.
- Do not wear damp clothing (particularly wet shoes) or allow skin surface to be damp when handling electrical equipment.
- Do not operate any electrical device or wires while standing in water, while barefoot, or while hands or feet are wet. It may result in severe electrical shock.
- Do not wear jewellery. Jewellery can cause a short circuit within electrical contacts and cause shock or burning.

In case of an accident caused by electric shock, immediately shut down the electrical power source. If this is not possible, try to release the victim from the live conductor. Avoid direct contact with the victim. Use a non-conducting object (for example a rope or a wooden stick) to release the victim from the live conductor. If the victim is unconscious, apply first aid and get immediate medical help.

## 3. Alarms

### 3.1 Alarms

When a Shutdown alarm occurs the controller commands the genset to stop. The controller does not send the start command if the Shutdown alarm is not acknowledged.

When an Electrical trip alarm occurs, the controller opens the genset contactor and then commands the genset to stop. The controller does not send the start command if the Electrical trip alarm is not acknowledged.

If the Warning alarm occurs while the genset runs, the controller does not send the stop command. But if the Warning alarm is not acknowledged when the genset is stopped, the genset cannot be started.

If Auto warning clear is enabled, the Warning alarms are automatically cleared when the conditions that triggered the alarm are cleared.

#### Alarm types

| No. | Alarm actions   | Description   |
|-----|-----------------|---|
| 1   | Shutdown        | Load is taken off from the genset and the genset is immediately stopped by skipping the Engine cooling time.  |
| 2   | Electrical trip | Load is taken off from the genset, the Engine cooling timer begins, after which the genset is stopped.  |
| 3   | Warning         | Warning alarms draw the operator's attention to an undesirable condition without affecting the genset's operation.<br>The genset cannot be started without acknowledging the Warning alarms |
| 4   | Notification    | The controller shows the message on the display. The genset start/stop operation is not affected.   |

#### Alarms and their causes

| No. | Alarms                    | Causes/Indication   | Actions  |
|-----|---------------------------|---|--|
| 1   | Low Oil Pressure (Sensor) | Indicates that the oil pressure measured is below the preset threshold.   | None<br>Shutdown<br>Warning                                    |
|     | Low Oil Pressure (Switch) | Indicates that the oil pressure measured is low through switch.   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 2   | LOP Res Sensor - Ckt Open | The oil pressure sensor is not detected (circuit open).   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 3   | High Eng Temp (sensor)    | Indicates that the engine temperature is above the preset threshold. This condition is detected only when engine is on. | None<br>Shutdown<br>Warning                                    |
|     | High Eng Temp (Switch)    | Indicates that the engine temperature measured is high through switch.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |

| No. | Alarms   | Causes/Indication   | Actions  |
|-----|--|---|--|
| 4   | Eng Temp - Ckt Opn   | The temperature sensor is not detected (circuit open).  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 5   | Low Fuel level (Sensor)                                    | Indicates that the amount of fuel level is below the preset threshold. This condition is detected only when engine is on. | None<br>Shutdown<br>Warning                                    |
|     | Low Fuel level (Switch)                                    | Indicates that the amount of fuel level measured is low through switch.   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
|     | Fuel level - Ckt Open                                      | The fuel level sensor is not detected (circuit open).   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 6   | Fuel Theft   | The fuel consumption has exceeded the preset threshold.   | Warning  |
| 7   | Low Water Level Switch                                     | Indicates that radiator water level is below the preset threshold.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 8   | Shelter Temp - Ckt Open                                    | Shelter temperature sensor is not detected (circuit open).  | Notification   |
| 9   | Aux S2 - Ckt Open  | Auxiliary sensor S2 is not detected (circuit open).   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 10  | Auxiliary Input (for example, Aux_A - P)/user defined name | Configured auxiliary input has triggered longer than the preset duration.   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 11  | Emergency Stop   | When emergency stop switch is pressed and immediate shutdown is required.   | Shutdown   |
| 12  | Fail To Stop   | It is detected that genset is still running after sending stop command.   | Shutdown   |
| 13  | Fail To Start  | Indicates that genset has not started after the preset number of start attempts.  | Shutdown   |
| 14  | L1 Phase Over Voltage                                      | Indicates that genset (L1) phase voltage has exceeded the preset over-voltage threshold.                                  | Shutdown<br>Warning  |
| 15  | L2 Phase Over Voltage                                      | Indicates that genset (L2) phase voltage has exceeded the preset over-voltage threshold.                                  | Shutdown<br>Warning  |
| 16  | L3 Phase Over Voltage                                      | Indicates that genset (L3) phase voltage has exceeded the preset over-voltage threshold.                                  | Shutdown<br>Warning  |
| 17  | L1 Phase Under Voltage                                     | Indicates that genset (L1) phase voltage has fallen below the preset under-voltage threshold.                             | Shutdown<br>Warning  |
| 18  | L2 Phase Under Voltage                                     | Indicates that genset (L2) phase voltage has fallen below the preset under-voltage threshold.                             | Shutdown<br>Warning  |

| No. | Alarms                  | Causes/Indication   | Actions  |
|-----|-------------------------|---|--|
| 19  | L3 Phase Under Voltage  | Indicates that genset (L3) phase voltage has fallen below the preset under-voltage threshold.                                       | Shutdown<br>Warning  |
| 20  | DG Phase Reversed       | Alternator phase sequence (L1-L2-L3) is not correct.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 21  | Mains Phase Reversed    | Mains is in unhealthy condition.  | None<br>Notification   |
| 22  | Over Frequency          | Indicates that genset output frequency has exceeded the preset threshold.   | Shutdown<br>Warning  |
| 23  | Under Frequency         | Indicates that genset output frequency has fallen below the preset threshold.   | Shutdown<br>Warning  |
| 24  | Over Current            | Indicates that genset current has exceeded the preset threshold.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 25  | Over Load               | Indicates that the measured kW load rating has exceeded the preset threshold.   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 26  | Unbalanced Load         | Load on any phase is greater or less than other phases by a threshold value.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 27  | Over Speed              | Indicates that genset speed has exceeded the preset overspeed threshold. Genset will shut down after Overspeed delay.               | Shutdown   |
| 28  | Gross Over Speed        | Indicates that genset speed has exceeded the preset Gross overspeed threshold. Genset will shut down immediately without any delay. | Shutdown   |
| 29  | Under Speed             | The engine speed has fallen below the preset RPM.   | Shutdown   |
| 30  | Charge Fail             | The charge alternator voltage has dropped below the preset threshold.   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 31  | Battery Under Voltage   | The battery voltage has fallen below the preset threshold.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 32  | Battery Over Voltage    | The battery voltage has exceeded the preset threshold.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 33  | High Oil Press Detected | Lube oil pressure is detected above the crank disconnect threshold when the engine is off.  | Warning  |



| No. | Alarms                   | Causes/Indication  | Actions  |
|-----|--------------------------|--|--|
| 34  | Maintenance Due          | Indicates that engine running hours has exceeded the preset hours limit or maintenance due date has occurred and filter servicing is required. | Warning<br>Notification  |
| 35  | Battery Charger Fail     | Indicates the battery is not getting charged by the charger.   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 36  | Smoke Fire               | Controller has detected smoke / fire through its digital input.  | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |
| 37  | Aux S2/user defined name | Auxiliary sensor S2's threshold being crossed.   | None<br>Shutdown<br>Warning<br>Electrical Trip<br>Notification |

## 4. Technical specifications

### 4.1 Electrical specifications

#### 4.1.1 Power supply

| Category                               | Specification  |
|--|--|
| Controller terminals                   | 1 (Ground)<br>2 (Battery or DC+)                                     |
| Supply voltage range                   | Nominal voltage: 12/24 VDC<br>Operating range: 8 to 32 V DC          |
| Cranking drop out period               | 50 ms  |
| Maximum reverse voltage protection     | -32 V DC   |
| Measurement accuracy (battery voltage) | ±1 % full scale  |
| Resolution                             | 0.1 V  |
| Maximum current consumption            | ~ 200 mA, 12/24 V DC (excluding the current load for the DC outputs) |
| Standby current consumption            | 180 mA, 12 V DC<br>140 mA, 24 V DC                                   |

#### 4.1.2 Genset voltage and frequency measurements

| Category                 | Specifications   |
|--------------------------|--|
| Controller terminals     | 54 (Neutral)<br>55 (L3)<br>56 (L2)<br>57 (L1)                                      |
| Measurement type         | True RMS   |
| Phase-to-neutral voltage | 32 to 300 V AC RMS   |
| Phase-to-phase voltage   | 32 to 520 V AC RMS   |
| Voltage accuracy         | ±1 % of full scale for phase-to-neutral<br>±1.5 % of full scale for phase-to-phase |
| Voltage resolution       | 1 V AC RMS for phase-to-neutral<br>2 V AC RMS for phase-to-phase                   |
| Frequency range          | 5 to 75 Hz   |
| Frequency accuracy       | 0.25 % of full scale   |
| Frequency resolution     | 0.1 Hz   |

**NOTE** For single phase applications, it is mandatory to connect the genset phase and neutral cables to the genset controller's phase L1 and neutral terminals.

### 4.1.3 Genset current measurements

| Category                            | Specifications   |
|-------------------------------------|--|
| Controller terminals                | 43 and 42 (for phase L1)<br>45 and 44 (for phase L2)<br>47 and 46 (for phase L3) |
| Measurement type                    | True RMS   |
| Maximum CT secondary current rating | 5 A  |
| Burden                              | 0.25 VA  |
| Measurement accuracy                | ±1.4 % of nominal  |

### 4.1.4 Earth leak measurements

| Category                            | Specifications    |
|-------------------------------------|-------------------|
| Controller terminals                | 48 and 49         |
| Measurement type                    | True RMS          |
| Maximum CT secondary current rating | 5 A               |
| Burden                              | 0.25 VA           |
| Measurement accuracy                | ±1.4 % of nominal |

**NOTE** Follow the recommended phase sequence while connecting the current transformer (CT).

### 4.1.5 Digital inputs

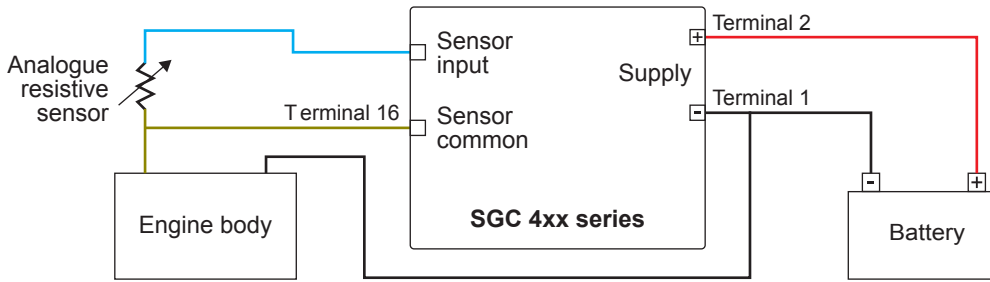
| Category                      | Specifications   |
|-------------------------------|--|
| Controller terminals          | 33, 34, 35, 36, 37, 38, 39, 40, 41   |
| Number of inputs              | 9  |
| Type                          | Negative sensing (connect to ground for activation)  |
| Software configurable options | Emergency stop, Remote start/ stop, and more (see <b>Controller overview, Configurable parameters</b> in the <b>User manual</b> for more details). |

### 4.1.6 Analogue resistive sensor inputs

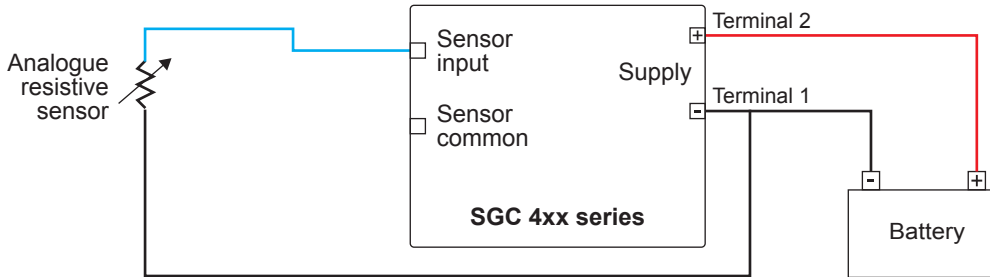
| Category               | Specifications   |
|------------------------|--|
| Controller terminals   | 11 (Oil pressure)<br>12 (Fuel)<br>13 (Temperature)<br>14 (Aux 1)<br>15 (Aux 2) |
| Number of inputs       | 5  |
| Type                   | Ratio-metric sensing   |
| Range                  | 10 to 5000 $\Omega$  |
| Open circuit detection | Above 5.5 k $\Omega$   |
| Measurement accuracy   | ±2 % of full scale (up to 1000 $\Omega$ )                                      |

## SCP connection

SCP connections for Analogue inputs 1 to 4\*:

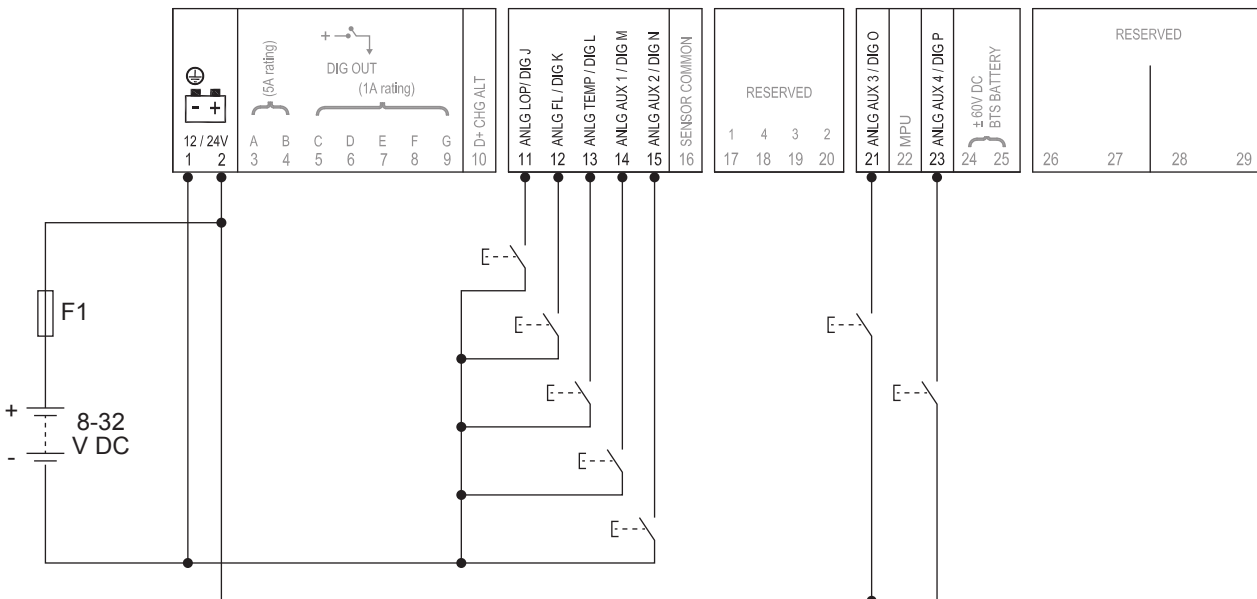


\*SCP connections for Analogue input 2 used as *Fuel level sensor* with the reference configured as *Battery Negative*



## 4.1.7 Analogue inputs used as digital inputs

Analogue inputs can be used as digital inputs when wired as shown.



## 4.1.8 Site battery inputs

| Category             | Specifications |
|----------------------|----------------|
| Controller terminals | 24, 25         |
| Number of inputs     | 2              |
| Type                 | Differential   |
| Range                | ±60 V          |

| Category   | Specifications     |
|------------|--------------------|
| Resolution | 0.1 V              |
| Accuracy   | ±2 % of full scale |

### Site battery run hours

In this feature, controller calculates the run hours for which the site runs on the battery backup. Site battery run hours are incremented only when both the mains and genset contactors are not latched and when site battery voltage is greater than low battery voltage threshold.

### 4.1.9 Magnetic pick-up (MPU) input

| Category            | Specifications        |
|---------------------|-----------------------|
| Controller terminal | 22                    |
| Measurement type    | Single ended          |
| Frequency range     | 10 to 10 kHz          |
| Input voltage range | 200 mV to 45 V AC RMS |

The Magnetic pick-up (MPU) is an inductive sensor fitted on the engine flywheel for the engine speed sensing. The output of the MPU is a sine-wave signal.

### 4.1.10 D+ Charger alternator

| Category            | Specifications                                       |
|---------------------|--|
| Controller terminal | 10   |
| Voltage range       | 0 to $V_{BATT}$<br>$V_{BATT} = 8$ to 32 V DC         |
| Excitation          | PWM (power limited to 3 W, 12 V/250 mA, 24 V/125 mA) |
| Accuracy            | ±2 % of full scale                                   |

The charge fail is a combined input and output terminal. When the genset starts, the terminal provides controlled power output to excite the charging alternator. After the excitation is successfully done, the controller reads the charging alternator's output voltage for monitoring its health. The action for charge fail is configurable.

### 4.1.11 Sensor common point

| Category            | Specifications     |
|---------------------|--------------------|
| Controller terminal | 16                 |
| Range               | ±2 V               |
| Accuracy            | ±2 % of full scale |

The sensor common point (SCP) terminal 16 must be connected directly to an electrically sound point on the engine body. This point serves as a common reference point for all analogue sensors. The electrical cable used for the connection must not be shared with any other electrical connection. This wiring practice is strongly recommended to ensure that there is negligible potential difference between the engine body and the controller's SCP terminal, and that predictable and accurate analogue sensor measurements are always available in a wide variety of field conditions.

## 4.1.12 Communication ports

| Category                     | Specifications  |
|------------------------------|---|
| USB                          | USB 2.0 type B for connection to PC with DEIF Smart Connect software  |
| RS-485 Serial Port           | Half Duplex<br>Max. Baud Rate 115200<br>Data connection 2-wire<br>Termination resistor of 120 $\Omega$ is provided between output terminals A and B<br>Common-mode operating range<br>Maximum distance of line is 200 m |
| Controller terminals         | 30 (GND)<br>31 (A)<br>32 (B)  |
| CAN                          | Baud rate: 250 kbps<br>Packet size: 8 bytes<br>Termination resistor of 120 $\Omega$ is provided   |
| Controller terminals for CAN | 58 and 59   |

- NOTE**
- The RS-485 port on the controller supports a protocol based on Modbus.
  - Use two core shielded twisted pair cable for Modbus RS-485 connection.
  - Terminal 30 should be connected to master's isolated ground only.
  - Keep terminal 30 connection open if shielded cable is not available.
  - Do not connect terminal 30 to the negative battery terminal (DC -).

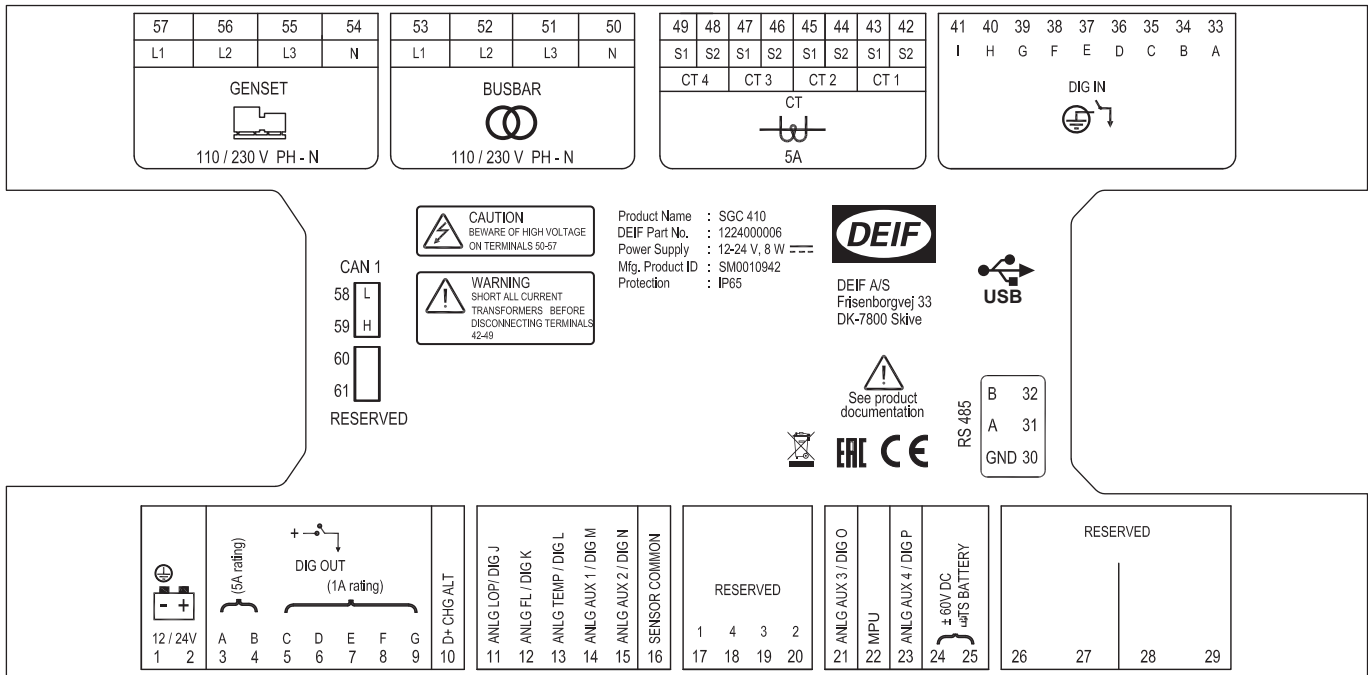
## 4.1.13 Digital outputs

| Category                      | Specifications   |
|-------------------------------|--|
| Controller terminals          | 3, 4, 5, 6, 7, 8, 9  |
| Number of outputs             | 7  |
| Type                          | DC outputs   |
| Maximum current rating        | 5 A (3 and 4)<br>1 A (5, 6, 7, 8, 9)   |
| Software configurable options | Start relay, Fuel relay, Close genset contactor, Stop solenoid and many more (see <b>Controller overview, Configurable parameters</b> in the <b>User manual</b> for more details). |

- NOTE**
- Do not connect the Starter motor relay and the Stop solenoid directly to the controller's output terminals. It is recommended to connect terminals 3 and 4 to Start and Stop.
  - Genset contactor latching relays should be compiled against 4 kVA surge as per IEC-61000-4-5 standard.

## 4.2 Terminal details

Rear view of the controller with terminal details.



| Terminal | Text                    | Description  | Connector    |
|----------|-------------------------|--|--------------|
| 1        | GND                     | Power ground   | BCP-508-10GN |
| 2        | BATT +                  | Power supply positive  |              |
| 3        | DIG OUT A               | DC output - A  |              |
| 4        | DIG OUT B               | DC output - B  |              |
| 5        | DIG OUT C               | DC output - C  |              |
| 6        | DIG OUT D               | DC output - D  |              |
| 7        | DIG OUT E               | DC output - E  |              |
| 8        | DIG OUT F               | DC output - F  |              |
| 9        | DIG OUT G               | DC output - G  |              |
| 10       | D+ CHG ALT              | Input for charging alternator control  |              |
| 11       | ANLG LOP / DIG J        | Analogue input from Lube Oil Pressure Sensor/<br>Digital Input J                           | BCP-508-6GN  |
| 12       | ANLG FUEL LEVEL / DIG K | Analogue input from Fuel Level Sensor/Digital<br>Input K                                   |              |
| 13       | ANLG ENG TEMP / DIG L   | Analogue input from Engine Temperature Sensor/<br>Digital Input L                          |              |
| 14       | ANLG AUX 1 / DIG M      | Analogue input auxiliary/Analogue input from<br>Shelter Temperature Sensor/Digital Input M |              |
| 15       | ANLG AUX 2 / DIG N      | Analogue input auxiliary/Digital Input N   |              |
| 16       | SCP                     | Sensor common point  |              |

| Terminal | Text             | Description  | Connector   |
|----------|------------------|--|-------------|
| 17       | Reserved         | -  | N/A         |
| 18       | Reserved         | -  |             |
| 19       | Reserved         | -  |             |
| 20       | Reserved         | -  |             |
| 21       | ANLG AUX 3/DIG 0 | Analogue input auxiliary/0-5 V/4-20 mA (LOP)/<br>Digital Input O | BCP-508-5GN |
| 22       | MPU              | Input from engine speed sensor (Inductive)                       |             |
| 23       | ANLG AUX 4/DIG P | Analogue input auxiliary/0-5 V/4-20 mA/Digital<br>Input P        |             |
| 24       | Site BATT I/P    | Input 1 from Site battery  |             |
| 25       | Site BATT I/P    | Input 2 from Site battery  |             |
| 26       | Reserved         | -  | N/A         |
| 27       | Reserved         | -  |             |
| 28       | Reserved         | -  |             |
| 29       | Reserved         | -  |             |
| 30       | RS 485 GND       | RS-485 GND   | BCP-508-3GN |
| 31       | RS 485 A         | RS-485 A   |             |
| 32       | RS 485 B         | RS-485 B   |             |
| 33       | DIG IN A         | Input from switch A  | BCP-508-9GN |
| 34       | DIG IN B         | Input from switch B  |             |
| 35       | DIG IN C         | Input from switch C  |             |
| 36       | DIG IN D         | Input from switch D  |             |
| 37       | DIG IN E         | Input from switch E  |             |
| 38       | DIG IN F         | Input from switch F  |             |
| 39       | DIG IN G         | Input from switch G  |             |
| 40       | DIG IN H         | Input from switch H  |             |
| 41       | DIG IN I         | Input from switch I  |             |
| 42       | GEN CT IN L1-2   | CT input 2 from Phase L1   | BCP-508-8GN |
| 43       | GEN CT IN L1-1   | CT input 1 from Phase L1   |             |
| 44       | GEN CT IN L2-2   | CT input 2 from Phase L2   |             |
| 45       | GEN CT IN L2-1   | CT input 1 from Phase L2   |             |
| 46       | GEN CT IN L3-2   | CT input 2 from Phase L3   |             |
| 47       | GEN CT IN L3-1   | CT input 1 from Phase L3   |             |
| 48       | GEN CT IN EL2    | CT input 2 from Earth Leakage                                    |             |
| 49       | GEN CT IN EL1    | CT input 1 from Earth Leakage                                    |             |

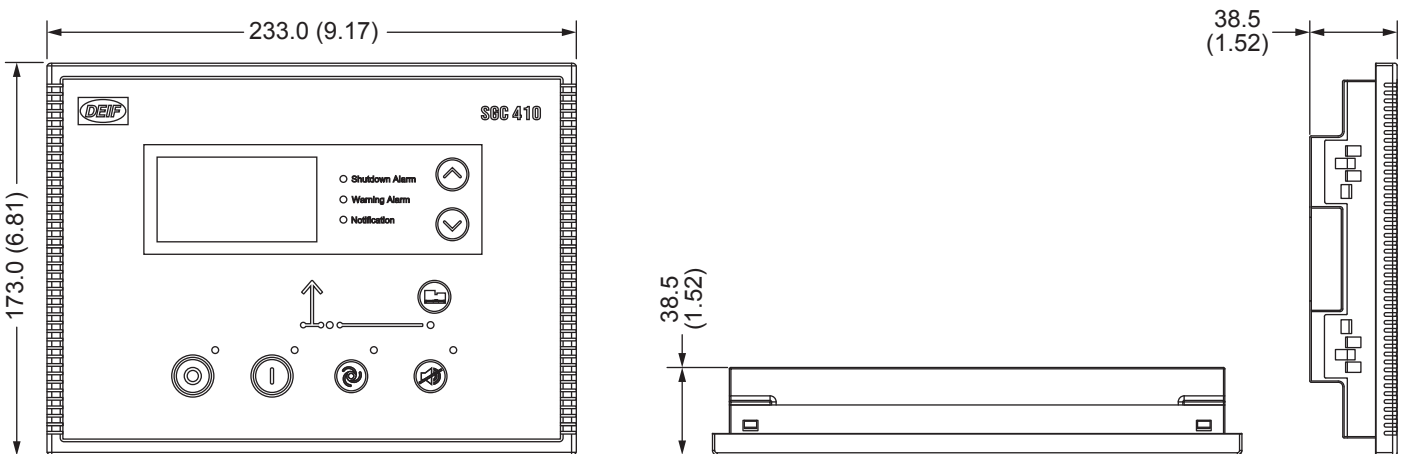


| Terminal | Text             | Description                    | Connector       |
|----------|------------------|--------------------------------|-----------------|
| 50       | Reserved         | -                              | BCP-508-7GN-4PA |
| 51       | Reserved         | -                              |                 |
| 52       | Reserved         | -                              |                 |
| 53       | Reserved         | -                              |                 |
| 54       | GEN V N          | Voltage input from Gen Neutral |                 |
| 55       | GEN V L3         | Voltage input from Gen L3      |                 |
| 56       | GEN V L2         | Voltage input from Gen L2      |                 |
| 57       | GEN V L1         | Voltage input from Gen L1      | BCP-508-4GN     |
| 58       | CAN L (Reserved) | CAN Low                        |                 |
| 59       | CAN H (Reserved) | CAN High                       |                 |
| 60       | Reserved         | -                              |                 |
| 61       | Reserved         | -                              |                 |

### 4.3 Approvals

| Standards |   |
|-----------|---|
| CE        | <ul style="list-style-type: none"> <li>Comply to the EU Low Voltage Directive: EN 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements</li> <li>Comply to the EU EMC directive EN 61000-6-2, 4</li> </ul> |
| UL        |   |

### 4.4 Dimensions



| Dimensions    |   |
|---------------|---|
| Dimensions    | Length: 233.0 mm (9.17 in)<br>Height: 173.0 mm (6.81 in)<br>Depth: 38.5 mm (1.52 in)      |
| Panel cut-out | Length: 219.0 mm (8.62 in)<br>Height: 158.0 mm (6.22 in)<br>Tolerance: ± 0.3 mm (0.01 in) |

## 5. Legal information

### 5.1 Legal information

#### Warranty



#### **WARNING**

The controller is not to be opened by unauthorised personnel. If the controller is opened anyway, the warranty will be lost.

#### Disclaimer

DEIF takes no responsibility for installation or operation of the generator set. If there is any doubt about how to install or operate the engine/generator controlled by the SGC controller, the company responsible for the installation or the operation of the set must be contacted.

DEIF A/S reserves the right to change any of the contents of this document without prior notice.

The English version of this document always contains the most recent and up-to-date information about the product. DEIF does not take responsibility for the accuracy of translations, and translations might not be updated at the same time as the English document. If there is a discrepancy, the English version prevails.

#### Copyright

© Copyright DEIF A/S 2020. All rights reserved.