Atlas Copco Instruction Manual

Instruction Manual
for AC Generators
English

QES 9 Kd S5 ESF	D1105-E4GB
QES 14 Kd S5 ESF	D1703M-E4BG
QES 20 Kd S5 ESF	V2203M-E4BG

Atlas Copco

QES 9-14-20 Kd S5 ESF - 50Hz

Instruction Manual for AC Generators

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ATLAS COPCO - PORTABLE ENERGY DIVISION
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Warranty and Liability Limitation

Use only authorized parts.
Any damage or malfunction caused by the use of unauthorized parts is not covered by Warranty or Product Liability.
The manufacturer does not accept any liability for any damage arising from modifications, additions or conversions made without the manufacturer's approval in writing.
Neglecting maintenance or making changes to the setup of the machine can result in major hazards, including fire risk.
While every effort has been made to ensure that the information in this manual is correct, Atlas Copco does not assume responsibility for possible errors.

Congratulations on the purchase of your QES generator set. It is a solid, safe and reliable machine, built according to the latest technology. Follow the instructions in this booklet and we guarantee you years of trouble free operation. Please read the following instructions carefully before starting to use your machine.
While every effort has been made to ensure that the information in this manual is correct, Atlas Copco does not assume responsibility for possible errors. Atlas Copco reserves the right to make changes without prior notice.

Contents

1 Safety precautions for on-site generator sets

To be read attentively and acted accordingly before towing, lifting, operating, performing maintenance or repairing the generator set.

1.1 Introduction

The policy of Atlas Copco is to provide the users of their equipment with safe, reliable and efficient products. Factors taken into account are among others:

- the intended and predictable future use of the products, and the environments in which they are expected to operate,
- applicable rules, codes and regulations,
- the expected useful product life, assuming proper service and maintenance,
- providing the manual with up-to-date information.

Before handling any product, take time to read the relevant instruction manual. Besides giving detailed operating instructions, it also gives specific information about safety, preventive maintenance, etc.
Keep the manual always at the unit location, easy accessible to the operating personnel.

See also the safety precautions of the engine and possible other equipment, which are separately sent along or are mentioned on the equipment or parts of the unit.

These safety precautions are general and some statements will therefore not always apply to a particular unit.

Only people that have the right skills should be allowed to operate, adjust, perform maintenance or repair on Atlas Copco equipment. It is the responsibility of management to appoint operators with the appropriate training and skill for each category of job.

Skill level 1: Operator

An operator is trained in all aspects of operating the unit with the push-buttons, and is trained to know the safety aspects.

Skill level 2: Mechanical technician

A mechanical technician is trained to operate the unit the same as the operator. In addition, the mechanical technician is also trained to perform maintenance and repair, as described in the instruction manual, and is allowed to change settings of the control and safety system. A mechanical technician does not work on live electrical components.

Skill level 3: Electrical technician

An electrical technician is trained and has the same qualifications as both the operator and the mechanical technician. In addition, the electrical technician may carry out electrical repairs within the various enclosures of the unit. This includes work on live electrical components.

Skill level 4: Specialist from the manufacturer

This is a skilled specialist sent by the manufacturer or its agent to perform complex repairs or modifications to the equipment.

In general it is recommended that not more than two people operate the unit, more operators could lead to unsafe operating conditions. Take necessary steps to keep unauthorized persons away from the unit and eliminate all possible sources of danger at the unit.

When handling, operating, overhauling and/or performing maintenance or repair on Atlas Copco equipment, the mechanics are expected to use safe engineering practices and to observe all relevant local safety requirements and ordinances. The following list is a reminder of special safety directives and precautions mainly applicable to Atlas Copco equipment.

Neglecting the safety precautions may endanger people as well as environment and machinery:

- endanger people due to electrical, mechanical or chemical influences,
- endanger the environment due to leakage of oil, solvents or other substances,
- endanger the machinery due to function failures.

All responsibility for any damage or injury resulting from neglecting these precautions or by non-observance of ordinary caution and due care required in handling, operating, maintenance or repair, also if not expressly mentioned in this instruction manual, is disclaimed by Atlas Copco.

The manufacturer does not accept any liability for any damage arising from the use of non-original parts and for modifications, additions or conversions made without the manufacturer's approval in writing.

If any statement in this manual does not comply with local legislation, the stricter of the two shall be applied.

Statements in these safety precautions should not be interpreted as suggestions, recommendations or inducements that it should be used in violation of any applicable laws or regulations.

1.2 General safety precautions

1 The owner is responsible for maintaining the unit in a safe operating condition. Unit parts and accessories must be replaced if missing or unsuitable for safe operation.

2 The supervisor, or the responsible person, shall at all times make sure that all instructions regarding machinery and equipment operation and maintenance are strictly followed and that the machines with all accessories and safety devices, as well as the consuming devices, are in good repair, free of abnormal wear or abuse, and are not tampered with.

3 Whenever there is an indication or any suspicion that an internal part of a machine is overheated, the machine shall be stopped but no inspection covers shall be opened before sufficient cooling time has elapsed; this to avoid the risk of spontaneous ignition of oil vapour when air is admitted.

4 Normal ratings (pressures, temperatures, speeds, etc.) shall be durably marked.

5 Operate the unit only for the intended purpose and within its rated limits (pressure, temperature, speeds, etc.).

6 The machinery and equipment shall be kept clean, i.e. as free as possible from oil, dust or other deposits.

7 To prevent an increase in working temperature, inspect and clean heat transfer surfaces (cooler fins, intercoolers, water jackets, etc.) regularly. See the maintenance schedule.

8 All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.

9 Pressure and temperature gauges shall be checked regularly with regard to their accuracy. They shall be replaced whenever outside acceptable tolerances.

10 Safety devices shall be tested as described in the maintenance schedule of the instruction manual to determine that they are in good operating condition.

11 Mind the markings and information labels on the unit.

12 In the event the safety labels are damaged or destroyed, they must be replaced to ensure operator safety.

13 Keep the work area neat. Lack of order will increase the risk of accidents.

14 When working on the unit, wear safety clothing. Depending on the kind of activities these are: safety glasses, ear protection, safety helmet (including visor), safety gloves, protective clothing, safety shoes. Do not wear the hair long and loose (protect long hair with a hairnet), or wear loose clothing or jewellery.

15 Take precautions against fire. Handle fuel, oil and anti-freeze with care because they are inflammable substances. Do not smoke or approach with naked flame when handling such substances. Keep a fire-extinguisher in the vicinity.

16a **On-site generator sets (with earthing pin):**

Earth the generator set as well as the load properly.

16b **On-site generator sets IT:**

Note: This generator set is built to supply a sheer alternating current IT network.
Earth the load properly.

1.3 Safety during transport and installation

To lift a unit, all loose or pivoting parts, e.g. doors and towbar, shall first be securely fastened.

Do not attach cables, chains or ropes directly to the lifting eye; apply a crane hook or lifting shackle meeting local safety regulations. Never allow sharp bends in lifting cables, chains or ropes.

Helicopter lifting is not allowed.
It is strictly forbidden to dwell or stay in the risk zone under a lifted load. Never lift the unit over people or residential areas. Lifting acceleration and deceleration shall be kept within safe limits.

1 Before towing the unit:
- check the towbar, the brake system and the towing eye. Also check the coupling of the towing vehicle,
- check the towing and brake capability of the towing vehicle,
- check that the towbar, jockey wheel or stand leg is safely locked in the raised position,
- ascertain that the towing eye can swivel freely on the hook,
- check that the wheels are secure and that the tyres are in good condition and inflated correctly,
- connect the signalisation cable, check all lights and connect the pneumatic brake couplers,
- attach the safety break-away cable or safety chain to the towing vehicle,
- remove wheel chocks, if applied, and disengage the parking brake.

2 To tow a unit use a towing vehicle of ample capacity. Refer to the documentation of the towing vehicle.

3 If a unit is to be backed up by a towing vehicle, disengage the overrun brake mechanism (if it is not an automatic mechanism).

4 In case of transporting a non-trailer unit on a truck, fasten it to the truck by attaching straps via fork lift slots, via the holes in the frame at the front and back or via the lifting beam. To prevent damage, never put straps on the roof surface of the unit.

5 Never exceed the maximum towing speed of the unit (mind the local regulations).

6 Place the unit on level ground and apply the parking brake before disconnecting the unit from the towing vehicle. Unclip the safety break-away cable or safety chain. If the unit has no parking brake or jockey wheel, immobilize the unit by placing chocks in front of and/or behind the wheels. When the towbar can be positioned vertically, the locking device must be applied and kept in good order.

7 To lift heavy parts, a hoist of ample capacity, tested and approved according to local safety regulations, shall be used.

8 Lifting hooks, eyes, shackles, etc., shall never be bent and shall only have stress in line with their design load axis. The capacity of a lifting device diminishes when the lifting force is applied at an angle to its load axis.

9 For maximum safety and efficiency of the lifting apparatus all lifting members shall be applied as near to perpendicular as possible. If required, a lifting beam shall be applied between hoist and load.

10 Never leave a load hanging on a hoist.

11 A hoist has to be installed in such a way that the object will be lifted perpendicular. If that is not possible, the necessary precautions must be taken to prevent load-swinging, e.g. by using two hoists, each at approximately the same angle not exceeding 30° from the vertical.

12 Locate the unit away from walls. Take all precautions to ensure that hot air exhausted from the engine and driven machine cooling systems cannot be recirculated. If such hot air is taken in by the engine or driven machine cooling fan, this may cause overheating of the unit; if taken in for combustion, the engine power will be reduced.

13 Generator sets shall be stalled on an even, solid floor, in a clean location with sufficient ventilation. If the floor is not level or can vary in inclination, consult Atlas Copco.

14 The electrical connections shall correspond to local codes. The machines shall be earthed and protected against short circuits by fuses or circuit breakers.

15 Never connect the generator set outlets to an installation which is also connected to a public mains.

16 Before connecting a load, switch off the corresponding circuit breaker, and check whether frequency, voltage, current and power factor comply with the ratings of the generator set.

17 Before transportation of the unit, switch off all the circuit breakers.

1.4 Safety during use and operation

1 When the unit has to operate in a fire-hazardous environment, each engine exhaust has to be provided with a spark arrestor to trap incendiary sparks.

2 The exhaust contains carbon monoxide which is a lethal gas. When the unit is used in a confined space, conduct the engine exhaust to the outside atmosphere by a pipe of sufficient diameter; do this in such a way that no extra back pressure is created for the engine. If necessary, install an extractor. Observe any existing local regulations.

Make sure that the unit has sufficient air intake for operation. If necessary, install extra air intake ducts.

3 When operating in a dust-laden atmosphere, place the unit so that dust is not carried towards it by the wind. Operation in clean surroundings considerably extends the intervals for cleaning the air intake filters and the cores of the coolers.

4 Never remove a filler cap of the cooling water system of a hot engine. Wait until the engine has sufficiently cooled down.

5 Never refill fuel while the unit is running, unless otherwise stated in the Atlas Copco Instruction Book (AIB). Keep fuel away from hot parts such as air outlet pipes or the engine exhaust. Do not smoke when fuelling. When fuelling from an automatic pump, an earthing cable should be connected to the unit to discharge static electricity. Never spill nor leave oil, fuel, coolant or cleansing agent in or around the unit.

6 All doors shall be shut during operation so as not to disturb the cooling air flow inside the bodywork and/or render the silencing less effective. A door should be kept open for a short period only e.g. for inspection or adjustment.

7 Periodically carry out maintenance works according to the maintenance schedule.

8 Stationary housing guards are provided on all rotating or reciprocating parts not otherwise protected and which may be hazardous to personnel. Machinery shall never be put into operation, when such guards have been removed, before the guards are securely reinstalled.

9 Noise, even at reasonable levels, can cause irritation and disturbance which, over a long period of time, may cause severe injuries to the nervous system of human beings.
When the sound pressure level, at any point where personnel normally has to attend, is:
- below 70 dB(A): no action needs to be taken,
- above 70 dB(A): noise-protective devices should be provided for people continuously being present in the room,
- below 85 dB(A): no action needs to be taken for occasional visitors staying a limited time only,
- above 85 dB(A): room to be classified as a noise-hazardous area and an obvious warning shall be placed permanently at each entrance to alert people entering the room, for even relatively short times, about the need to wear ear protectors,
- above 95 dB(A): the warning(s) at the entrance(s) shall be completed with the recommendation that also occasional visitors shall wear ear protectors,
- above 105 dB(A): special ear protectors that are adequate for this noise level and the spectral composition of the noise shall be provided and a special warning to that effect shall be placed at each entrance.

10 The unit has parts of which the temperature can be in excess of 80 °C (176 °F), and which may be accidentally touched by personnel when opening the machine during or just after operation. Insulation or safety guards protecting these parts shall not be removed before the parts have cooled down sufficiently, and must be re-installed before operating the machine. As it is not possible to insulate or protect all hot parts by guards (e.g. exhaust manifold, exhaust turbine), the operator / service engineer must always be aware not to touch hot parts when opening a machine door.

11 Never operate the unit in surroundings where there is a possibility of taking in flammable or toxic fumes.

12 If the working process produces fumes, dust or vibration hazards, etc., take the necessary steps to eliminate the risk of personnel injury.

13 When using compressed air or inert gas to clean down equipment, do so with caution and use the appropriate protection, at least safety glasses, for the operator as well as for any bystander. Do not apply compressed air or inert gas to your skin or direct an air or gas stream at people. Never use it to clean dirt from your clothes.

14 When washing parts in or with a cleaning solvent, provide the required ventilation and use appropriate protection such as a breathing filter, safety glasses, rubber apron and gloves, etc.

15 Safety shoes should be compulsory in any workshop and if there is a risk, however small, of falling objects, wearing of a safety helmet should be included.

16 If there is a risk of inhaling hazardous gases, fumes or dust, the respiratory organs must be protected and depending on the nature of the hazard, so must the eyes and skin.

17 Remember that where there is visible dust, the finer, invisible particles will almost certainly be present too; but the fact that no dust can be seen is not a reliable indication that dangerous, invisible dust is not present in the air.

18 Never operate the generator set in excess of its limits as indicated in the technical specifications and avoid long no-load sequences.

19 Never operate the generator set in a humid atmosphere. Excessive moisture reduces the generator set insulation.

20 Do not open electrical cabinets, cubicles or other equipment while voltage is supplied. If such cannot be avoided, e.g. for measurements, tests or adjustments, have the action carried out by a qualified electrician only, with appropriate tools, and ascertain that the required bodily protection against electrical hazards is applied.

21 Never touch the power terminals during operation of the machine.

22 Whenever an abnormal condition arises, e.g. excessive vibration, noise, odour, etc., switch the circuit breakers to OFF and stop the engine. Correct the faulty condition before restarting.

23 Check the electric cables regularly. Damaged cables and insufficient tightening of connections may cause electric shocks. Whenever damaged wires or dangerous conditions are observed, switch the circuit breakers to OFF and stop the engine. Replace the damaged wires or correct the dangerous condition before restarting. Make sure that all electric connections are securely tightened.

24 Avoid overloading the generator set. The generator set is provided with circuit breakers for overload protection. When a breaker has tripped, reduce the concerned load before restarting.

25 If the generator set is used as stand-by for the mains supply, it must not be operated without control system which automatically disconnects the generator set from the mains when the mains supply is restored.

26 Never remove the cover of the output terminals during operation. Before connecting or disconnecting wires, switch off the load and the circuit breakers, stop the machine and make sure that the machine cannot be started inadvertently or there is any residual voltage on the power circuit.

27 Running the generator set at low load for long periods will reduce the lifetime of the engine.

28 When operating the generator set in Remote or Auto mode, observe all relevant local legislation.

1.5 Safety during maintenance and repair

Maintenance, overhaul and repair work shall only be carried out by adequately trained personnel; if required, under supervision of someone qualified for the job.

1 Use only the correct tools for maintenance and repair work, and only tools which are in good condition.

2 Parts shall only be replaced by genuine Atlas Copco replacement parts.

3 All maintenance work, other than routine attention, shall only be undertaken when the unit is stopped. Steps shall be taken to prevent inadvertent starting. In addition, a warning sign bearing a legend such as “work in progress; do not start” shall be attached to the starting equipment.
On engine-driven units the battery shall be disconnected and removed or the terminals covered by insulating caps.
On electrically driven units the main switch shall be locked in open position and the fuses shall be taken out. A warning sign bearing a legend such as “work in progress; do not supply voltage” shall be attached to the fuse box or main switch.

4 Prior to stripping an engine or other machine or undertaking major overhaul on it, prevent all movable parts from rolling over or moving.

5 Make sure that no tools, loose parts or rags are left in or on the machine. Never leave rags or loose clothing near the engine air intake.

6 Never use flammable solvents for cleaning (fire-risk).

7 Take safety precautions against toxic vapours of cleaning liquids.

8 Never use machine parts as a climbing aid.

9 Observe scrupulous cleanliness during maintenance and repair. Keep away dirt, cover the parts and exposed openings with a clean cloth, paper or tape.

10 Never weld on or perform any operation involving heat near the fuel or oil systems. Fuel and oil tanks must be completely purged, e.g. by steam-cleaning, before carrying out such operations. Never weld on, or in any way modify, pressure vessels. Disconnect the alternator cables during arc welding on the unit.

11 Support the towbar and the axle(s) securely if working underneath the unit or when removing a wheel. Do not rely on jacks.

12 Do not remove any of, or tamper with, the sound-damping material. Keep the material free of dirt and liquids such as fuel, oil and cleansing agents. If any sound-damping material is damaged, replace it to prevent the sound pressure level from increasing.

13 Use only lubricating oils and greases recommended or approved by Atlas Copco or the machine manufacturer. Ascertain that the selected lubricants comply with all applicable safety regulations, especially with regard to explosion or fire-risk and the possibility of decomposition or generation of hazardous gases. Never mix synthetic with mineral oil.

14 Protect the engine, alternator, air intake filter, electrical and regulating components, etc., to prevent moisture ingress, e.g. when steam-cleaning.

15 When performing any operation involving heat, flames or sparks on a machine, the surrounding components shall first be screened with non-flammable material.

16 Never use a light source with open flame for inspecting the interior of a machine.

17 When repair has been completed, the machine shall be barred over at least one revolution for reciprocating machines, several revolutions for rotary ones to ensure that there is no mechanical interference within the machine or driver. Check the direction of rotation of electric motors when starting up the machine initially and after any alteration to the electrical connection(s) or switch gear, to check that the oil pump and the fan function properly.

18 Maintenance and repair work should be recorded in an operator's logbook for all machinery. Frequency and nature of repairs can reveal unsafe conditions.

19 When hot parts have to be handled, e.g. shrink fitting, special heat-resistant gloves shall be used and, if required, other body protection shall be applied.

20 When using cartridge type breathing filter equipment, ascertain that the correct type of cartridge is used and that its useful service life is not surpassed.

21 Make sure that oil, solvents and other substances likely to pollute the environment are properly disposed of.

22 Before clearing the generator set for use after maintenance or overhaul, submit it to a test run, check that the AC power performance is correct and that the control and shutdown devices function correctly.

1.6 Tool applications safety

Apply the proper tool for each job. With the knowledge of correct tool use and knowing the limitations of tools, along with some common sense, many accidents can be prevented.

Special service tools are available for specific jobs and should be used when recommended. The use of these tools will save time and prevent damage to parts.

1.7 Battery safety precautions

When servicing batteries, always wear protecting clothing and glasses.

1 The electrolyte in batteries is a sulphuric acid solution which is fatal if it hits your eyes, and which can cause burns if it contacts your skin. Therefore, be careful when handling batteries, e.g. when checking the charge condition.

2 Install a sign prohibiting fire, open flame and smoking at the post where batteries are being charged.

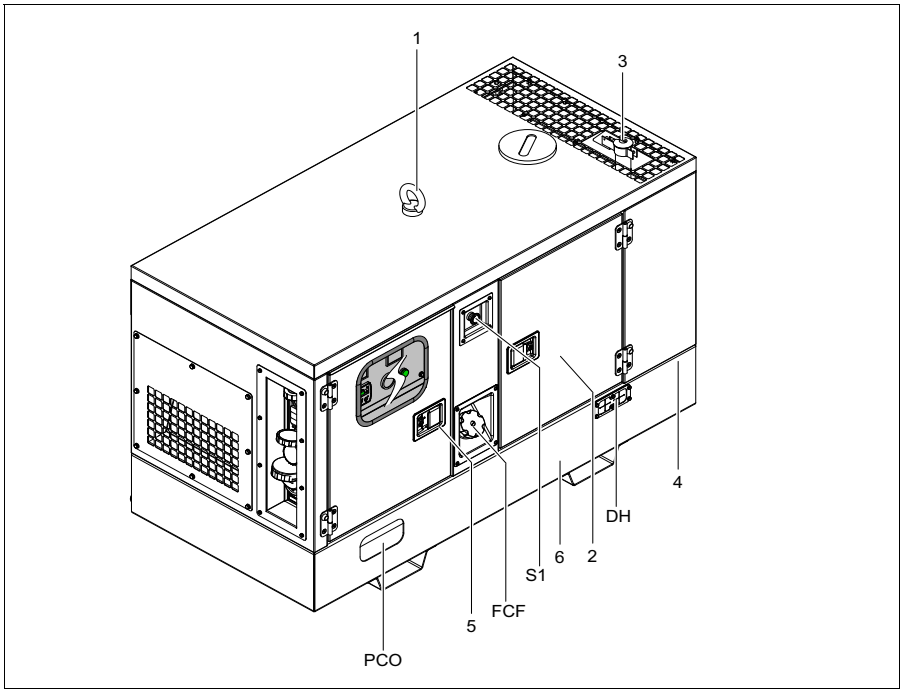
3 When batteries are being charged, an explosive gas mixture forms in the cells and might escape through the vent holes in the plugs.
Thus an explosive atmosphere may form around the battery if ventilation is poor, and can remain in and around the battery for several hours after it has been charged. Therefore:
- never smoke near batteries being, or having recently been, charged,
- never break live circuits at battery terminals, because a spark usually occurs.

4 When connecting an auxiliary battery (AB) in parallel to the unit battery (CB) with booster cables: connect the + pole of AB to the + pole of CB, then connect the - pole of CB to the mass of the unit. Disconnect in the reverse order.

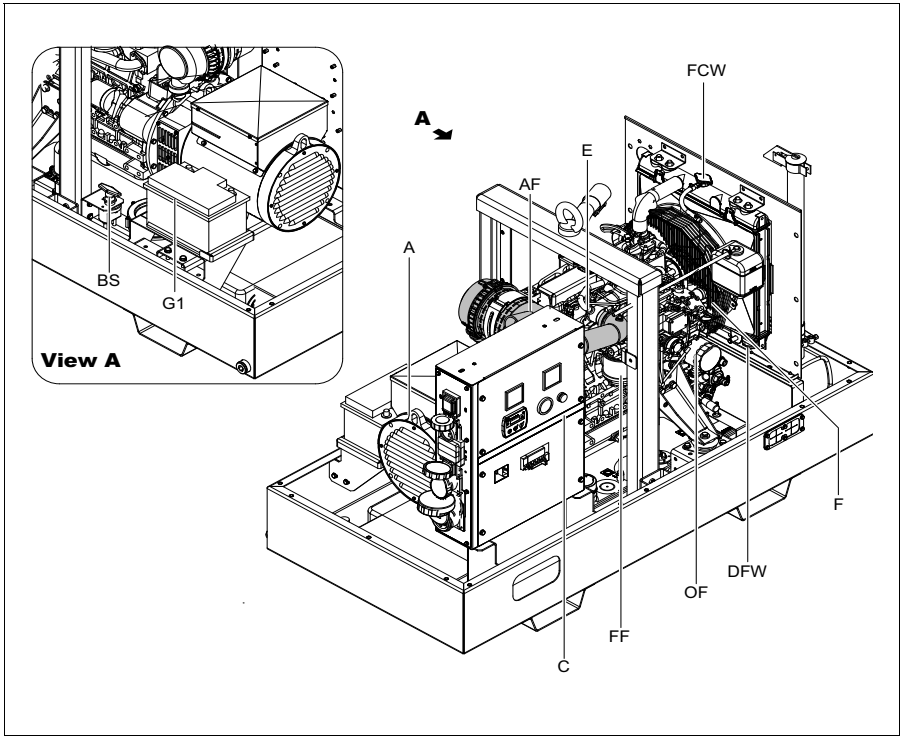
2 Main parts

2.1 General description

The QES 9-14-20 are generator sets, built for continuous running at sites where no electricity is available or as stand-by in cases of interruption of the mains. The QES 9-14-20 generator sets operate at 50 Hz, 400/380/415V 3ph and 230V 1ph. The QES 9-14-20 generator sets are driven by a fluid-cooled diesel engine, manufactured by KUBOTA. An overview of the main parts is given in the diagram below. Some parts of the unit might differ, depending on the version.



1	Lifting beam
2	Side doors
3	Engine exhaust
4	Data plate
5	Door, access to control and indicator panel
6	Galvanized frame with forklift slots
DH	Drain and access hole
FCF	Filler cap fuel
PCO	Power cable output
S1	Emergency stop



A	Alternator
AF	Air filter
BS	Battery switch
C	Cubicle
DFW	Drain flexible cooling water
E	Engine
F	Fan
FCW	Filler cap cooling water
FF	Fuel filter
G1	Battery
OF	Oil filter

2.2 Markings

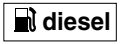
Markings provide instructions and information. They also warn of hazards. For convenience and safety, keep all markings in legible condition, replacing them when damaged or missing. Replacement markings are available from the factory.

A brief description of all markings provided on the generator set is given hereafter. The precise location of all markings can be found in the parts manual of this generator set.

Indicates the presence of electric shock hazards. Enclosures marked with these symbols should only be opened by trained or instructed people.

Indicates that these parts can become very hot during operation (e.g. engine, cooler, etc.). Always make sure that these parts are cooled down before touching them.

Indicates the sound power level in accordance with Directive 2000/14/EC (expressed in dB (A)).



Indicates that the generator set may be refuelled with diesel fuel only.

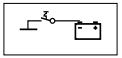
Indicates the drain for the engine oil.

Indicates the drain for the coolant.

Indicates the drain plug for the engine fuel.

Use PAROIL E only.

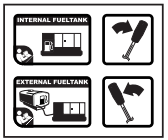
Indicates that the alternator should not be cleaned with high pressurised water.



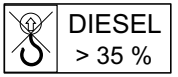
Indicates the battery switch.

Indicates that the unit may start automatically and that the instruction book has to be consulted prior to use.

Read the instruction manual before using the lifting eye.



Indicates the 3-way valve.



Do not lift a generator set with optional 1000 l fuel tank by using the lifting beam, if the fuel level exceeds 35%.

Indicates the different service packs, liquids and critical parts. These parts can be ordered to the factory.

2.3 Mechanical features

The mechanical features described in this chapter are standard provided on this generator set. For all other mechanical features, see chapter "Overview of the mechanical options" on page 95.

2.3.1 Engine and alternator

The alternator is driven by a fluid-cooled diesel engine. The engine's power is transmitted through a direct disc coupling.

The generator set houses a single bearing alternator with a dedicated voltage regulator.

The synchronous brushless alternator has Class H rotor and stator windings in an IP23 housing.

2.3.2 Cooling system

The engine is provided with a water cooler. The cooling air is generated by a fan, driven by the engine.

2.3.3 Safety devices

The engine is equipped with low oil pressure and high coolant temperature shut-down switches.

2.3.4 Bodywork

The alternator, the engine, the cooling system, etc. are enclosed in a sound-insulated bodywork that can be opened by means of side doors (and service plates).

The generator set can be lifted by using the lifting eye integrated in the bodywork (roof). To be able to lift the QES 9-14-20 by means of a forklift, rectangular slots are provided in the frame.

The earthing rod, connected to the generator set's earth terminal is located at the bottom of the frame on the outside.

2.3.5 Control panel

The control panel grouping volt and amp meters, control switch etc., is placed at the rear end.

2.3.6 Data plate and serial number

The generator set is furnished with a data plate showing the product code, the unit number and the power output (see chapter "Data plate" on page 116).

The serial number is located on the right-hand front side of the frame.

2.3.7 Drain plugs and filler caps

The drain holes for the engine oil, the coolant and the plug for the fuel, are located and labelled on the frame. The fuel drain plug is located at the front, the others at the service side.

The drain flexible for engine oil can be brought to the outside of the generator set through the drain hole.

The drain hole can also be used to guide external fuel tank connections. When connecting an external fuel tank, use the 3-way valves. Refer to chapter "External fuel tank connection (with/without quick couplings)".

The filler cap for the engine coolant is accessible via an opening in the roof. The fuel filler cap is located in the side panel.

2.3.8 Spillage free skid

A Spillage free skid with forklift slots allows the customer to transport the generator set easily with a forklift. It avoids accidental spilling of engine fluids and thus helps to protect the environment.

The leaking fluid can be removed via drain holes, secured by drain plugs. Tighten the plugs firmly and check for leakages. When removing the leaking fluid, observe all relevant local legislation.

2.3.9 Hot parts protection (CE compliance)

The hot parts protection shields hot parts of the generator set (turbo and exhaust system) to reduce the risk of burns.

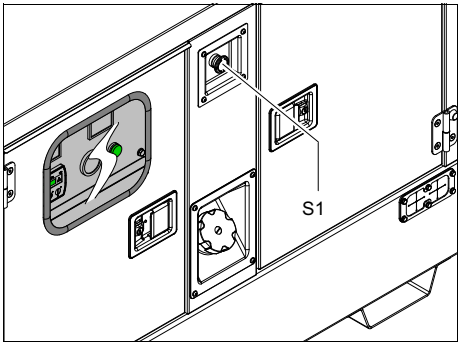
2.3.10 Rotating parts protection (CE compliance)

The rotating parts protection shields rotating parts of the generator set.

2.4 Electrical features

The electrical features described in this chapter are standard provided on this generator set. For all other electrical features, see chapter "Overview of the electrical options" on page 77.

2.4.1 Emergency stop



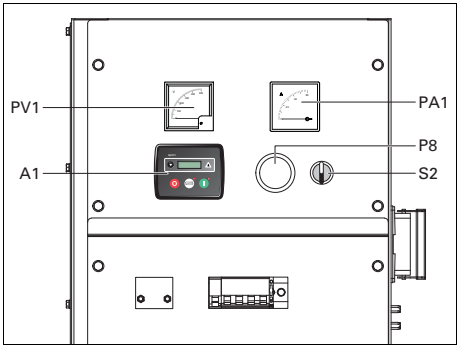
S1 .....Emergency stop button

Push the button to stop the generator set in case of an emergency. When the button is pressed, it must be unlocked, before the generator set can be restarted.

2.4.2 Qc1011™ control and indicator panel

To operate the generator set, the QES 9-14-20 control panel contains a Qc1011™ controller. The controller will carry out all necessary tasks to control and protect the generator set, which allows operation in many different applications.

General description Qc1011™ control panel



A1 .....Qc1011™ display

PA1.....Ammeter

PV1 .....Voltmeter

P8.....Fuel level gauge

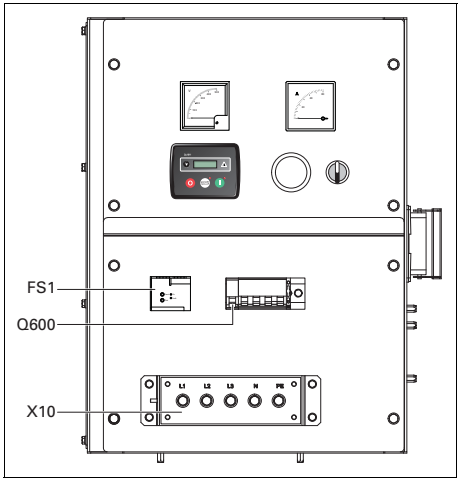
S2.....ON/OFF switch

Position O: No voltage is supplied to the Qc1011™ module, the generator set will not start.

Position I: Voltage is supplied to the Qc1011™ module, it is possible to start up the generator set.

2.4.3 Output terminal board

The cubicle provides a terminal board for easier connection of cables. It is situated below the control and indicator panel.



Q600 ... Main circuit breaker

Interrupts the power supply to X10 when a short-circuit occurs at the load side, or when the earth leak detector (30 mA) or the overcurrent protection (QES 9: 16 A, QES 14: 20 A, QES 20: 32 A) is activated or when the shunt trip is energized. It must be reset manually after eliminating the problem.

X10 ..... Main power supply (400 V AC)

Terminals L1, L2, L3, N (= neutral) and PE (= earthing), hidden behind the control panel door.

FS1 ..... Earth leakage relay

Detects and indicates an earth fault current and activates the main circuit breaker Q600. The detection level can be set at 0.03 A fixed with instantaneous trip but can also be adjusted between 0.1 A and 30 A with time delayed (0 - 4.5 sec) trip. FS1 has to be reset manually after eliminating the problem (Reset button) and has to be tested monthly (by pushing the Test button).

2.4.4 Earth leakage relay

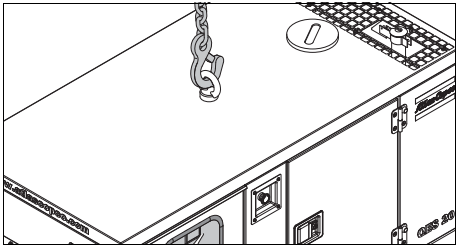
An earth leakage relay provides protection in case of an earth leak current.

3 Installation and connection

3.1 Lifting

The lifting eye, to lift the generator set by means of a hoist, is located on the top of the roof and easily accessible from the outside.

When lifting the generator set, the hoist has to be placed in such a way that the generator set, which must be placed level, will be lifted vertically.

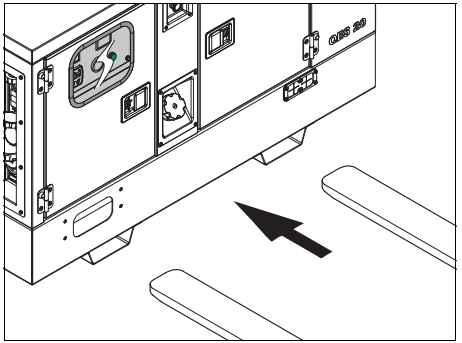


Do not lift the genset using the lifting eye when ambient temperatures are below -20°C.

Lifting acceleration and deceleration must be kept within safe limits (max. 2 g).
Helicopter lifting is not allowed.

Generator sets with an optional 1000 l fuel tank may only be lifted with the lifting beam at a maximum fuel level of 35%.

To be able to lift the generator set by means of a forklift, rectangular slots are provided at the bottom of the frame.



3.2 Installation

3.2.1 Indoor installation

If the generator set is operated indoors, install an exhaust pipe of sufficient diameter to duct the engine exhaust towards the outside. Check for sufficient ventilation so that the cooling air is not recirculated.

For more information about indoor installation, consult your local Atlas Copco dealer.

3.2.2 Outdoor installation

- Place the generator set on a horizontal, even and solid floor. The generator set can operate in a slant position not exceeding 15% (in both senses: front/rear and left/right).
- The generator set should be kept with the doors closed, in order to avoid the ingress of water and dust. Dust ingress reduces the lifetime of filters and may reduce your generator set's performance.
- Check that the engine exhaust is not directed towards people.
- Locate the rear end of the generator set upwind, away from contaminated wind streams and walls. Avoid recirculation of exhaust air from the engine. This causes overheating and engine power decrease.

– Leave enough space for operation, inspection and maintenance (at least 1 meter at each side).
– Check that the inner earthing system is in compliance with the local legislation.
– Use coolant for the engine cooling system. Refer to the Engine instruction book for the proper coolant mixture.
– Check the tightness of the bolts and nuts.
– Check that the cable end of the earthing rod is connected to the earth terminal.

The generator set is wired for a TN-system to IEC 364-3, i.e. one point in the power source directly earthed - in this case the neutral. The exposed conductive parts of the electric installation must be directly connected to the functional earth.
If operating the generator set in another power system, e.g. an IT-system, other protective devices required for these types must be installed. In any case only a qualified electrician is authorized to remove the connection between the neutral (N) and earth terminals in the terminal box of the alternator.

3.3 Connecting the generator set

3.3.1 Precautions for non-linear and sensitive loads

Non-linear loads draw currents with high contents in harmonics, causing distortion in the wave form of the voltage generated by the alternator.

The most common non-linear, 3-phase loads are thyristor/rectifier-controlled loads, such as convertors supplying voltage to variable speed motors, uninterruptable power supplies and Telecom supplies. Gas-discharge lighting arranged in single-phase circuits generate high 3rd harmonics and risk for excessive neutral current.

Loads most sensitive to voltage distortion include incandescent lamps, discharge lamps, computers, X-ray equipment, audio amplifiers and elevators.

Consult Atlas Copco for measures against the adverse influence of non-linear loads.

3.3.2 Quality, minimum section and maximum length of cables

The cable connected to the terminal board of the generator set must be selected in accordance with local legislation. The type of cable, its rated voltage and current carrying capacity are determined by installation conditions, stress and ambient temperature. For flexible wiring, rubber-sheathed, flexible core conductors of the type H07 RN-F (Cenelec HD.22) or better must be used.

The following table indicates the maximum allowable 3-phase currents (in A), at an ambient temperature of 40°C, for cable types (multiple and single core PVC insulated conductors and H07 RN-F multiple core conductors) and wire sections as listed, in accordance with VDE 0298 installation method C3. Local regulations remain applicable if they are stricter than those proposed below.

Wire section	*Max. current (A)*		
(mm²)	*Multiple core*	*Single core*	*H07 RN-F*
2.5	*22*	*25*	*21*
4	*30*	*33*	*28*
6	*38*	*42*	*36*
10	*53*	*57*	*50*
16	*71*	*76*	*67*
25	*94*	*101*	*88*
35	*114*	*123*	*110*
50	*138*	*155*	*138*
70	*176*	*191*	*170*
95	*212*	*228*	*205*

The lowest acceptable wire section and the corresponding maximum cable or conductor length for multiple core cable or H07 RN-F, at rated current (20 A), for a voltage drop e lower than 5% and at a power factor of 0.80, are respectively 2.5 mm² and 144 m. In case electric motors must be started, oversizing the cable is advisable.

The voltage drop across a cable can be determined as follows:

$$e = \frac{\sqrt{3} \cdot I \cdot L \cdot (R \cdot \cos\varphi + X \cdot \sin\varphi)}{1000}$$

e = Voltage drop (V)

I = Rated current (A)

L = Length of conductors (m)

R = Resistance (Ω/km to VDE 0102)

X = Reactance (Ω/km to VDE 0102)

3.3.3 Connecting the load

3.3.3.1 Site distribution panel

If outlet sockets are provided, they must be mounted on a site distribution panel supplied from the terminal board of the generator set and in compliance with local regulations for power installations on building sites.

3.3.3.2 Protection

For safety reasons, it is necessary to provide an isolating switch or circuit breaker in each load circuit. Local legislation may impose the use of isolating devices which can be locked.

- Check whether frequency, voltage and current comply with the ratings of the generator set.
- Provide a load cable, without excessive length, and lay it out in a safe way without forming coils.
- Open the door of the control and indicator panel in front of the terminal board X1.
- Provide the wire ends with cable lugs suited for the cable terminals.
- Loosen the cable clamp and push the wire ends of the load cable through the orifice and clamp.
- Connect the wires to the proper terminals (L1, L2, L3, N and PE) of X1 and tighten the bolts securely.
- Tighten the cable clamp.
- Close the door in front of X1.

4 Operating instructions

In your own interest, always strictly observe all relevant safety instructions.

Do not operate the generator set in excess of the limitations mentioned in the Technical Specifications.

Local rules concerning the setting up of low voltage power installations (below 1000 V) must be respected when connecting site distribution panels, switch gear or loads to the generator set.

At each start-up and at any time a new load is connected, the earthing and protections (GB trip and earth leakage relay) of the generator set must be verified. Earthing must be done either by the earthing rod or, if available, by an existing, suitable earthing installation. The protective system against excessive contact voltage is not effective unless a suitable earthing is made.

4.1 Before starting

- With the generator set standing level, check the engine oil level and top up if necessary. The oil level must be near to, but not exceed the high mark on the engine oil level dipstick.
- Check the coolant level in the expansion tank of the engine cooling system. The coolant level must be near to the FULL mark. Add coolant if necessary.
- Drain any water and sediment from the fuel pre-filter. Check the fuel level and top up if necessary. It is recommended to fill the tank after the day's operation to prevent water vapor in a nearly empty tank from condensing.
- Drain leaking fluid from the frame.
- Check the vacuum indicator of the air filter. If the red part shows completely, replace the filter element.
- Press the dust evacuator of the air filter to remove dust.
- Check the generator set for leakage, tightness of wire terminals, etc. Correct if necessary.
- Check that circuit breaker Q600 is switched off.
- Check that no circuit breakers have tripped and that the emergency stop is in the OUT position.
- Check that the load is switched off.
- Check that the earth fault protection (FS1) has not tripped (reset if necessary).

4.2 Operating and setting Qc1011™

4.2.1 Manual operation

NOTE: If a digital input configured to 'panel lock' is active, changing operating modes will not be possible. Viewing the instruments and event logs is NOT affected by panel lock.

Manual mode allows the operator to start and stop the generator set manually and, if required, change the state of the load switching devices. Manual mode is active when the STOP button is pressed.

4.2.1.1 Waiting in manual mode

To begin the starting sequence, press the START button.

- If 'protected start' is disabled, the start sequence begins immediately.
- If 'Protected Start' is enabled, the MANUAL mode icon is displayed to indicate manual mode and the manual LED flashes.

  The START button must be pressed once more to begin the start sequence.

4.2.1.2 Starting sequence

NOTE: There is no start delay in this mode of operation.

1. The fuel relay is energized and the engine is cranked.

NOTE: If the unit has been configured for CAN, compatible ECUs will receive the start command via CAN.

2. If the engine fails to fire during this cranking attempt then the starter motor is disengaged for the crank rest duration after which the next start attempt is made.

   Should this sequence continue beyond the set number of attempts, the start sequence will be terminated and the display shows the FAIL TO START icon.

3. When the engine fires, the starter motor is promptly disengaged.

   Speed detection is factory configured to be derived from the main alternator output frequency but can additionally be measured from a magnetic pickup mounted on the flywheel (selected by PC using the 3000 series configuration software).

   Additionally, rising oil pressure can be used to disconnect the starter motor (but cannot detect underspeed or overspeed).

NOTE: If the unit has been configured for CAN, speed sensing is via CAN.

4. After the starter motor has disengaged, the ‘Safety On’ timer activates, allowing Oil Pressure, High Engine Temperature, Underspeed, Charge Fail and any delayed Auxiliary fault inputs to stabilize without triggering a fault.

4.2.1.3 Engine running

In manual mode, the load is not transferred to the generator set unless a 'loading request' is made.

A loading request can come from a number of sources.

– Activation of an auxiliary input that has been configured to remote start on load

– Activation of the built-in exercise scheduler if configured for 'on load' runs.

NOTE: The load transfer signal remains inactive until the Oil Pressure has risen. This prevents excessive wear on the engine.

Once the load has been transferred to the generator set, it will not be automatically removed.

To manually transfer the load back to the mains either:

– Press the AUTO mode button to return to automatic mode. The set will observe all auto mode start requests and stopping timers before beginning the Auto mode stopping sequence.

– Press the STOP button.

– Deactivation of an auxiliary input that has been configured to remote start on load.

4.2.1.4 Stopping sequence

In manual mode, the set will continue to run until either:

– The STOP button is pressed. The set will immediately stop

– The AUTO button is pressed. The set will observe all auto mode start requests and stopping timers before beginning the Auto mode stopping sequence.

4.2.2 Automatic operation

NOTE: If a digital input configured to 'panel lock' is active, changing module modes will not be possible. Viewing the instruments and event logs is NOT affected by panel lock.

Activate Auto Mode by pressing the AUTO push button.

The AUTO mode icon is displayed to indicate Auto Mode operation, if no alarms are present.

Auto mode will allow the generator set to operate fully automatically, starting and stopping as required with no user intervention.

4.2.2.1 Waiting in auto mode

If a starting request is made, the starting sequence will begin.

Starting requests can be from the following sources:

– Activation of an auxiliary input that has been configured to remote start

– Activation of the built-in exercise scheduler.

4.2.2.2 Starting sequence

1. To allow for 'false' start requests, the start delay timer begins.

   Should all start requests be removed during the start delay timer, the unit will return to a stand-by state.

2. If a start request is still present at the end of the start delay timer, the fuel relay is energized and the engine will be cranked.

NOTE: If the unit has been configured for CAN, compatible ECUs will receive the start command via CAN.

3. If the engine fails to fire during this cranking attempt then the starter motor is disengaged for the crank rest duration after which the next start attempt is made.

   Should this sequence continue beyond the set number of attempts, the start sequence will be terminated and the display shows the FAIL TO START icon.

4. When the engine fires, the starter motor is promptly disengaged. Speed detection is factory configured to be derived from the main alternator output frequency but can additionally be measured from a magnetic pickup mounted on the flywheel (selected by PC using the 3000 series configuration software).

5. Additionally, rising oil pressure can be used to disconnect the starter motor (but cannot detect underspeed or overspeed).

NOTE: If the unit has been configured for CAN, speed sensing is via CAN.

6. After the starter motor has disengaged, the ‘Safety On’ timer activates, allowing Oil Pressure, High Engine Temperature, Underspeed, Charge Fail and any delayed Auxiliary fault inputs to stabilize without triggering a fault.

4.2.2.3 Engine running

Once the engine is running and all starting timers have expired, the animated ENGINE RUNNING icon is displayed on the Qc1011™. The generator set will be placed on load if configured to do so.

NOTE: The load transfer signal remains inactive until the Oil Pressure has risen. This prevents excessive wear on the engine.

If all start requests are removed, the stopping sequence will begin.

4.2.2.4 Stopping sequence

The return delay timer operates to ensure that the starting request has been permanently removed and isn't just a short-term removal. Should another start request be made during the cooling down period, the set will return on load.

If there are no starting requests at the end of the return delay timer, the load is removed from the generator set to the mains supply and the cooling timer is initiated.

The cooling timer allows the set to run off load and cool sufficiently before being stopped. This is particularly important where turbochargers are fitted to the engine.

After the cooling timer has expired, the set is stopped.

4.2.3 Checks during operation

Regularly carry out following checks:

– Check the analogue meters (PV1-PA1) and the controller display for normal readings.

Avoid to let the engine run out of fuel. If it happened, priming will speed up the starting.

– Check for leakage of oil, fuel or coolant.

Avoid long low-load periods (< 30%). In this case, an output drop and higher oil consumption of the engine could occur. Refer to chapter “Preventing low loads”.

– Check, by means of the generator set gauges, that the voltage between the phases is identical and that the rated current is not exceeded.

– When single-phase loads are connected to the generator set output terminals, keep all loads well-balanced.

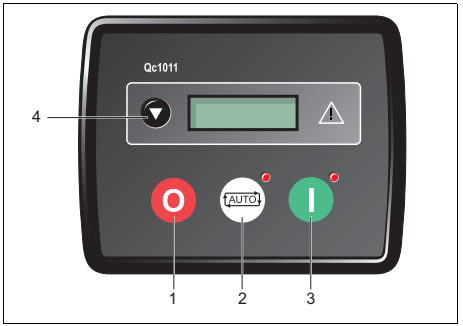
– If circuit breakers have tripped during operation, switch off the load and stop the generator set. Check and, if necessary, decrease the load.

The generator set’s doors may only remain opened for short periods during operation, to carry out checks for example.

4.2.4 Setting the Qc1011™

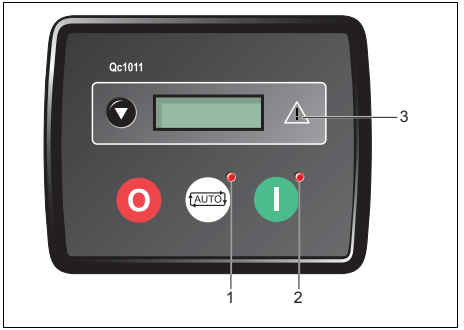
4.2.4.1 Push button and LED functions

Following push buttons are used on the Qc1011™:



1		**STOP:** Is used to activate **Stop/ Reset/Manual** mode. When pressing the STOP button, the generator set will unload, the fuel supply de-energises and the engine shuts down. Pressing the STOP button will also clear any alarm conditions for which the triggering criteria have been removed.
2	AUTO	**AUTO:** Is used to activate **Auto** mode. This mode allows the module to control the function of the generator set automatically.
3		**START:** Is used to crank the engine.
4		**SCROLL:** Is used to scroll the display to show the various instruments.

Following LEDs are used on the Qc1011™:

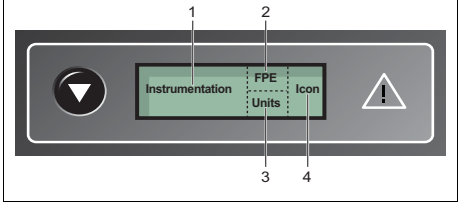


1	**Auto**	LED indicates that the unit is in Auto Mode.
2	**Start**	LED indicates that the unit is in Manual/Start Mode.
3	**Alarm**	LED indicates that an alarm is present. The exact alarm is shown on the display.

4.2.4.2 Module display

General

The Qc1011™ graphical display shows the generator instrumentation and alarm conditions. It is segmented into areas for instrumentation, unit, alarm icons and for Front Panel Editor (FPE) use.



1	Instrumentation
3	FPE
3	Units
4	Mode icon

It is possible to scroll to display the different pages of information by repeatedly pushing the scroll button.

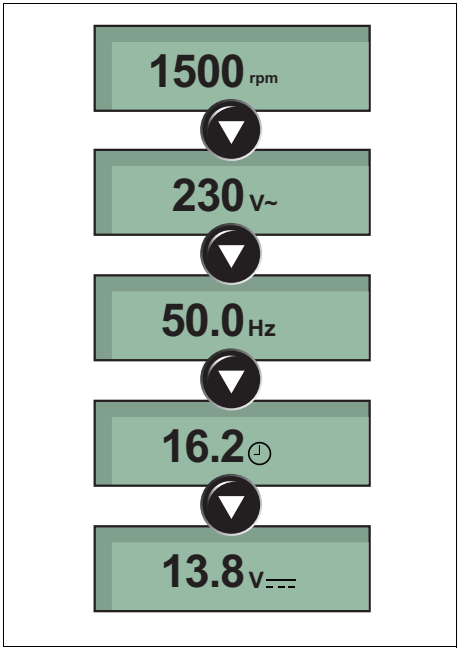
Once a page has been selected, it will remain on the LCD display until the user selects a different page. After an extended period of inactivity, the module will revert to the Status page.

When scrolling manually, the display will automatically return to the Status page if no buttons are pressed for the duration set in the configurable LCD Page Timer.

If an alarm becomes active while viewing the Status page, the display shows the Alarms page to draw the operator's attention to the alarm condition.

Page overview

This is the order of pages displayed:



Icon overview

Display	Description
	Appears when a timer is active, for example cranking time, crank rest etc.
	Appears when the engine is at rest and the unit is in stop mode.
	Appears when the engine is at rest and the unit is in auto mode.
	Appears when the engine is at rest and the unit is waiting for a manual start.
	When there are no alarms present, an animated icon is displayed to indicate the engine is running.
	Appears when a USB connection is made to the controller.
	Appears when the unit is in the front panel editor
	Appears if either the configuration file or engine file becomes corrupted.

Back light

The back light will be on if the unit has sufficient voltage while the unit is turned on. When the unit is cranking the back light is turned off.

4.2.4.3 Protections

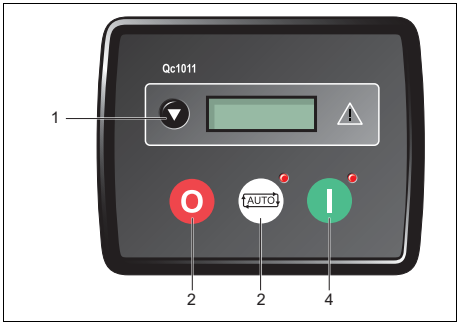
When an alarm is present, the alarm LED will illuminate, if configured. The LCD display will show an icon to indicate the failure.

For an overview of all controller alarms, see chapter “Solving Qc1011™ controller alarms” on page 54.

4.2.4.4 Front panel configuration

This configuration mode allows the operator limited customising of the way the module operates.

Use the module’s navigation buttons to traverse the menu and make value changes to the parameters.

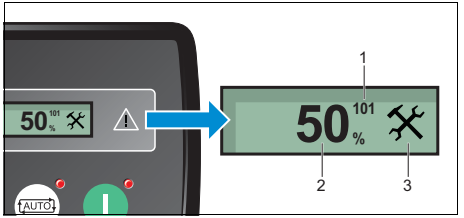


1	Accept
2	Next page
3	Decrease value / previous item
4	Increase value / next item

Accessing the Front Panel Editor (FPE)

Press the STOP and AUTO button simultaneously to enter the editor mode.

The display shows the FPE configuration mode icon and the first parameter.



1	Parameter number
2	Current value
3	Configuration mode icon

Editing a parameter

1. Enter the editor mode by pressing the STOP and AUTO button simultaneously.
2. Press the STOP button to select the required page.
3. Press the START (+) button to select the next parameter or the AUTO (-) button to select the previous parameter within the current page.
4. When the parameter to be edited is displayed, press the DOWN (Accept) button.

   The value begins to flash.
5. Press the START (+) or AUTO (-) button to adjust the value to the required setting.
6. Press the DOWN (Accept) button to save the current value.

   The value ceases flashing.
7. Press and hold the DOWN (Accept) button to save and exit the editor.

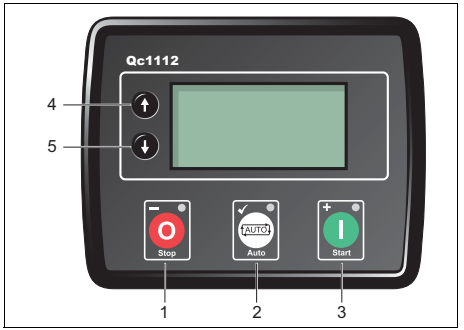
   The configuration icon is removed from the display.

When adjusting values in the FPE, pressing and holding the AUTO button will cover the full range of settings of a parameter being adjusted (min to max) in less then 20 seconds.

The editor automatically exits after 5 minutes of inactivity to ensure security.

4.3 Operating and setting Qc1112™

4.3.1 Setting the Qc1112™ Button overview



1 **STOP/RESET:** Allows to put the control module in **Stop/Reset** mode. When pressing the STOP button, the generator set will unload, the fuel supply de-energises and the engine shuts down. Pressing the STOP button will also clear any alarm conditions for which the triggering criteria have been removed.

2 **AUTO:** Allows to put the control module in **Auto** mode.

3 

START: Allows to put the control module in **Manual/Start** mode.

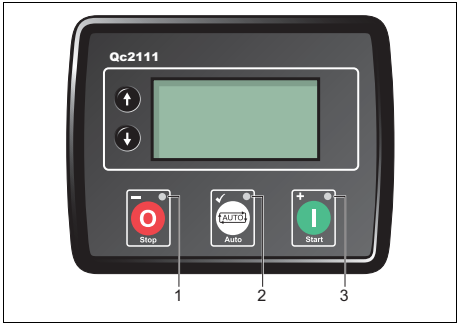
4 

UP: Is used for navigating the instrumentation, event log and configuration screens and to go to the previous parameter level.

5 

DOWN: Is used for navigating the instrumentation, event log and configuration screens and to go to the next parameter level.

LED overview

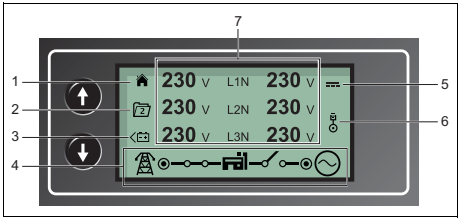


1	**Stop/Reset**	LED will flash upon electrical trip and shutdown fault.
2	**Auto**	LED indicates that the unit is in Auto Mode.
3	**Start/Manual**	LED will flash upon 'Waiting in Manual mode'.

Graphical display

General

The Qc1112™ graphical display shows the instrumentation, active configuration, operating mode, load switching status and alarm conditions. It is segmented into 7 areas:



1	Instrumentation icon
2	Active configuration
3	FPE/Auto Run
4	Load switching icon
5	Alarm icon
6	Mode icon
7	Instrumentation and Unit e.g. voltage reading

Icons overview

– Instrumentation icons

Display	Description
	Generator voltage and frequency instrumentation screen
	Generator current instrumentation screen
	Load power instrumentation screen
	Engine speed instrumentation screen
	Hours run instrumentation screen
	Battery voltage instrumentation screen
	Oil pressure instrumentation screen
	Coolant temperature instrumentation screen
	Flexible sender instrumentation screen

Display	Description
	Appears when the event log is being displayed
	Current time held in the unit
	The current value of the scheduler run time and duration
	ECU diagnostic trouble codes
	Oil filter maintenance timers
	Air filter maintenance timers
	Fuel filter maintenance timers

– Active configuration icons

Display	Description
	Appears when the main configuration is selected
	Appears when the alternative configuration is selected

– Front panel editor (FPE) / Auto run icons

When running in Auto mode, an icon is displayed on the home page, in the FPE / Auto run section to indicate the source of the auto start signal.

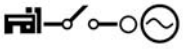
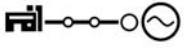
Display	Description
	Appears when a remote start input is active
	Appears when a low battery run is active
	Appears when a scheduled run is active

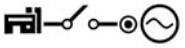
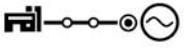
– Mode icons

Display	Description
	Appears when the engine is at rest and the unit is in stop mode
	Appears when the engine is at rest and the unit is in auto mode
	Appears when the engine is at rest and the unit is waiting for a manual start
	Appears when a timer is active, for example cranking time, crank rest etc.

Display	Description
	Appears when the engine is running, and all timers have expired, either on or off load. The animation speed is reduced when running in idle mode.
	Appears when the unit is in the front panel editor
	Appears when a USB connection is made to the controller
	Appears if either the configuration file or engine file becomes corrupted

– Load switching icons

Display	Description
	Appears when the generator set is at rest or not available and when the generator breaker is open.
	Appears when the generator set is at rest or not available and the generator breaker has failed to open.

Display	Description
	Appears when the generator set is available and the generator breaker is open.
	Appears when the generator set is available and the generator breaker is closed.

Note: the controller gives only an indication of the position of the mains and generator set breaker and may be different from the actual breaker position.

– Alarm icons

To indicate the alarm that is currently active on the controller, an Alarm icon will be displayed in the Icon section.

For an overview of all controller alarms, see “Solving Qc1011™ controller alarms” on page 54.

Back light

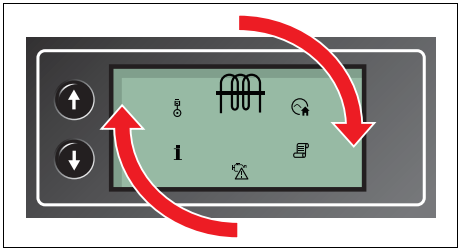
The back light will be on if the unit has sufficient voltage while the unit is turned on. When the unit is cranking the back light is turned off.

Qc1112™ menu overview

Navigation menu

To enter the navigation menu, press both the UP and DOWN buttons simultaneously.

To cycle through the icons, press the UP and DOWN button. When the desired icon is at the top of the display press the AUTO (Accept) button to enter that specific instrumentation page.



If the AUTO button is not pressed, the display automatically returns to the home page.

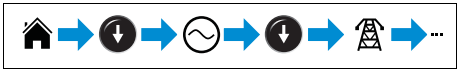
– Navigation menu icons

Display	Description
	Generator instrumentation
	Current and load instrumentation
	Engine instrumentation
	Module information
	Engine DTCs (Diagnostic Trouble Codes), if active
	Event Log

General navigation

It is possible to scroll through the display to view different pages of information by repeatedly operating the UP or DOWN navigation buttons.

Example:

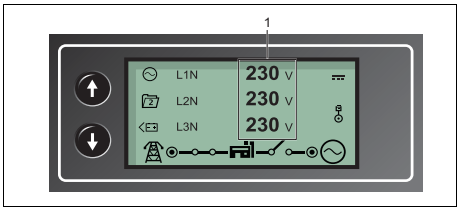


Further press of the DOWN button, returns the display to the Home page.

Once selected, a page will remain on the LCD display until the user selects a different page, or after an extended period of inactivity (Page Delay Timer), the module will revert to the Home page.

Home page

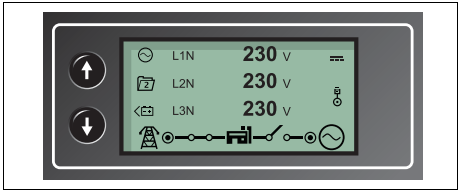
This is the page that is displayed when no other page has been selected and is automatically displayed after a period of inactivity (Page Delay Timer) of the module facia buttons.



1 | Generator voltage (ph-N / ph-ph)

Generator pages

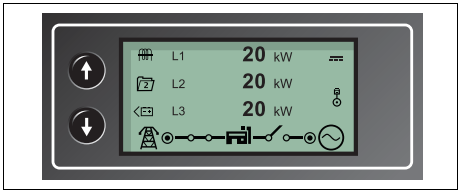
These pages contain electrical values of the generator set, measured or derived from the module's voltage inputs.



– Generator Voltage (ph-N)
– Generator Voltage (ph-ph)
– Generator Frequency

Load pages

These pages contain electrical values of the load, measured or derived from the module's voltage and current inputs. The power values displayed depend on which supply is on load.

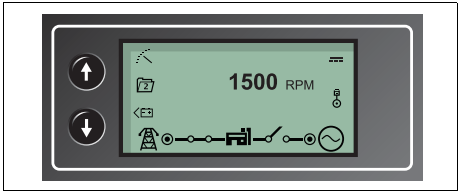


– Generator Current (A)
– Load ph-N (kW)
– Total Load (kW)

– Load ph-N (kVA)
– Total Load (kVA)
– Load ph-N (kVAr)
– Total Load (kVAr)
– Power Factor ph-N
– Power Factor Average
– Accumulated Load (kWh, kVAh, kVArh)

Engine pages

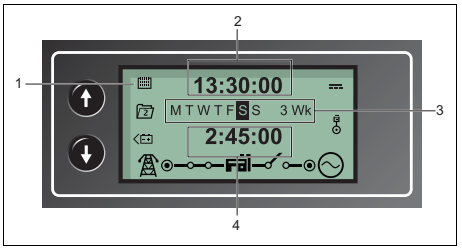
These pages contain engine instrumentation, measured or derived from the module's inputs, some of which may be obtained from the engine ECU.



– Engine Speed
– Engine Run Time
– Engine Battery Volts
– Engine Coolant Temperature
– Engine Oil Pressure
– Engine Fuel Level / Flexible Sensor
– Engine Maintenance Due – Oil
– Engine Maintenance Due – Air
– Engine Maintenance Due – Fuel

Info pages

These pages contain information about the controller.

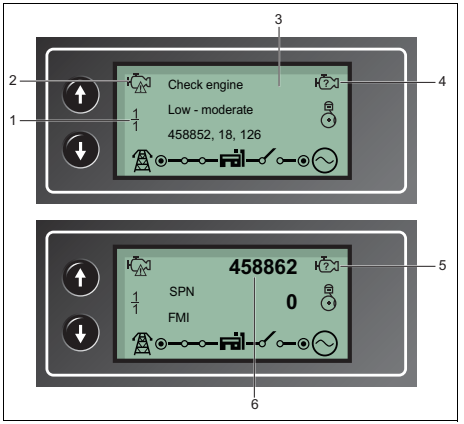


1	Icon to indicate that the scheduler is currently displayed
2	Start time of scheduled run
3	Day and week of scheduled run
4	Duration of scheduled run

– Module's date and time
– Scheduler settings
– Product description and USB identification number
– Application and Engine Version

Engine DTC (ECU alarms)

This page contains active Diagnostic Trouble Codes (DTC), if the engine ECU generates a fault code. The alarm conditions are detected by the engine ECU and displayed by the Qc1112™ controller.



1	Number of DTC displayed out of number of active DTCs
2	Icon to indicate that the event log is currently displayed
3	Description and fault code of active DTC alarm
4	Icon to indicate the type of DTC fault that is active
5	Current operating state of the module
6	SPN and FMI fault code of active DTC alarm

To view the active engine DTC(s):

1. Press the UP and DOWN buttons simultaneously to display the navigation menu.
2. Once entered, cycle to the DTC icon and enter.
3. To view the active DTC(s) alarms, repeatedly press the UP or DOWN buttons until the LCD screen displays the alarm.
4. Continuing to press the UP or DOWN buttons will cycle through the alarms.
5. To exit the active DTC(s) alarm section, press the UP and DOWN buttons simultaneously. The navigation menu will be displayed.

– CAN fault icons

Display	Description
	Check Engine Fault: The engine ECU has detected a fault not recognised by the Qc1112™ module, contact the engine manufacturer for support.
	Low Oil Pressure: The engine ECU has detected that the engine oil pressure has fallen below its configured low oil pressure alarm level.
	Under Speed: The engine ECU has detected that the engine speed has fallen below its configured under speed alarm level.
	Over Speed: The engine ECU has detected that the engine speed has risen above its configured over speed alarm level.
	Charge Failure: The engine ECU has detected that the engine's charge alternator output has fallen below its configured alarm level.
	Low Fuel Level: The engine ECU has detected that the engine's fuel level has fallen below its configured low fuel level alarm

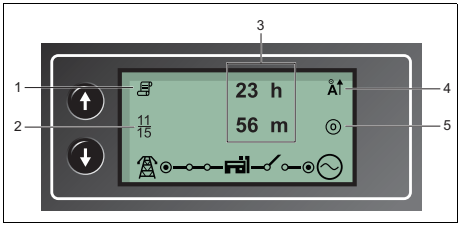
Display	Description
	Battery Under/Over Voltage The engine ECU has detected that the engine's DC supply has fallen below or risen above its configured alarm level.

For more details on these code meanings, refer to the ECU instructions provided by the engine manufacturer, or contact the engine manufacturer for further assistance.

Event log

The Qc1112™ event log contains a list of the last 15 recorded electrical trip or shutdown events and the engine hours at which they occurred.

Once the log is full, any subsequent electrical trip or shutdown alarm will overwrite the oldest entry in the log. Hence, the log always contains the most recent shutdown alarms. The module logs the alarm, along with the engine running hours.



1	Icon to indicate that the event log is currently displayed
2	Number of displayed event
3	Engine hours at which the event occurred
4	Icon to indicate the electrical trip or shutdown alarm that has been recorded
5	Current operating mode of the module

To view the event log:

1. Press the UP and DOWN buttons simultaneously to display the navigation menu.
2. Once entered, cycle to the event log icon (1) and enter.
3. To view the event log, repeatedly press the UP or DOWN buttons until the LCD screen displays the desired event.
4. Continuing to press the UP or DOWN buttons will cycle through the past alarms.
5. To exit the event log, press the UP and DOWN buttons simultaneously. The navigation menu will be displayed.

4.3.2 Generator set operating modes

The generator set can be used in 3 operating modes:

– Stop/Reset mode,
– Automatic mode,
– Manual/Start mode

Stop mode

1. Activate Stop/Reset mode by pressing the STOP/RESET button.

   The Stop/Reset icon will be displayed on the Qc1112™ controller.

2. In Stop/Reset mode, the module will remove the generator set from load (if necessary) before stopping the engine, if it is already running.

   If the engine does not stop when requested, the FAIL TO STOP alarm is activated. To detect the engine at rest the following must occur:
   - Engine speed is zero as detected by the CANbus ECU.
   - Generator AC Voltage and Frequency must be zero.
   - Engine Charge Alternator Voltage must be zero.
   - Oil pressure sensor must indicate low oil pressure

3. When the engine has stopped, it is possible to send configuration files to the module from Qc Configuration Suite PC software and to enter the Front Panel Editor to change parameters.

4. Any latched alarm that has been cleared will be reset when STOP mode is entered.

When the engine is running and the module is put into Stop/Reset mode, the module will automatically instruct the generator set to unload ('Close Generator' and 'Delayed Load Output 1, 2, 3 & 4' become inactive (if used)). The fuel supply de-energises and the engine comes to a standstill. Should any form of remote start signal be present while operating in this mode, a start will not occur.

Manual mode

Activate Manual mode by pressing the START push button. An LED indicator beside the button confirms this action.

Manual mode allows the operator to start and stop the set manually.

If the engine is running off-load in Manual/Start mode and a remote start signal becomes present, the module will automatically instruct the changeover device to place the generator set on load ('Close Generator' and 'Delayed Load Output 1, 2, 3 & 4' becomes active (if used)). Upon removal of the Remote Start Signal, the generator set remains on load until Stop/Reset mode or Auto mode are selected.

NOTE: If a digital input configured to panel lock is active, changing module modes will not be possible. Viewing the instruments and event logs is NOT affected by panel lock.

Starting sequence

When in manual mode, the set will not start automatically.

1. To begin the starting sequence, press the START button.
   - If 'protected start' is disabled, the start sequence begins immediately.
   - If 'Protected Start' is enabled, the Waiting in Manual mode icon is displayed and the LED above the START button flashes. The START button must be pressed once more to begin the start sequence.
2. The fuel relay is energised and the engine is cranked.

   If the engine fails to fire during this cranking attempt, the starter motor is disengaged for the crank rest duration after which the next start attempt is made. Should this sequence continue beyond the set number of attempts, the start sequence will be terminated and the display shows 'Fail to Start'.
3. When the engine fires, the starter motor is disengaged. Speed detection is factory configured to be derived from the main alternator output frequency.

   Additionally, rising oil pressure can be used to disconnect the starter motor (but it cannot detect underspeed or overspeed).
4. After the starter motor has disengaged, the Safety On timer activates, allowing Oil Pressure, High Engine Temperature, Under-speed, Charge Fail and any delayed Auxiliary fault input to stabilise without triggering the fault.

Engine running

Once the engine is running and all starting timers have expired, the animated Engine Running icon is displayed.

In manual mode, the load is not transferred to the generator set unless a 'loading request' is made. A loading request can come from a number of sources.

– Activation of an auxiliary input that has been configured to Remote Start On Load or Auxiliary Mains Fail.

– Activation of the inbuilt exercise scheduler if configured for 'on load' runs.

NOTE: The load transfer signal remains inactive until the Oil Pressure has risen. This prevents excessive wear on the engine.

Once the generator set has been placed on load, it is not automatically removed. To manually remove the load, either:

– Press the AUTO button to go to Auto mode.

The set observes all Auto mode start requests and stopping timers before beginning the Auto mode Stopping Sequence.

– Press the STOP/RESET button to remove load and stop the generator set.

– Activation of an auxiliary input that has been configured to Generator Load Inhibit.

Stopping

In manual/start mode the set will continue to run until either:

– The STOP/RESET button is pressed

  The delayed load outputs are de-activated immediately and the set immediately stops.

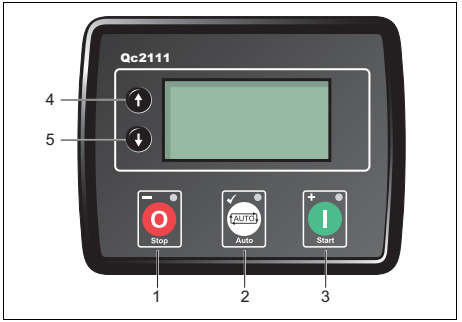
– The AUTO button is pressed.

  The set observes all Auto mode start requests and stopping timers before beginning the Auto mode Stopping Sequence.

4.3.3 Front panel configuration

This configuration mode allows the operator limited customising of the way the module operates.

Use the module's navigation buttons to traverse the menu and make value changes to the parameters.



1	Next Section (101-201-301)
2	Previous Section (301-201-101)
3	Previous Parameter (103-102-101)
4	Edit or Save Parameter
5	Next Parameter (101-102-103)

1. Press the STOP and AUTO buttons together to enter the editor mode.
2. Press the UP or DOWN button to cycle through the front panel editor to select the required page in the configuration tables.
3. Press the START button to select the next parameter or the STOP button to select the previous parameter within the current page.
4. When viewing the parameter to be edited, press the AUTO (Accept) button, the value begins to flash.
5. Press the START or STOP button to adjust the value to the required setting.
6. Press the AUTO (Accept) button the save the current value, the value ceases flashing.
7. Press and hold the AUTO (Accept) button to save and exit the editor, the configuration icon is removed from the display.

Pressing and holding the START or STOP button will enable auto-repeat functionality. Values can be changed quickly by holding the buttons for a prolonged period of time.

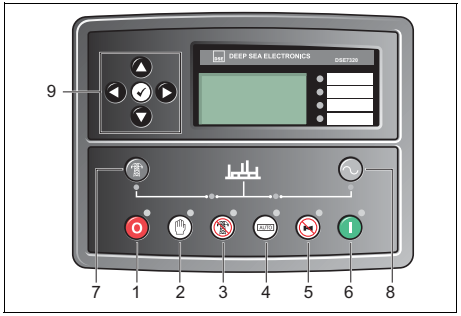
The editor automatically exits after 5 minutes of inactivity to ensure security.

4.4 Operating and setting Qc2212™

The Qc2212™ control module is integrated in the control panel. The Qc2212™ will carry out all necessary tasks to control and protect the generator set, regardless of its use.

This means that the Qc2212™ control module can be used for several applications.

4.4.1 Qc2212™ buttons



1 **STOP/RESET:** Allows to put the control module in **Stop/Reset** mode.

2 **MANUAL:** Allows to put the control module in **Manual** mode.

3 **TEST:** Allows to put the control module in **Test** mode. This allows an on load test of the generator set.

4 **AUTO:** Allows to put the control module in **Automatic** mode.

5 **MUTE/LAMP TEST:** Allows to silence the audible alarm if it is sounding and illuminate all LED indicators as a lamp test feature.

6 **START:** Allows to start the generator set. This button is only active in **Stop/Reset** or **Manual** mode.

7 **TRANFER TO MAINS:** Allows to transfer the load to the mains (when in **Manual** mode only).

8 **TRANSFER TO GENERATOR:** Allows to transfer the load to the generator set (when in **Manual** mode only).

9 **MENU NAVIGATION:** Allows to navigate the instrumentation, event log and configuration screens.

UP: Allows to scroll to the next item above. Increases the value of the selected set point in the editor menu.

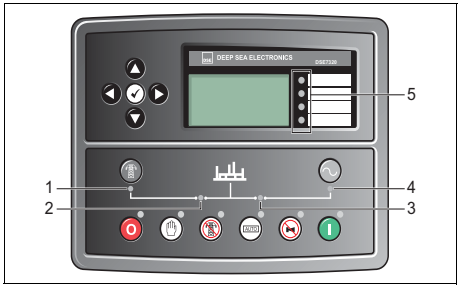
DOWN: Allows to scroll to the next item below. Decreases the value of the selected set point in the editor menu.

PREVIOUS PAGE: Allows to navigate to the previous page/digit.

NEXT PAGE: Allows to navigate to the next page/digit.

ACCEPT: Allows to accept modifications made, enable set parameters.

4.4.2 Qc2212™ LEDs



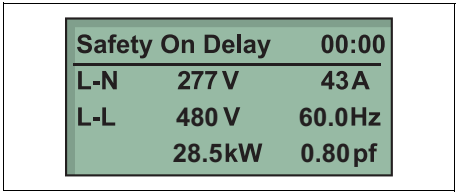
1	**Mains available**	LED indicates that the mains is within limits and able to take load.
2	**Close Mains**	LED indicates that the mains is required to be on load.
3	**Close Generator**	LED indicates that the generator set is required to be on load.
4	**Generator available**	LED indicates that the generator set is within limits and able to take load.
5	**User Configurable Indicators**	– REMOTE START – OVERCURRENT – COMMON ALARMS – COMMON SHUTDOWNS

4.4.3 Qc2212™ menu overview

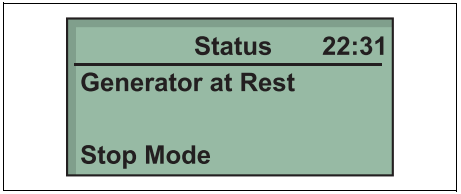
Status page

This is the 'home' page, the page that is displayed when no other page has been selected, and the page that is automatically displayed after a period of inactivity of the module control buttons.

Status page - engine running:



Status page - engine stopped:

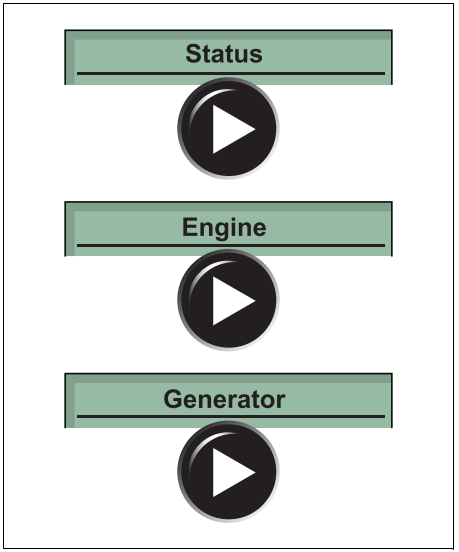


If an alarm becomes active while viewing the Status page, the display shows the Alarms page to draw the operator's attention to the alarm condition. See also "Warnings" on page 69.

Instrument pages

It is possible to scroll to display the different pages of information by repeatedly operating the NEXT / PREVIOUS PAGE pushbuttons.

Example:



Further pressing of the NEXT PAGE pushbutton, returns the display to the Status page.

Once selected, the instrument page will remain on the LCD display until the user selects a different page, or after an extended period of inactivity (LCD Page Timer), the module will revert to the Status display.

If no buttons are pressed upon entering an instrumentation page, the instruments will be displayed automatically.

Alternatively, to scroll manually through all instruments on the currently selected page, press the UP/DOWN buttons. The 'autoscroll' is disabled. To re-enable 'autoscroll' press the UP/DOWN buttons to scroll to the 'title' of the instrumentation page. After a short period the instrumentation page will begin to autoscroll again.

Engine page

Contains instrumentation gathered about the engine itself, some of which may be obtained using the CAN or other electronic engine link.

- Engine Speed
- Oil Pressure
- Coolant Temperature
- Engine Battery Volts
- Run Time
- Oil Temperature*
- Coolant Pressure*
- Inlet Temperature*
- Exhaust Temperature*
- Fuel Temperature*
- Turbo Pressure
- Fuel Pressure*
- Fuel Consumption*
- Fuel Used*
- Auxiliary Sensors (If fitted and configured)
- Engine Maintenance Due (If configured)
- Engine ECU Link*

* When connected to suitably configured and compatible engine ECU.

Depending on configuration and instrument function, some of the instrumentation items may include a tick icon beside them.

Generator page

Contains electrical values of the generator (alternator), measured or derived from the module's voltage and current inputs.

- Generator Voltage (ph-N)
- Generator Voltage (ph-ph)
- Generator Frequency
- Generator Current
- Generator Earth Current
- Generator Load (kW)
- Generator Load (kVA)
- Generator Power Factor
- Generator Load (kVAr)
- Generator Load (kWh, kVAh, kVArh)
- Generator Phase Sequence

Mains page

Contains electrical values of the mains (utility) supply, measured or derived from the module's mains voltage and current (where applicable) inputs.

- Mains Voltage (ph-N)
- Mains Voltage (ph-ph)
- Mains Current (if the CT location is in the 'load' and the mains is 'on load')
- Mains Frequency

Serial port page

This section is included to give information about the currently selected serial port and external modem (if connected).

About page

Contains important information about the module and the firmware versions.

- Module Type (7320)
- Application Version
- USB ID
- Firmware Update Bootloader software version
- Engine type or ECU file which is configured within the module.
- Engine type file version.

CAN error messages

When connected to a suitable CAN engine the controller displays alarm status messages from the ECU.

– Type of alarm as reported by the ECU
– Type of alarm that is triggered in the DSE module (i.e. Warning or Shutdown)

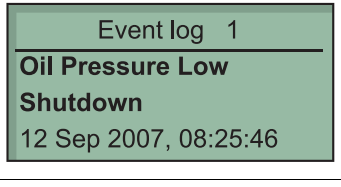
Event log

The Qc2212™ module maintains a log of past alarms and/or selected status changes. The log is capable of storing the last 250 log entries.

Once the log is full, any subsequent shutdown alarms will overwrite the oldest entry in the log. Hence, the log will always contain the most recent shutdown alarms.

The module logs the alarm, along with the date and time of the event (or engine running hours if configured to do so).

To view the event log, repeatedly press the NEXT PAGE button until the LCD screen displays the Event log.



Press DOWN to view the next most recent shutdown alarm. Continuing to press DOWN cycles through the past alarms after which the display shows the most recent alarm and the cycle begins again.

To exit the event log and return to viewing the instruments, press the NEXT PAGE button to select the next instrumentation page.

4.4.4 Scheduler

The Qc2212™ contains a scheduler, capable of automatically starting and stopping the set.

Up to 16 scheduled start/stop sequences can be configured to repeat on a 7 day or 28 day cycle.

Scheduled runs may be on load or off load depending upon module configuration.

STOP Mode

– Scheduled runs will not occur when the module is in STOP/RESET mode.

MANUAL Mode

– Scheduled runs will not occur when the module is in MANUAL mode.
– Activation of a Scheduled Run ‘On Load’ when the module is operating OFF LOAD in Manual mode will have no effect, the set continues to run OFF LOAD.

AUTO Mode

– Scheduled runs will operate ONLY if the module is in AUTO mode with no Shutdown or Electrical Trip alarm present.
– If the module is in STOP or MANUAL mode when a scheduled run begins, the engine will not be started. However, if the module is moved into AUTO mode during a scheduled run, the engine will be called to start.
– Depending upon configuration by the system designer, an external input can be used to inhibit a scheduled run.
– If the engine is running OFF LOAD in AUTO mode and a scheduled run configured to ‘On Load’ begins, the set is placed ON LOAD for the duration of the Schedule.

5 Maintenance

5.1 Maintenance schedules

Before carrying out any maintenance activity, check that the start switch is in position O and that no electrical power is present on the terminals.

Maintenance schedule	Daily	50 hrs after initial start-up	Every 500 hours	Every 1000 hours	Yearly
Service paks	-	-	**2912 6382 05**	**2912 6383 06**	-
For the most important subassemblies, Atlas Copco has developed service kits that combine all wear parts. These service kits offer you the benefits of genuine parts, save on administration costs and are offered at reduced price, compared to the loose components. Refer to the parts list for more information on the contents of the service kits.					
Drain water from fuel filter	x				
Check/Fill fuel level (3)	x				
Empty air filter vacuator valves	x				
Check air intake vacuum indicators	x				
Check engine oil level (if necessary top up)	x				
Check coolant level	x				
Check control panel for alarms and warnings	x				
Check on abnormal noise	x				
Check function of coolant heater (option)			x		x
Replace air filter element (1)			x		x
Check/Replace safety cartridge				x	x
Change engine oil (2) (6)		x	x	x	x
Replace engine oil filter (2)			x	x	x

Maintenance schedule	Daily	50 hrs after initial start-up	Every 500 hours	Every 1000 hours	Yearly
Service paks	-	-	2912 6382 05	2912 6383 06	-
Replace fuel (primary)filter(s) (5)			x	x	x
Inspect/Adjust fan/alternator belt		x	x	x	x
Replace fan/alternator belt				x	x
Measure alternator insulation resistance (11)				x	x
Test Earth Leakage Relay (12)			x	x	x
Check emergency stop (12)			x	x	x
Clean radiator (1)			x	x	x
Check for obstructions on crankcase breather system / filter and hoses	x				
Drain condensate and water from spillage-free frame or catch basin (8)			x	x	x
Check for leaks in engine-, air-, oil-, or fuel system			x	x	x
Inspect/Replace hoses and clamps			x	x	x
Check electrical system cables for wear				x	x
Check/Test glow plugs - grid heater				x	x
Check torque on critical bolt connections (14)				x	x
Check electrolyte level and terminals of battery (10)			x	x	x
Analyse coolant (4) (7)			x	x	x
Check external fuel connection (option)				x	x
Grease locks and hinges			x	x	x
Check rubber flexibles (9)				x	x
Drain/Clean fuel tank water and sediment (1) (13)			x	x	x
Adjust engine inlet and outlet valves (2)		x		x	x
Check fuel injectors (2)				x	
Check engine protective devices				x	x

Maintenance schedule	Daily	50 hrs after initial start-up	Every 500 hours	Every 1000 hours	Yearly
Service paks	-	-	**2912 6382 05**	**2912 6383 06**	-
Inspect starter motor				x	x
Inspect turbocharger				x	x
Inspect water pump				x	x
Inspect charging alternator				x	x
Inspection by Atlas Copco service technician			x	x	x
		**Generator sets in stand-by application have to be tested on a regular basis. At least once a month the engine should run for one hour. If possible a high load (> 30%) should be applied so that the engine reaches its operating temperature.**			

Maintenance schedule	Daily	50 km after initial start-up	Every 500 km	Every 1000 km	Yearly
Check tyre pressure		x	x	x	x
Check tyres for uneven wear				x	x
Check torque of wheel nuts		x		x	x
Check coupling head	x			x	x
Check height of adjusting facility	x				x
Check tow bar handbrake lever spring actuator, reversing lever, linkage and all movable parts for ease of movement	x	x	x	x	x
Grease coupling head, tow bar bearings at the housing of the overrun brake		x		x	x
Check brake system (if installed) and adjust if necessary		x		x	x
Oil or grease brake lever and moving parts such as bolts and joints		x		x	x
Grease sliding points on height adjusting parts				x	x
Check safety cable for damage				x	x
Check Bowden cable on height adjustable connection device for damage				x	x
Lubricate torsion bar axle trailing arm				x	x
Check brake lining wear					x
Change wheel hub bearing grease					x

Notes:

In highly dusty environments, these service intervals do not apply. Check and/or replace filters and clean radiator on a regular basis.

(1) More frequently when operating in a dusty environment.

(2) Refer to engine operation manual.

(3) After a days work.

(4) Yearly is only valid when using PARCOOL. Change coolant every 5 years.

(5) Gummed or clogged filters means fuel starvation and reduced engine performance. Reduce service interval in heavy duty application.

(6) See chapter “Engine oil specifications”.

(7) The following part numbers can be ordered from Atlas Copco to check on inhibitors and freezing points:
- 2913 0028 00: refractometer
- 2913 0029 00: pH meter

(8) See chapter “Before starting”.

(9) Replace all rubber flexibles every 5 years, according to DIN20066.

(10) See chapter “Battery care”.

(11) See chapter “Measuring the alternator insulation resistance”.

(12) The function of this protection should be tested minimum on every new installation.

(13) Water in fuel tank can be detected by means of 2914 8700 00. Drain fuel tank when water is detected.

(14) See chapter “Critical bolt connections - torque values”.

Tyre maintenance of the trailers	Load index	Speed symbol	Rolling radius	Pressure
165R-13”C (8 PR)	96	N	294	4.50
185/65R-14” Reinf.	93	N	294	2.90
165/75R-14”C	93	N	298	3.75
165/75R-14”C	97	N	298	4.75
175/75R-14”C	99	N	305	4.75
165R-14”C (6 PR)	93	N	306	3.75
165R-14”C (8 PR)	97	N	306	4.50
175R-14”C (6 PR)	93	N	313	3.75
175R-14”C (6 PR)	96	N	313	4.50
175R-14”C (8 PR)	99	N	313	4.70
185R-14”C (6 PR)	99	N	321	3.75

5.1.1 Use of maintenance schedule

The maintenance schedule contains a summary of the maintenance instructions. Read the respective section before taking maintenance measures.

When servicing, replace all disengaged packing, e.g. gaskets, O-rings, washers.

For engine maintenance refer to Engine Operation Manual.

The maintenance schedule has to be seen as a guideline for units operating in a dusty environment typical to generator set applications. Maintenance schedule can be adapted depending on application, environment and quality of maintenance.

5.1.2 Use of service paks

Service Paks include all genuine parts needed for normal maintenance of both generator set and engine. Service Paks minimize downtime and keep your maintenance budget low.

The order number of the Service Paks are listed in the Atlas Copco Parts list (ASL). Order Service Paks at your local Atlas Copco dealer.

5.2 Preventing low loads

5.2.1 General

All engine parts are designed with tolerances to allow work under full load conditions. When operating at low load, these tolerances allow more lube oil to pass between valve guides, stems, liners and pistons due to the lower engine temperatures.

Lower combustion pressure has an influence on the piston ring operation and the combustion temperature. Low boost pressure will cause oil leakage over the turbo shaft seal.

5.2.2 Risks of low load operation

- Cylinder glazing: the cylinder bore troughs become filled with lacquer, displacing oil and thus preventing correct ring lubrication.
- Bore polishing: the bore surface becomes polished, all peaks and most troughs become worn away, also preventing correct ring lubrication.
- Heavy carbon buildup: on pistons, piston ring grooves, valves and turbo charger. Carbon buildup on pistons can cause seizure when later operating at full load.
- High oil consumption: prolonged no-load/low load operation of the engine may cause it to blue/gray smoke at low rpm with an associated increase in oil consumption
- Low combustion temperature: this will result in insufficiently burnt fuel, which will cause diluting of the lube oil. Also, unburnt fuel and lube oil can enter the exhaust manifold and eventually leak out through joints in the exhaust manifold.
- Risk for fire

5.2.3 Best practices

Reduce the low load periods to a minimum. This should be achieved by adequately sizing the unit for the application.

It is recommended that a unit is always used with a load > 30% of nominal. Corrective actions should be taken if due to circumstances this minimum load capacity cannot be obtained.

Operate the unit at full load capacity after any low load operating period. Therefore, connect the unit periodically to a load bank. Increase the load in steps of 25% every 30 minutes and allow the unit to run for 1 hour in full load condition. Gradually return the unit to the operating load.

The interval between load bank connections may vary according to the conditions present on site and the amount of load. However, a rule of thumb is to connect a unit to a load bank after every maintenance operation.

If the engine is installed as a stand-by generator set, then it should be operated at full load for at least 4 hrs/year. If periodic tests are performed on a regular basis without load, these should not exceed 10 min. Full load tests help to clean out the carbon deposits in the engine and exhaust system and evaluate the engine's performance. To avoid potential problems during the test, load should be gradually increased.

In rental applications (where the load is often an unknown factor) units should be tested at full load after each rental job or every 6 months, whichever comes first.

For more info, please contact your Atlas Copco Service Center.

When a failure occurs and is deemed due to low load operation, the repairs fall outside warranty coverage.

5.3 Alternator maintenance procedures

5.3.1 Measuring the alternator insulation resistance

A 500 V megger is required to measure the alternator insulation resistance.

If the N-terminal is connected to the earthing system, it must be disconnected from the earth terminal. Disconnect the AVR.

Connect the megger between the earth terminal and terminal L1 and generate a voltage of 500 V. The scale must indicate a resistance of at least 5 MΩ.

Refer to the alternator operating and maintenance instructions for more details.

5.4 Engine maintenance procedures

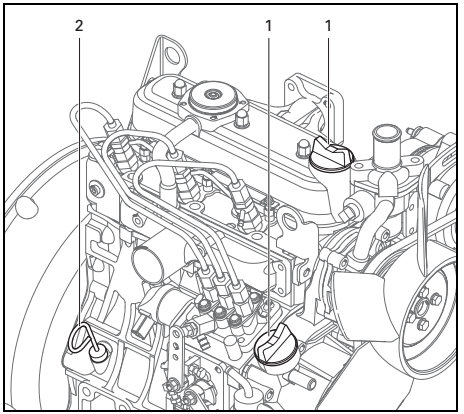
Refer to the engine's operator manual for full maintenance, including instructions for changing the oil and coolant and replacing the fuel, oil and air filters.

5.4.1 Engine oil level check

For the intervals, see section "Maintenance schedules" on page 33. Use Atlas Copco engine oil PAROIL E or PAROIL Extra.

Check the engine oil level before every time that the generator set is used. To do this you must ensure that the machine stands on an even surface and that the engine is not running.

1. Check the engine oil level before starting or more than 5 minutes after stopping the engine.



2. Remove the oil level gauge (2), wipe it clean and reinstall it.
3. Take the oil level gauge out again, and check the oil level.
4. If the oil level is too low, remove the oil filler plug (1), and add new oil to the prescribed level.

5.4.2 Engine oil and oil filter change

Regularly perform maintenance work and replace parts as indicated in the Engine Operation Manual.

Observe all relevant environmental and safety precautions.

Be sure to stop the engine before draining engine oil or changing the oil filter cartridge.

Allow the engine to cool down sufficiently, oil can be hot and cause burns.

Changing engine oil

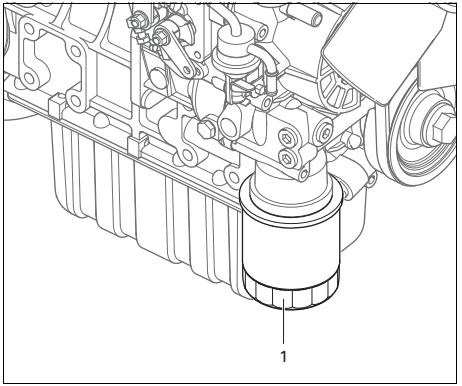
When draining engine oil, place some container underneath the engine and dispose it according to local regulations.

Do not drain oil after running the engine. Allow engine to cool down sufficiently.

1. Change oil as instructed in the Maintenance schedules.
2. Remove plug and drain all the old oil. If the oil is warm, it is easier to drain.
3. Add new engine oil up to the upper limit of the oil level gauge.

Replacing the oil filter cartridge

1. Replace the oil filter cartridge (1) as instructed in the Maintenance schedules.
2. Remove the old oil filter cartridge with a filter wrench.
3. Apply a film of oil to the gasket for the new cartridge.
4. Screw in the cartridge by hand. When the gasket contacts the seal surface, tighten the cartridge enough by hand. Because, if you tighten the cartridge with a wrench, it will be tightened too much.



5. After the new cartridge has been replaced, the engine oil level normally decreases a little. Thus, run the engine for a while and check for oil leaks through the seal before checking the engine oil level. Add oil if necessary.
6. Wipe off any oil sticking to the machine completely.

5.4.3 Coolant check

5.4.3.1 Monitoring coolant condition

In order to guarantee the lifetime and quality of the product, thus to optimise engine protection, regular coolant-condition-analysis is advisable.

The quality of the product can be determined by three parameters.

Visual check

– Verify the outlook of the coolant regarding colour and make sure that no loose particles are floating around.

Long service intervals
5-year drain interval to minimize service costs (when used in accordance with the instructions).

pH measurement

– Check the pH value of the coolant using a pH-measuring device.

– The pH-meter can be ordered from Atlas Copco with part number 2913 0029 00.

– Typical value for EG = 8.6.

– If the pH-level is below 7 or above 9.5, the coolant should be replaced.

Glycol concentration measurement

– To optimise the unique engine protection features of the PARCOOL EG the concentration of the Glycol in the water should be always above 33 vol.%.

– Mixtures with more than 68 vol.% mix ratio in water are not recommended, as this will lead to high engine operating temperatures.

– A refractometer can be ordered from Atlas Copco with part number 2913 0028 00.

In case of a mix of different coolant products this type of measurement might provide incorrect values.

5.4.3.2 Topping up of coolant

– Verify if the engine cooling system is in a good condition (no leaks, clean,...).

– Check the condition of the coolant.

– If the condition of the coolant is outside the limits, the complete coolant should be replaced (see chapter “Replacing the coolant”).

– Always top-up with PARCOOL EG.

– Topping up the coolant with water only, changes the concentration of additives and is therefore not allowed.

5.4.3.3 Replacing the coolant

Drain

– Completely drain the entire cooling system.

– Used coolant must be disposed or recycled in accordance with laws and local regulations.

Flush

– Flush twice with clean water. Used coolant must be disposed or recycled in accordance with laws and local regulations.

– From the Atlas Copco Instruction book, determine the amount of PARCOOL EG required and pour into the radiator top tank.

– It should be clearly understood that the risk for contamination is reduced in case of proper cleaning.

– In case a certain content of ‘other’ coolant remains in the system, the coolant with the lowest properties influences the quality of the ‘mixed’ coolant.

Fill

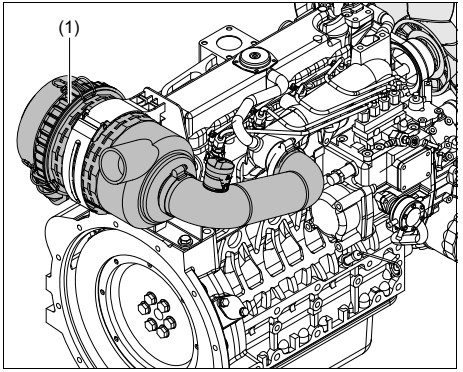
– To assure proper operation and the release of trapped air, run the engine until normal engine operation temperature is reached. Turn off the engine and allow to cool.

– Recheck coolant level and add if necessary.

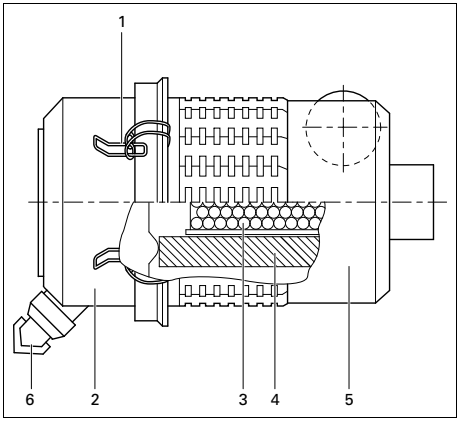
5.4.4 Air filter check

The Atlas Copco air filters are specially designed for the application.
Using only genuine parts will prolong engine life and avoid breakdowns.
Never run the generator set without air filter element.

The engine must be stopped before cleaning or performing any maintenance activity to the air filter (1).



5.4.4.1 Main parts



1	Snap clips
2	Dust trap
3	Safety cartridge
4	Filter element
5	Filter housing
6	Dust evacuator

5.4.4.2 Recommendation

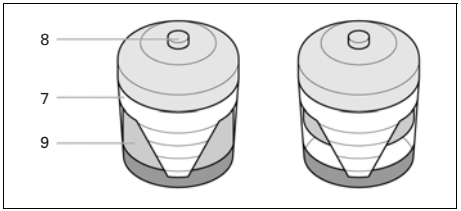
- New elements must be inspected for tears or punctures before installation.
- Discard the filter element (4) when damaged.
- In heavy duty applications it is recommended to install a safety cartridge which can be ordered with part no.: 2914 9307 00.
- A dirty safety cartridge (3) is an indication of a malfunctioning air filter element (4). Replace the element and the safety cartridge in this case.
- The safety cartridge (3) cannot be cleaned.

5.4.4.3 Cleaning the dust trap

To remove dust from the dust trap (2), clean it with a dry rag.

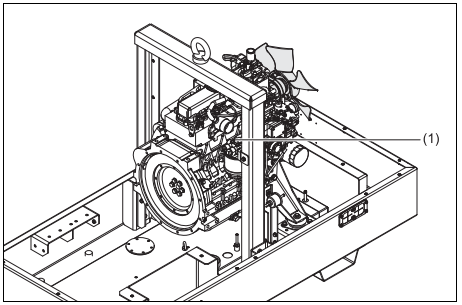
5.4.4.4 Replacing the air filter element

– Release the snap clips (1) and remove the dust trap (2). Clean the trap.
– Remove the element (4) from the housing (5).
– Reassemble in reverse order of dismantling.
– Inspect and tighten all air intake connections.
– Reset the vacuum indicator.



7	Air filter contamination indicator
8	Reset button
9	Yellow indicator

5.4.5 Replacing fuel filter element



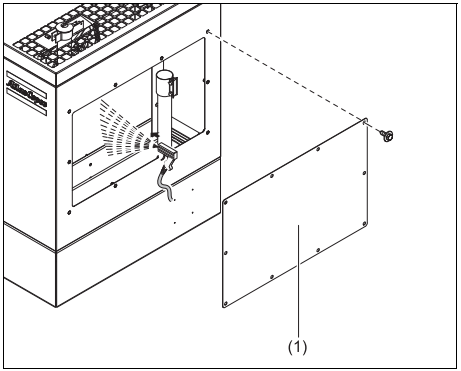
Replacing the filter element:

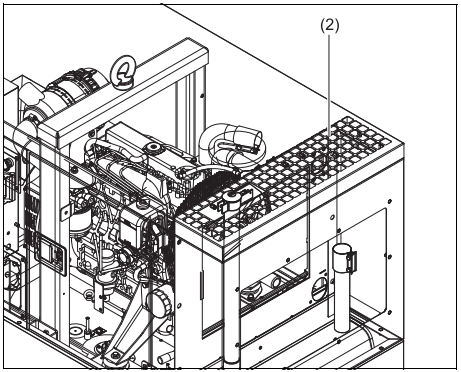
– Unscrew the filter element (1) from the adapter head.
– Clean the adapter head sealing surface. Lightly oil the gasket of the new element and screw the latter onto the header until the gasket is properly seated, then tighten with both hands.
– Check for fuel leaks once the engine has been restarted.

5.5 Adjustments and service procedures

5.5.1 Cleaning coolers

Keep the engine water cooler clean to maintain the cooling efficiency





– Remove the service plate at the front of the unit (1) to get access to the engine water cooler (2).

Remove any dirt from the coolers with a fibre brush. Never use a wire brush or metal objects.

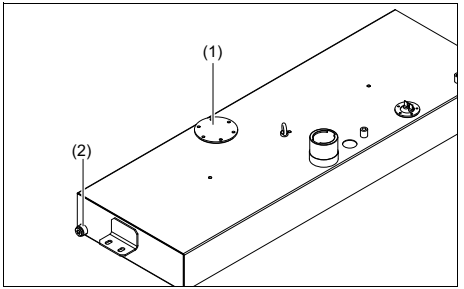
– Steam cleaning in combination with a cleansing agent may be applied.

To avoid damaging the coolers, angle between jet and coolers should be approx. 90°.
Protect the electrical and controlling equipment, air filters, etc. against penetration of moisture.
Make sure to not steam clean the alternator.

– Re-install the service plate.

Never leave spilled liquids such as fuel, oil, water and cleansing agents in or around the generator set.

5.5.2 Cleaning the fuel tank



Observe all relevant environmental and safety precautions.

– Place an appropriate drain pan under the drain plug of the fuel tank.
– Remove the flange (1) and the drain plug (2).
– Slope the unit. approx. 15° to remove all fuel, dirt and water.
– Clean the fuel tank and fix the drain plug and flange handtight.

Never leave spilled liquids such as fuel, oil, water and cleansing agents in or around the generator set.

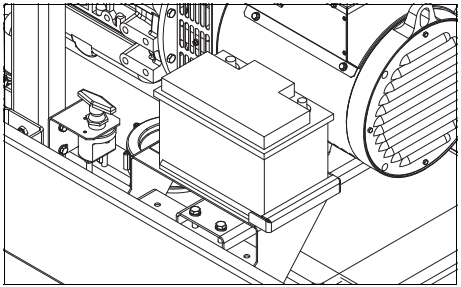
– Refill the fuel tank with clean fuel.

5.5.3 Battery care

Before handling batteries, read the relevant safety precautions and act accordingly.

If the battery is still dry, it must be activated as described in chapter “Activating a dry-charged battery”.

The battery must be in operation within 2 months from being activated; if not, it needs to be recharged first.



5.5.3.1 Electrolyte

Read the safety instructions carefully.

Electrolyte in batteries is a sulphuric acid solution in distilled water.

The solution must be made up before being introduced into the battery.

5.5.3.2 Activating a dry-charged battery

- Take out the battery.
- Battery and electrolyte must be at equal temperature above 10°C.
- Remove cover and/or plug from each cell.
- Fill each cell with electrolyte until the level reaches 10 to 15 mm above the plates, or to the level marked on the battery.
- Rock the battery a few times so that possible air bubbles can escape; wait 10 minutes and check the level in each cell once more; if required, add electrolyte.
- Refit plugs and/or cover.
- Place the battery in the generator set.

5.5.3.3 Recharging a battery

Before and after charging a battery, always check the electrolyte level in each cell; if required, top up with distilled water only. When charging batteries, each cell must be open, i.e. plugs and/or cover removed.

Use a commercial automatic battery charger according to its manufacturer’s instructions.

Apply with preference the slow charging method and adjust the charge current according to the following rule of thumb: battery capacity in Ah divided by 20 gives safe charging current in Amp.

5.5.3.4 Make-up distilled water

The amount of water evaporating from batteries is largely dependant on the operating conditions, i.e. temperatures, number of starts, running time between start and stop, etc...

If a battery starts to need excessive make-up water, this points to overcharging. Most common causes are high temperatures or a too high voltage regulator setting.

If a battery does not need any make-up water at all over a considerable time of operation, an undercharged battery condition may be caused by poor cable connections or a too low voltage regulator setting.

5.5.3.5 Periodic battery service

- Keep the battery clean and dry.
- Keep the electrolyte level at 10 to 15 mm above the plates or at the indicated level; top up with distilled water only. Never overfill, as this will cause poor performance and excessive corrosion.
- Record the quantity of distilled water added.
- Keep the terminals and clamps tight, clean, and lightly covered with petroleum jelly.
- Carry out periodic condition tests. Test intervals of 1 to 3 months, depending on climate and operating conditions, are recommended.
- If doubtful conditions are noticed or malfunctions arise, keep in mind that the cause may be in the electrical system, e.g. loose terminals, voltage regulator maladjusted, poor performance of generator set, etc...

5.6 Engine consumable specifications

5.6.1 Engine fuel specifications

For fuel specifications, please contact your Atlas Copco Customer Center.

5.6.2 Engine oil specifications

It is strongly recommended to use Atlas Copco branded lubrication oils.

High-quality, mineral, hydraulic or synthesized hydrocarbon oil with rust and oxidation inhibitors, anti-foam and anti-wear properties is recommended.
The viscosity grade should correspond to the ambient temperature and ISO 3448, as follows:

Engine	Type of lubricant
between -10°C and 50°C	PAROIL E or PAROIL E Mission Green
between -25°C and 50°C	PAROIL Extra

Never mix synthetic with mineral oil.
When changing from mineral to synthetic oil (or the other way around), you will need to do an extra rinse.
After doing the complete change procedure to synthetic oil, run the unit for a few minutes to allow good and complete circulation of the synthetic oil. Then drain the synthetic oil again and fill again with new synthetic oil. To set correct oil levels, proceed as in normal instruction.

Specifications PAROIL

PAROIL from Atlas Copco is the ONLY oil tested and approved for use in all engines built into Atlas Copco compressors and generator sets.
Extensive laboratory and field endurance tests on Atlas Copco equipment have proven PAROIL to match all lubrication demands in varied conditions. It meets stringent quality control specifications to ensure your equipment will run smoothly and reliably.
The quality lubricant additives in PAROIL allow for extended oil change intervals without any loss in performance or longevity.

PAROIL provides wear protection under extreme conditions. Powerful oxidation resistance, high chemical stability and rust- inhibiting additives help reduce corrosion, even within engines left idle for extended periods.

PAROIL contains high quality anti-oxidants to control deposits, sludge and contaminants that tend to build up under very high temperatures.
PAROIL's detergent additives keep sludge forming particles in a fine suspension instead of allowing them to clog your filter and accumulate in the valve/rocker cover area.

PAROIL releases excess heat efficiently, whilst maintaining excellent bore-polish protection to limit oil consumption.
PAROIL has an excellent Total Base Number (TBN) retention and more alkalinity to control acid formation.

PAROIL prevents Soot build-up.

PAROIL is optimized for the latest low emission EURO -3 & -2, EPA TIER II & III engines running on low sulphur diesel for lower oil and fuel consumption.

PAROIL Extra

PAROIL Extra is a synthetic ultra high performance diesel engine oil with a high viscosity-index. Atlas Copco PAROIL Extra is designed to provide excellent lubrication from start-up in temperatures as low as -25°C (-13°F).

	Litre	US gal	Imp gal	cu.ft	Order number
can	5	1.3	1.1	0.175	1630 0135 01
can	20	5.3	4.4	0.7	1630 0136 01

PAROIL E

PAROIL E is a mineral based high performance diesel engine oil with a high viscosity-index. Atlas Copco PAROIL E is designed to provide a high level of performance and protection in standard ambient conditions as from -10°C (14°F).

	Litre	US gal	Imp gal	cu.ft	Order number
can	5	1.3	1.1	0.175	1615 5953 00
can	20	5.3	4.4	0.7	1615 5954 00
barrel	209	55.2	46	7.32	1615 5955 00

PAROIL E Mission Green

PAROIL E Mission Green is a mineral based high performance diesel engine oil with a high viscosity-index. Atlas Copco PAROIL E Mission Green is designed to provide a high level of performance and protection in standard ambient conditions as from -10°C (14°F).

	Litre	US gal	Imp gal	cu.ft	Order number
can	5	1.3	1.1	0.175	1630 0471 00
can	20	5.3	4.4	0.7	1630 0472 00
barrel	209	55.2	46	7.32	1630 0473 00

5.6.3 Engine coolant specifications

Never remove the cooling system filler cap while coolant is hot.
The system may be under pressure. Remove the cap slowly and only when coolant is at ambient temperature. A sudden release of pressure from a heated cooling system can result in personal injury from the splash of hot coolant.
It is strongly recommended to use Atlas Copco branded coolant.

The use of the correct coolant is important for good heat transfer and protection of liquid-cooled engines. Coolants used in these engines must be mixtures of good quality water (distilled or de-ionised), special coolant additives and if necessary freeze protection. Coolant that is not to manufacturer's specification will result in mechanical damage of the engine.

The freezing point of the coolant must be lower than the freezing point that can occur in the area. The difference must be at least 5°C. If the coolant freezes, it may crack the cylinder block, radiator or coolant pump.

Consult the engine's operation manual and follow the manufacturer's directions.

Never mix different coolants and mix the coolant components outside the cooling system.

Specifications PARCOOL EG

PARCOOL EG is the only coolant that has been tested and approved by all engine manufacturers currently in use in Atlas Copco compressors and generator sets.

Atlas Copco's PARCOOL EG extended life coolant is the new range of organic coolants purpose designed to meet the needs of modern engines. PARCOOL EG can help prevent leaks caused by corrosion. PARCOOL EG is also fully compatible with all sealants and gasket types developed to join different materials used within an engine.

PARCOOL EG is a ready to use Ethylene Glycol based coolant, premixed in an optimum 50/50 dilution ratio, for antifreeze protection guaranteed to -40°C.

Because PARCOOL EG inhibits corrosion, deposit formation is minimized. This effectively eliminates the problem of restricted flow through the engine coolant ducts and the radiator, minimizing the risk for engine overheating and possible failure.

It reduces water pump seal wear and has excellent stability when subjected to sustained high operating temperatures.

PARCOOL EG is free of nitride and amines to protect your health and the environment. Longer service life reduces the amount of coolant produced and needing disposal to minimise environmental impact.

PARCOOL EG

	Litre	US gal	Imp gal	cu.ft	Order number
can	5	1.3	1.1	0.175	1604 5308 01
can	20	5.3	4.4	0.7	1604 5307 02

PARCOOL EG CONCENTRATE

	Litre	US gal	Imp gal	cu.ft	Order number
can	5	1.3	1.1	0.175	1604 8159 00

To ensure protection against corrosion, cavitation and formation of deposits, the concentration of the additives in the coolant must be kept between certain limits, as stated by the manufacturer's guidelines. Topping up the coolant with water only, changes the concentration and is therefore not allowed.

Liquid-cooled engines are factory-filled with this type of coolant mixture.

6 Checks and trouble shooting

Never perform a test run with connected power cables. Never touch an electrical connector without a voltage check.
When a failure occurs, always report what you experienced before, during and after the failure. Information with regard to the load (type, size, power factor, etc.), vibrations, exhaust gas colour, insulation check, odours, output voltage, leaks and damaged parts, ambient temperature, daily and normal maintenance and altitude might be helpful to quickly locate the problem. Also report any information regarding the humidity and location of the generator set (e.g. close to sea).

6.1 Checks

6.1.1 Checking voltmeter PV1

- Put a voltmeter in parallel with voltmeter PV1 on the control panel.
- Check that the read-out of both voltmeters is the same.
- Stop the generator set and disconnect one terminal.
- Check that the internal resistance of the voltmeter is high.

6.1.2 Checking ammeter PA1

- Measure during the load, by means of a clamp-on probe, the outgoing current in the third phase (L3).
- Compare the measured current with the current indicated on ammeter PA1. Both readings should be the same.

6.2 Engine troubleshooting

The table below gives an overview of the possible engine problems and their possible causes.

The starter motor turns the engine too slowly

- Battery capacity too low.
- Bad electrical connection.
- Fault in starter motor.
- Wrong grade of lubricating oil.

The engine does not start or is difficult to start

- Starter motor turns engine too slowly.
- Fuel tank empty.
- Fault in fuel control solenoid.
- Restriction in a fuel pipe.
- Fault in fuel lift pump.
- Dirty fuel filter element.
- Air in fuel system.
- Fault in atomisers.
- Cold start system used incorrectly.
- Fault in cold start system.
- Restriction in fuel tank vent.
- Wrong type or grade of fuel used.
- Restriction in exhaust pipe.

Not enough power

- Restriction in a fuel pipe.
- Fault in fuel lift pump.
- Dirty fuel filter element.
- Restriction in air filter/cleaner or induction system.
- Air in fuel system.
- Fault in atomisers or atomisers of an incorrect type.
- Restriction in fuel tank vent.
- Wrong type or grade of fuel used.
- Restricted movement of engine speed control.
- Restriction in exhaust pipe.
- Engine temperature is too high.
- Engine temperature is too low.

Misfire

- Restriction in a fuel pipe.
- Fault in fuel lift pump.
- Dirty fuel filter element.
- Air in fuel system.
- Fault in atomisers or atomisers of an incorrect type.
- Fault in cold start system.
- Engine temperature is too high.
- Incorrect valve tip clearances.

The pressure of the lubricating oil is too low

- Wrong grade of lubricating oil.
- Not enough lubricating oil in sump.
- Defective gauge.
- Dirty lubricating oil filter element.

High fuel consumption

- Restriction in air filter/cleaner or induction system.
- Fault in atomisers or atomisers of an incorrect type.
- Fault in cold start system.
- Wrong type or grade of fuel used.
- Restricted movement of engine speed control.
- Restriction in exhaust pipe.
- Engine temperature is too low.
- Incorrect valve tip clearances.

Black exhaust smoke

- Restriction in air filter/cleaner or induction system.
- Fault in atomisers or atomisers of an incorrect type.
- Fault in cold start system.
- Wrong type or grade of fuel used.
- Restriction in exhaust pipe.
- Engine temperature is too low.
- Incorrect valve tip clearances.
- Engine overload.

Blue or white exhaust smoke

- Wrong grade of lubricating oil.
- Fault in cold start system.
- Engine temperature is too low.

The engine knocks

- Fault in fuel lift pump.
- Fault in atomisers or atomisers of an incorrect type.
- Fault in cold start system.
- Wrong type or grade of fuel used.
- Engine temperature is too high.
- Incorrect valve tip clearances.

The engine runs erratically

- Fault in fuel control.
- Restriction in a fuel pipe.
- Fault in fuel lift pump.
- Dirty fuel filter element.
- Restriction in air filter/cleaner or induction system.
- Air in fuel system.
- Fault in atomisers or atomisers of an incorrect type.

– Fault in cold start system.
– Restriction in fuel tank vent.
– Restricted movement of engine speed control.
– Engine temperature is too high.
– Incorrect valve tip clearances.

Vibration

– Fault in atomisers or atomisers of an incorrect type.
– Restricted movement of engine speed control.
– Engine temperature is too high.
– Fan damaged.
– Fault in engine mounting or flywheel housing.

The pressure of the lubricating oil is too high

– Wrong grade of lubricating oil.
– Defective gauge.

The engine temperature is too high

– Restriction in air filter/cleaner or induction system.
– Fault in atomisers or atomisers of an incorrect type.
– Fault in cold start system.
– Restriction in exhaust pipe.
– Fan damaged.
– Too much lubricating oil in sump.
– Restriction in air or coolant passages of radiator.

Crankcase pressure

– Restriction in breather pipe.
– Vacuum pipe leaks or fault in exhaust.

Bad compression

– Restriction in air filter/cleaner or induction system.
– Incorrect valve tip clearances.

The engine starts and stops

– Dirty fuel filter element.
– Restriction in air filter/cleaner or induction system.
– Air in fuel system.

The engine shuts down after approx. 15 sec.

– Bad connection towards oil pressure switch/ coolant temperature switch

6.3 Alternator troubleshooting

Symptom	*Possible cause*	*Corrective action*
Alternator gives 0 Volt	Blown fuse.	Replace fuse.
	No residual voltage.	Excite the alternator by applying a 12V battery voltage with a 30 Ω resistor in series on the + and - terminals of the electronic regulator, respecting the polarities.
After being excited the alternator still gives 0 Volt.	Connections are interrupted.	Check connection cables, measure winding resistance and compare with values mentioned in the alternator manual.
Low voltage at no load	Voltage potentiometer out of setting.	Reset voltage.
	Intervention of protection.	Check frequency/voltage regulator.
	Winding failure.	Check windings.
High voltage at no load	Voltage potentiometer out of setting.	Reset voltage.
	Failed regulator.	Substitute regulator.
Lower than rated voltage at load	Voltage potentiometer out of setting.	Reset voltage potentiometer.
	Intervention by protection.	Current too high, power factor lower than 0.8; speed lower than 10% of rated speed.
	Failed regulator.	Substitute regulator.
	Rotating bridge failure.	Check diodes, disconnect cables.
Higher than rated voltage at load	Voltage potentiometer out of setting.	Reset voltage potentiometer.
	Failed regulator.	Substitute regulator.
Unstable voltage	Speed variation in engine.	Check regularity of rotation.
	Regulator out of setting.	Regulate stability of regulator by acting on STABILITY potentiometer.

6.4 Solving Qc1011™ controller alarms

6.4.1 General

When an alarm is present, the alarm LED will illuminate, if configured. The LCD display will show an icon to indicate the failure.

Warnings

Warnings are non-critical alarm conditions and do not affect the operation of the generator set system, they serve to draw the operators attention to an undesirable condition.

Warning alarms are self-resetting when the fault condition is removed. The icon will appear steady in the display.

Shutdowns

Shutdowns are critical alarm conditions that stop the engine and draw the operator's attention to an undesirable condition.

Shutdown alarms are latching. The fault must be removed and the button pressed to reset the module. The icon will appear flashing in the display.

6.4.2 Alarm icon overview

	Auxiliary inputs	Auxiliary inputs can be user configured and will display the message as written by the user.
	Fail to start	The engine has not fired after the preset number of start attempts.
	Fail to stop	The module has detected a condition that indicates that the engine is running when it has been instructed to stop.  **'Fail to Stop' could indicate a faulty oil pressure sensor. If the engine is at rest, check the oil sensor wiring and configuration.**
	Low oil pressure warning	The module detects that the engine oil pressure has fallen below the low oil pressure pre-alarm setting level after the Safety On timer has expired.
	Engine high temperature	The module detects that the engine coolant temperature has exceeded the high engine temperature pre-alarm setting level after the Safety On timer has expired.
	Under speed	The engine speed has fallen below the underspeed pre-alarm setting.
	Over speed	The engine speed has risen above the overspeed pre-alarm setting.
	Charge failure	The auxiliary charge alternator voltage is low as measured from the W/L terminal.
	Low fuel level	The level detected by the fuel level sensor is below the low fuel level setting.

	Battery under voltage / Battery over voltage	The DC supply has fallen below or risen above the low/high volts setting level.
	Generator under voltage	The generator output voltage has fallen below the pre-set pre-alarm setting after the Safety On timer has expired.
	Generator over voltage	The generator output voltage has risen above the pre-set pre-alarm setting.
	Under frequency	The generator output frequency has fallen below the pre-set pre-alarm setting after the Safety On timer has expired.
	Over frequency	The generator output frequency has risen above the pre-set pre-alarm setting.
	CAN ECU warning / CAN ECU shutdown	The engine ECU has detected an alarm – Check the engine light. Contact the Engine Manufacturer for support.
	CAN data fail	The module is configured for CAN operation and does not detect data on the engine CAN datalink.
	Emergency stop	The emergency stop button has been depressed. This is a failsafe (normally closed to battery positive) input that will immediately stop the set, should the signal be removed. Removal of the battery positive supply from the emergency stop input will also remove DC supply from the Fuel and Start outputs of the controller.  **The Emergency Stop positive signal must be present otherwise the unit will shutdown.**

	Magnetic pickup failure	Pulses are no longer being detected from the magnetic pickup probe.
	Internal memory error	Either the configuration file or engine file memory is corrupted. Contact your supplier for assistance.

6.5 Solving Qc1112™/Qc2112™ controller alarms

6.5.1 Qc1112™/Qc2112™ alarms and remedies

If an alarm condition occurs, an icon is displayed in the Alarm icon section of the LCD to indicate the alarm that is current active on the controller.

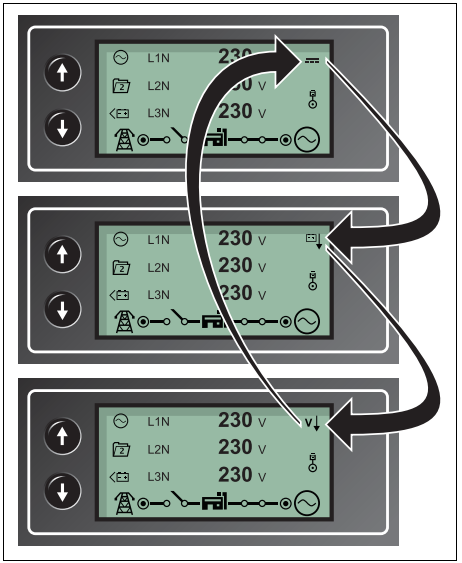
In the event of a **warning alarm**, the LCD only displays the Alarm Icon.

In the event of an **electrical trip or shutdown alarm**, the module displays the Alarm icon and the STOP/ RESET button LED begins to flash.

If multiple alarms are active at the same time, the Alarm icon automatically cycles through all the appropriate icons to indicate each alarm which is active.

Example:

If the Qc1112™/Qc2112™ controller detected a charge alternator failure alarm, a delay over current alarm and an AC under voltage alarm at the same time, it would cycle through all of the icons, as shown below:



6.5.2 Alarm overview

6.5.2.1 Warning alarm icons

Warnings are non-critical alarm conditions and do not affect the operation of the generator set system, they serve to draw the operators attention to an undesirable condition. By default, warning alarms are self-resetting when the fault condition is removed. However enabling “all warnings are latched” will cause warning alarms to latch until reset manually.

Display	Description	Reason
	Auxiliary Inputs	The module detects that an auxiliary input which has been user configured to create a fault condition has become active.
	Analogue Input Configured As Digital	The analogue inputs can be configured to digital inputs. The module detects that an input configured to create a fault condition has become active.
	Fail to stop	The module has detected a condition that indicates that the engine is running when it has been instructed to stop.  **‘Fail to Stop’ could indicate a faulty oil pressure sensor. If the engine is at rest, check the oil sensor wiring and configuration.**
	Charge Failure	The auxiliary charge alternator voltage is low as measured from the W/L terminal.
	Low Fuel Level	The level detected by the fuel level sensor is below the low fuel level pre-set pre-alarm setting.
	High Fuel Level	The level detected by the fuel level sensor is above the high fuel level pre-set pre-alarm setting.
	Battery Under Voltage	The DC supply has fallen below or risen above the low volts pre-set pre-alarm setting.

Display	Description	Reason
	Battery Over Voltage	The DC supply has risen above the high volts pre-set pre-alarm setting.
	Generator Under Voltage	The generator output voltage has fallen below the pre-set pre-alarm setting after the Safety On timer has expired.
	Generator Over Voltage	The generator output voltage has risen above the pre-set pre-alarm setting.
	Generator Under Frequency	The generator output frequency has fallen below the pre-set pre-alarm setting after the Safety On timer has expired.
	Generator Over Frequency	The generator output frequency has risen above the pre-set pre-alarm setting.
	CAN ECU Fault	The engine ECU has detected an alarm.
	CAN Data Fail	The module is configured for CAN operation and does not detect data on the engine CAN data link.
	Immediate Over Current	The measured current has risen above the configured trip level.
	Delayed Over Current	The measured current has risen above the configured trip level for a configured duration.
	Oil Filter Maintenance Alarm	Maintenance due for oil filter

Display	Description	Reason
	Air Filter Maintenance Alarm	Maintenance due for air filter
	Fuel Filter Maintenance Alarm	Maintenance due for fuel filter

6.5.2.2 Electrical trip alarm icons

Electrical trips are latching and stop the generator set, but in a controlled manner. On initiation of the electrical trip condition the Qc1112™ /Qc2112™ module de-energises all the 'Delayed Load Output' and the 'Close Gen Output' outputs to remove the load from the generator set. Once this has occurred the module starts the Cooling timer and allows the engine to cool off-load before shutting down the engine. The alarm must be accepted and cleared, and the fault removed to reset the module.

Electrical trips are latching alarms and to remove the fault, press the STOP/RESET button on the Qc1112™ /Qc2112™ module.

The alarm condition must be rectified before a reset will take place. If the alarm condition remains, it is not possible to reset the unit.

Display	Description	Reason
	Auxiliary Inputs	The module detects that an auxiliary input which has been user configured to create a fault condition has become active.
	Analogue Input Configured As Digital	The analogue inputs can be configured to digital inputs. The module detects that an input configured to create a fault condition has become active.
	Low Fuel Level	The level detected by the fuel level sensor is below the low fuel level pre-set alarm setting.
	High Fuel Level	The level detected by the fuel level sensor is above the high fuel level pre-set alarm setting.
	Delayed Over Current	The measured current has risen above the configured trip level for a configured duration.
	kW Overload	The measured kW has risen above the configured trip level for a configured duration.

6.5.2.3 Shutdown alarm icons

Shutdown alarms are latching and immediately stop the generator set. On initiation of the shutdown condition the module de-energises all the 'Delayed Load Output' and the 'Close Gen Output' outputs to remove the load from the generator set. Once this has occurred, the module shuts the generator set down immediately to prevent further damage. The alarm must be accepted and cleared, and the fault removed to reset the module.

Shutdowns are latching alarms and to remove the fault, press the STOP/RESET button on theQc1112™ /Qc2112™ module.

The alarm condition must be rectified before a reset will take place. If the alarm condition remains, it is not possible to reset the unit.

Display	Description	Reason
	Auxiliary Inputs	The module detects that an auxiliary input which has been user configured to create a fault condition has become active.
	Analogue Input Configured As Digital	The analogue inputs can be configured to digital inputs. The module detects that an input configured to create a fault condition has become active.
	Fail To Start	The engine has failed to start after the configured number of start attempts.
	Low Oil Pressure	The module detects that the engine oil pressure has fallen below the low oil pressure pre-alarm setting level after the Safety On timer has expired.
	Engine High Temperature	The module detects that the engine coolant temperature has exceeded the high engine temperature pre-alarm setting level after the Safety On timer has expired.
	Under Speed	The engine speed has fallen below the under speed pre-alarm setting.
	Over Speed	The engine speed has risen above the over speed pre-alarm setting.

Display	Description	Reason
	Charge Failure	The auxiliary charge alternator voltage is low as measured from the W/L terminal.
	Low Fuel Level	The level detected by the fuel level sensor is below the low fuel level pre-set alarm setting.
	High Fuel Level	The level detected by the fuel level sensor is above the high fuel level pre-set alarm setting.
	Generator Under Voltage	The generator output voltage has fallen below the pre-set alarm setting. after the Safety On timer has expired.
	Generator Over Voltage	The generator output voltage has risen above the pre-set alarm setting.
	Generator Under Frequency	The generator output frequency has fallen below the pre-set alarm setting after the Safety On timer has expired.
	Generator Over Frequency	The generator output frequency has risen above the pre-set alarm setting.
	Delayed Over Current	The measured current has risen above the configured trip level for a configured duration.
	kW Overload	The measured kW has risen above the configured trip level for a configured duration.
	CAN ECU Fault	The engine ECU has detected an alarm – CHECK ENGINE LIGHT. Contact Engine Manufacturer for support.

Display	Description	Reason
	CAN Data Fail	The module is configured for CAN operation and does not detect data on the engine CAN data link.
	Emergency Stop	The emergency stop button has been depressed. This failsafe (normally closed to emergency stop) input immediately stops the set, should the signal be removed.
	Oil Sender Open Circuit	The oil pressure sensor has been detected as being open circuit.
	Coolant Temperature Sender Open Circuit	The coolant temperature sensor has been detected as being open circuit.
	Oil Filter Maintenance Alarm	Maintenance due for oil filter.
	Air Filter Maintenance Alarm	Maintenance due for air filter.
	Fuel Filter Maintenance Alarm	Maintenance due for fuel filter.

6.6 Solving Qc2212™ controller alarms

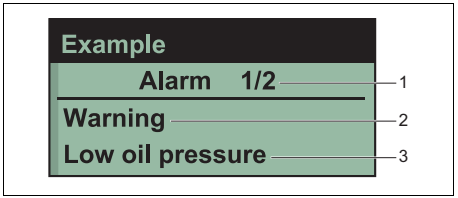
6.6.1 Qc2212™ alarms and remedies

6.6.1.1 Protections

When an alarm is present, the audible alarm will sound and the common alarm LED, if configured, will illuminate.

The audible alarm can be silenced by pressing the MUTE button.

The LCD display will jump from the Information page to display the Alarm page.



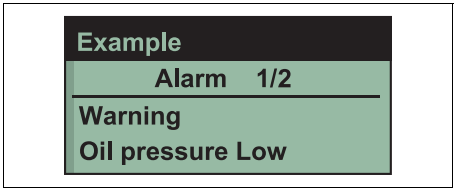
1	Number of present alarms. This is alarm 1 of a total of 2 present alarms
2	The type of alarm. E.g. Shutdown or warning
3	The nature of alarm, e.g. Low oil pressure

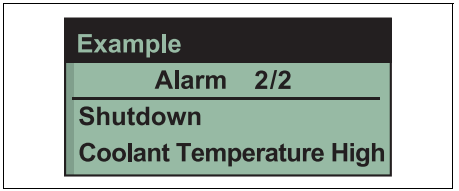
The LCD will display multiple alarms E.g. “High Engine Temperature shutdown”, “Emergency Stop” and “Low Coolant Warning”.

These alarms will automatically scroll in the order that they occurred.

In the event of a warning alarm, the LCD will display the appropriate text. If a shutdown then occurs, the module will again display the appropriate text.

Example:

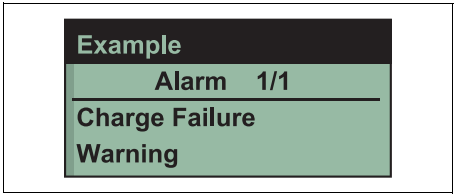




6.6.1.2 Warnings

Warnings are non-critical alarm conditions and do not affect the operation of the generator set system, they serve to draw the operators attention to an undesirable condition.

Example:



In the event of an alarm the LCD will jump to the Alarm page, and scroll through all active warnings and shutdowns.

By default, warning alarms are self-resetting when the fault condition is removed. However enabling ‘all warnings are latched’ will cause warning alarms to latch until reset manually. This can be enabled using the Qc2212™ configuration suite in conjunction with a compatible PC.

6.6.1.3 High current warning alarms

If the module detects a generator set output current in excess of the pre-set trip a warning alarm initiates. The module shows Alarm Warning High Current.

If this high current condition continues for an excess period, then the alarm escalates to a shutdown condition.

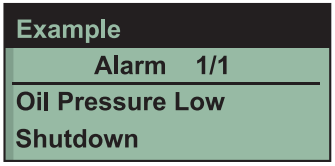
For further details of the high current alarm, please see “High current shutdown / Electrical trip alarm”.

By default, High Current Warning Alarm is self-resetting when the overcurrent condition is removed. However enabling ‘all warnings are latched’ will cause the alarm to latch until reset manually. This can be enabled using the Qc2212™ configuration suite in conjunction with a compatible PC.

6.6.1.4 Shutdowns

Shutdowns are latching alarms and stop the generator set. Clear the alarm and remove the fault then press STOP to reset the module.

Example:



The alarm condition must be rectified before a reset will take place. If the alarm condition remains, it will not be possible to reset the unit.
(The exception to this is the Low Oil Pressure alarm and similar 'delayed alarms', as the oil pressure will be low with the engine at rest.)

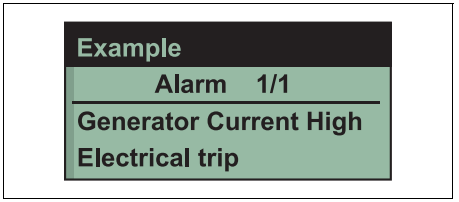
6.6.1.5 Electrical trips

Electrical trips are latching and stop the generator set but in a controlled manner.

On initiation of the electrical trip condition the module will de-energise the 'Close Generator' Output to remove the load from the generator set. Once this has occurred the module will start the Cooling timer and allow the engine to cool off-load before shutting down the engine.

The alarm must be accepted and cleared, and the fault removed to reset the module.

Example:



Electrical trips are latching alarms and stop the generator set. Remove the fault then press STOP to reset the module.

6.6.1.6 High current shutdown / Electrical trip alarm

The overcurrent alarm combines a simple warning trip level with a fully functioning IDMT curve for thermal protection.

Immediate warning

If the Immediate Warning is enabled, the Qc2212™ controller generates a warning alarm as soon as the Trip level is reached.

The alarm automatically resets once the generator set loading current falls below the Trip level (unless All Warnings are latched is enabled).

IDMT alarm

The aim of the IDMT alarm is to prevent the alternator windings being overload (heated) too much.

If the IDMT Alarm is enabled, the Qc2212™ controller begins following the IDMT 'curve' when the trip level is passed. If the Trip is surpassed for an excess amount of time the IDMT Alarm triggers (Shutdown or Electric trip as selected in Action).

– **High current shutdown** is a latching alarm and stops the generator set. Remove the fault then press STOP to reset the module.
– **High current electrical trip** is a latching alarm and removes the generator set from the load, before stopping the generator set after the off load Cooling timer. Remove the fault then press STOP to reset the module.

The higher the overload the faster the trip.

6.6.1.7 Earth fault shutdown / electrical trip alarm

When the module is suitably connected using the 'Earth Fault CT'. The module measures Earth Fault and can optionally be configured to generate an alarm condition (shutdown or electrical trip) when a specified level is surpassed.

If the Earth Fault alarm is enabled, the Qc2212™ controller begins following the IDMT 'curve'. If the Trip is surpassed for an excess amount of time the Alarm triggers (Shutdown or Electric trip as selected in Action).

The higher the earth fault the faster the trip.

6.6.1.8 Short circuit alarm

If the Short Circuit alarm is enabled, the controller begins following the IDMT 'curve'. If the Trip is surpassed for an excess amount of time the Alarm triggers (Shutdown or Electrical trip as selected in Action).

The higher the Short Circuit, the faster the trip.

6.6.1.9 Maintenance alarm

Depending upon module configuration one or more levels of maintenance alarm may occur based upon a configurable schedule.

When activated, the maintenance alarm can be either a warning (set continues to run) or shutdown (running the set is not possible).

Resetting the maintenance alarm is normally done by the site service engineer after performing the required maintenance.

6.6.1.10 CAN alarms

CAN alarms are messages sent from the CAN ECU to the DSE controller. A description of each displayed alarm can be found in the section "Overview displayed alarm messages".

DM1 Signals

Messages from the CAN ECU that are configurable within the DSE module for: Warning, Electrical Trip, Shutdown or None.

Display	Reason
Amber Warning	The CAN ECU has detected a Amber warning.
Red Shutdown	The CAN ECU has detected a Red Shutdown.
Malfunction	The CAN ECU has detected a Malfunction message.
Protect	The CAN ECU has detected a Protect message.

Advanced CAN alarms

Alarms from the ECU will be displayed in the smartconnect and DSE controller.

Allows configuration of additional can messages from the engine ECU. In these settings the actions to be taken by the DSE controller when the ECU detects an alarm status, can be defined.

For CAN ECU error code meanings, refer to the ECU documentation provided by the engine manufacturer, or contact the engine manufacturer for further assistance.

6.6.1.11 Overview displayed alarm messages

Warnings

Display	Reason
CHARGE FAILURE	The auxiliary charge alternator voltage is low as measured from the W/L terminal.
BATTERY UNDER VOLTAGE	The DC supply has fallen below the low volts setting level for the duration of the low battery volts timer.
BATTERY OVER VOLTAGE	The DC supply has risen above the high volts setting level for the duration of the high battery volts timer.
FAIL TO STOP	The module has detected a condition that indicates that the engine is running when it has been instructed to stop.  **'Fail to Stop' could indicate a faulty oil pressure sensor. If the engine is at rest, check the oil sensor wiring and configuration.**
FUEL USAGE	Indicates the amount of fuel used is in excess of the Fuel Usage alarm settings. This often indicates a fuel leak or potential fuel theft.
AUXILIARY INPUTS	Auxiliary inputs can be user configured and will display the message as written by the user.
LOW FUEL LEVEL	The level detected by the fuel level sensor is below the low fuel level setting.
CAN ECU ERROR	The engine ECU has detected a warning alarm and has informed the DSE module of this situation. The exact error is also indicated on the module's display.
kW OVERLOAD	The measured Total kW is above the setting of the kW overload warning alarm.
LOADING VOLTAGE NOT REACHED	Indicates that the generator voltage is not above the configured loading voltage after the safety timer. The generator will shutdown.
PROTECTIONS DISABLED	Shutdown and electrical trip alarms can be disabled by user configuration. In this case, Protections Disabled will appear on the module display; The alarm text will be displayed but the engine will continue to run. This is 'logged' by the module to allow DSE Technical Staff to check if the protections have been disabled on the module at any time. This feature is available from V4 onwards.
LOADING FREQUENCY NOT REACHED	Indicates that the generator frequency is not above the configured loading frequency after the safety timer. The generator set will shutdown.

Display	Reason
LOW OIL PRESSURE	The module detects that the engine oil pressure has fallen below the low oil pressure pre-alarm setting level after the *Safety On* timer has expired.
ENGINE HIGH TEMPERATURE	The module detects that the engine coolant temperature has exceeded the high engine temperature pre-alarm setting level after the *Safety On* timer has expired.
OVERSPEED	The engine speed has risen above the overspeed pre-alarm setting.
UNDERSPEED	The engine speed has fallen below the underspeed pre-alarm setting.
GENERATOR OVER FREQUENCY	The generator output frequency has risen above the pre-set pre-alarm setting.
GENERATOR UNDER FREQUENCY	The generator output frequency has fallen below the pre-set pre-alarm setting after the *Safety On* timer has expired.
GENERATOR OVER VOLTAGE	The generator output voltage has risen above the pre-set pre-alarm setting.
GENERATOR UNDER VOLTAGE	The generator output voltage has fallen below the pre-set pre-alarm setting after the *Safety On* timer has expired.
ECU WARNING	The engine ECU has detected a warning alarm and has informed the DSE module of this situation. The exact error is also indicated on the module's display.

NOTE: If the module is configured for CAN and receives an "error" message from the engine control unit, 'Can ECU Warning" is shown on the module's display and a warning alarm is generated.

Shutdowns

Display	Reason
FAIL TO START	The engine has not fired after the preset number of start attempts.
EMERGENCY STOP	The emergency stop button has been depressed. This a failsafe (normally closed to battery positive) input and will immediately stop the set should the signal be removed. Removal of the battery positive supply from the emergency stop input will also remove DC supply from the Fuel and Start outputs of the controller.  **The Emergency Stop Positive signal must be present otherwise the unit will shutdown.**
LOW OIL PRESSURE	The engine oil pressure has fallen below the low oil pressure trip setting level after the *Safety On* timer has expired.
ENGINE HIGH TEMPERATURE	The engine coolant temperature has exceeded the high engine temperature trip setting level after the *Safety On* timer has expired.
FUEL USAGE	Indicates the amount of fuel used is in excess of the Fuel Usage alarm settings. This often indicates a fuel leak or potential fuel theft.
PHASE ROTATION (DSE7320MKII™ (Qc2212) V2.0 or above)	The phase rotation is measured as being different to the configured direction.
OVERSPEED	The engine speed has exceeded the pre-set trip.  **During the start-up sequence, the overspeed trip logic can be configured to allow an extra trip level margin. This is used to prevent nuisance tripping on start-up.**
UNDERSPEED	The engine speed has fallen below the pre-set trip after the *Safety On* timer has expired.
GENERATOR OVER FREQUENCY	The generator output frequency has risen above the preset level.
GENERATOR UNDER FREQUENCY	The generator output frequency has fallen below the preset level.
GENERATOR OVER VOLTAGE	The generator output voltage has risen above the preset level.
GENERATOR UNDER VOLTAGE	The generator output voltage has fallen below the preset level.

Display	Reason
OIL PRESSURE SENSOR OPEN CIRCUIT	The oil pressure sensor is detected as not being present (open circuit)
AUXILIARY INPUTS	An active auxiliary input configured as a shutdown will cause the engine to shut down. The display shows the text as configured by the user.
LOSS OF SPEED SIGNAL	The speed signal from the magnetic pickup is not being received by the DSE controller.
ECU DATA FAIL	The module is configured for CAN operation and does not detect data on the engine CAN data link, the engine shuts down.
ECU SHUTDOWN	The engine ECU has detected a shutdown alarm and has informed the DSE module of this situation. The exact error is also indicated on the module's display.
kW OVERLOAD	The measured Total kW is above the setting of the kW overload shutdown alarm.
GENERATOR HIGH CURRENT	A High Current condition has continued for an excess period, then the alarm escalates to either a shutdown or electrical trip condition (depending upon module configuration). For further details of the high current alarm, see High current shutdown / Electrical trip alarm - page 67.
LOADING VOLTAGE NOT REACHED	Indicates that the generator voltage is not above the configured loading voltage after the safety timer. The generator set will shutdown.
LOADING FREQUENCY NOT REACHED	Indicates that the generator frequency is not above the configured loading frequency after the safety timer. The generator set will shutdown.
PROTECTIONS DISABLED	Shutdown and electrical trip alarms can be disabled by user configuration. In this case, Protections Disabled will appear on the module display; The alarm text will be displayed but the engine will continue to run. This is 'logged' by the module to allow DSE Technical Staff to check if the protections have been disabled on the module at any time. This feature is available from V4 onwards.
POSITIVE VAr	Positive VArs has exceeded the trip settings.
NEGATIVE VAr	Negative VArs has exceeded the trip settings.

Electrical trips

Display	Reason
GENERATOR HIGH CURRENT	If a generator set output in excess of the high current alarm point, a warning alarm occurs. If this high current condition continues for an excess period, then the alarm escalates to either a shutdown or electrical trip condition (depending upon module configuration). For further details of the high current alarm, see High current shutdown / Electrical trip alarm - page 67.
AUXILIARY INPUTS	If an auxiliary input configured as an electrical trip is active, the appropriate message will be displayed as configured by the user.
kW OVERLOAD	The measured Total kW is above the setting of the kW overload Electrical Trip alarm.
FUEL USAGE	Indicates the amount of fuel used is in excess of the Fuel Usage alarm settings. This often indicates a fuel leak or potential fuel theft.
LOADING VOLTAGE NOT REACHED	Indicates that the generator voltage is not above the configured loading voltage after the safety timer. The generator set will shutdown.
LOADING FREQUENCY NOT REACHED	Indicates that the generator frequency is not above the configured loading frequency after the safety timer. The generator set will shutdown.
PROTECTIONS DISABLED	Shutdown and electrical trip alarms can be disabled by user configuration. In this case, Protections Disabled will appear on the module display; The alarm text will be displayed but the engine will continue to run. This is 'logged' by the module to allow DSE Technical Staff to check if the protections have been disabled on the module at any time. This feature is available from V4 onwards.
GENERATOR UNDER FREQUENCY	The generator output frequency has fallen below the preset level.
GENERATOR UNDER VOLTAGE	The generator output voltage has fallen below the preset level.
UNDERSPEED	The engine speed has fallen below the underspeed level.
POSITIVE VAr	Positive VArs has exceeded the trip settings.
NEGATIVE VAr	Negative VArs has exceeded the trip settings.

7 Storage of the generator set

7.1 Storage

– Store the generator set in a dry, frost-free room which is well ventilated.

– Run the engine regularly, e.g. once a week, until it is warmed up. If this is impossible, extra precautions must be taken:
  - Consult the engine's operator manual.
  - Remove the battery. Store it in a dry, frost-free room. Keep the battery clean and its terminals lightly covered with petroleum jelly. Recharge the battery regularly.
  - Clean the generator set and protect all electrical components against moisture.
  - Place silica gel bags, VCI paper (Volatile Corrosion Inhibitor) or another drying agent inside the generator set and close the doors.
  - Stick sheets of VCI paper with adhesive tape on the bodywork to close off all openings.
  - Wrap the generator set, except the bottom, with a plastic bag.

7.2 Preparing for operation after storage

Before operating the generator set again, remove the wrapping, VCI paper and silica gel bags and check the generator set thoroughly (go through the checklist "Before starting" on page 25).

– Consult the engine's operator manual.

– Check that the insulation resistance of the generator set exceeds 5 MΩ.

– Replace the fuel filter and fill the fuel tank. Vent the fuel system.

– Reinstall and connect the battery, if necessary after being recharged.

– Submit the generator set to a test run.

8 Disposal

8.1 General

When developing products and services, Atlas Copco tries to understand, address, and minimize the negative environmental effects that the products and services may have, when being manufactured, distributed, and used, as well as at their disposal.

Recycling and disposal policy are part of the development of all Atlas Copco products. Atlas Copco company standards determine strict requirements.

Selecting materials the substantial recyclability, the disassembly possibilities and the separability of materials and assemblies are considered as well as the environmental perils and dangers to health during the recycling and disposal of the unavoidable rates of not recyclable materials.

Your Atlas Copco generator set consists for the most part of metallic materials, that can be remelted in steelworks and smelting works and that is therefore almost infinite recyclable. The plastic used is labelled; sorting and fractioning of the materials for recycling in the future is foreseen.

This concept can only succeed with your help. Support us by disposing professionally. By assuring a correct disposal of the product you help to prevent possible negative consequences for environment and health, that can occur with an inappropriate waste handling.
Recycling and re-usage of material helps to preserve natural resources.

8.2 WEEE

DIRECTIVE 2012/19/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on waste electrical and electronic equipment (WEEE)

This equipment falls under the provisions of the European Directive 2012/19/EU on waste electrical and electronic appliances (WEEE) and may not be disposed as unsorted waste

The equipment is labelled in accordance with the European Directive 2012/19/EU with the crossed-out wheelie bin symbol.

At the end of life-time of the electric and electronic equipment (EEE) it must be taken to separate collection.

For more information check with your local waste authority, customer center or distributor.

8.3 Disposal of materials

Dispose contaminated substances and material separately, according to local applicable environmental legislation.

Before dismantling a machine at the end of its operating lifetime drain all fluids and dispose of according the applicable local disposal regulations.

Remove the batteries. Do not throw batteries into the fire (explosion risk) or into the residual waste. Separate the machine into metal, electronics, wiring, hoses, insulation and plastic parts.

Dispose all components according to the applicable disposal regulations.

Remove spilled fluid mechanically; pick up the rest with absorbing agent (for example sand, sawdust) and dispose it according the applicable local disposal regulations. Do not drain into the sewage system or surface water.

9 Options available

9.1 Circuit diagrams

The engine control circuit diagrams and the power circuit diagrams for the standard QES 9-14-20 units, for the units with options and for the units with combined options are:

Circuit 1ph

Unit	*Circuit*
QES 9 Kd - Qc1011	1636 0050 77
QES 9 Kd - Qc1112	1640 0031 30
QES 9 Kd - Qc2212	1640 0106 60
QES 14-20 Kd - Qc1011	1636 0050 25
QES 14-20 Kd - Qc1112	1636 0214 21
QES 14-20 Kd - Qc2212	1640 0106 40

Circuit 3ph

Unit	*Circuit*
QES 9 Kd - Qc1011	1636 0051 72
QES 9 Kd - Qc1112	1636 0214 17
QES 9 Kd - Qc2212	1640 0106 50
QES 14-20 Kd - Qc1011	1636 0048 31
QES 14-20 Kd - Qc1112	1636 0214 19
QES 14-20 Kd - Qc2212	1640 0106 30

9.2 Overview of the electrical options

The following electrical options are available:

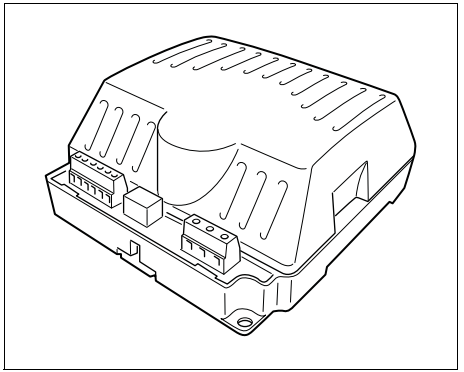
- Automatic battery charger
- Battery switch
- Engine coolant heater
- Spillage free liquid sensor (only compatible with Qc2212™)
- Automatic Fuel Transfer (only compatible with Qc2212™)
- Single phase
- Outlet sockets (S) - 3-phase
- Outlet sockets (S) - 1-phase
- IT-relay
- Qc1112™
- Qc2212™

9.3 Description of the electrical options

9.3.1 Automatic battery charger

The 2 Amp battery chargers have been designed to be permanently connected to a battery, keeping it charged to maximum capacity. The charger will continue to operate during cranking and running. It can accept multiple AC voltage connections.

The LED on the bottom indicates that the unit is operational.



The battery charger provides multi-stage intelligent charging:

– Constant current: maximum current available during charge recovery phase
– Constant voltage
– Chargers automatically return to float mode when charging is complete

It also offers full protection:

– Reverse polarity protection, short circuit protection and current limiting
– Automatic recovery after the removal of fault conditions

To use the battery charger:

– Provide connector X4 with external power:
  • terminals for inlet supply: 832 - 835
  • terminals for outlet: 6 - 7

9.3.2 Battery switch

The battery switch is situated inside the sound-insulated bodywork. It allows to open or to close the electrical connection between the battery and the engine circuits.

Never turn the battery switch to OFF during operation.

9.3.3 Engine coolant heater

To make sure that the engine can start and accept load immediately, an external cooling water heater (1000 W, 240 V) is provided which keeps the engine temperature between 38°C and 49°C.

9.3.4 Spillage free liquid sensor (only compatible with Qc2212™)

Whenever the sensor detects a spillage of fluid into the frame, the unit is shut-down.

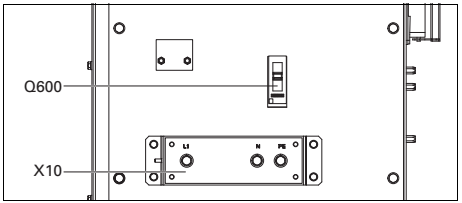
9.3.5 Automatic Fuel Transfer (only compatible with Qc2212™)

The Automatic Fuel Transfer (AFT) option allows the fuel tank to be refilled automatically when a low fuel level is detected. It automatically stops refilling when the fuel reaches the predetermined full tank level.

It includes an electric pump, electro-valve, extra overflow fuel tank level sensor and ON/OFF switch in the control cubicle, combined with fuel level control, set in the controller. The electric pump has a 300W motor that is DC powered. It is self-suction and self-priming with a free flow of 50l/min. It also is anti-rust treated and has a cleaning steel filter of 350 µm built in.

9.3.6 Single phase

The single phase option provides single phase output voltage (e.g. 230 V).



X10 .....Main power supply (230 V AC)

Terminals L1, N and PE (= earthing), hidden behind the control panel door.

Q600 ...Circuit breaker for single phase operation

Interrupts phases L1 and N towards X10 when a short-circuit occurs at the load side or when the overcurrent protection (QES 9: 32 A, QES 14: 50 A, QES 20: 63 A) is activated. It must be reset manually after eliminating the problem.

9.3.7 Outlet sockets (S) - 3-phase

A brief description of all outlet sockets and circuit breakers provided on the generator set is given hereafter:

XS1..... 3-phase outlet socket (400/480 V AC)

Provides phases L1, L2 and L3, neutral and earthing.

XS2..... 3-phase outlet socket (400/480 V AC)

Provides phases L1, L2 and L3, neutral and earthing.

XS3..... 1-phase outlet socket (230/240 V AC)

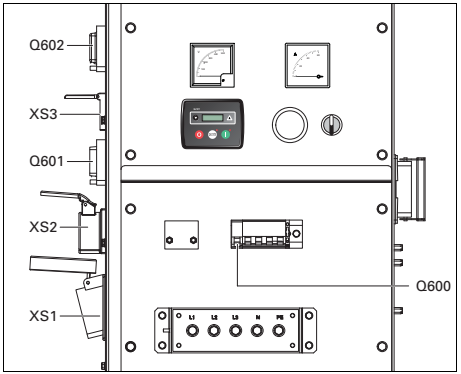
Provides phase L1, neutral and earthing.

Q601... Circuit breaker for XS2

Interrupts the power supply to XS2 when a short-circuit occurs at the load side, or when the overcurrent protection (16 A) is activated. When tripped, Q601 interrupts the three phases towards XS2. It can be reset after eliminating the problem.

Q602... Circuit breaker for XS3

Interrupts the power supply to XS3 when a short-circuit occurs at the load side, or the overcurrent protection (16 A) is activated. When tripped, Q602 interrupts phase L1 and the neutral towards XS3. It can be reset after eliminating the problem.



Circuit breaker Q600 does not only interrupt the power supply towards X10, but also towards XS1, XS2 and XS3.

Make sure to switch on circuit breakers Q600, Q601 and Q602 after starting the generator set when power is supplied by means of XS1, XS2 or XS3.

9.3.8 Outlet sockets (S) - 1-phase

A brief description of all outlet sockets and circuit breakers provided on the generator set is given hereafter:

XS2..... 1-phase outlet socket (230 V AC)

Provides phase L1, neutral and earthing.

XS3..... 1-phase outlet socket (230 V AC)

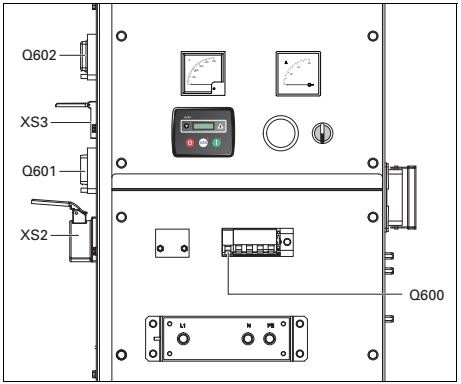
Provides phase L1, neutral and earthing.

Q601... Circuit breaker for XS2

Interrupts the power supply to XS2 when a short-circuit occurs at the load side, or when the overcurrent protection (16 A) is activated. When tripped, Q601 interrupts the three phases towards XS2. It can be reset after eliminating the problem.

Q602... Circuit breaker for XS3

Interrupts the power supply to XS3 when a short-circuit occurs at the load side, or when the overcurrent protection (16 A) is activated. When tripped, Q602 interrupts the three phases towards XS3. It can be reset after eliminating the problem.

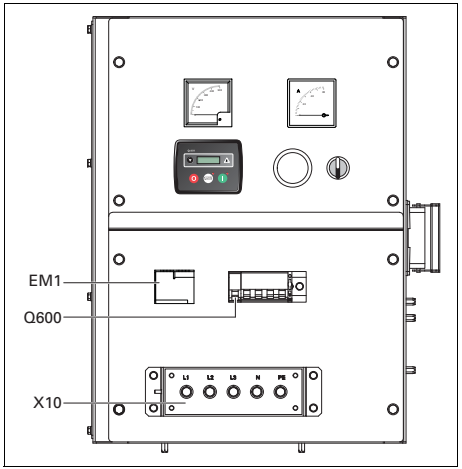


Circuit breaker Q600 does not only interrupt the power supply towards X10, but also towards XS2 and XS3. Make sure to switch on circuit breakers Q600, Q601 and Q602 after starting the generator set when power is supplied by means of XS2 or XS3.

9.3.9 IT-relay

The generator set is wired for an IT network i.e. no supply lines of the power supply are directly earthed. A failure in insulation resulting in a too low insulation resistance, is detected by the insulation monitoring relay.

The generator set shall not be operated with other networks (such as TT or TN). Doing so will cause tripping of the insulation monitoring relay.
The generator set is wired for an IT network i.e. no supply lines of the power supply are directly earthed. A failure in insulation resulting in too low an insulation resistance, is detected by the insulation monitoring relay.
At each start-up and any time a new load is connected, the insulation resistance must be verified. Check for the correct setting of the insulation monitoring relay. (factory set at 13 kΩ)



Q600 ... Circuit breaker for X10

Interrupts the power supply X10 when a short-circuit occurs at the load side, or when the overcurrent protection is activated. When activated, Q600 interrupts the three phases towards X10. It must be reset manually after eliminating the problem.

X10 ..... Main power supply (400 V AC)

Terminals L1, L2, L3, N (= neutral) and PE (= earthing), hidden behind the control panel door.

EM1 .... Insulation monitoring relay

Checks the insulation resistance and activates Q600 when the insulation resistance is too low.

9.3.10 Qc1112™

The Qc1112™ controller option replaces the standard controller Qc1011™ and the voltmeter and analogue meter.
It adds the following functionality on top of Qc1011™:

- Generator/load power monitoring (kW, kV A, kV Ar, pf)
- Accumulated power monitoring (kW h, kVA h, kVAr h)
- Real time clock provides accurate event logging (50 events)

9.3.11 Qc2212™

The Qc2212™ controller option replaces the standard controller Qc1011™ and the voltmeter and analogue meter. It is an Automatic on Mains Failure controller that is also able to control the Power Transfer Box.

It is mandatory to install Qc2212™ for certain options like AFT, ISV and spillage free liquid sensor.
It also adds the following functionality on top of Qc1112™ :

- RS232/RS485 communication port
- MODBUS RTU support with configurable MODBUS pages.
- Expansion module port for inputs or outputs modules, remote display, …
- Real time clock provides accurate event logging (250 events)

9.4 Overview of the mechanical options

The following mechanical options are available:

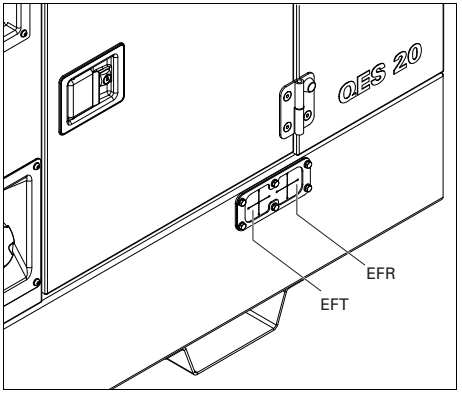
- External fuel tank connection (with/without quick couplings)
- Oil drain pump
- Special colour
- Large capacity fuel tanks
- Inlet Shutoff valve (ISV) (only compatible with Qc2212™)
- Integrated spark arrestor
- Galvanized skid with forklift slots
- Undercarriage (axle, towbar, towing eyes)
- Lighting tower

9.5 Description of the mechanical options

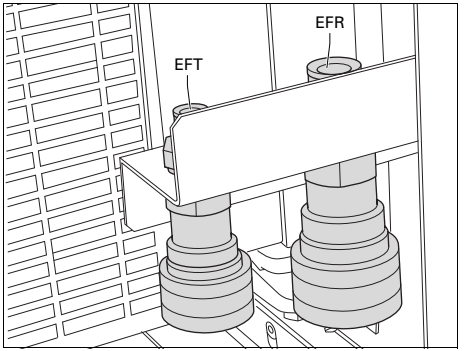
9.5.1 External fuel tank connection (with/without quick couplings)

The option external fuel tank connection allows to bypass the internal fuel tank and to connect an external fuel tank to the unit.

View outside



View inside



EFT	External fuel tank feed connection
EFR	External fuel tank return connection

When using this option, make sure to connect the fuel supply line as well as the fuel return line. Connections to fuel lines ought to be air-tight to prevent air from entering the fuel system. Turn the handle of 3-way valve to desired condition.

Position 1: Indicates that the fuel supply line to the engine is connected to the internal fuel tank.

Position 2: Indicates that the fuel supply line to the engine is connected to the external fuel tank.

9.5.2 Oil drain pump

The oil drain pump facilitates oil change.

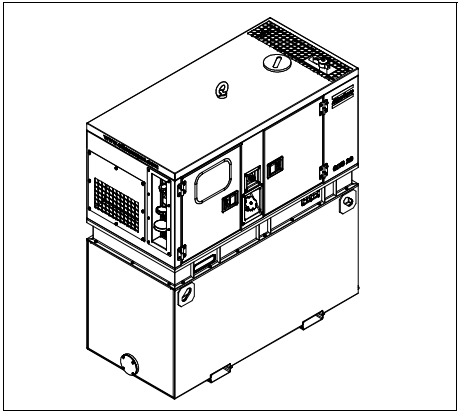
9.5.3 Special colour

This option allows to select a specific color for the canopy. Contact your generator set supplier for available configurations.

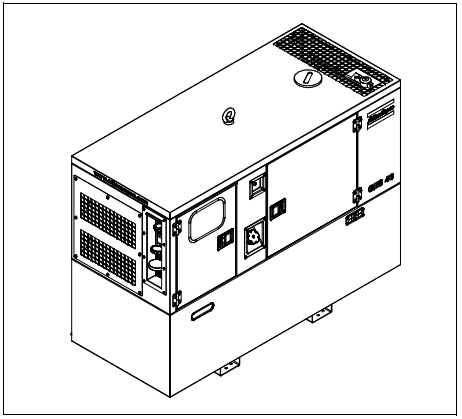
9.5.4 Large capacity fuel tanks

The QES range offers the following large capacity fuel tanks:

– 1000 l fuel tank



– 48h fuel tank



9.5.5 Inlet Shutoff valve (ISV) (only compatible with Qc2212™)

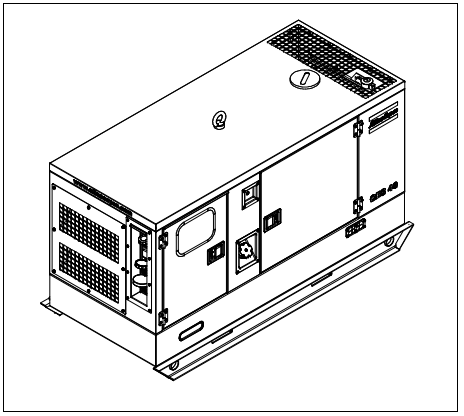
The engine air inlet shut-off valve option is included in the refinery equipment pack. It will prevent over-speeding of the engine due to combustible gases being traced within the normal engine air intake.

9.5.6 Integrated spark arrestor

The integrated spark arrestor option is included in the refinery equipment pack.

9.5.7 Galvanized skid with forklift slots

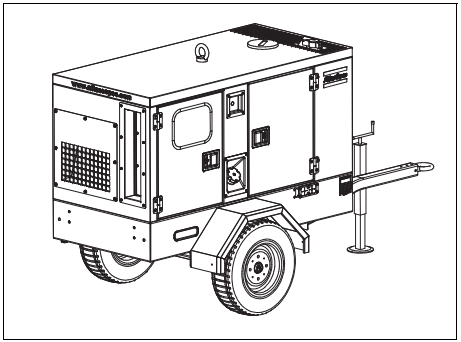
To be able to lift the generator set by means of a forklift, a galvanized skid with rectangular slots is provided. This option is compatible with standard and 48h frame.



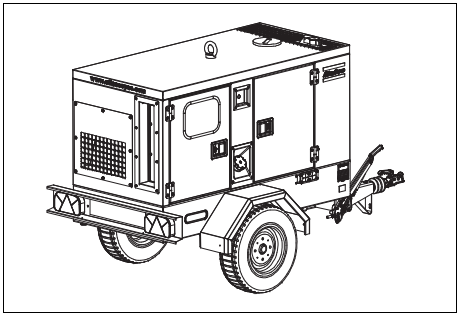
9.5.8 Undercarriage (axle, towbar, towing eyes)

The QES generator sets can be optionally provided with a site trailer for off-road use. For on-road use the undercarriage is either equipped with an adjustable or fixed towbar with DIN-eye, AC-eye, IT-eye, GB-eye, NATO-eye or ball coupling and with road signalisation which is approved by EC legislation.

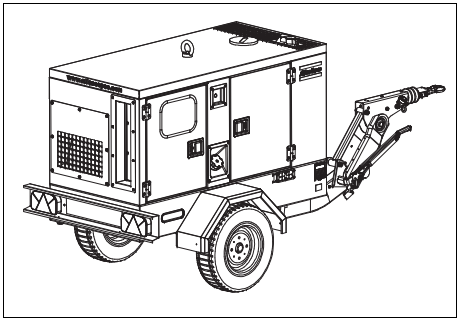
Site trailer:



Homologated fixed towbar:



Homologated adjustable towbar:



When using this option

- Make sure that the towing equipment of the vehicle matches the towing eye before towing the generator set.
- Never move the generator set while electrical cables are connected to the unit.
- Always apply the hand brake when parking the generator set.
- Leave enough space for operation, inspection and maintenance (at least 1 meter at each side).

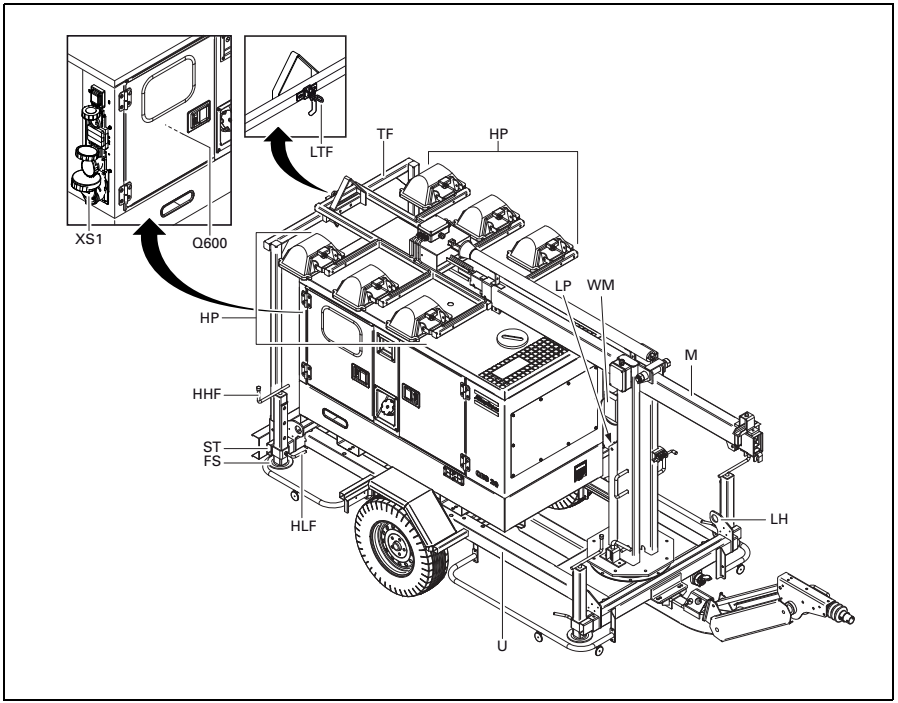
To maintain the undercarriage

- Check the tightness of the towbar bolts, the axle bolts and the wheel nuts at least twice a year and after the initial 50 hours of operation.
- Grease the wheel axle suspension bearings, the drawbar to the steering gear shaft and the spindle of the brake handle at least twice a year. Use ball bearing grease for the wheel bearings and graphite grease for the drawbar and spindle.
- Check the brake system twice a year.
- Check the condition of the vibration dampers twice a year.
- Repack the wheel hub bearings once a year using grease.

9.5.9 Lighting tower

9.5.9.1 General description

The lighting tower option provides an undercarriage (frame, axle and towbar) and 6 halogen projectors of 1500 W each. There are two versions of undercarriages available: on-road (with road signalisation) and off-road (without road signalisation). The lighting tower is very useful for construction sites where no electricity nor lighting is available.



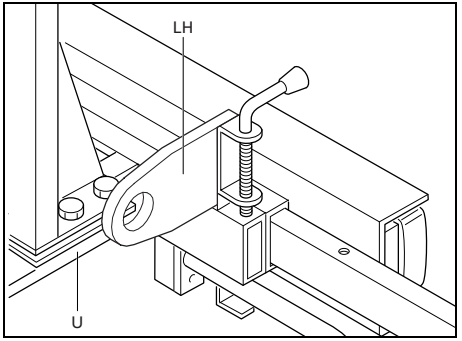
FS	Foot
HHF	Handle to adjust the height of the foot
HLF	Handle to lock/unlock the foot
HLS	Handle to lock/unlock the stabilizer
HP	Halogen projectors
LH	Lifting hook
LP	Locking pin
LTF	Lever transport frame
M	Mast
Q600	Main circuit breaker
ST	Stabilizer
TF	Transport frame
U	Undercarriage (on-road)
WM	Winding mechanism
XS1	Outlet socket

9.5.9.2 Operating procedure

General guidelines

1. Check the terrain where the lighting tower has to be erected:
   - Maximum allowable slope of the terrain: the generator set can be operated temporarily in an out-of-level position not exceeding 15°.
   - Absence of obstacles that could interfere with the erection of the lighting tower: (e.g. high voltage lines, constructions, …)
2. The lighting tower should never be left unattended. When finishing activities on a site, the lighting tower should be lowered to its resting position.

When the generator set is mounted on a lighting tower it is NOT permitted to use the lifting eye for lifting of the assembly. Instead use the 4 lifting hooks (LH) situated at the corners of the lighting tower undercarriage (U). Ignoring these instructions may lead to damage and personal injury!

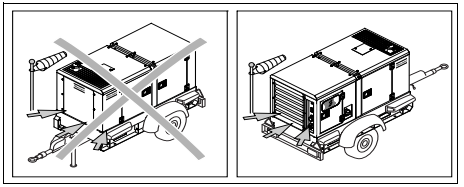


3. Before moving the unit, ALWAYS lower the mast (M) and secure it on the transport frame (TF).
4. Never move the generator set while power supply cables are connected to the unit.

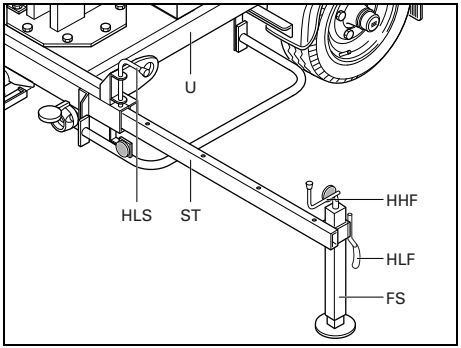
When the lighting tower is mounted on an off-road undercarriage, never exceed the maximum speed limit of 30 km/h!

Erection of the lighting tower

1. Positioning of the generator set mounted on the lighting tower.
   - Locate the rear-end of the generator set upwind, (see figure below), away from contaminated wind-streams and walls. Avoid recirculation of exhaust air from the engine. This causes overheating and engine power decrease.



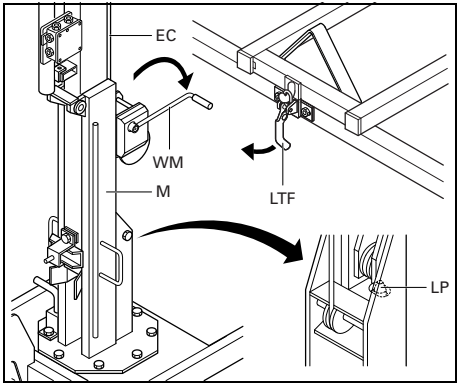
   - Immobilize the generator set by applying the handbrake or support leg or using wheel chocks in front of or behind the wheels.
   - Position the generator set mounted on the lighting tower as level as possible by using the vertical adjustment of the jockey wheel (or support leg).



2. Extend the four stabilizers (ST) at the corners as far as possible and lock them with the appropriate levers (HLS). All stabilizers should be extended to the same length.
   Unlock the feet of the stabilizers (FS) by using the handle aside of the stabilizer (HLF) and bring them down as far as possible. Ensure that the feet are locked in one of the foreseen holes.
   Wind down the foot (FS) using the handle on top of the stabilizer (HHF), until the foot touches the ground and clamps the stabilizer (ST) firmly to the undercarriage (U).

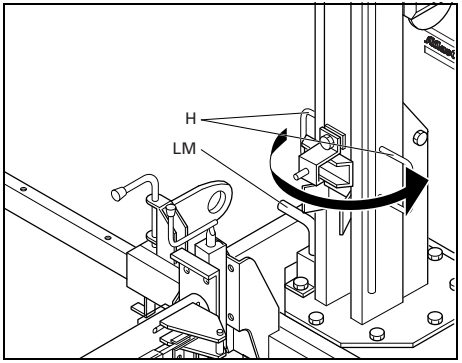
   If the underground is too loose, it is recommended to place a flat support (wooden block, …) under the stabilizer.

3. Erect the mast of the lighting tower:
   - Loosen the elevation cable (EC) by turning the lever of the winding mechanism (WM) clockwise. This makes it more easy to unlock the mast.
   - Unlock the mast by raising the lever (LTF) situated at the back of the transport frame (TF).



   - Raise the mast (M) from the horizontal resting position to the vertical position by turning the lever of the winding mechanism (WM) counter clockwise. When the mast is in vertical position, check whether the locking pin (LP) secures the vertical position of the mast.
   - Raise the mast (M) to the desired height by turning further the lever of the winding mechanism (WM).

4. Turning the mast of the lighting tower.
   The mast of the lighting tower can be turned to the left and to the right to locked positions on 45°, 90°, 135° and 180°. First unlock the mast by pulling on the lever (LM), then turn the mast to the desired position and lock the mast again with the lever.



Starting the generator set and switching the lights on and off

Only start the generator set and switch on the lights when the lighting tower is erected to the desired position.

1. To switch the lamps (HP) on, plug the connector of the power supply cable towards the lamps in outlet socket XS1 of the generator.
2. Check that the main circuit breaker Q600 is switched off.
3. Start up the generator set (see “Operating and setting Qc1011™”).
4. To switch on the lights, switch on the main circuit breaker Q600. To switch off the lights, switch off the main circuit breaker Q600.

When pushing on the emergency stop the main circuit breaker Q600 is automatically switched off.

Taking down the lighting tower

Do not take down the lighting tower with lights switched on and generator set running.

1. Check that the mast (M) is turned to the original position (with the lights directed to the back of the lighting tower) and locked.
2. To take down the lighting tower follow the procedure of the erection of the lighting tower in reversed order.

Additional checks:

– After locking the mast in its horizontal position, tighten the elevation cable (EC) by turning on the lever of the winding mechanism (WM).
– Make sure ALWAYS to retract the stabilizers (ST).
– After retracting, check that the stabilizers (ST) are locked with the appropriate handles (HLS). Check that the feet of the stabilizers (FS) are tightened firmly (using the handles HHF and HLF).

9.5.9.3 Lighting tower maintenance

– Refer to the maintenance instructions mentioned in the chapter dealing with the “Undercarriage (axle, towbar, towing eyes)” option.
– Check the condition of the tower, the tightness of its bolts and the fixation of the elevation cable (EC) at least twice a year.

Do not use the handles on the lighting tower for towing or lifting the generator set.

10 Technical specifications

10.1 Technical specifications for QES 9 units

10.1.1 Readings on gauges

Gauge	*Reading*	*Unit*
Ammeter L3 (PA1)	Below max. rating	A
Voltmeter (PV1)	Below max. rating	V

10.1.2 Settings of switches

Switch	*Function*	*Activates at*
Engine oil pressure	Shut down	0.5 bar
Engine coolant temperature	Shut down	103°C

10.1.3 Specifications of the engine/alternator/unit

		QES 9 400/230V - 3ph	***QES 9 380/220V - 3ph***	***QES 9 415/240V - 3ph***	***QES 9 230V - 1ph***
Reference conditions 1)	Rated frequency	50 Hz	50 Hz	50 Hz	50 Hz
	Rated speed	1500 rpm	1500 rpm	1500 rpm	1500 rpm
	Generator service duty	PRP	PRP	PRP	PRP
	Absolute air inlet pressure	1 bar(a)	1 bar(a)	1 bar(a)	1 bar(a)
	Relative air humidity	30%	30%	30%	30%
	Air inlet temperature	25°C	25°C	25°C	25°C
Limitations 2)	Maximum ambient temperature	40°C	40°C	40°C	40°C
	Altitude capability	3000 m	3000 m	3000 m	3000 m
	Maximum relative air humidity	85%	85%	85%	85%
	Minimum starting temperature unaided	-10°C	-10°C	-10°C	-10°C
	Minimum starting temperature with cold start equipment (optional)	-25°C	-25°C	-25°C	-25°C
Performance data 2) 3) 4) 5)	Rated active power (PRP)	7.4 kW	7.4 kW	7.4 kW	6.8 kW
	Rated active power (ESP)	8.1 kW	8.1 kW	8.1 kW	7.5 kW
	Rated power factor 3phase	0.8	0.8	0.8	-
	Rated power factor 1phase	-	-	-	1
	Rated apparent power (PRP)	9.2 kVA	9.2 kVA	9.2 kVA	6.8 kVA

	Rated apprant power (ESP)	10.1 kVA	10.1 kVA	10.1 kVA	7.5 kVA
	Rated voltage line to line	400 V	380 V	415 V	230 V
	Rated current	13.3 A	14.0 A	29.6 A	12.8 A
	Performance class (acc.ISO 8528-5:1993)	G1	G1	G1	G1
	Single step load acceptance	100%	100%	100%	100%
		7.4 kW	7.4 kW	7.4 kW	N/A
	Frequency droop	N/A	N/A	N/A	N/A
	Fuel consumption at no load (0%)	0.69 kg/h	0.69 kg/h	0.69 kg/h	N/A
	Fuel consumption at 50% load	1.33 kg/h	1.33 kg/h	1.33 kg/h	N/A
	Fuel consumption at 75% load	1.80 kg/h	1.80 kg/h	1.80 kg/h	N/A
	Fuel consumption at full load (100%)	2.07 kg/h	2.07 kg/h	2.07 kg/h	N/A
	Specific fuel consumption (at full load, 100%)	0.288 kg/kWh	0.288 kg/kWh	0.288 kg/kWh	N/A
	Fuel autonomy at full load with standard tank	22.9 h	22.9 h	22.9 h	N/A
	Fuel autonomy at full load with 48h tank	103.9 h	103.9 h	103.9 h	N/A
	Fuel autonomy at full load with 1000L tank	411.3 h	411.3 h	411.3 h	N/A
	Max. oil consumption at full load	0.02 l/h	0.02 l/h	0.02 l/h	0.02 l/h
	Maximum sound power level (Lw) complies with 2000/14 EC	85 dB(A)	85 dB(A)	85 dB(A)	85 dB(A)
	Capacity of standard fuel tank	55 l	55 l	55 l	55 l
	Capacity of 48h fuel tank	250 l	250 l	250 l	250 l
	Capacity of 1000L fuel tank	990 l	990 l	990 l	990 l
	Single step load capability	7.4 kW	7.4 kW	7.4 kW	N/A
		100%	100%	100%	-
Application data	Mode of operation	PRP	PRP	PRP	PRP
	Site	land use	land use	land use	land use
	Operation	single	single	single	single
	Start-up and control mode	manual/automatic	manual/automatic	manual/automatic	manual/automatic
	Start-up time	unspecified	unspecified	unspecified	unspecified
	Mobility/Config. acc. to ISO 8528-1:1993	transportable/D	transportable/D	transportable/D	transportable/D
	(optional)	mobile/E	mobile/E	mobile/E	mobile/E
	Mounting	fully resilient	fully resilient	fully resilient	fully resilient
	Climatic exposure	open air	open air	open air	open air
Alternator 4)	Standard	IEC34-1	IEC34-1	IEC34-1	IEC34-1
		ISO8528-3	ISO8528-3	ISO8528-3	ISO8528-3
	Make	MeccAlte	MeccAlte	MeccAlte	MeccAlte
	Model	ECP3-1LN/4	ECP3-1LN/4	ECP3-1LN/4	ECP3-2L/4
	Rated output, class H temp. rise - 3ph	11 kVA	11 kVA	11 kVA	9.6 kVA
	rating type acc. ISO 8528-3	125/40°C	125/40°C	125/40°C	125/40°C
	Degree of protection (IP index acc. NF EN 60-529)	IP 23	IP 23	IP 23	IP 23
	Insulation stator class	H	H	H	H
	Insulation rotor class	H	H	H	H
	Number of wires	12	12	12	12

Engine 4)	Standard	ISO 3046 ISO 8528-2	ISO 3046 ISO 8528-2	ISO 3046 ISO 8528-2	ISO 3046 ISO 8528-2
	Type KUBOTA	D1105-E4GB	D1105-E4GB	D1105-E4GB	D1105-E4GB
	Rated net output (PRP)	8.6 kW	8.6 kW	8.6 kW	8.6 kW
	rating type acc. ISO 3046-7	ICXN	ICXN	ICXN	ICXN
	Coolant	coolant	coolant	coolant	coolant
	Combustion system	indirect injection	indirect injection	indirect injection	indirect injection
	Aspiration	natural aspirated	natural aspirated	natural aspirated	natural aspirated
	Number of cylinders	3	3	3	3
	Swept volume	1.12 l	1.12 l	1.12 l	1.12 l
	Speed governing	mechanical	mechanical	mechanical	mechanical
	Capacity of oil sump - initial fill	5.1 l	5.1 l	5.1 l	5.1 l
	Capacity of cooling system	3.1 l	3.1 l	3.1 l	3.1 l
	Electrical system	12 Vdc	12 Vdc	12 Vdc	12 Vdc
	Emission compliance	EU Stage 5	EU Stage 5	EU Stage 5	EU Stage 5
	Maximum permissible load factor of PRP during 24h period	100%	100%	100%	100%
Power circuit	**Circuit-breaker**				
	Number of poles	4	4	4	2
	Thermal release It (thermal release is higher at 25°C)	16 A	16 A	16 A	32 A
	Magnetic release Im	C curve	C curve	C curve	C curve
	Fault current protection				
	Residual current release IDn	0.030-30 A	0.030-30 A	0.030-30 A	0.030-30 A
	Insulation resistance	1-200 kOhm	1-200 kOhm	1-200 kOhm	1-200 kOhm

Notes

1)	Reference conditions for engine performance to ISO 3046-1.
2)	See derating diagram or consult the factory for other conditions.
3)	At reference conditions unless otherwise stated.
4)	Rating definition (ISO 8528-1): LTP: Limited Time Power is the maximum electrical power which a generating set is capable of delivering (at variable load), in the event of a utility power failure (for up to 500 hours per year of which a maximum of 300 hours is continuous running). No overload is permitted on these ratings. The alternator is peak continuous rated (as defined in ISO 8528-3) at 25°C. PRP: Prime Power is the maximum power available during a variable power sequence, which may be run for an unlimited number of hours per year, between stated maintenance intervals and under the stated ambient conditions. A 10% overload is permitted for 1 hour in 12 hours. The permissible average power output during a 24h period shall not exceed the stated load factor as indicated in the Technical Specifications above.
5)	Specific mass fuel used: 0.86 kg/l.
6)	Thermal release is higher at 25°C.
7)	Optional equipment.

Derating

Height (m)	Temperature (°C)										
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**
0	100	100	100	100	100	100	100	95	95	90	90
500	100	100	95	95	95	90	90	90	85	85	85
1000	95	90	90	90	85	85	85	80	80	80	75
1500	85	85	85	80	80	80	80	75	75	75	70
2000	80	80	80	75	75	75	70	70	70	65	65
2500	75	75	70	70	70	70	65	65	65	NA	NA
3000	70	70	65	65	65	65	60	60	60	NA	NA
3500	65	65	60	60	60	60	55	NA	NA	NA	NA
4000	60	60	60	55	55	55	55	NA	NA	NA	NA

For use of generator set outside these conditions, please contact Atlas Copco.

10.2 Technical specifications for QES 14 units

10.2.1 Readings on gauges

Gauge	*Reading*	*Unit*
Ammeter L3 (PA1)	Below max. rating	A
Voltmeter (PV1)	Below max. rating	V

10.2.2 Settings of switches

Switch	*Function*	*Activates at*
Engine oil pressure	Shut down	0.5 bar
Engine coolant temperature	Shut down	103°C

10.2.3 Specifications of the engine/alternator/unit

		QES 14 400/230V - 3ph	***QES 14 380/220V - 3ph***	***QES 14 415/240V - 3ph***	***QES 14 230V - 1ph***
Reference conditions 1)	Rated frequency	50 Hz	50 Hz	50 Hz	50 Hz
	Rated speed	1500 rpm	1500 rpm	1500 rpm	1500 rpm
	Generator service duty	PRP	PRP	PRP	PRP
	Absolute air inlet pressure	1 bar(a)	1 bar(a)	1 bar(a)	1 bar(a)
	Relative air humidity	30%	30%	30%	30%
	Air inlet temperature	25°C	25°C	25°C	25°C
Limitations 2)	Maximum ambient temperature	40°C	40°C	40°C	40°C
	Altitude capability	3000 m	3000 m	3000 m	3000 m
	Maximum relative air humidity	85%	85%	85%	85%
	Minimum starting temperature unaided	-10°C	-10°C	-10°C	-10°C
	Minimum starting temperature with cold start equipment (optional)	-25°C	-25°C	-25°C	-25°C
Performance data 2) 3) 4) 5)	Rated active power (PRP)	11.4 kW	11.4 kW	11.4 kW	10.7 kW
	Rated active power (ESP)	12.4 kW	12.4 kW	12.4 kW	11.7 kW
	Rated power factor 3phase	0.8	0.8	0.8	-
	Rated power factoer 1phase	-	-	-	1
	Rated apparent power (PRP)	14.2 kVA	14.2 kVA	14.2 kVA	10.7kVA
	Rated apparent power (ESP)	15.6 kVA	15.6 kVA	15.6 kVA	11.7 kVA
	Rated voltage line to line	400 V	380 V	415 V	230 V
	Rated current 3ph	20.6 A	21.6 A	19.8 A	46.5 A
	Performance class (acc.ISO 8528-5:1993)	G2	G2	G2	G2

	Single step load acceptance	11.4 kW 100%	11.4 kW 100%	11.4 kW 100%	10.7 kW 100%
	Frequency droop	N/A	N/A	N/A	N/A
	Fuel consumption at no load (0%)	1.17 kg/h	1.17 kg/h	1.17 kg/h	N/A
	Fuel consumption at 50% load	1.77 kg/h	1.77 kg/h	1.77 kg/h	N/A
	Fuel consumption at 75% load	2.39 kg/h	2.39 kg/h	2.39 kg/h	N/A
	Fuel consumption at full load (100%)	2.98 kg/h	2.98 kg/h	2.98 kg/h	N/A
	Specific fuel consumption (at full load, 100%)	0.270 kg/kWh	0.270 kg/kWh	0.270 kg/kWh	N/A
	Fuel autonomy at full load with standard tank	15.9 h	15.9 h	15.9 h	N/A
	Fuel autonomy at full load with 48h tank	72.1 h	72.1 h	72.1 h	N/A
	Max. oil consumption at full load	0.02 l/h	0.02 l/h	0.02 l/h	0.02 l/h
	Maximum sound power level (Lw) complies with 2000/14 EC	87 dB(A)	87 dB(A)	87 dB(A)	87 dB(A)
	Capacity of fuel tank	55 l	55 l	55 l	55 l
	Capacity of 48h fuel tank	250 l	250 l	250 l	250 l
	Single step load capability	11.4 kW 100%	11.4 kW 100%	11.4 kW 100%	10.7 kW 100%
	Multiple step load ISO8528-5	100%	100%	100%	100%
Application data	Mode of operation	PRP	PRP	PRP	PRP
	Site	land use	land use	land use	land use
	Operation	single	single	single	single
	Start-up and control mode	manual/automatic	manual/automatic	manual/automatic	manual/automatic
	Start-up time	unspecified	unspecified	unspecified	unspecified
	Mobility/Config. acc. to ISO 8528-1:1993	transportable/D	transportable/D	transportable/D	transportable/D
	(optional)	mobile/E	mobile/E	mobile/E	mobile/E
	Mounting	fully resilient	fully resilient	fully resilient	fully resilient
	Climatic exposure	open air	open air	open air	open air
Alternator 4)	Standard	IEC34-1 ISO 8528-3	IEC34-1 ISO 8528-3	IEC34-1 ISO 8528-3	IEC34-1 ISO 8528-3
	Make	Mecc Alte	Mecc Alte	Mecc Alte	Mecc Alte
	Model	ECP3-3L/4	ECP3-3L/4	ECP3-3L/4	ECP28-S/4
	Rated output, class H temp. rise - 3ph	15 kVA	15 kVA	15 kVA	11.5 kVA
	rating type acc. ISO 8528-3	125/40°C	125/40°C	125/40°C	125/40°C
	Degree of protection (IP index acc. NF EN 60-529)	IP 23	IP 23	IP 23	IP 23
	Insulation stator class	H	H	H	H
	Insulation rotor class	H	H	H	H
	Number of wires	12	12	12	12

Engine 4)	Standard	ISO 3046 ISO 8528-2	ISO 3046 ISO 8528-2	ISO 3046 ISO 8528-2	ISO 3046 ISO 8528-2
	Type KUBOTA	D1703M-BG	D1703M-BG	D1703M-BG	D1703M-BG
	Rated net output (PRP)	13.2 kW	13.2 kW	13.2 kW	13.2 kW
	rating type acc. ISO 3046-7	ICXN	ICXN	ICXN	ICXN
	Coolant	coolant	coolant	coolant	coolant
	Combustion system	indirect injection	indirect injection	indirect injection	indirect injection
	Aspiration	natural aspirated	natural aspirated	natural aspirated	natural aspirated
	Number of cylinders	3	3	3	3
	Swept volume	1.7 l	1.7 l	1.7 l	1.7 l
	Speed governing	electronic	electronic	electronic	electronic
	Capacity of oil sump - initial fill	8 l	8 l	8 l	8 l
	Capacity of cooling system	9 l	9 l	9 l	9 l
	Electrical system	12 Vdc	12 Vdc	12 Vdc	12 Vdc
	Emission compliance	EU stage 5	EU stage 5	EU stage 5	EU stage 5
	Maximum permissible load factor of PRP during 24h period	100%	100%	100%	100%
Power circuit	**Circuit-breaker 3ph**				
	Number of poles	4	4	4	2
	Thermal release It (thermal release is higher at 25°C)	20 A	20 A	20 A	50A
	Magnetic release Im	C curve	C curve	C curve	C curve
	Fault current protection				
	Residual current release IDn	0.030-30 A	0.030-30 A	0.030-30 A	0.030-30 A
	Insulation resistance	1-200 kOhm	1-200 kOhm	1-200 kOhm	1-200 kOhm

Notes

1) Reference conditions for engine performance to ISO 3046-1.

2) See derating diagram or consult the factory for other conditions.

3) At reference conditions unless otherwise stated.

4) Rating definition (ISO 8528-1):

LTP: Limited Time Power is the maximum electrical power which a generating set is capable of delivering (at variable load), in the event of a utility power failure (for up to 500 hours per year of which a maximum of 300 hours is continuous running). No overload is permitted on these ratings. The alternator is peak continuous rated (as defined in ISO 8528-3) at 25°C.

PRP: Prime Power is the maximum power available during a variable power sequence, which may be run for an unlimited number of hours per year, between stated maintenance intervals and under the stated ambient conditions. A 10% overload is permitted for 1 hour in 12 hours. The permissible average power output during a 24h period shall not exceed the stated load factor as indicated in the Technical Specifications above.

5) Specific mass fuel used: 0.86 kg/l.

6) Thermal release is higher at 25°C.

7) Optional equipment.

Derating factor (%) (PRP at 50Hz, 400V)

Height (m)	Temperature (°C)										
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**
0	100	100	100	100	100	100	100	95	95	90	90
500	100	100	100	95	95	95	90	90	90	85	85
1000	95	90	90	90	90	85	85	85	80	80	75
1500	85	85	85	85	80	80	80	75	75	75	70
2000	80	80	80	75	75	75	75	70	70	70	65
2500	75	75	75	70	70	70	65	65	65	NA	NA
3000	70	70	65	65	65	65	60	60	60	NA	NA
3500	65	65	60	60	60	60	55	NA	NA	NA	NA
4000	60	60	60	55	55	55	55	NA	NA	NA	NA

For use of generator set outside these conditions, please contact Atlas Copco.

10.3 Technical specifications for QES 20 units

10.3.1 Readings on gauges

Gauge	*Reading*	*Unit*
Ammeter L3 (PA1)	Below max. rating	A
Voltmeter (PV1)	Below max. rating	V

10.3.2 Settings of switches

Switch	*Function*	*Activates at*
Engine oil pressure	Shut down	0.5 bar
Engine coolant temperature	Shut down	103°C

10.3.3 Specifications of the engine/alternator/unit

		QES 20 400/230V - 3ph	***QES 20 230V - 1ph***
Reference conditions 1)	Rated frequency	50 Hz	50 Hz
	Rated speed	1500 rpm	1500 rpm
	Generator service duty	PRP	PRP
	Absolute air inlet pressure	1 bar(a)	1 bar(a)
	Relative air humidity	30%	30%
	Air inlet temperature	25°C	25°C
Limitations 2)	Maximum ambient temperature	50°C	50°C
	Altitude capability	3000 m	3000 m
	Maximum relative air humidity	85%	85%
	Minimum starting temperature unaided	-10°C	-10°C
	Minimum starting temperature with cold start equipment (optional)	-25°C	-25°C
Performance data 2) 3) 4) 5)	Rated active power (PRP)	14.1 kW	13.2 kW
	Rated active power (ESP)	15.4 kW	14.5 kW
	Rated power factor 3phase	0.8	-
	Rated power factor 1phase	-	1
	Rated apparent power (PRP)	17.6 kVA	13.2 kVA
	Rated apparent power (ESP)	19.3 kVA	14.5 kVA
	Rated voltage line to line	400 V	230 V
	Rated current	25.4 A	57.4 A
	Performance class (acc.ISO 8528-5:1993)	G2	G2

	Single step load acceptance	100%	N/A
		14.1 kW	N/A
	Frequency droop	N/A	N/A
	Fuel consumption at no load (0%)	1.329 kg/h	N/A
	Fuel consumption at 50% load	2.731 kg/h	N/A
	Fuel consumption at 75% load	3.361 kg/h	N/A
	Fuel consumption at full load (100%)	4.327 kg/h	N/A
	Specific fuel consumption (at full load, 100%)	0.270 kg/kWh	N/A
	Fuel autonomy at full load with standard tank (PRP)	10.9 h	N/A
	Fuel autonomy at full load with 48h tank	49,7 h	N/A
	Max. oil consumption at full load	0.02 l/h	0.02 l/h
	Maximum sound power level (Lw) complies with 2000/14 EC	89 dB(A)	89 dB(A)
	Capacity of fuel tank	55 l	55 l
	Capacity of 48h fueltank	250 l	250 l
	Single step load capability	14.1 kW	N/A
		100%	100%
Application data	Mode of operation	PRP	PRP
	Site	land use	land use
	Operation	single	single
	Start-up and control mode	manual/automatic	manual/automatic
	Start-up time	unspecified	unspecified
	Mobility/Config. acc. to ISO 8528-1:1993	transportable/D	transportable/D
	(optional)	mobile/E	mobile/E
	Mounting	fully resilient	fully resilient
	Climatic exposure	open air	open air
Alternator 4)	Standard	IEC34-1	IEC34-1
		ISO 8528-3	ISO 8528-3
	Make	MeccAlte	MeccAlte
	Model	ECP28-M/4	ECP28-2L/4A
	Rated output, class H temp. rise - 3ph	20 kVA	16.5 kVA
	rating type acc. ISO 8528-3	125/40°C	125/40°C
	Degree of protection (IP index acc. NF EN 60-529)	IP 23	IP 23
	Insulation stator class	H	H
	Insulation rotor class	H	H
	Number of wires	12	12
Engine 4)	Standard	ISO 3046	ISO 3046
		ISO 8528-2	ISO 8528-2
	Type KUBOTA	V2203M-E4BG	V2203M-E4BG
	Rated net output (PRP)	16.1 kW	16.1 kW
	rating type acc. ISO 3046-7	ICXN	ICXN

	Coolant	coolant	coolant
	Combustion system	indirect injection	indirect injection
	Aspiration	natural aspirated	natural aspirated
	Number of cylinders	4	4
	Swept volume	2.4 l	2.4 l
	Speed governing	electronic	electronic
	Capacity of oil sump - initial fill	9 l	9 l
	Capacity of cooling system	9 l	9 l
	Electrical system	12 Vdc	12 Vdc
	Emission compliance	EU stage 5	EU stage 5
	Maximum permissible load factor of PRP during 24h period	100%	100%
Power circuit	**Circuit-breaker**		
	Number of poles	4	2
	Thermal release It (thermal release is higher at 25°C)	32 A	63 A
	Magnetic release Im	C curve	C curve
	Fault current protection		
	Residual current release Idn	0.030-30 A	0.030-30 A
	Insulation resistance	1-200 kOhm	1-200 kOhm

Notes

1)	Reference conditions for engine performance to ISO 3046-1.
2)	See derating diagram or consult the factory for other conditions.
3)	At reference conditions unless otherwise stated.
4)	Rating definition (ISO 8528-1): LTP: Limited Time Power is the maximum electrical power which a generating set is capable of delivering (at variable load), in the event of a utility power failure (for up to 500 hours per year of which a maximum of 300 hours is continuous running). No overload is permitted on these ratings. The alternator is peak continuous rated (as defined in ISO 8528-3) at 25°C. PRP: Prime Power is the maximum power available during a variable power sequence, which may be run for an unlimited number of hours per year, between stated maintenance intervals and under the stated ambient conditions. A 10% overload is permitted for 1 hour in 12 hours. The permissible average power output during a 24h period shall not exceed the stated load factor as indicated in the Technical Specifications above.
5)	Specific mass fuel used: 0.86 kg/l.
6)	Thermal release at 25°C.
7)	Optional equipment.

Derating factor (%)
(PRP at 50Hz, 400V)

Height (m)	**Temperature (°C)**										
	0	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**
0	100	100	100	100	100	100	100	100	95	90	90
500	100	100	100	100	95	95	95	90	90	85	85
1000	95	95	95	90	90	90	85	85	85	80	80
1500	90	90	85	85	85	80	80	80	75	75	75
2000	85	80	80	80	75	75	75	75	70	70	65
2500	75	75	75	75	70	70	70	65	65	NA	NA
3000	70	70	70	65	65	65	65	60	60	NA	NA
3500	65	65	65	60	60	60	60	NA	NA	NA	NA
4000	60	60	60	60	55	55	55	NA	NA	NA	NA

For use of generator set outside these conditions, please contact Atlas Copco.

10.4 Critical bolt connections - torque values

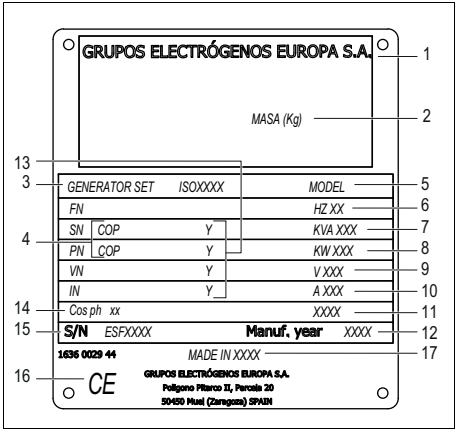
Applications	Screw/Bolt/Nut		
	Type	Class	Torque (Nm)
Lifting beam - frame	M10	8.8	85
Engine - engine feet	M10	8.8	50
Engine feet - vibration damper	M10	8.8	50
Engine vibration damper - frame	M10	8.8	50
Alternator - vibration damper	M10	8.8	50
Alternator vibration damper - beam	M10	8.8	50
Alternator beam - frame	M10	8.8	85
Engine-alternator coupling housing	3/8" UNC	8.8	35
Engine-alternator coupling rotor	5/16" UNC	8.8	21
Undercarriage wheel - axle	M12	8.8	120
Undercarriage axle - frame	M12	8.8	85
Undercarriage tow bar - frame	M12	8.8	85
Undercarriage towing eye - tow bar	M12	10.9	86
Lighting tower undercarriage - frame	M16	8.8	185

10.5 Conversion list of SI units into British units

1 bar	=	14.504 psi
1 g	=	0.035 oz
1 kg	=	2.205 lbs
1 km/h	=	0.621 mile/h
1 kW	=	1.341 hp (UK and US)
1 l	=	0.264 US gal
1 l	=	0.220 lmp gal (UK)
1 l	=	0.035 cu.ft
1 m	=	3.281 ft
1 mm	=	0.039 in
1 m^3/min	=	35.315 cfm
1 mbar	=	0.401 in wc
1 N	=	0.225 lbf
1 Nm	=	0.738 lbf.ft
$t_{°F}$	=	32 + (1.8 x $t_{°C}$)
$t_{°C}$	=	($t_{°F}$ - 32)/1.8

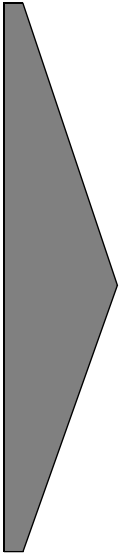
A temperature difference of 1°C = a temperature difference of 1.8°F.

10.6 Data plate

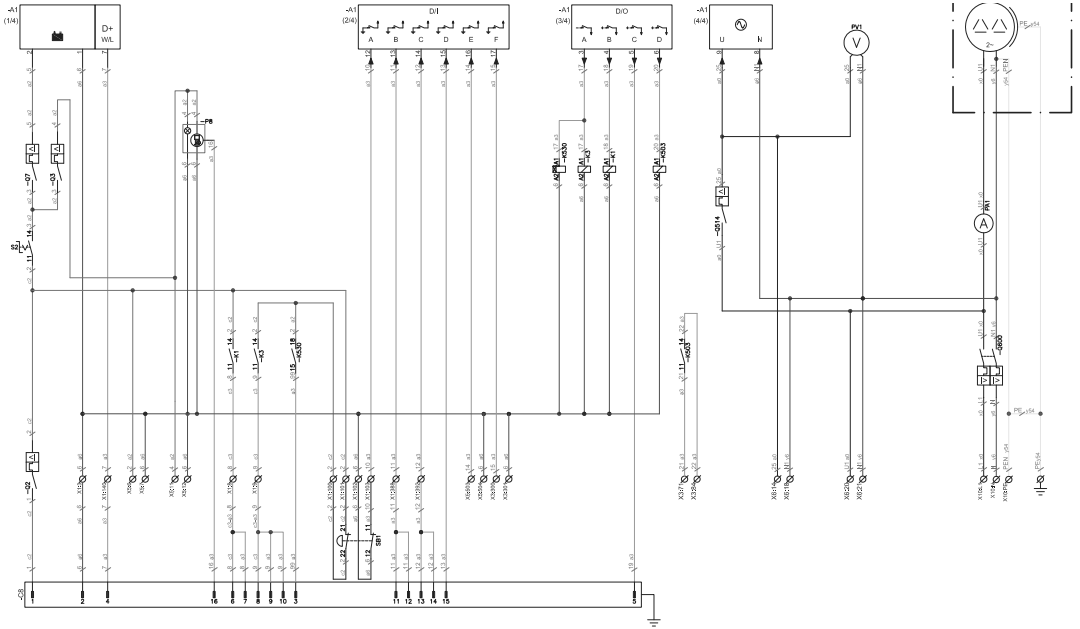


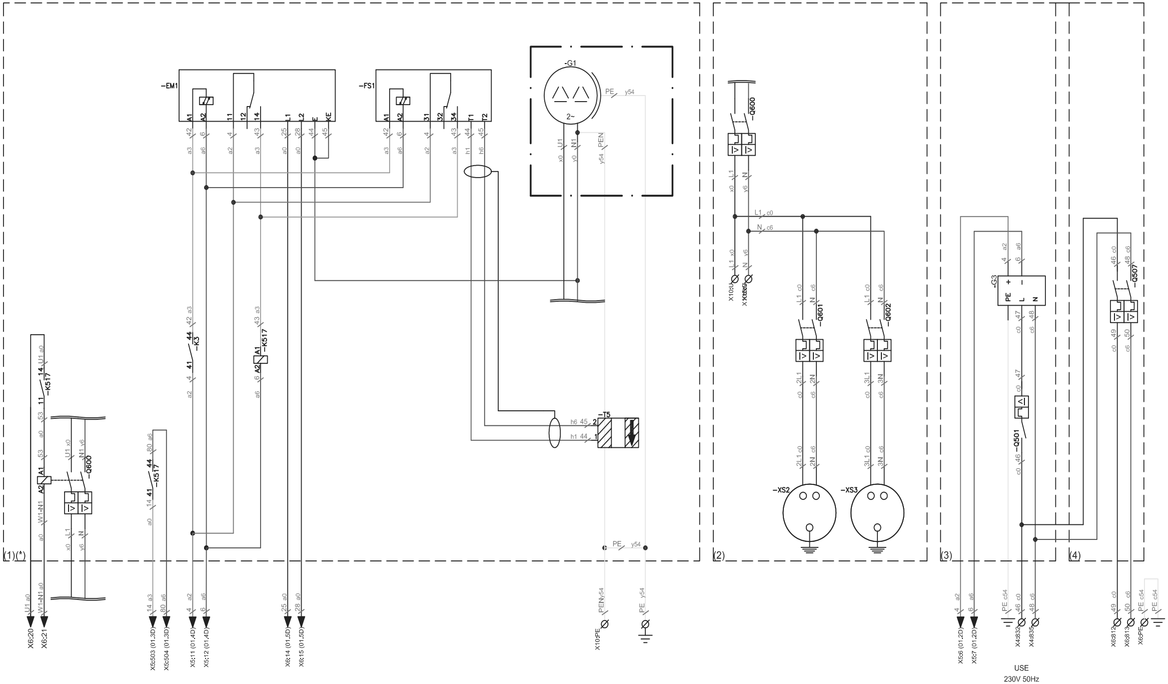
1	Name of manufacturer
2	Maximum permitted total weight of the vehicle
3	Machine type
4	Mode of operation
5	Model number
6	Frequency
7	Apparent power - PRP
8	Active power - PRP
9	Nominal rated voltage
10	Nominal rated current
11	Generator class
12	Manufacturing year and month
13	Winding connections
14	Power factor
15	Serial number
16	EEC mark in accordance with Machine Directive 89/392E
17	Address of manufacturer

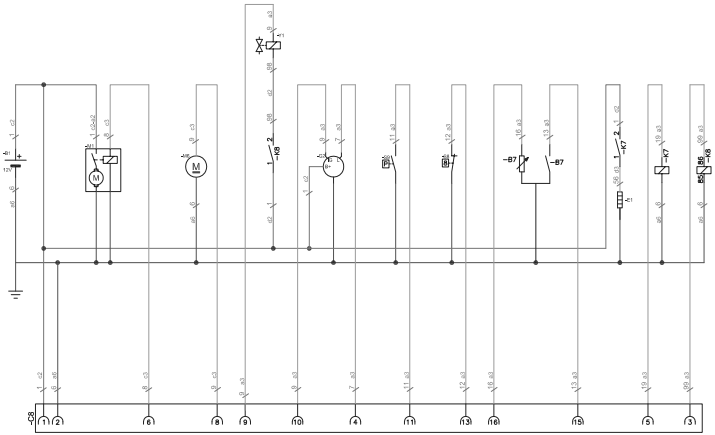
Circuit diagrams

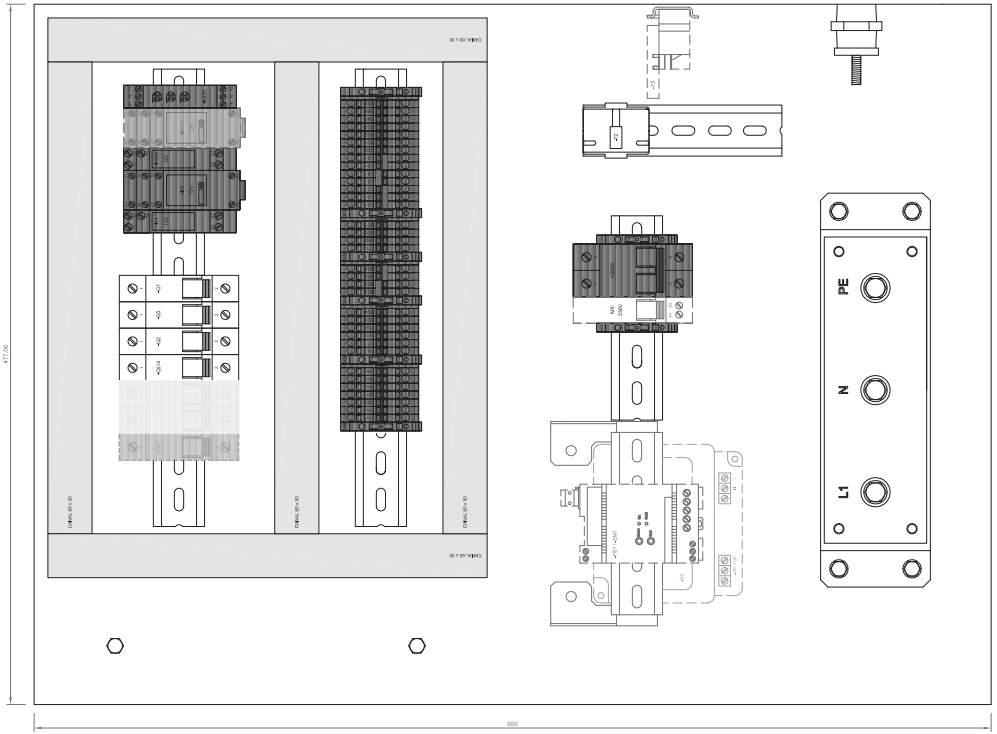


Qc1011 - 1636 0050 77
Applicable for QES 9- 1-phase




-EM1
-FS1
-G1
2~
-T5
-Q600
-Q601
-Q602
-Q501
-Q507
-K517
-K3
-XS2
-XS3
-G3
(1)(*)
(2)
(3)
(4)
X6:20
X6:21
X5:503 (01.3D)
X5:504 (01.3D)
X5:11 (01.4D)
X5:12 (01.4D)
X6:14 (01.5D)
X6:15 (01.5D)
X5:6 (01.2D)
X5:7 (01.2D)
USE
230V 50Hz




PE
N
L1
650

COD.SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-PA1	WIRE SIZE x	WIRE SIZE y
9	230V 50Hz	32A	40A	4mm²	4mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - Qc1011
	-PV1	VOLTMETER
	-PA1	AMMETER
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K8	PULL RELAY SOLENOID
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-K530	TIMMER 12V 1C - PULL
	-S1	EMERGENCY STOP
	-S2	OFF / ON
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-FS1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 2P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 2P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS2	SOCKET CEE 16A 2P+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-B11	SPEED SENSOR
	-M1	STARTER
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER

TERMINALS LIST

ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	71	CLOSE GENERATOR OUTPUT
	DC	84	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	AC	832	AUX. INPUT AC SUPPLY
	AC	835	AUX. INPUT AC SUPPLY
-X5	DC	6	BATTERY CHARGUER +
	DC	7	BATTERY CHARGUER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	503	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - U
	AC	18	VOLTAGE REFERENCE - NG
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X10	AC	L1	GENSET - L1
	AC	N	GENSET - N
	AC	PE	GENSET - PE

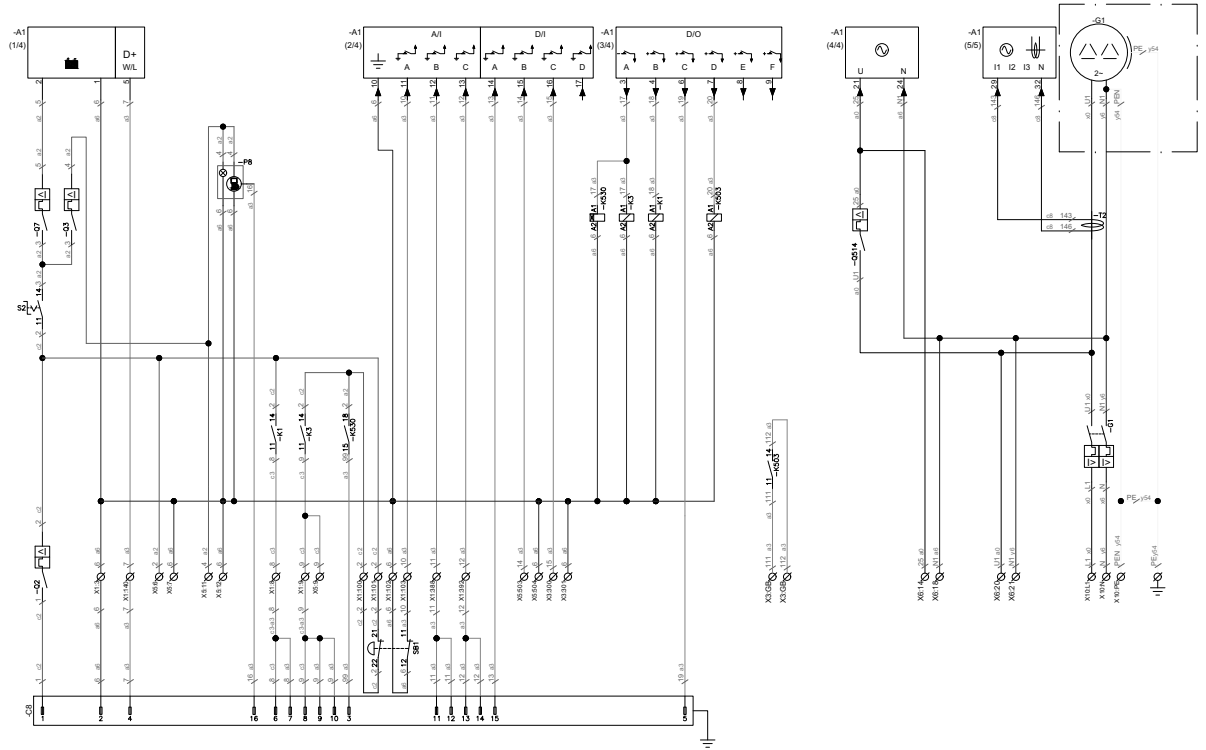
PROGRAMMING DSE

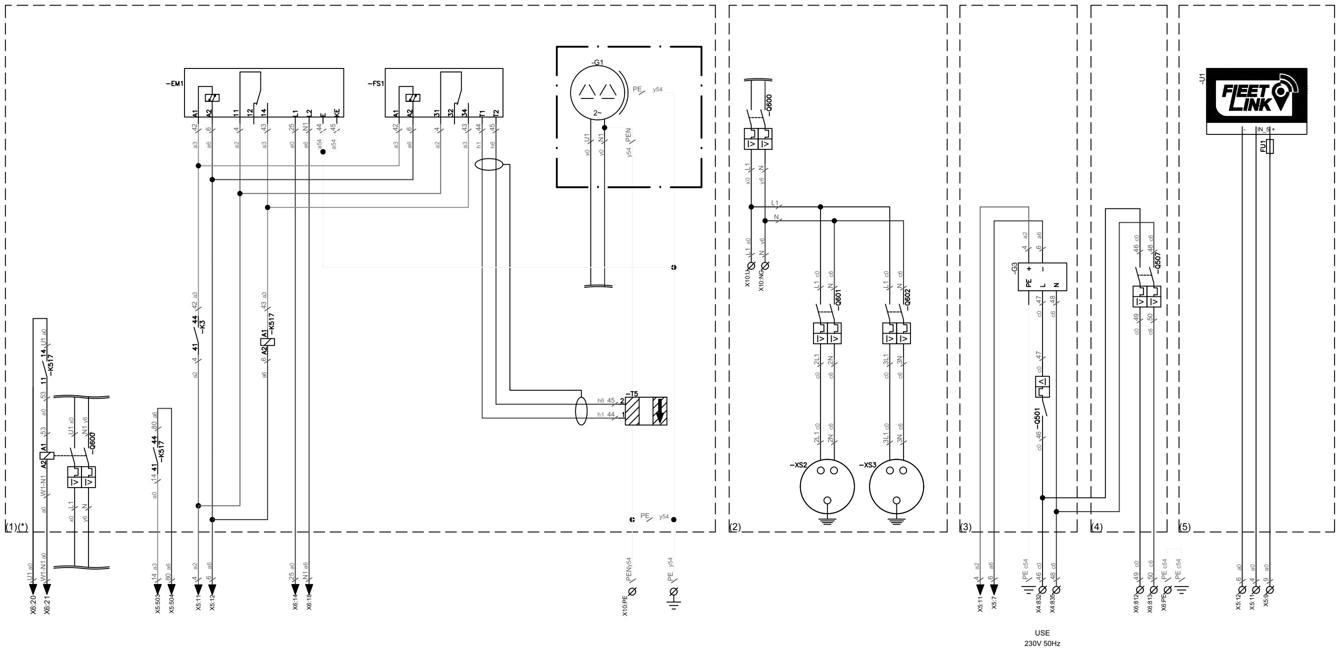
Nº	OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT

Nº	DIGITAL INPUTS
A	EMERGENCY STOP
B	OIL PRESSURE SWITCH
C	COOLANT TEMPERATURE SWITCH
D	LOW FUEL LEVEL SWITCH
E	DIFFERENTIAL TRIP
F	REMOTE START SIGNAL

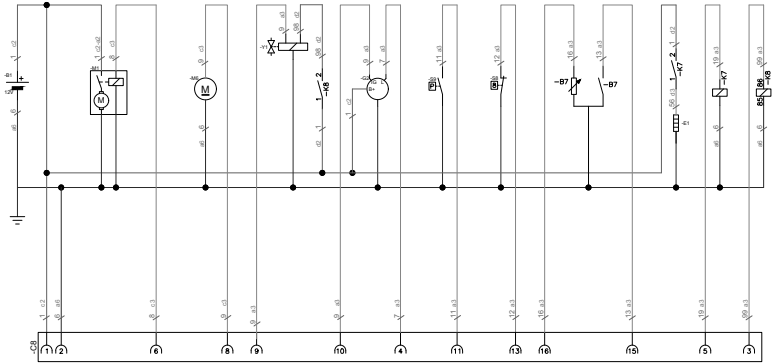
CONFIGURATION -K530		
1-10s	2	H

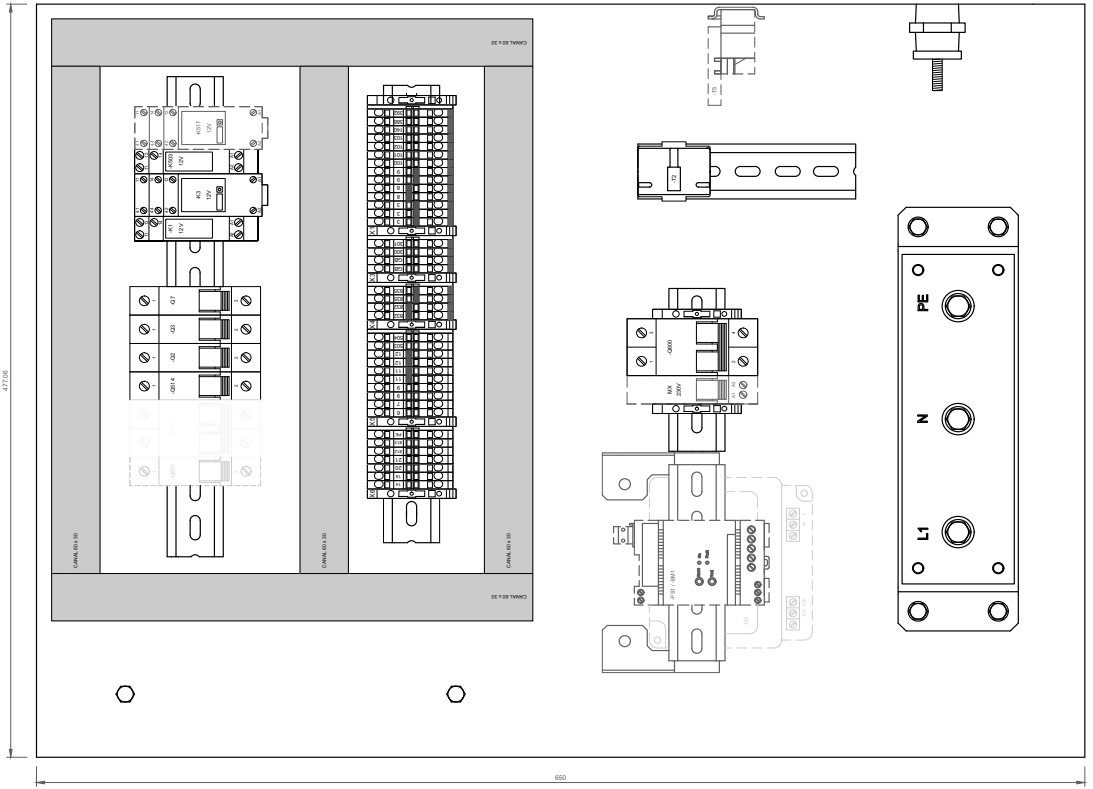
Qc1112 - 1640 0031 30
Applicable for QES 9- 1-phase

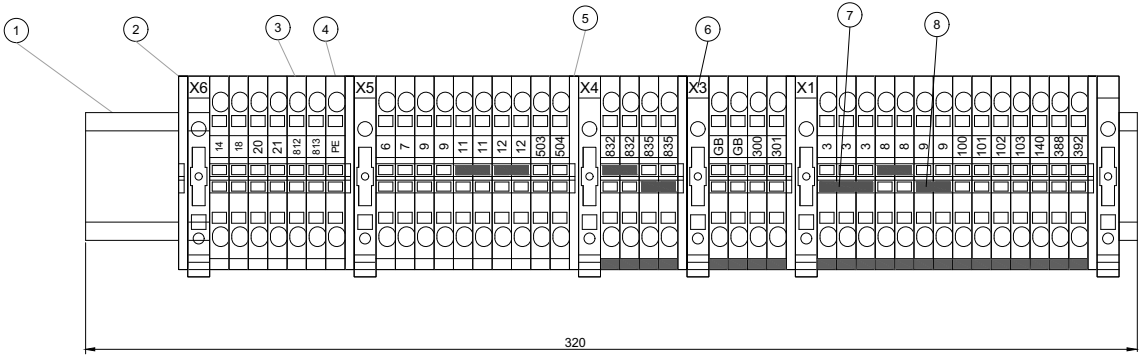




-EM1
-FS1
-G1
-Q600
-Q601
-Q602
-XS2
-XS3
-G3
-Q501
-Q507
-U1
FLEET LINK
FU1
-K517
-K3
-T5
(1)(*)
(2)
(3)
(4)
(5)
USE
230V 50Hz




477,05
650
PE
N
L1



ITEM	DESCRIPCION COMPONENTE	CANTIDAD
1	CARRIL DIN TS 35X7.5 PERFORADO	320mm
2	TOPE FIJACION BORNAS	6
3	BORNA PUSH-IN 2,5-4 mm²	37
4	BORNA PUSH-IN 2,5-4 mm² PE	1
5	TAPA BORNA PUSH-IN 2,5-4 mm²	5
6	SEÑALIZACION BORNAS SERIE W Y P	43
7	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 3 POLOS	1
8	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 2 POLOS	6

COD.SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2	WIRE SIZE x	WIRE SIZE y
9	230V 50Hz	50A	200/5A	6mm²	6mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4510MKII
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K8	PULL RELAY SOLENOID
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-K530	TIMER 12V 1C - PULL
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 2P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 2P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS2	SOCKET CEE 16A 2P+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx5mm
(5)	-U1	FLEETLINK MODULE
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER
(5) FLEETLINK MODULE

TERMINALS LIST

ID..	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	GB	CLOSE GENERATOR OUTPUT
	DC	GB	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	AC	832	AUX. INPUT AC SUPPLY
	AC	835	AUX. INPUT AC SUPPLY
-X5	DC	6	BATTERY CHARGER +
	DC	7	BATTERY CHARGER -
	DC	9	FLEETLINK IN5
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - U (IT RELAY)
	AC	18	VOLTAGE REFERENCE - NG (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X10	AC	L1	GENSET - L1
	AC	N	GENSET - N
	AC	PE	GENSET - PE

PROGRAMMING DSE

Nº	DIGITAL OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT
E	NOT USED
F	NOT USED

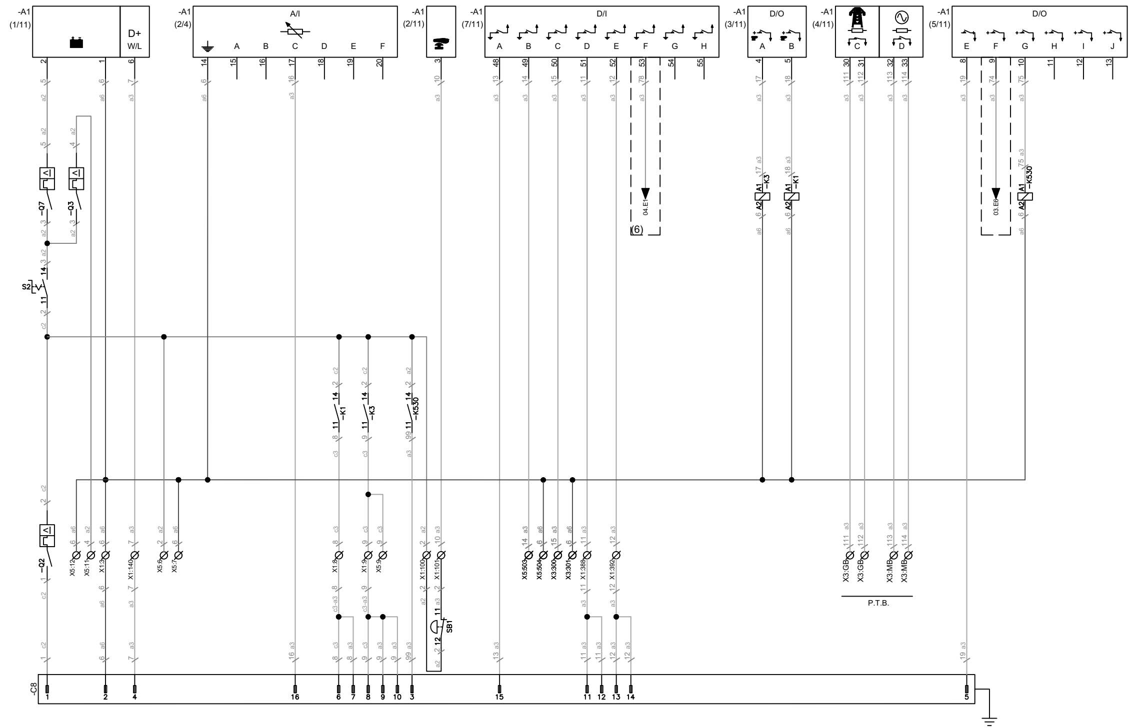
Nº	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	NOT USED

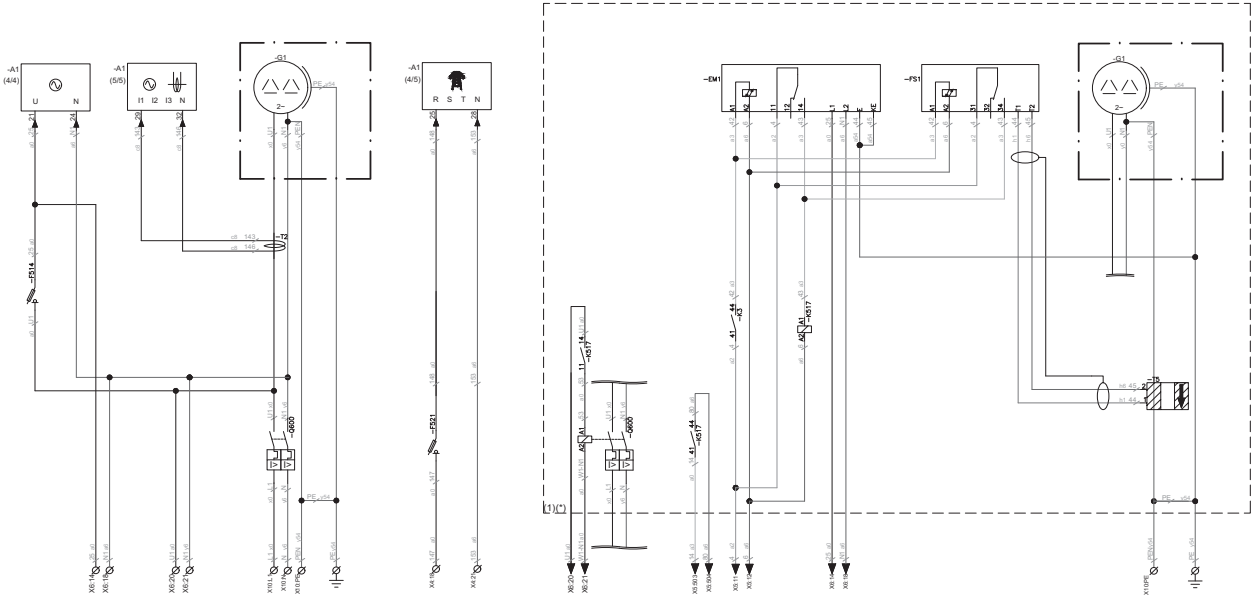
Nº	ANALOGUE INPUTS
A	EMERGENCY STOP (AS A DIGITAL INPUT)
B	OIL PRESSURE SWITCH (AS A DIGITAL INPUT)
C	COOLANT TEMP. SWITCH (AS DIGITAL INPUT)

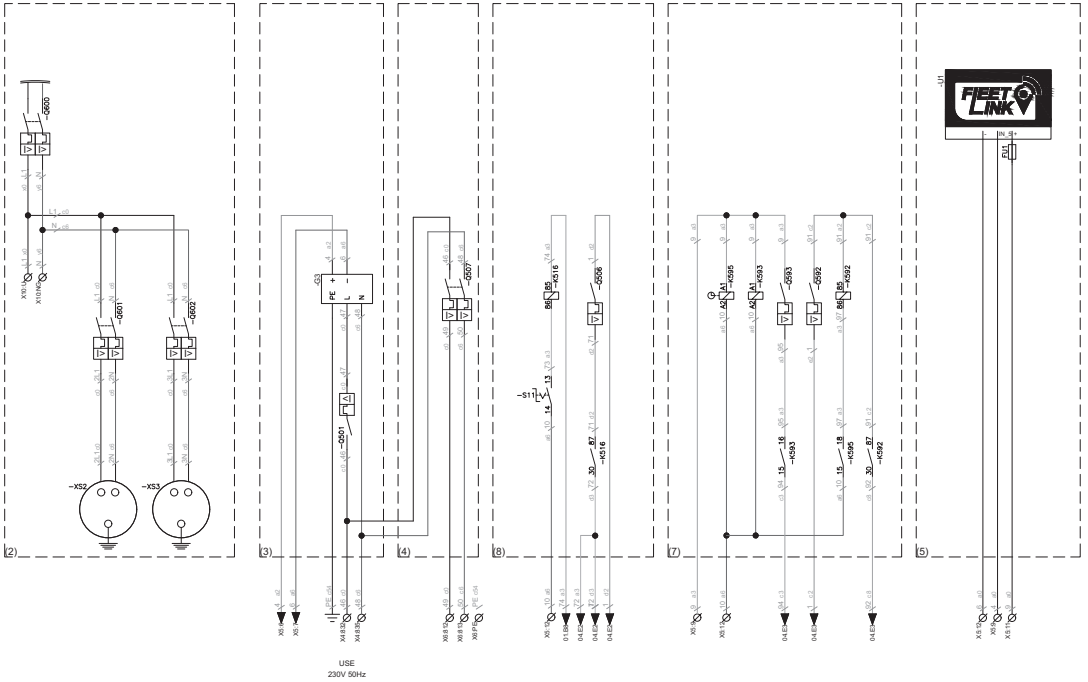
CONFIGURATION -K530

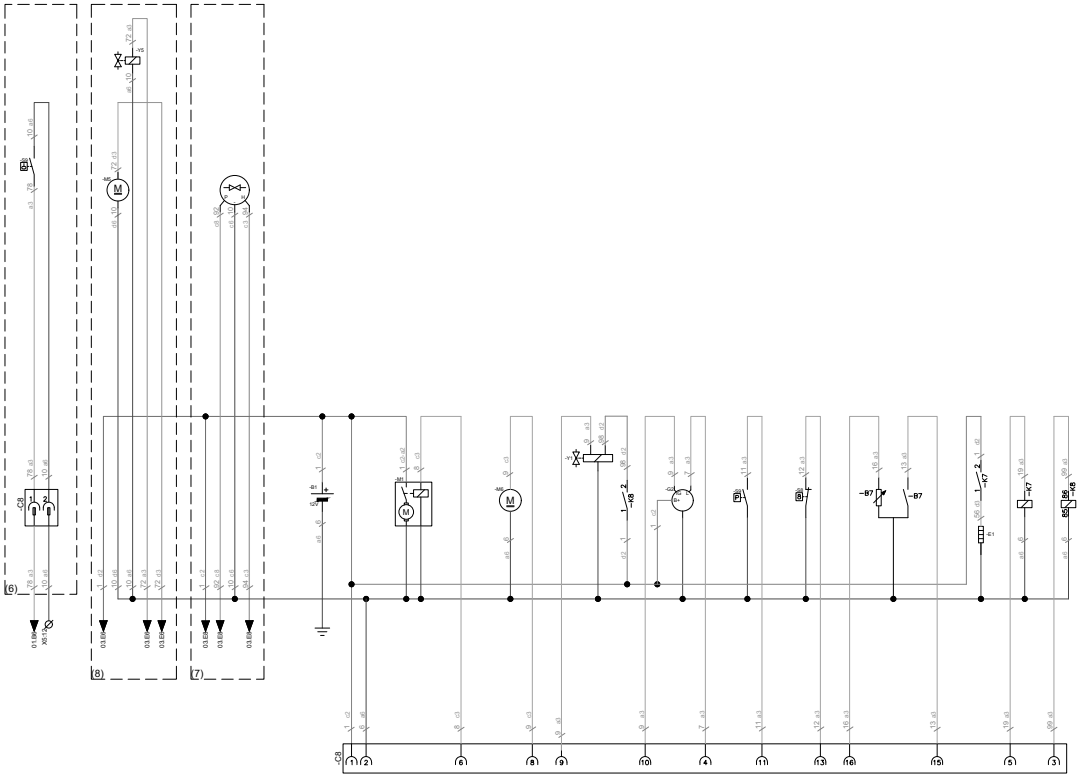
Atlas Copco

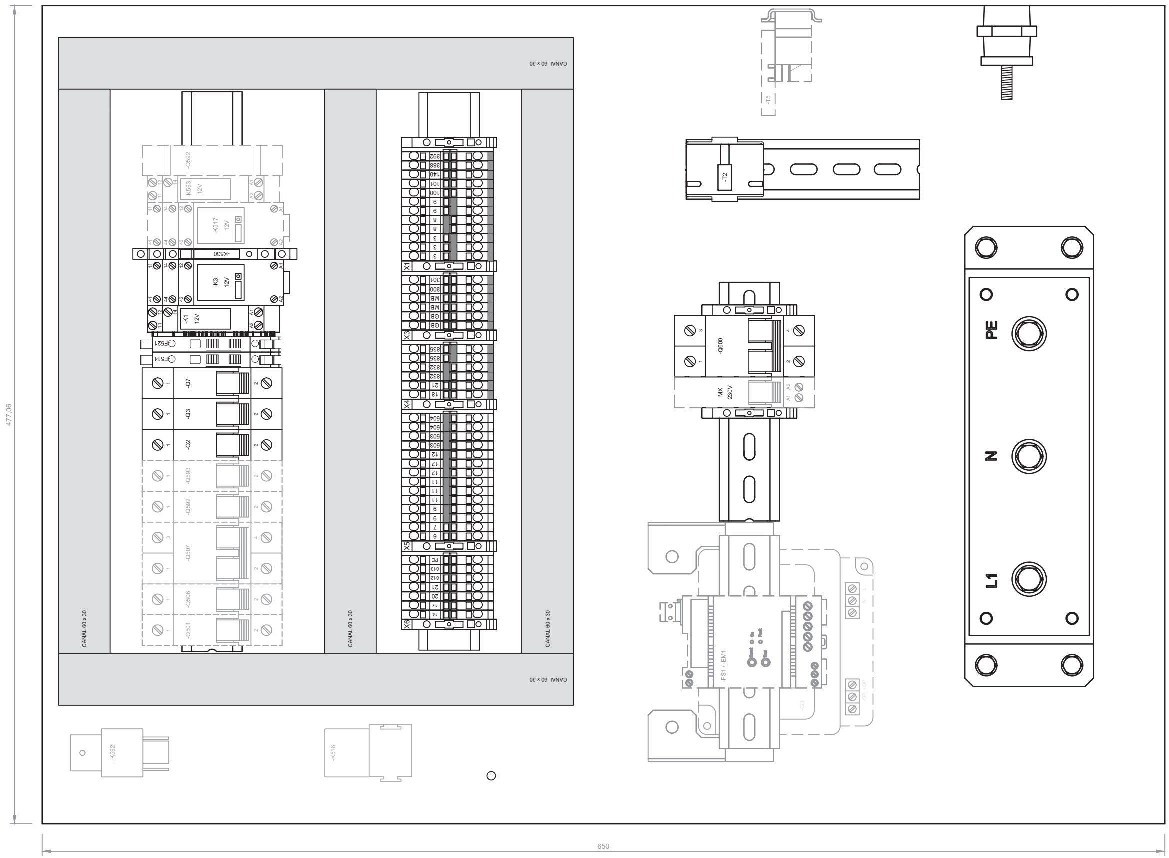
Qc2212 - 1640 0106 60
Applicable for QES 9- 1-phase






-S603
-S601
-S602
-XS2
-XS3
-G3
-S501
-S507
-S11
-K516
-K595
-K593
-K592
-U1
FLEET LINK
(2)
(3)
(4)
(8)
(7)
(5)
USE
230V 50Hz




CANAL 60 x 30
-Q592
-K593
12V
-K517
12V
-K530
-K3
12V
-K1
12V
F521
F514
-Q7
-Q3
-Q2
-Q593
-Q592
-Q507
-Q506
-Q501
X1
X3
X4
X5
X6
-T5
-T2
-Q600
MX
230V
-FS1 / -EM1
-G3
PE
N
L1
-K592
-K516
477,06
650

COD.SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	3x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2	WIRE SIZE x	WIRE SIZE y
9	230V 50Hz	50A	200/5A	6mm²	6mm²

COMPONENT LIST

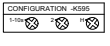
	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4520MKII
	-N11	ECU
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K8	PULL RELAY SOLENOID
(8)	-K516	RELAY 12V 1C - AUTO. FUEL TRANSFER
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-K530	RELAY 12V 1C - PULL
(7)	-K592	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K593	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K595	RELAY 12V 1C - INLET SHUTDOWN VALVE
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-FS14	FUSE 2A
	-FS21	FUSE 2A
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(8)	-Q506	CIRCUIT BREAKER - 1P 32A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
(7)	-Q592	CIRCUIT BREAKER - 2P 6A
(7)	-Q593	CIRCUIT BREAKER - 2P 6A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx5mm
(5)	-U1	FLEETLINK MODULE
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
(8)	-M5	TRANSFER FUEL PUMP
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
(8)	-Y5	ELECTROVALVE
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPTIONAL EQUIPMENT
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER
(5) FLEETLINK MODULE
(6) FLUID LEAKAGE SENSOR
(7) INLET SHUTDOWN VALVE
(8) AUTOMATIC FUEL TRANSFER

TERMINALS LIST

ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	GB	CLOSE GENERATOR OUTPUT
	DC	GB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	DC	18	MAIN REF. L1
	DC	21	MAIN REF. N
	AC	**832**	**AUX. INPUT AC SUPPLY**
	AC	**835**	**AUX. INPUT AC SUPPLY**
-X5	**DC**	**6**	BATTERY CHARGER +
	DC	**7**	BATTERY CHARGER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	9	FUEL RELAY
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - N (IT RELAY)
	AC	17	VOLTAGE REFERENCE - N (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X8	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	721	SELECTION CONFIGURARTION SUPPLY
	AC	722	SELECTION CONFIGURARTION SUPPLY
-X10	AC	L1	GENSET - L1
	AC	N	GENSET - N
	AC	PE	GENSET - PE

CONFIGURATION -K595



PROGRAMMING DSE

Nº	DIGITAL OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT
E	CLOSE MAIN OUTPUT
F	FUEL PUMP
G	PULL

Nº	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	OIL PRESSURE SWITCH
E	COOLANT TEMP. SWITCH
F	FLUID LEAKAGE SENSOR

Nº	ANALOG INPUTS
C	FUEL LEVEL

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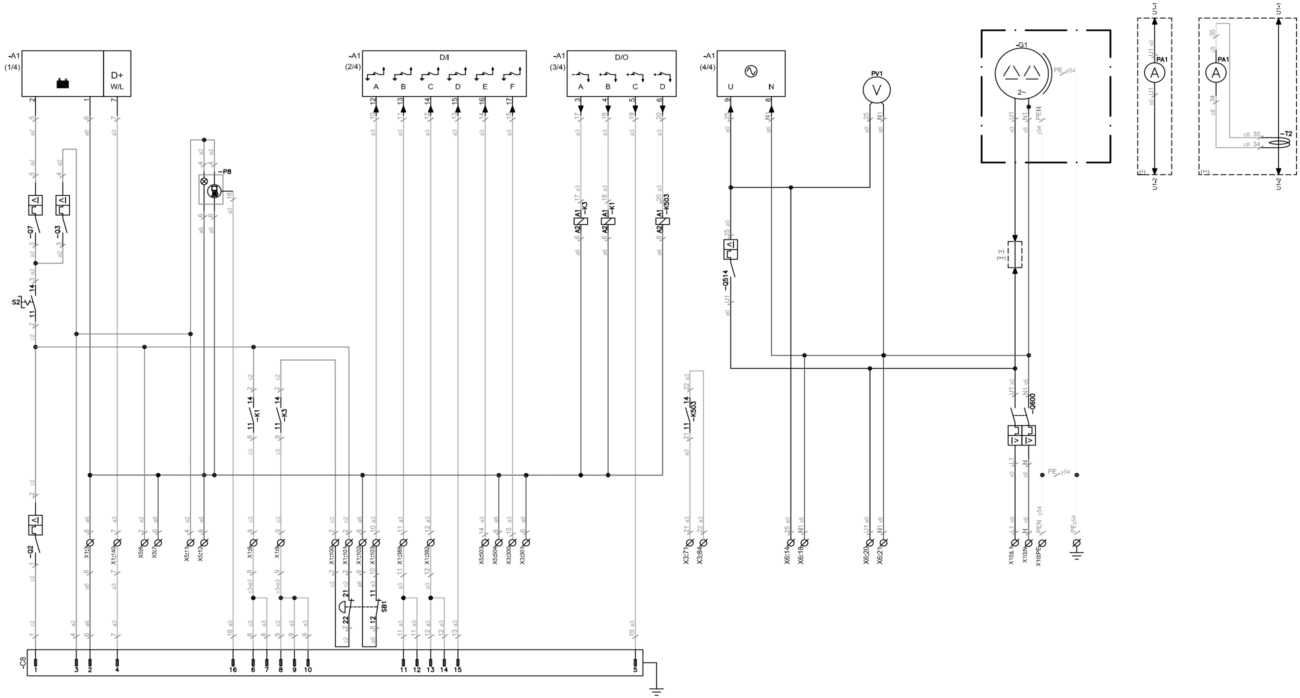
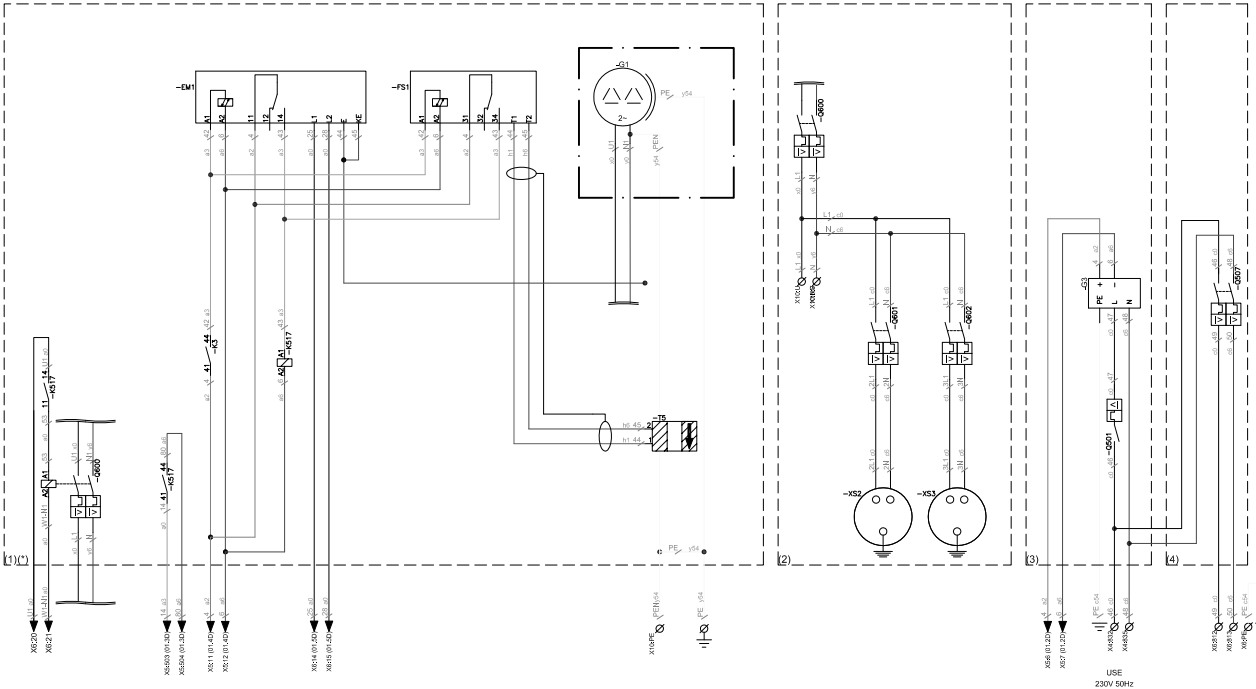
Qc1011 - 1636 0050 25
Applicable for QES 14-20 - 1-phase

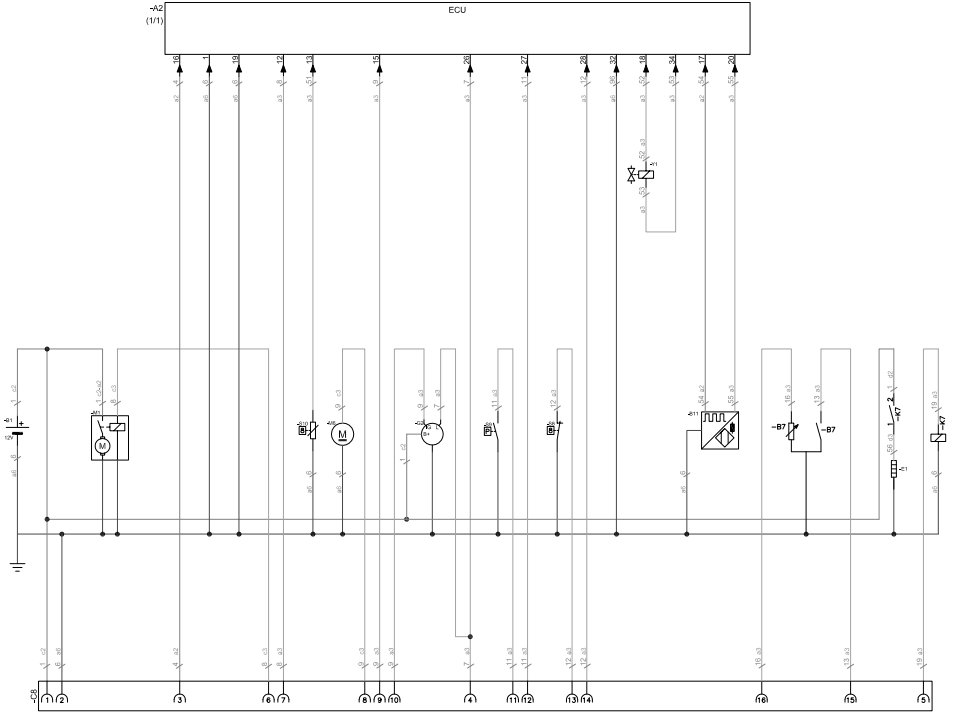


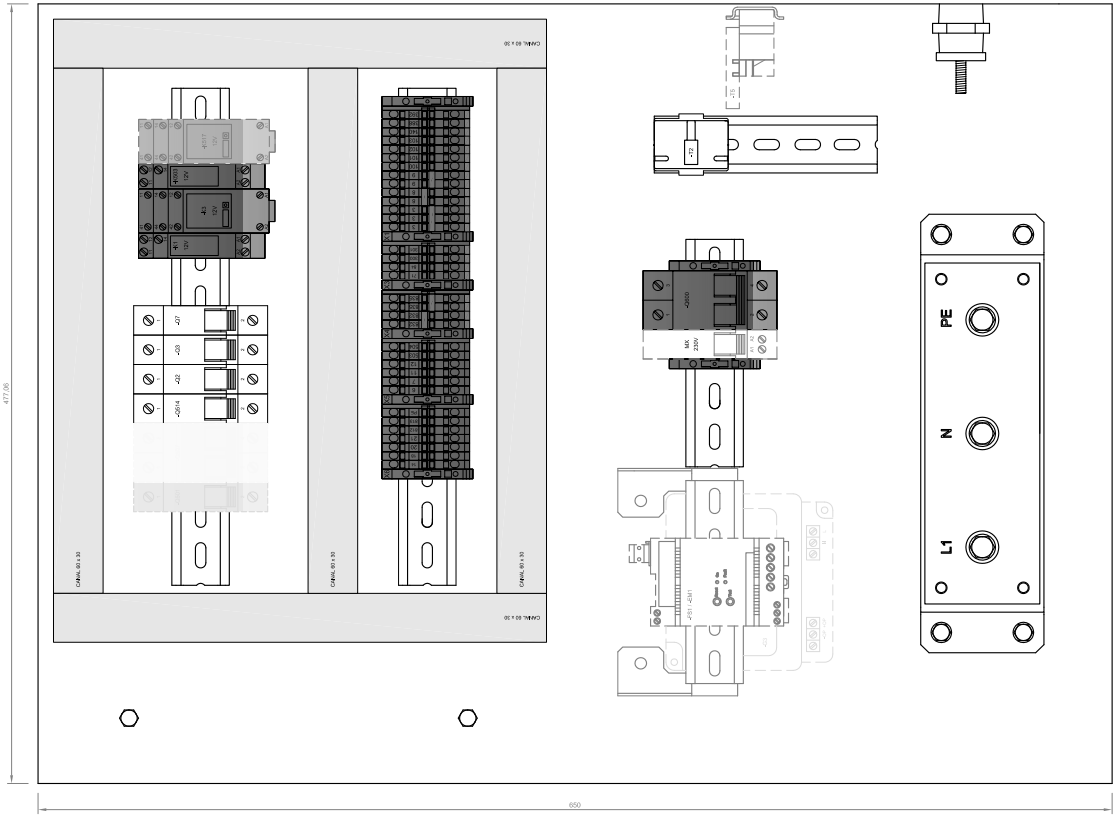
(+) DIRECT CURRENT METER TO CIRCUIT BREAKER UNTIL 50A

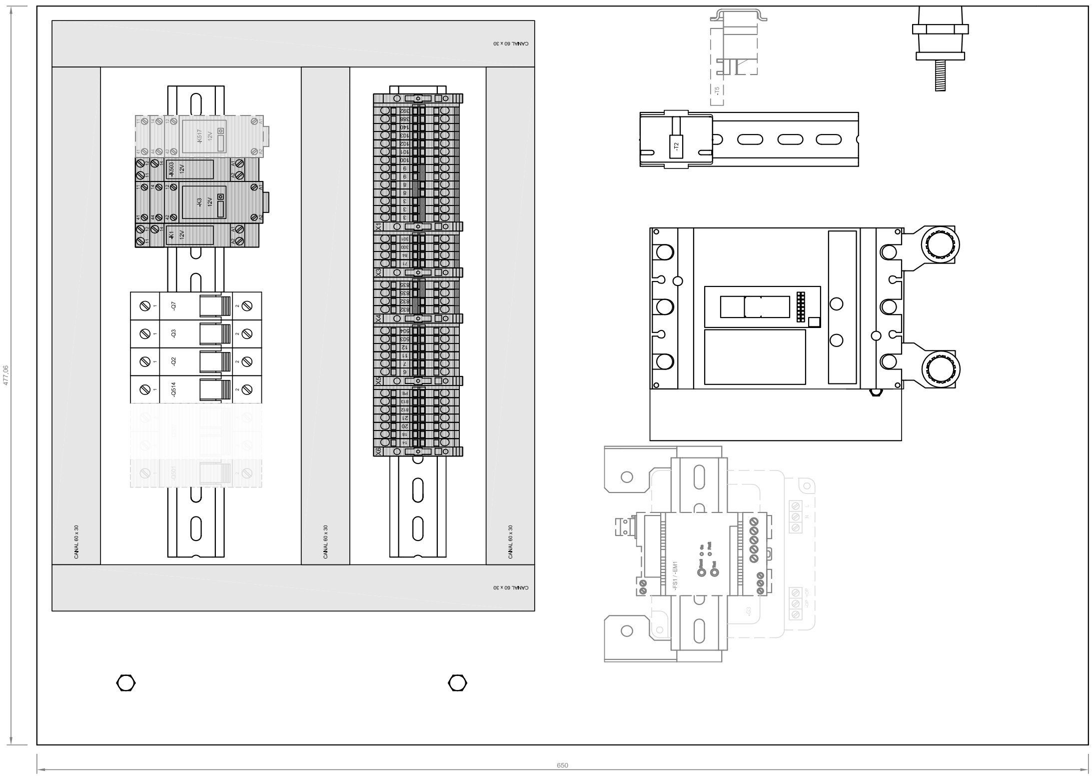
(++) CURRENT METER AND CURRENT TRANSFORMER CIRCUIT BREAKER FROM 63A

Atlas Copco


-EM1
-FS1
-G1
-Q600
-Q601
-Q602
-Q607
-Q651
-XS2
-XS3
-T5
-K3
-K517
(1)(*)
(2)
(3)
(4)
USE
230V 50Hz


-A2
(1/1)
ECU
-CB


477.06
650
PE
N
L1



477,06
650
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
-K517 12V
-K503 12V
-K3 12V
-K1 12V
-Q7
-Q3
-Q2
-Q514
-Q501
X1
X3
X4
X5
X6
392
388
140
103
102
101
100
9
9
8
8
3
3
3
301
300
84
71
835
835
832
832
504
503
12
11
7
6
PE
813
812
21
20
18
14
-T5
-T2
-FS1 / -EM1
-G3
L
N
-OP
+OP

COD.SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-PA1	WIRE SIZE x	WIRE SIZE y
14	230V 50Hz	50A	60A	6mm²	6mm²
20	230V 50Hz	63A	75A	10mm²	10mm²
30	230V 50Hz	100A	150A	16mm²	16mm²
40	230V 50Hz	160A	200A	25mm²	25mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - Qc1011
	-A2	ECU
	-PV1	VOLITMETER
	-PA1	AMMETER
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-S1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-FS1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 2P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 2P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS2	SOCKET CEE 16A 2P+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-B11	SPEED SENSOR
	-M1	STARTER
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER

TERMINALS LIST

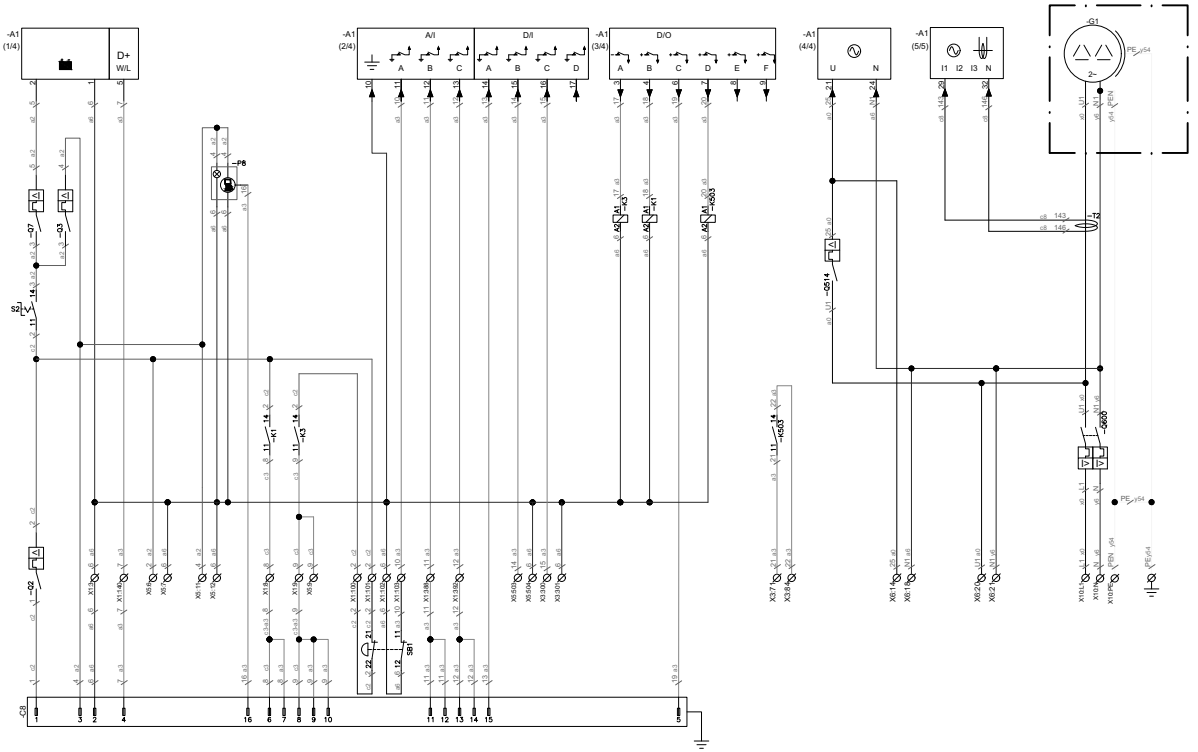
ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	71	CLOSE GENERATOR OUTPUT
	DC	84	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	AC	832	AUX. INPUT AC SUPPLY
	AC	835	AUX. INPUT AC SUPPLY
-X5	DC	6	BATTERY CHARGUER +
	DC	7	BATTERY CHARGUER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	503	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - U
	AC	18	VOLTAGE REFERENCE - NG
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X10	AC	L1	GENSET - L1
	AC	N	GENSET - N
	AC	PE	GENSET - PE

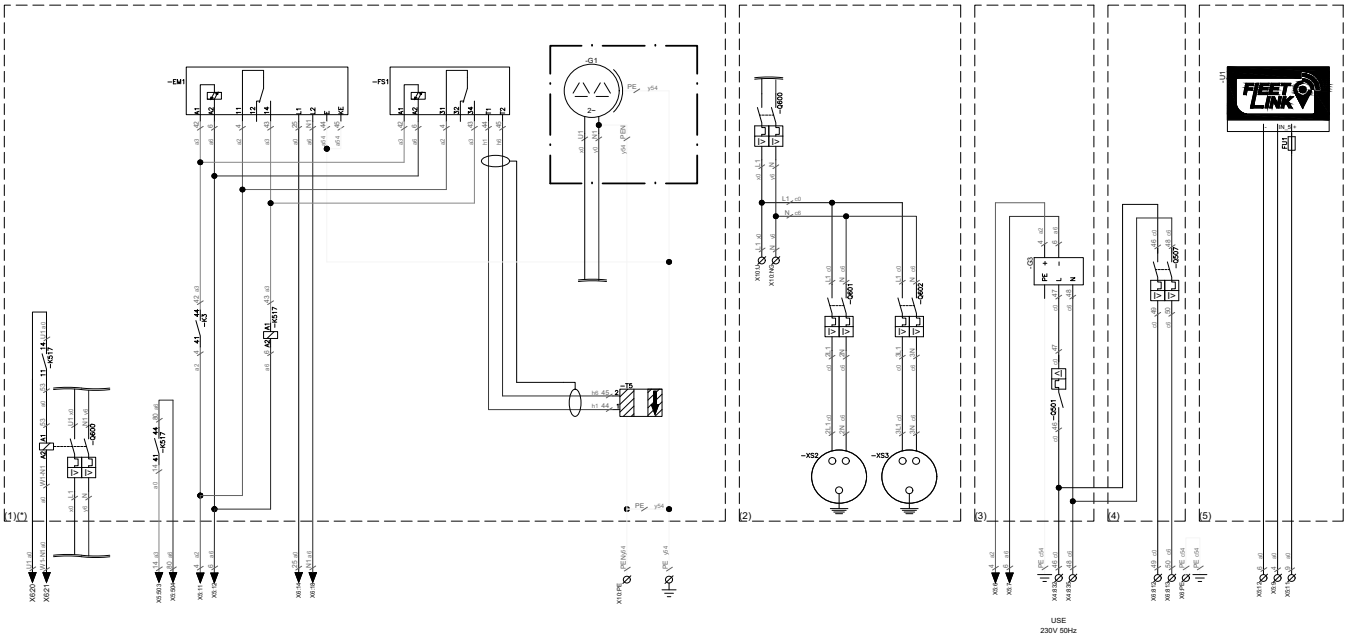
PROGRAMMING DSE

Nº	OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT

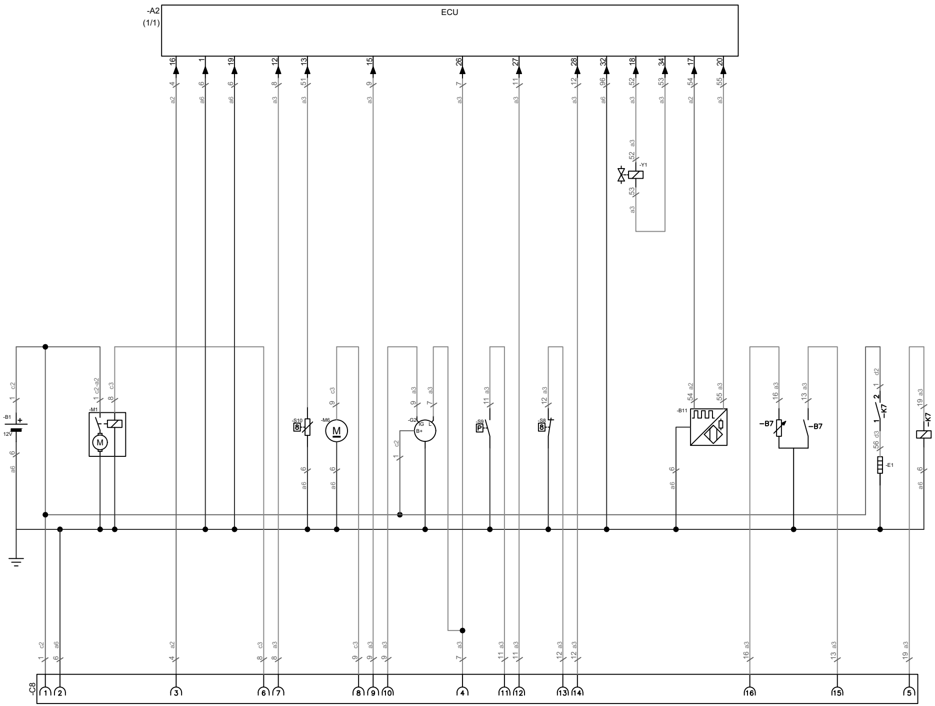
Nº	DIGITAL INPUTS
A	EMERGENCY STOP
B	OIL PRESSURE SWITCH
C	COOLANT TEMPERATURE SWITCH
D	LOW FUEL LEVEL SWITCH
E	DIFFERENTIAL TRIP
F	REMOTE START SIGNAL

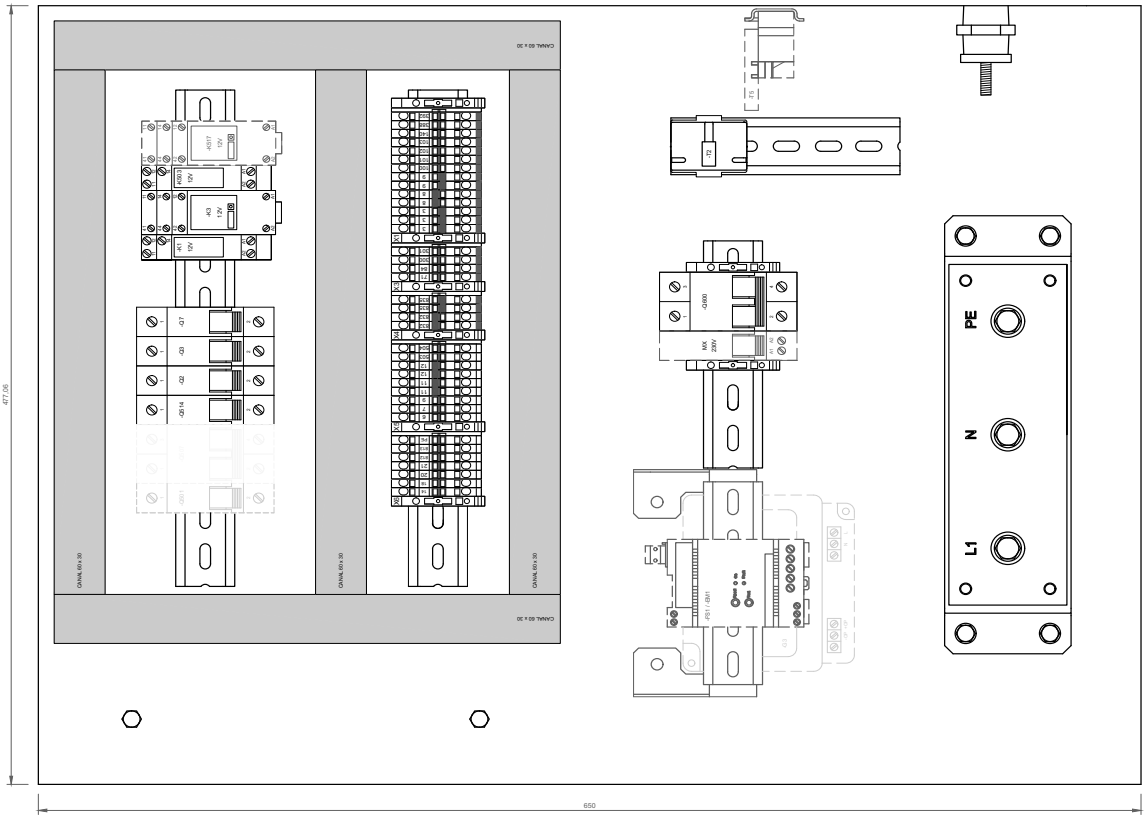
Qc1112 - 1636 0214 21
Applicable for QES 14-20- 1-phase

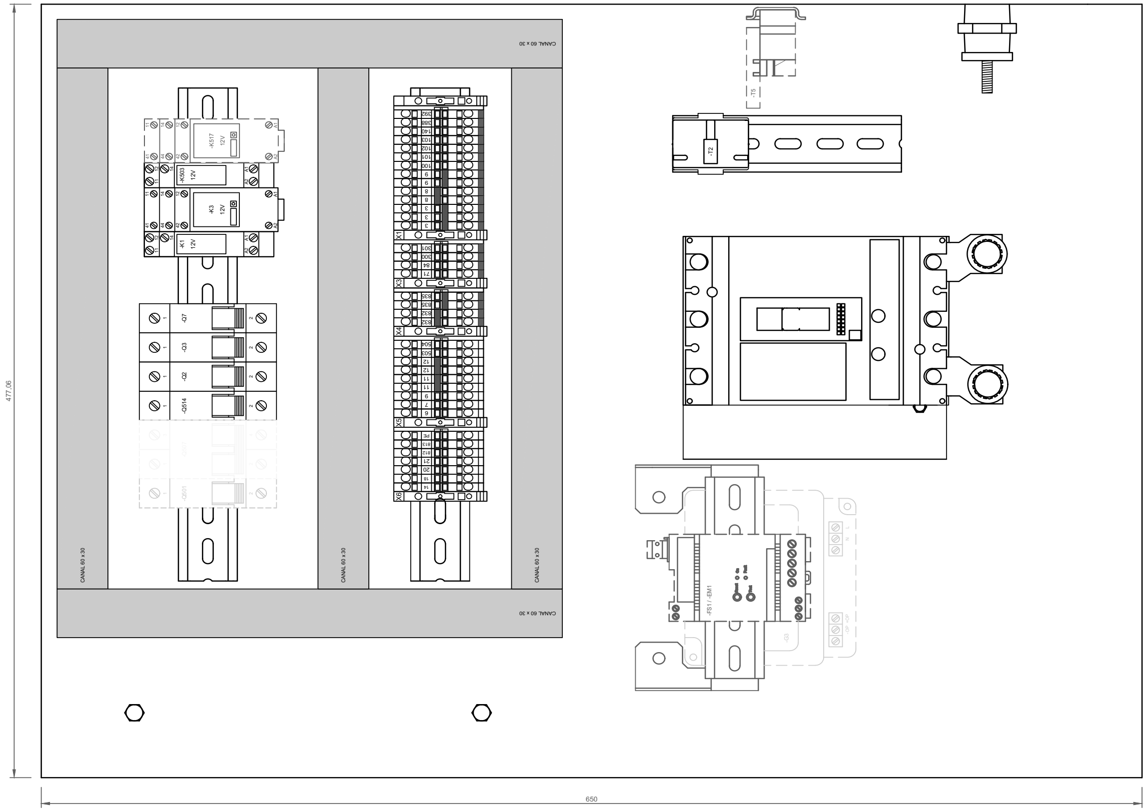



(1)(*)
(2)
(3)
(4)
(5)
-EM1
-FS1
-G1
-T1
-Q600
-Q601
-Q602
-Q607
-XS1
-XS2
-XS3
-U1
FLEET LINK
USE
230V 50Hz

Atlas Copco


-A2
(1/1)
ECU
-Y1
-B1
12V
-M1
-S10
-M6
-G2
-B11
-B7
-K7
-E1
-C8


477,06
650
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
PE
N
L1


477,06
650
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
-K517 12V
-K503 12V
-K3 12V
-K1 12V
-Q7
-Q3
-Q2
-Q514
X1
X3
X4
X5
X6
392 388 140 103 102 101 100 9 9 8 8 3 3 3
301 300 84 71
835 835 832 832
504 503 12 12 11 11 9 7 6
PE 813 812 21 20 18 14
-T5
-T2
-FS1 / -EM1
-G3
L N
-OP +OP

COD SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2	WIRE SIZE x	WIRE SIZE y
14	230V 50Hz	50A	200/5A	6mm²	6mm²
20	230V 50Hz	63A	200/5A	10mm²	10mm²
30	230V 50Hz	100A	200/5A	16mm²	16mm²
40	230V 50Hz	160A	200/5A	25mm²	25mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4510MKII
	-A2	ECU
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 2P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 2P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS2	SOCKET CEE 16A 2P+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx6mm
(5)	-U1	FLEETLINK MODULE
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-B11	SPEED SENSOR
	-M1	STARTER
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER
(5) FLEETLINK MODULE

TERMINALS LIST

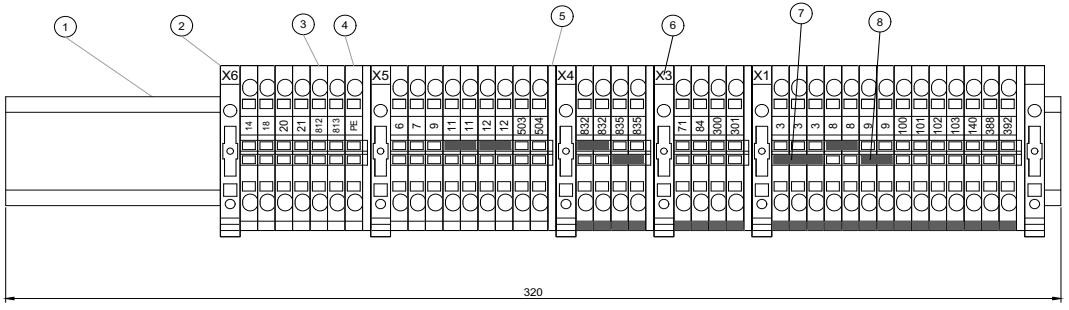
ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	71	CLOSE GENERATOR OUTPUT
	DC	84	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	AC	832	AUX. INPUT AC SUPPLY
	AC	835	AUX. INPUT AC SUPPLY
-X5	DC	6	BATTERY CHARGER +
	DC	7	BATTERY CHARGER -
	DC	9	FLEETLINK INS
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - U (IT RELAY)
	AC	18	VOLTAGE REFERENCE - NG (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X10	AC	L1	GENSET - L1
	AC	N	GENSET - N
	AC	PE	GENSET - PE

PROGRAMMING DSE

Nº	DIGITAL OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHAET
D	CLOSE GENERATOR OUTPUT
E	NOT USED
F	NOT USED

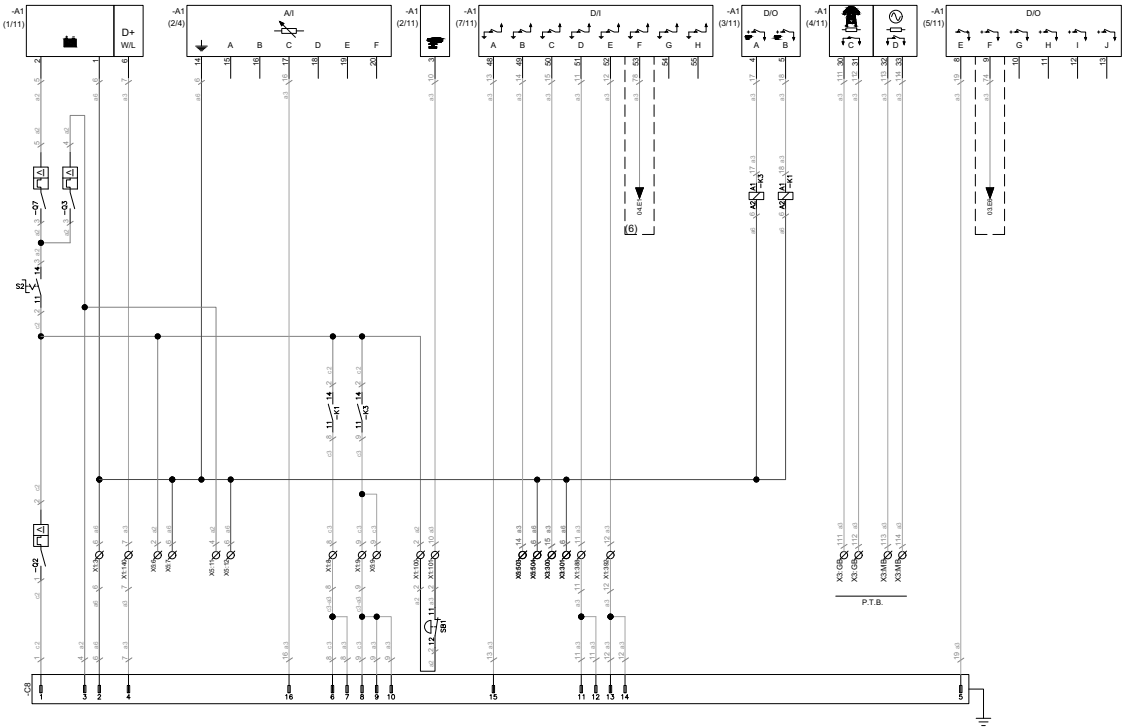
Nº	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	NOT USED

Nº	ANALOGUE INPUTS
A	EMERGENCY STOP (AS A DIGITAL INPUT)
B	OIL PRESSURE SWITCH (AS A DIGITAL INPUT)
C	COOLANT TEMP. SWITCH (AS DIGITAL INPUT)

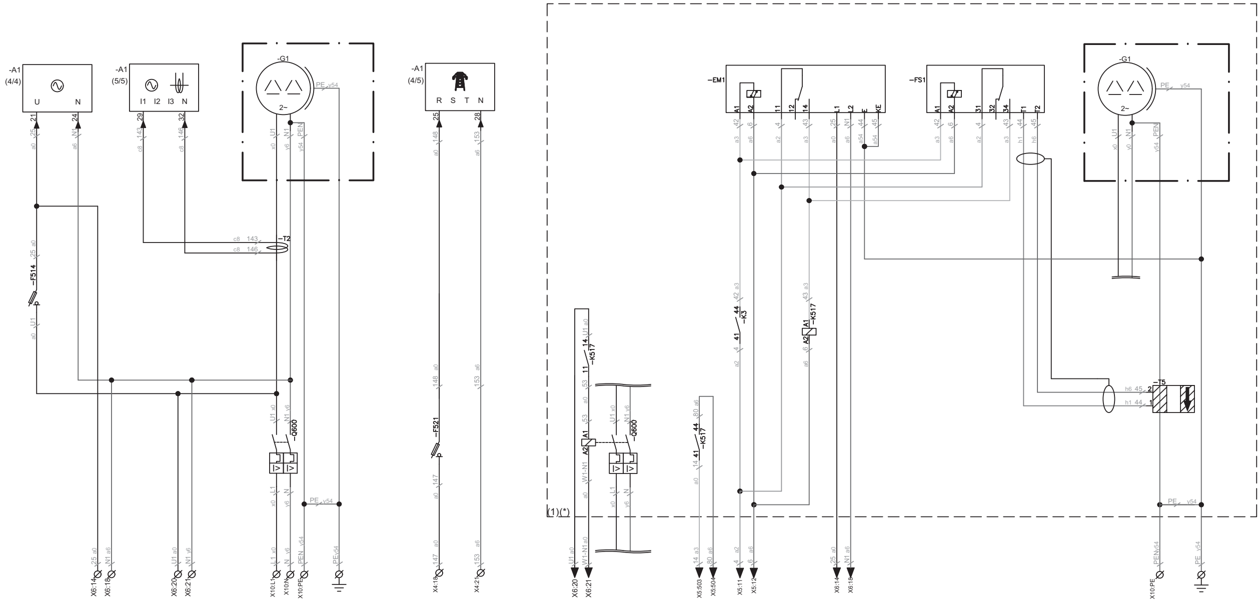


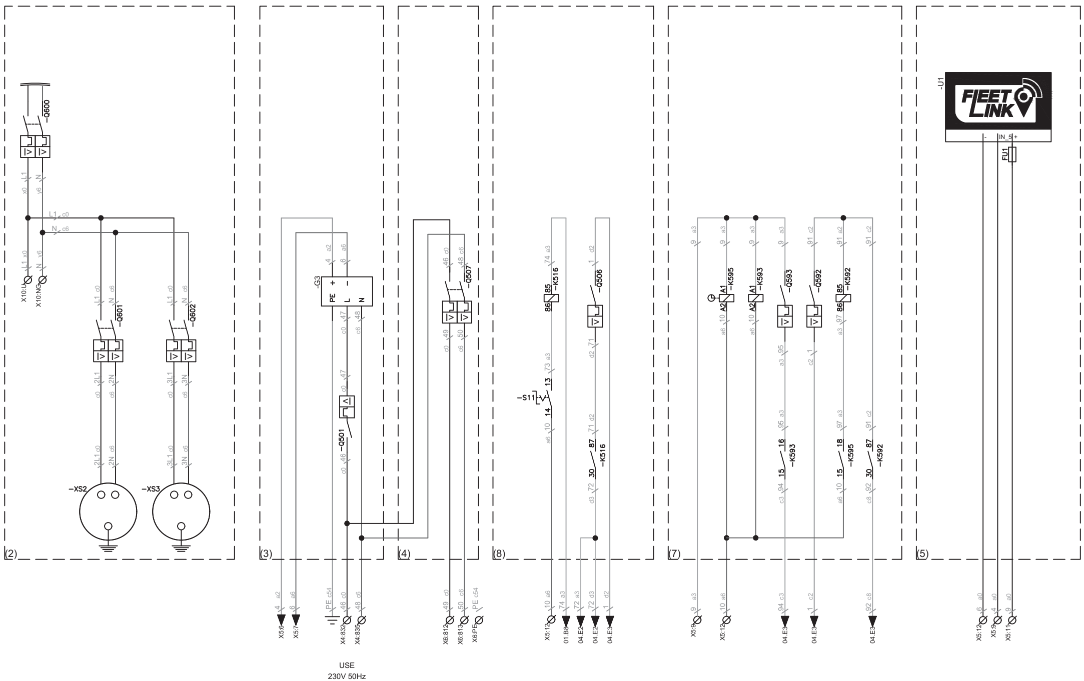
ITEM	DESCRIPCION COMPONENTE	CANTIDAD
1	CARRIL DIN TS 35X7.5 PERFORADO	320mm
2	TOPE FIJACION BORNAS	6
3	BORNA PUSH-IN 2,5-4 mm²	37
4	BORNA PUSH-IN 2,5-4 mm² PE	1
5	TAPA BORNA PUSH-IN 2,5-4 mm²	5
6	SEÑALIZACION BORNAS SERIE W Y P	43
7	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 3 POLOS	1
8	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 2 POLOS	6

Qc2212 - 1640 0106 40
Applicable for QES 14-20- 1-phase

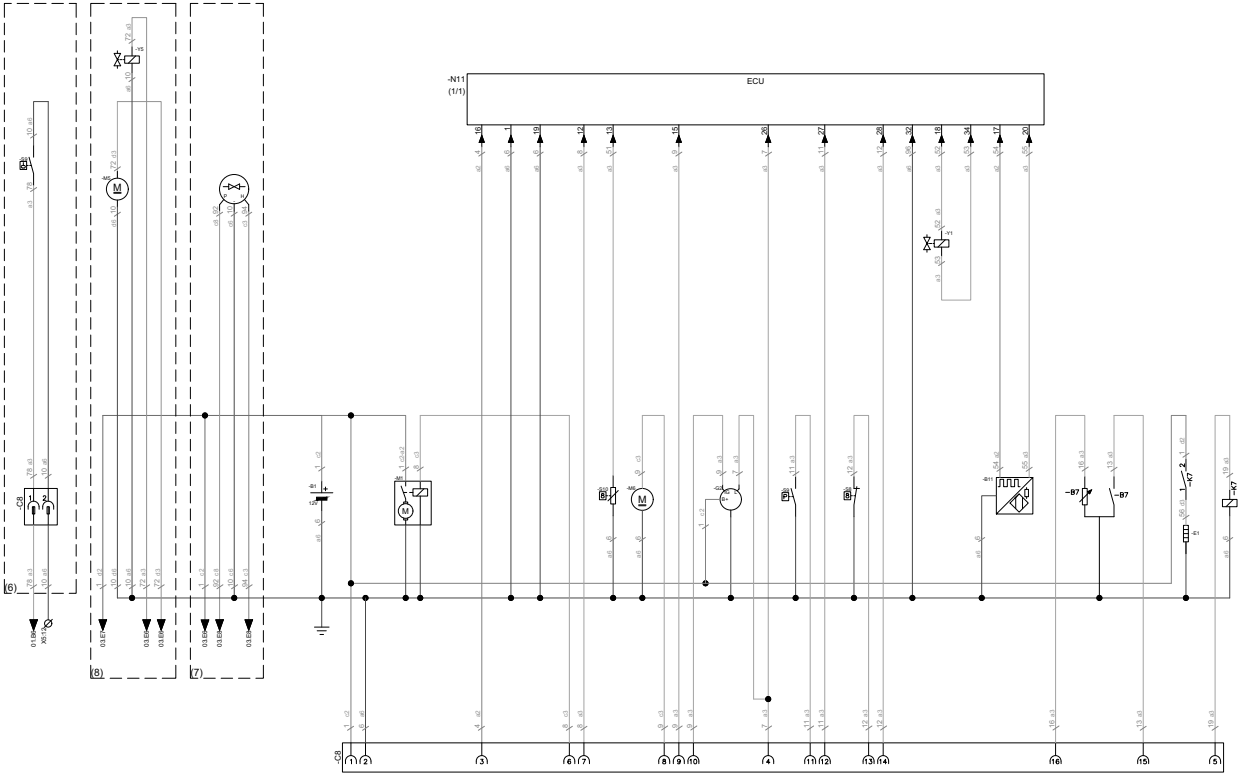


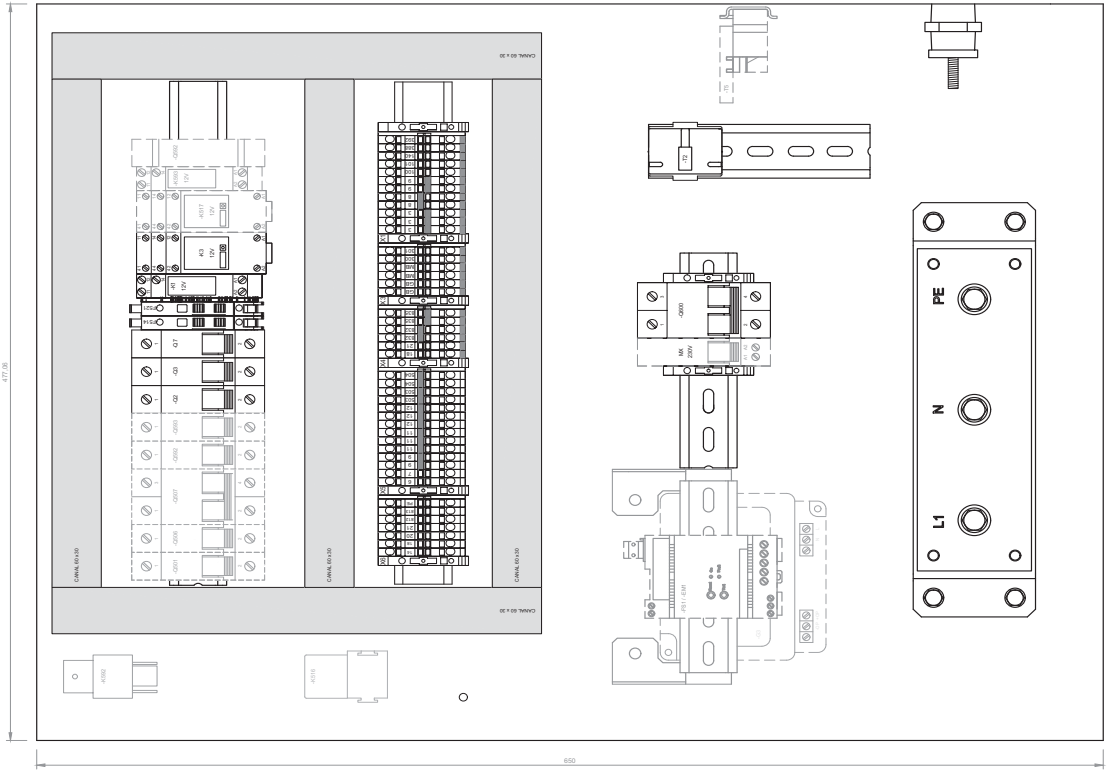
Atlas Copco

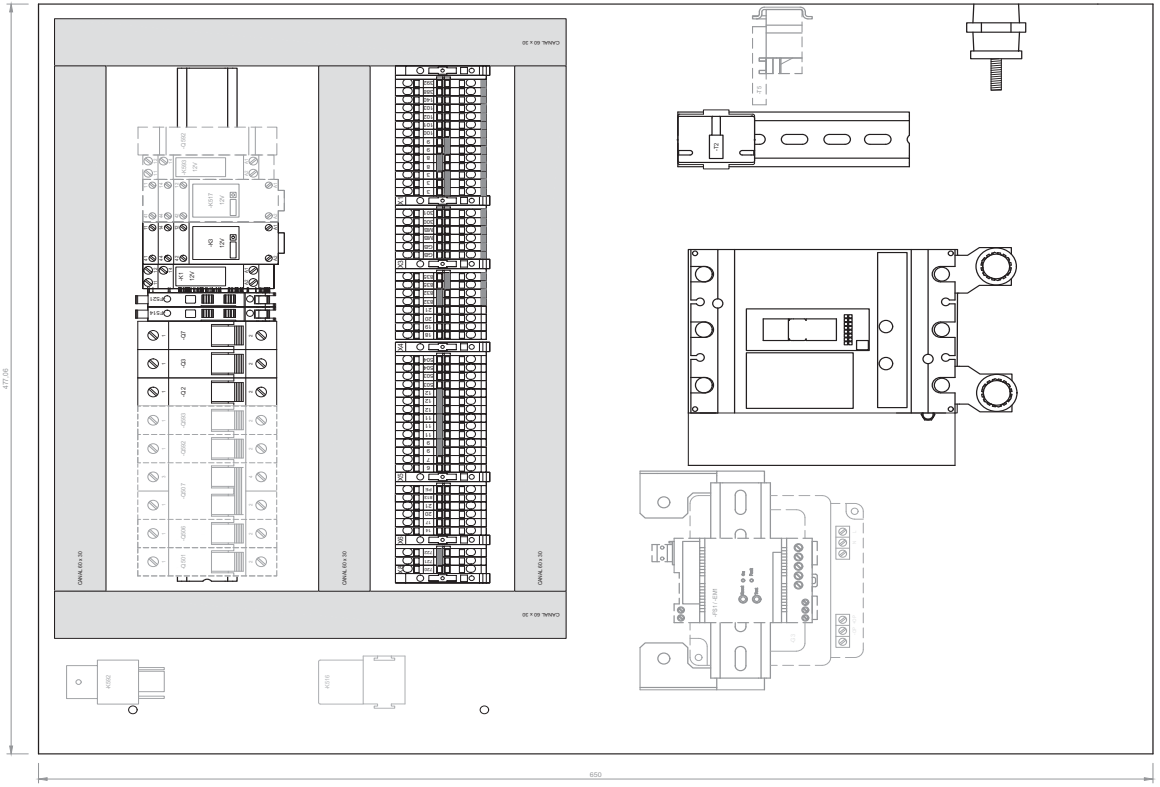

-A1
(4/4)
U N
-A1
(5/5)
I1 I2 I3 N
-G1
2~
-A1
(4/5)
R S T N
-F514
-T2
-Q600
-F521
-K517
-K3
-EM1
-FS1
-T5
(1)(*)
X6:14
X6:18
X6:20
X6:21
X10:L1
X10:N
X10:PE
X4:18
X4:21
X5:503
X5:504
X5:11
X5:12
X10:PE



-Q600
-Q601
-Q602
-XS2
-XS3
-G3
-Q501
-Q507
-K516
-Q506
-S11
-K595
-K593
-Q593
-Q592
-K592
-U1
FLEET LINK
FU1
(2)
(3)
(4)
(8)
(7)
(5)
USE
230V 50Hz


-N11
(1/1)
ECU
-C8
(6)
(8)
(7)


PE
N
L1
650


CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
477,06
650

COD.SECCION	SECCION
aa	0,5mm²
a	1mm²
b	1,5mm²
c	2,5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2	WIRE SIZE x	WIRE SIZE y
14	230V 50Hz	50A	200/5A	6mm²	6mm²
20	230V 50Hz	63A	300/5A	10mm²	10mm²

COMPONENT LIST

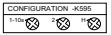
	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4520MKII
	-N11	ECU
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
(8)	-K516	RELAY 12V 1C - AUTO. FUEL TRANSFER
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
(7)	-K592	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K593	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K595	RELAY 12V 1C - INLET SHUTDOWN VALVE
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-F514	FUSE 2A
	-F521	FUSE 2A
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(8)	-Q506	CIRCUIT BREAKER - 1P 32A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
(7)	-Q592	CIRCUIT BREAKER - 2P 6A
(7)	-Q593	CIRCUIT BREAKER - 2P 6A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx5mm
(5)	-U1	FLEETLINK MODULE
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
(8)	-M5	TRANSFER FUEL PUMP
	-M6	FUEL PUMP
	-B11	SPEED SENSOR
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
(8)	-Y5	ELECTROVALVE
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPTIONAL EQUIPMENT
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER
(5) FLEETLINK MODULE
(6) FLUID LEAKAGE SENSOR
(7) INLET SHUTDOWN VALVE
(8) AUTOMATIC FUEL TRANSFER

TERMINALS LIST

ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	GB	CLOSE GENERATOR OUTPUT
	DC	GB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	DC	18	MAIN REF. L1
	DC	21	MAIN REF. N
	AC	**832**	**AUX. INPUT AC SUPPLY**
	AC	**835**	**AUX. INPUT AC SUPPLY**
-X5	**DC**	**6**	BATTERY CHARGER +
	DC	**7**	BATTERY CHARGER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	9	FUEL RELAY
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - N (IT RELAY)
	AC	17	VOLTAGE REFERENCE - N (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X8	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	721	SELECTION CONFIGURARTION SUPPLY
	AC	722	SELECTION CONFIGURARTION SUPPLY
-X10	AC	L1	GENSET - L1
	AC	N	GENSET - N
	AC	PE	GENSET - PE

CONFIGURATION -K595



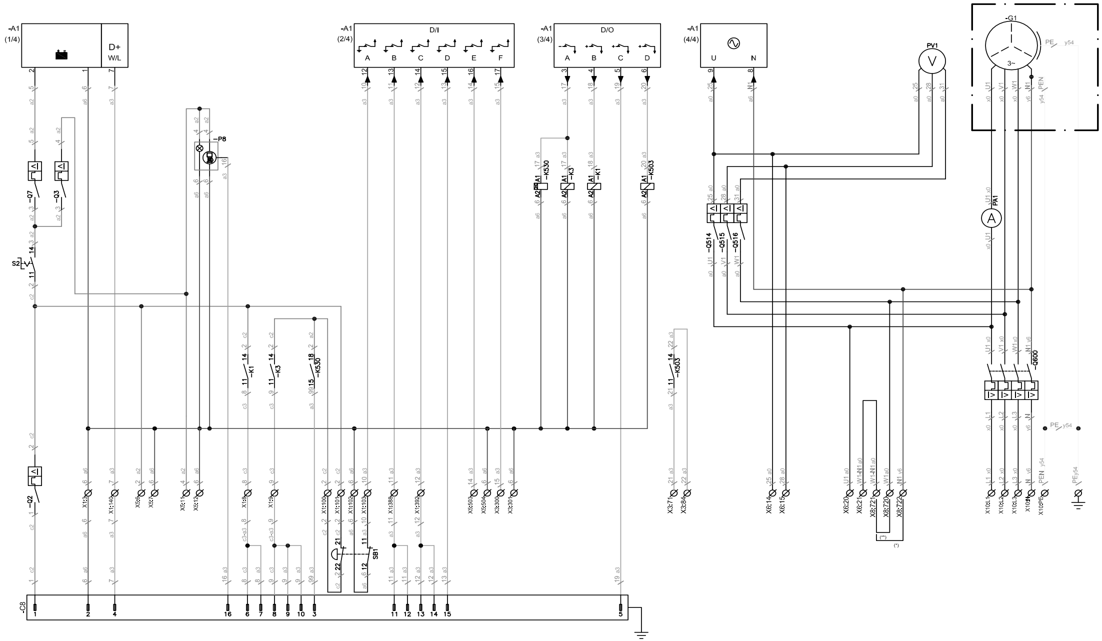
PROGRAMMING DSE

Nº	DIGITAL OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT
E	CLOSE MAIN OUTPUT
F	FUEL PUMP

Nº	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	OIL PRESSURE SWITCH
E	COOLANT TEMP. SWITCH
F	FLUID LEAKAGE SENSOR

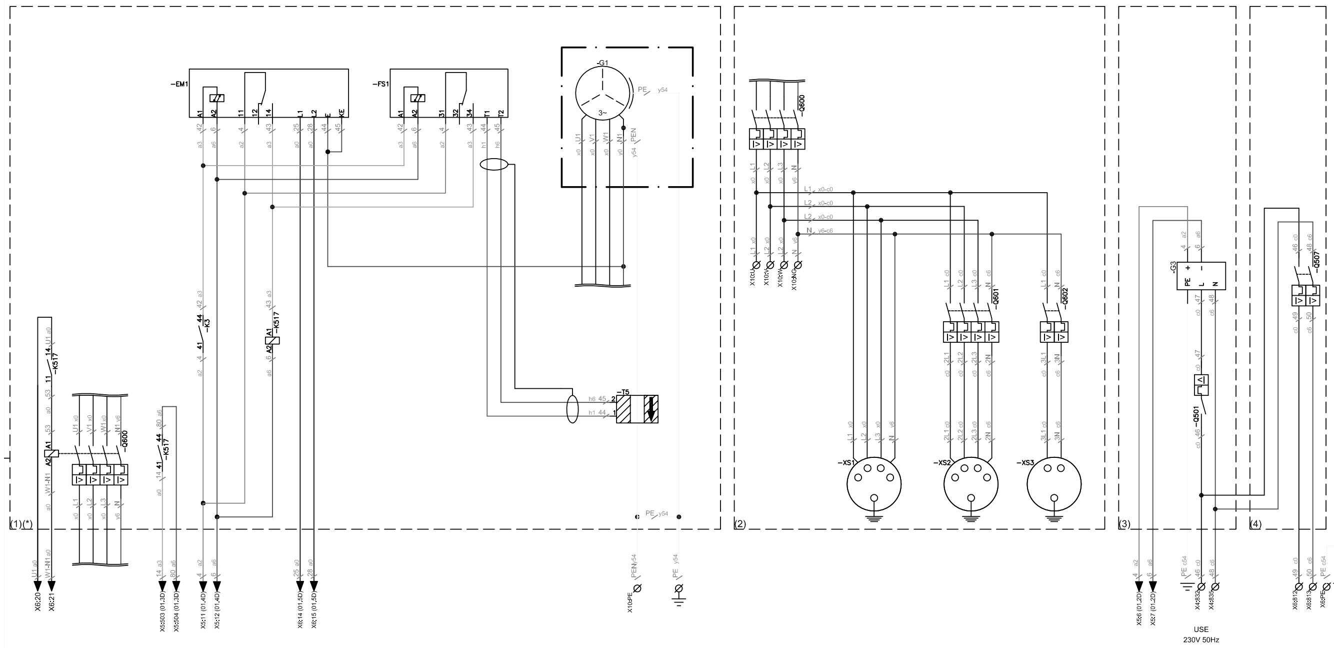
Nº	ANALOG INPUTS
C	FUEL LEVEL

Qc1011 - 1636 0051 72
Applicable for QES 9 - 3-phase



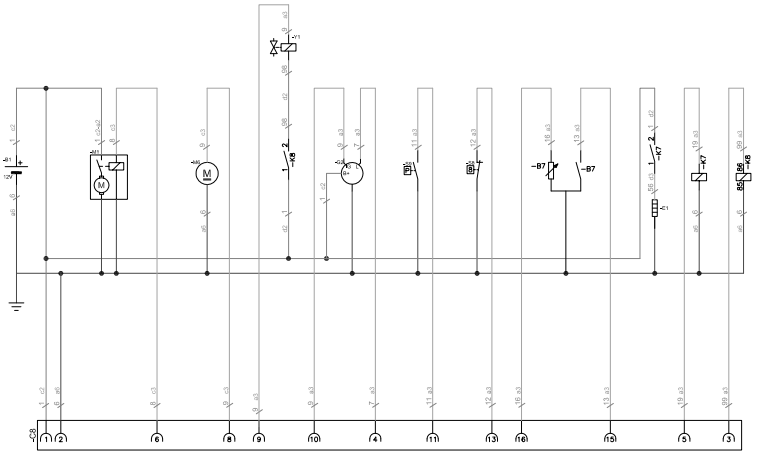
(*) CONNECTION SHUNT COIL TO 380/220V 50HZ, 400/230V 50HZ, 415/240V 50HZ, 380/220V 60HZ CONFIGURATION

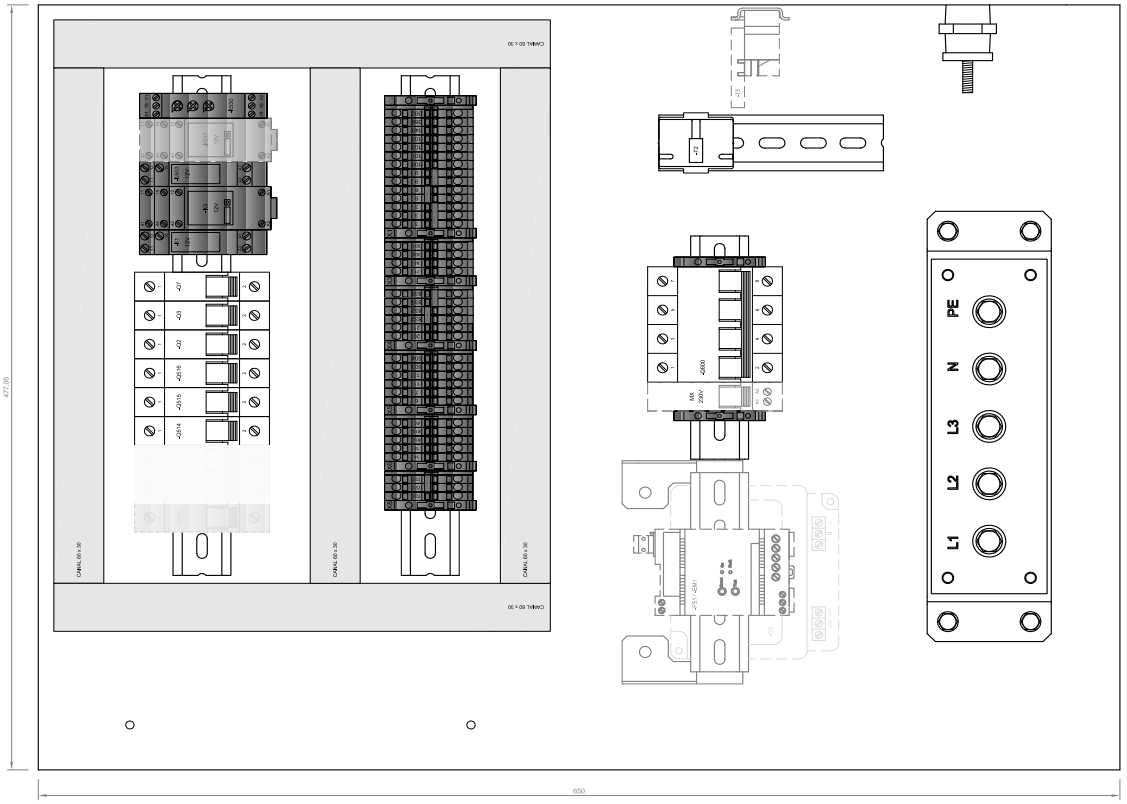
(**) CONNECTION SHUNT COIL TO 220/127V 60HZ AND 208/120V 60HZ CONFIGURATIONS



-EM1
-FS1
-G1
3~
-T5
-K517
-K3
-Q600
-Q601
-Q602
-XS1
-XS2
-XS3
-G3
-Q501
-Q507
(1)(*)
(2)
(3)
(4)
X6:20
X6:21
X5:503 (01,3D)
X5:504 (01,3D)
X5:11 (01,4D)
X5:12 (01,4D)
X6:14 (01,5D)
X6:15 (01,5D)
X10:PE
X5:6 (01,2D)
X5:7 (01,2D)
X4:832
X4:835
X6:812
X6:813
X6:PE
USE
230V 50Hz

Atlas Copco




477,00
650
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
CANAL 60 x 30
PE
N
L3
L2
L1

COD./SECCION	SECCION
aa	0,2mm²
a	1mm²
b	1,2mm²
c	2,2mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD./SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP.KVA	CONFIGURATION	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
9	380/220V 50Hz	16A	25A	2,2mm²	2,5mm²
POWER PRP.KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
9	455/230V 50Hz	16A	25A	2,2mm²	2,5mm²
POWER PRP.KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
9	415/240V 50Hz	16A	25A	2,2mm²	2,5mm²

POWER PRP.KVA	CONFIGURATION	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
11	208/120V 60Hz	32A	40A	6mm²	6mm²
POWER PRP.KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
11	220/127V 60Hz	32A	40A	6mm²	6mm²
POWER PRP.KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
11	380/220V 60Hz	16A	25A	2,5mm²	2,2mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - Qc1011
	-PV1	VOLTMETER
	-FA1	AMMETER
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K8	PULL RELAY SOLENOID
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-K530	TIMMER 12V 1C - PULL
	-S1	EMERGENCY STOP
	-S2	OFF / ON
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-FS1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q515	CIRCUIT BREAKER - 1P 2A
	-Q516	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
	-B11	SPEED SENSOR
	-M8	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER

TERMINALS LIST

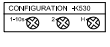
ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	71	CLOSE GENERATOR OUTPUT
	DC	84	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	AC	832	AUX. INPUT AC SUPPLY
	AC	835	AUX. INPUT AC SUPPLY
-X5	DC	6	BATTERY CHARGUER +
	DC	7	BATTERY CHARGUER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	505	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - U
	AC	15	VOLTAGE REFERENCE - V
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X8	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	721	SELECTION CONFIGURARTION SUPPLY
	AC	722	SELECTION CONFIGURARTION SUPPLY
-X10	AC	L1	GENSET - L1
	AC	L2	GENSET - L2
	AC	L3	GENSET - L3
	AC	N	GENSET - N
	AC	PE	GENSET - PE

PROGRAMMING DSE

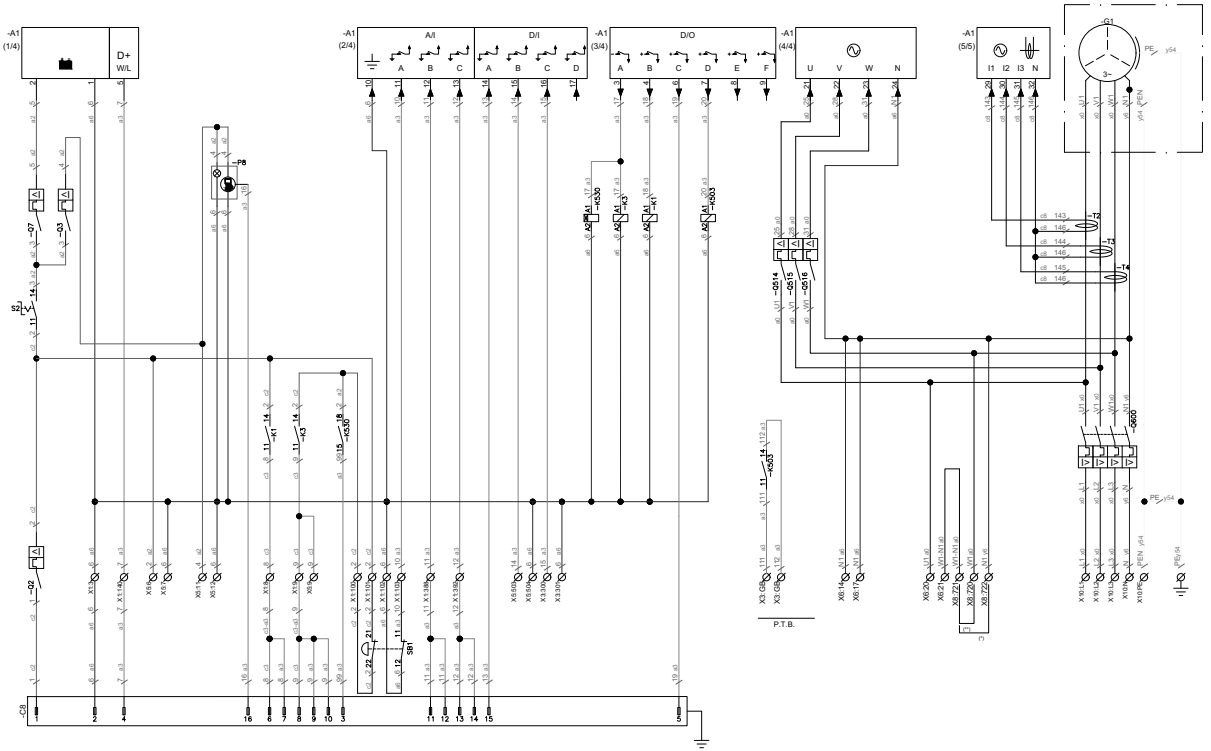
Nº	OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT

Nº	DIGITAL INPUTS
A	EMERGENCY STOP
B	OIL PRESSURE SWITCH
C	COOLANT TEMPERATURE SWITCH
D	LOW FUEL LEVEL SWITCH
E	DIFFERENTIAL TRIP
F	REMOTE START SIGNAL

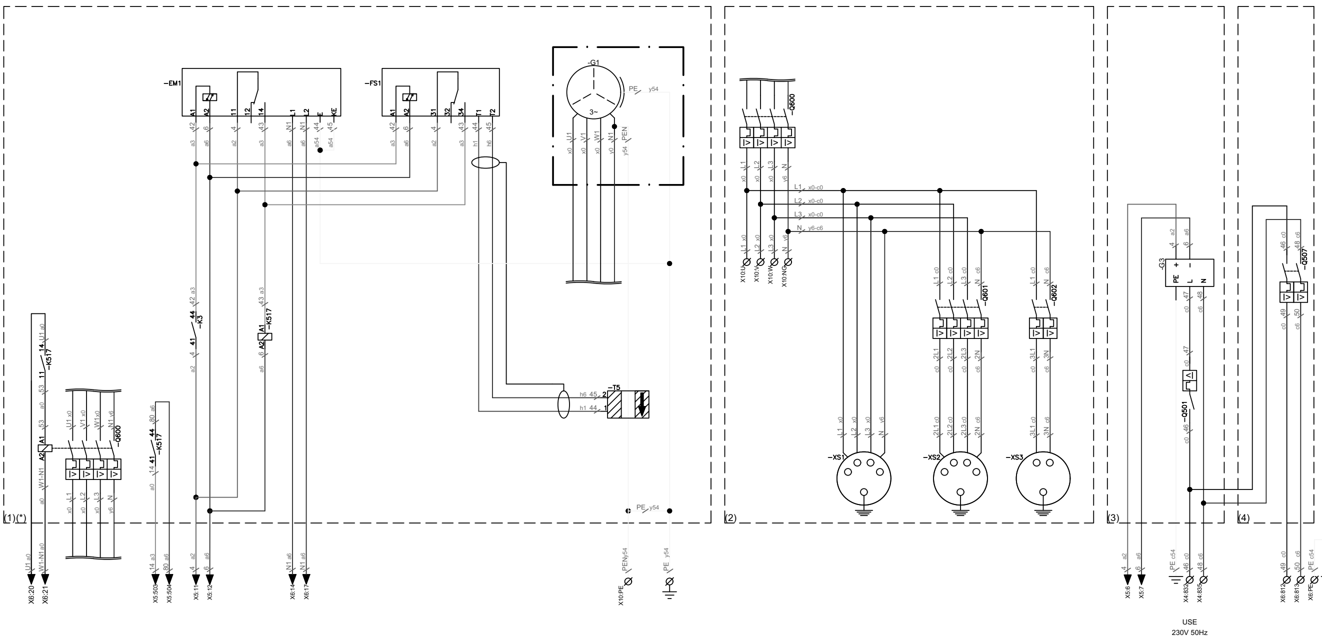
CONFIGURATION -K530

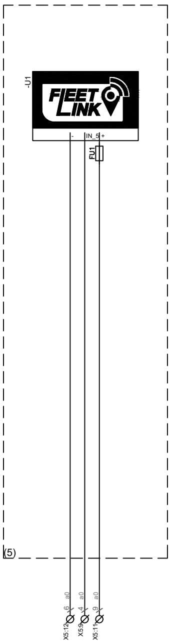


Qc1112 - 1636 0214 17
Applicable for QES 14-20- 3-phase



Atlas Copco


-EM1
-FS1
G1
3~
-Q600
-Q601
-Q602
-XS1
-XS2
-XS3
-G3
-Q501
-Q507
-T5
-K3
-K517
(1)(*)
(2)
(3)
(4)
USE
230V 50Hz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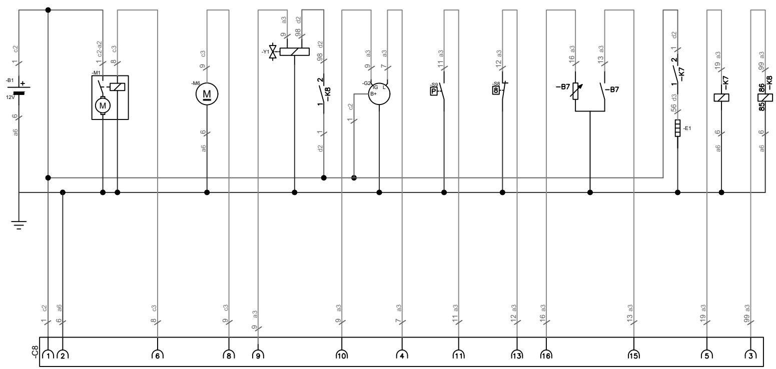
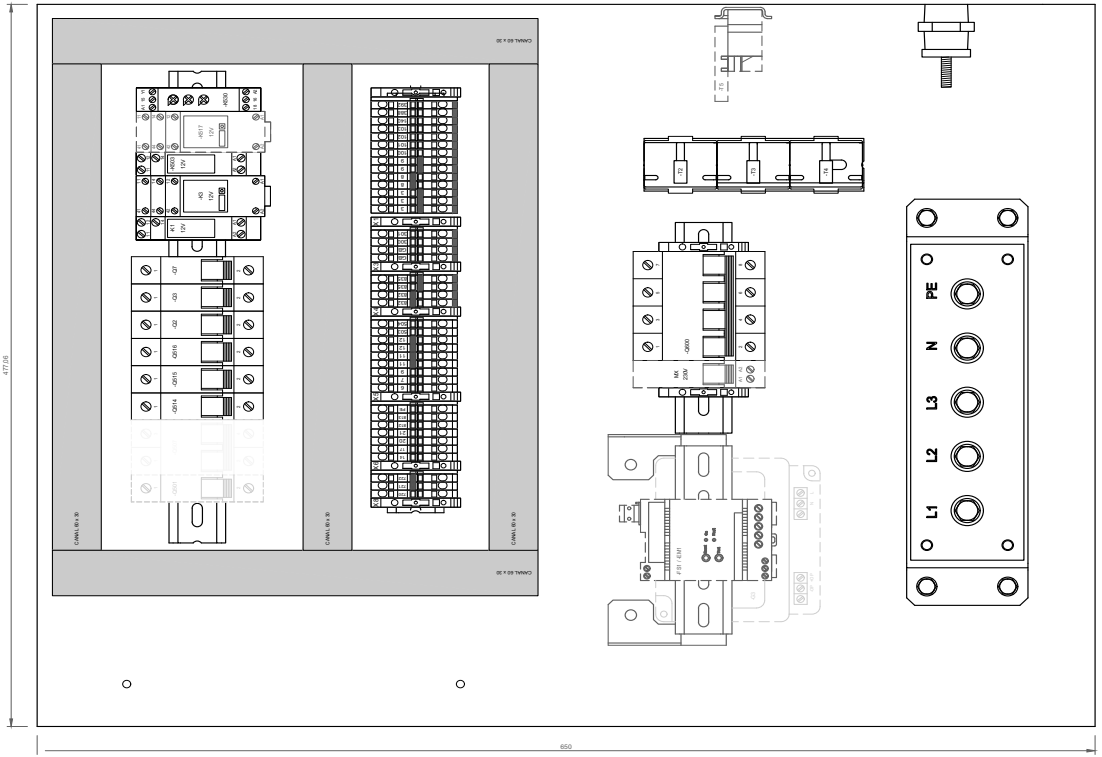
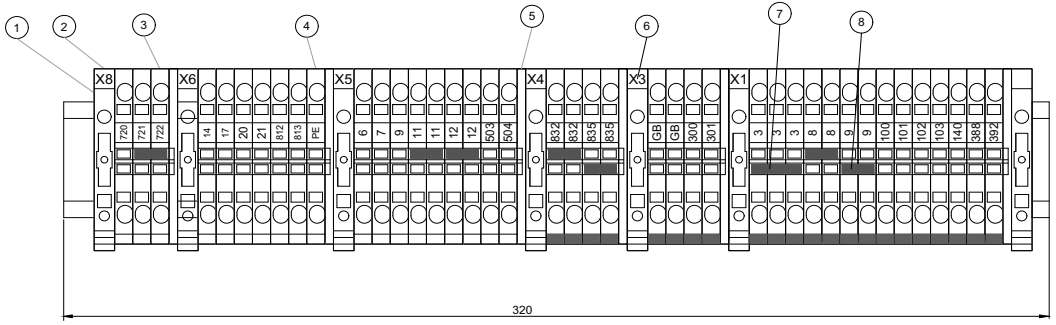
FLEET LINK
FU1
(5)
X5:12
X5:9
X5:11


-B1
12V
-M1
M
-M6
M
-Y1
-K8
-G2
-B7
-B7
-K7
-E1
-K7
-K8
-C8


PE
N
L3
L2
L1
650



ITEM	DESCRIPCION COMPONENTE	CANTIDAD
1	CARRIL DIN TS 35X7.5 PERFORADO	320mm
2	TOPE FIJACION BORNAS	7
3	BORNA PUSH-IN 2,5-4 mm²	40
4	BORNA PUSH-IN 2,5-4 mm² PE	1
5	TAPA BORNA PUSH-IN 2,5-4 mm²	6
6	SEÑALIZACION BORNAS SERIE W Y P	44
7	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 3 POLOS	1
8	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 2 POLOS	7

COD.SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
8	380/220V 50Hz	16A	200/5A	2.5mm²	2.5mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
9	400/230V 50Hz	16A	200/5A	2.5mm²	2.5mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
9	415/240V 50Hz	16A	200/5A	2.5mm²	2.5mm²

POWER PRP KVA	CONFIGURATION	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
11	208/120V 60Hz	32A	200/5A	6mm²	6mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
11	220/127V 60Hz	32A	200/5A	6mm²	6mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
11	380/220V 60Hz	16A	200/5A	2.5mm²	2.5mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4510MKII
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K8	PULL RELAY SOLENOID
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-K530	TIMMER 12V 1C - PULL
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T3	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T4	ELECTRICAL CURRENT TRANSFORMER 200/5A
(1)	-T5	TORODIAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q515	CIRCUIT BREAKER - 1P 2A
	-Q516	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx5mm
(5)	-U1	FLEETLINK MODULE
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGER
(4) HEATER
(5) FLEETLINK MODULE

TERMINALS LIST

ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	GB	CLOSE GENERATOR OUTPUT
	DC	GB	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	AC	832	AUX. INPUT AC SUPPLY
	AC	835	AUX. INPUT AC SUPPLY
-X5	DC	6	BATTERY CHARGER +
	DC	7	BATTERY CHARGER -
	DC	9	FLEETLINK IN5
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - N (IT RELAY)
	AC	17	VOLTAGE REFERENCE - N (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X8	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	721	SELECTION CONFIGURARTION SUPPLY
	AC	722	SELECTION CONFIGURARTION SUPPLY
-X10	AC	L1	GENSET - L1
	AC	L2	GENSET - L2
	AC	L3	GENSET - L3
	AC	N	GENSET - N
	AC	PE	GENSET - PE

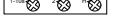
PROGRAMMING DSE

Nº	OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT
E	NOT USED
F	NOT USED

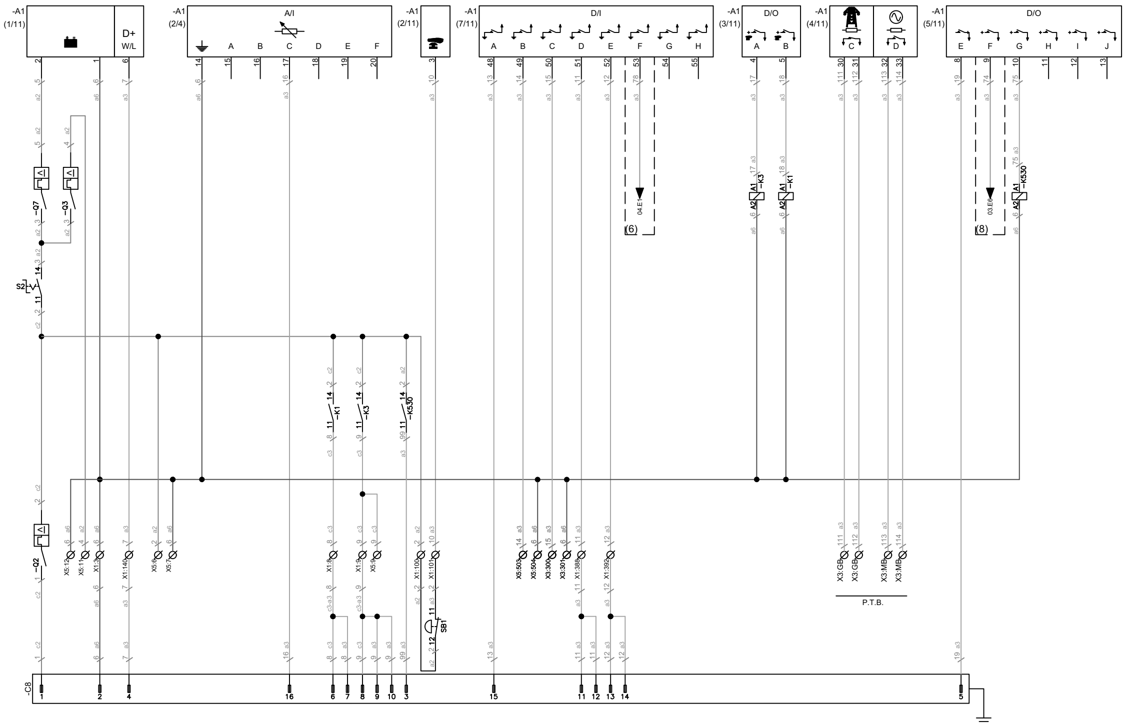
Nº	ANALOGIC INPUTS
A	EMERGENCY STOP (as a digital input)
B	OIL PRESSURE SWITCH (as a digital input)
C	COOLANT TEMP. SWITCH (as a digital input)

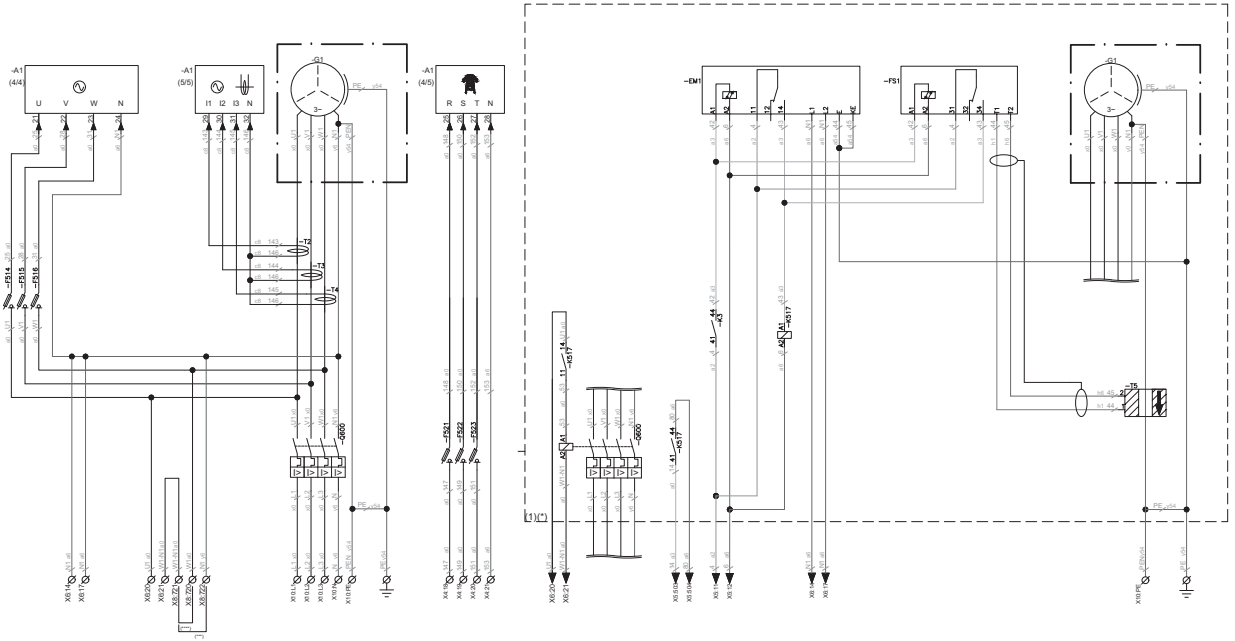
Nº	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	NOT USED

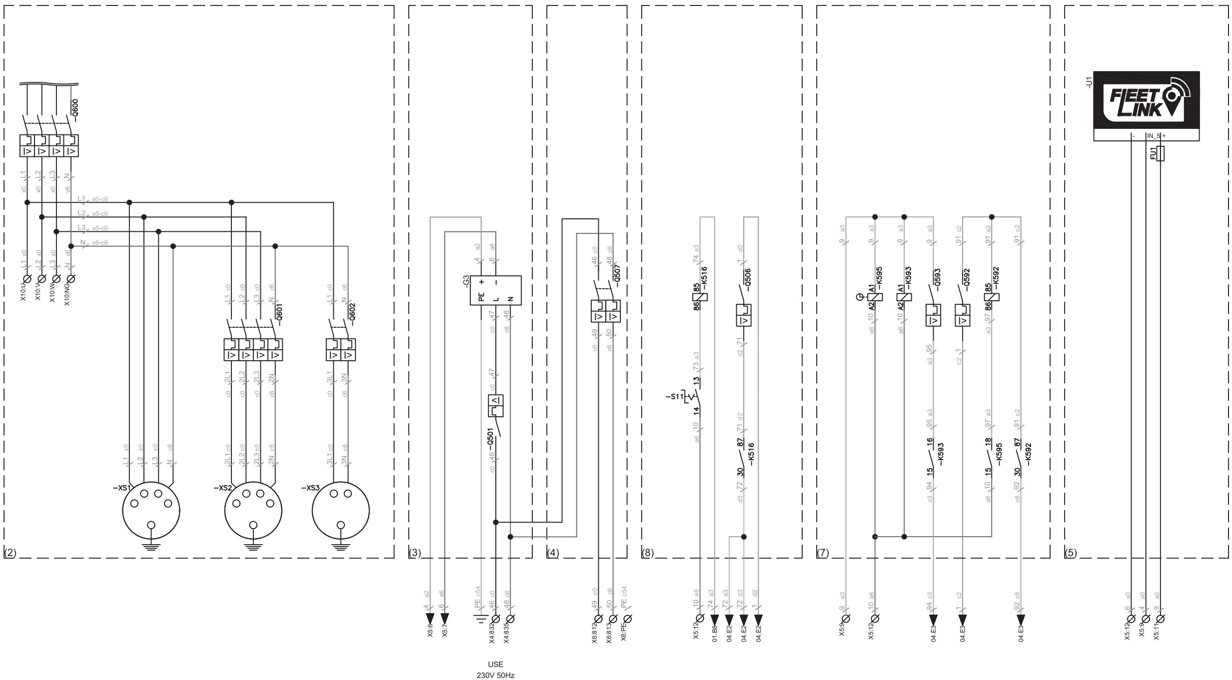
CONFIGURATION - K530

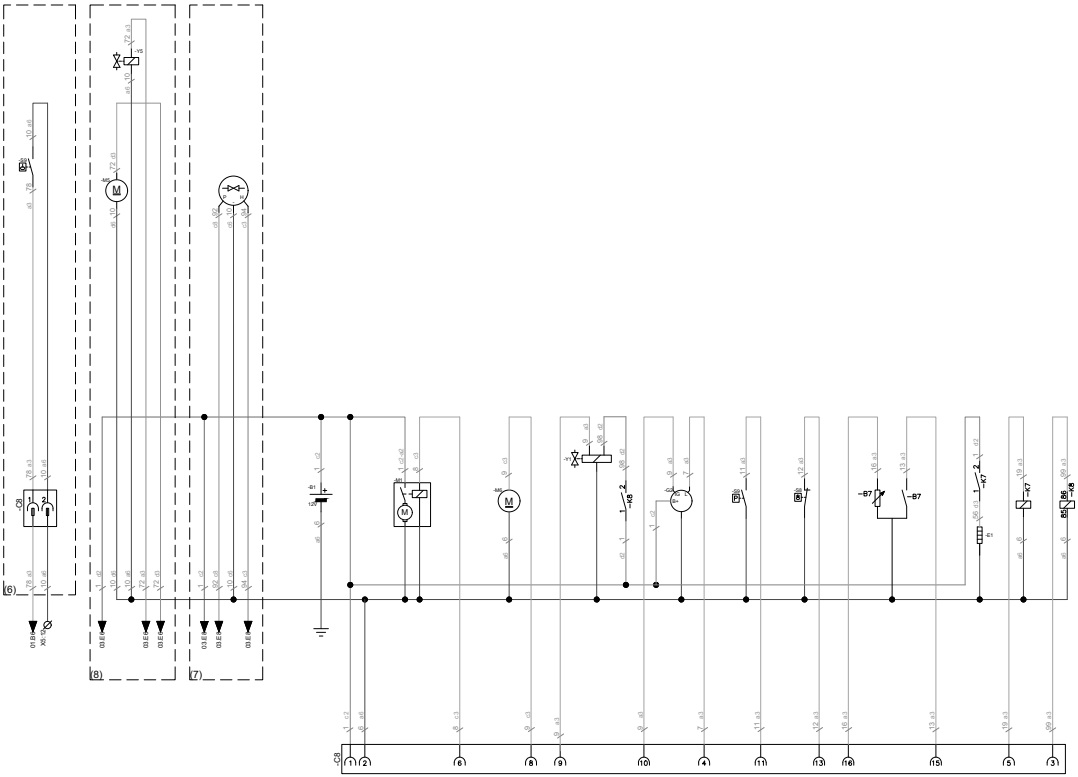


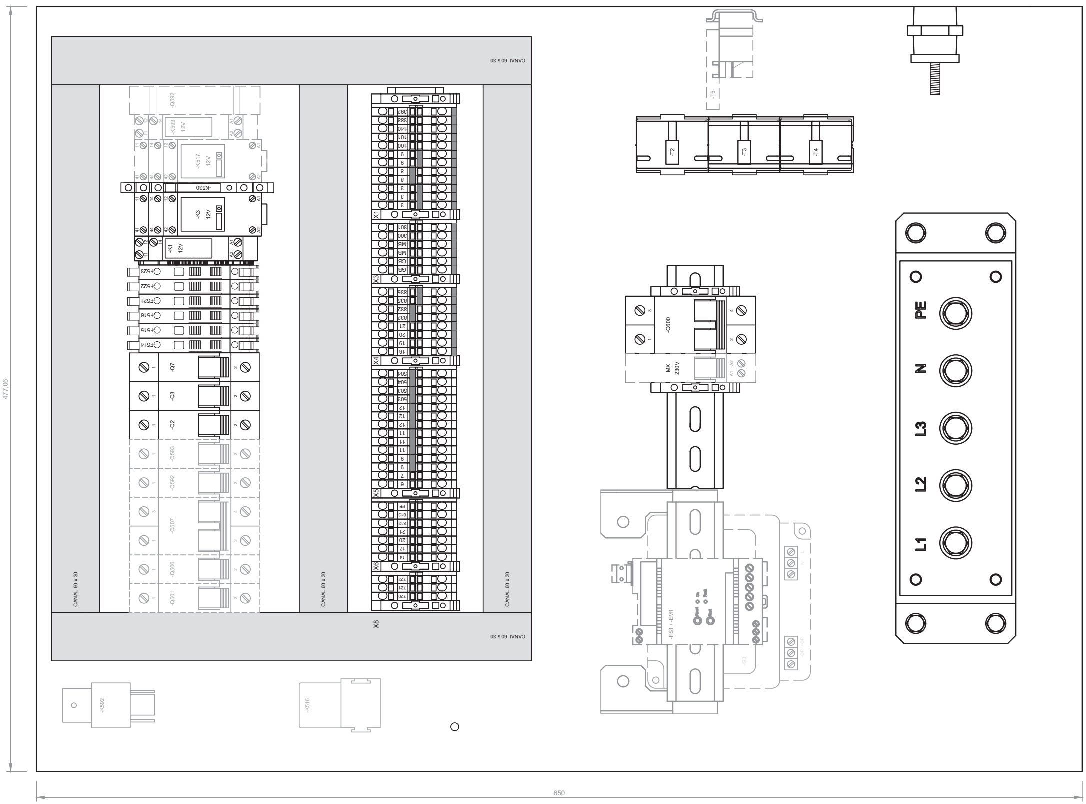
Qc2212 - 1640 0106 50
Applicable for QES 9 - 3-phase






-Q600
-Q601
-Q602
-XS1
-XS2
-XS3
-G3
-Q501
-Q507
-S11
-K516
-Q506
-K595
-K593
-Q593
-Q592
-K592
-U1
FLEET LINK
FU1
(2)
(3)
(4)
(8)
(7)
(5)
USE
230V 50Hz





(*) EL-RELAY AND IT-RELAY SHARE THE LOCATION

COD.SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
9	380/220V 50Hz	16A	200/5A	2.5mm²	2.5mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
9	400/230V 50Hz	16A	200/5A	2.5mm²	2.5mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
9	415/240V 50Hz	16A	200/5A	2.5mm²	2.5mm²

COMPONENT LIST

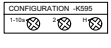
	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4520MKII
	-N11	ECU
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K8	PULL RELAY SOLENOID
(8)	-K516	RELAY 12V 1C - AUTO. FUEL TRANSFER
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-K530	RELAY 12V 1C - PULL
(7)	-K592	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K593	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K595	RELAY 12V 1C - INLET SHUTDOWN VALVE
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T3	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T4	ELECTRICAL CURRENT TRANSFORMER 200/5A
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-F514	FUSE 2A
	-F515	FUSE 2A
	-F516	FUSE 2A
	-F521	FUSE 2A
	-F522	FUSE 2A
	-F523	FUSE 2A
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(8)	-Q506	CIRCUIT BREAKER - 1P 32A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
(7)	-Q592	CIRCUIT BREAKER - 2P 6A
(7)	-Q593	CIRCUIT BREAKER - 2P 6A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx5mm
(5)	-U1	FLEETLINK MODULE
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
(8)	-M5	TRANSFER FUEL PUMP
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
(8)	-Y5	ELECTROVALVE
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPTIONAL EQUIPMENT
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER
(5) FLEETLINK MODULE
(6) FLUID LEAKAGE SENSOR
(7) INLET SHUTDOWN VALVE
(8) AUTOMATIC FUEL TRANSFER

TERMINALS LIST

ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	GB	CLOSE GENERATOR OUTPUT
	DC	GB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	DC	18	MAIN REF. L1
	DC	19	MAIN REF. L2
	DC	20	MAIN REF. L3
	DC	21	MAIN REF. N
	AC	**832**	**AUX. INPUT AC SUPPLY**
	AC	**835**	**AUX. INPUT AC SUPPLY**
-X5	**DC**	**6**	BATTERY CHARGER +
	DC	**7**	BATTERY CHARGER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	9	FUEL RELAY
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - N (IT RELAY)
	AC	17	VOLTAGE REFERENCE - N (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X8	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	721	SELECTION CONFIGURARTION SUPPLY
	AC	722	SELECTION CONFIGURARTION SUPPLY
-X10	AC	L1	GENSET - L1
	AC	L1	GENSET - L2
	AC	L1	GENSET - L3
	AC	N	GENSET - N
	AC	PE	GENSET - PE

CONFIGURATION -K595



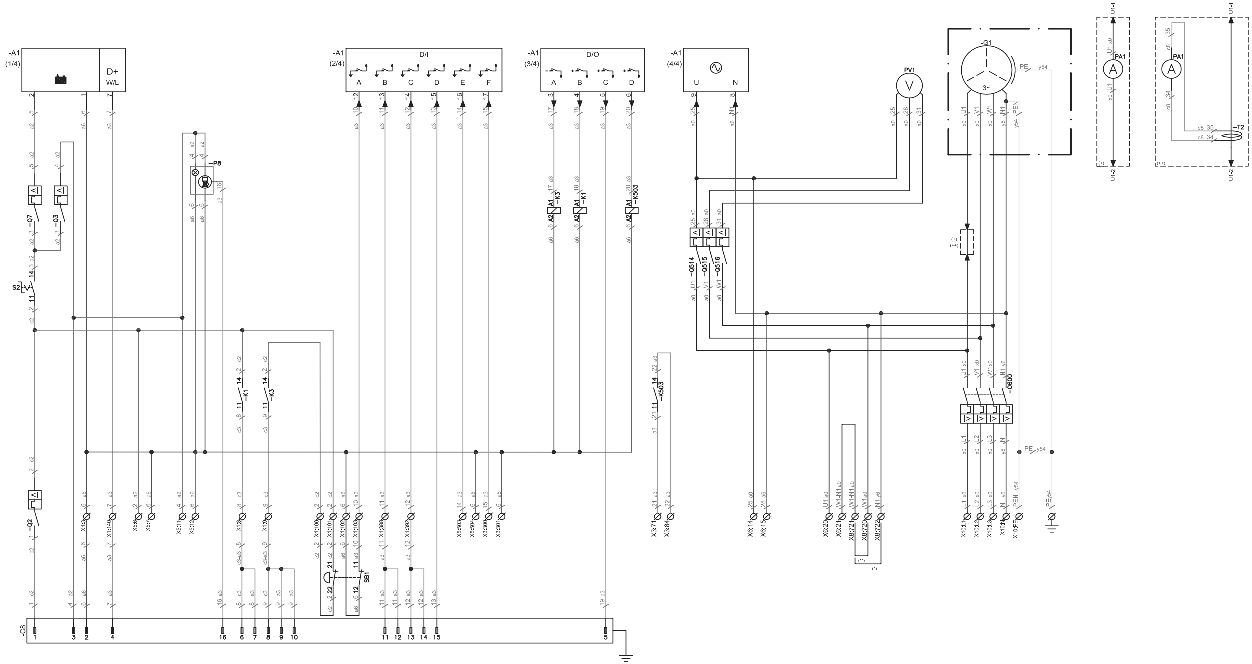
PROGRAMMING DSE

Nº	DIGITAL OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT
E	CLOSE MAIN OUTPUT
F	FUEL PUMP
G	PULL

Nº	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	OIL PRESSURE SWITCH
E	COOLANT TEMP. SWITCH
F	FLUID LEAKAGE SENSOR

Nº	ANALOG INPUTS
C	FUEL LEVEL

Qc1011 - 1636 0048 31
Applicable for QES 14-20 - 3-phase

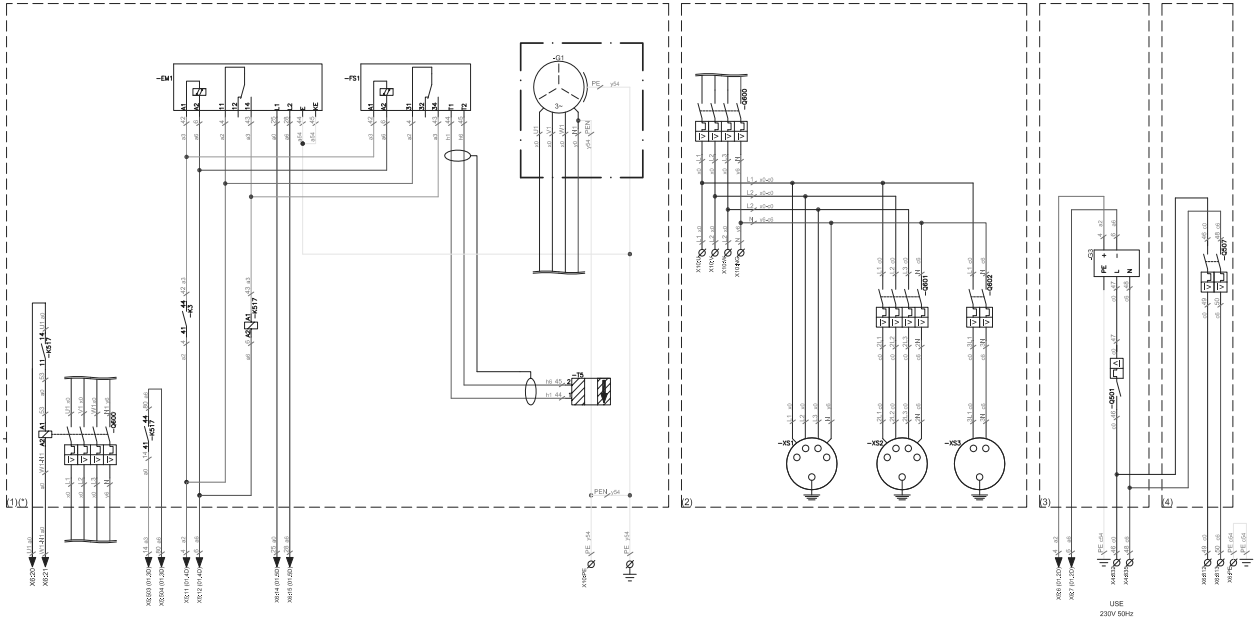


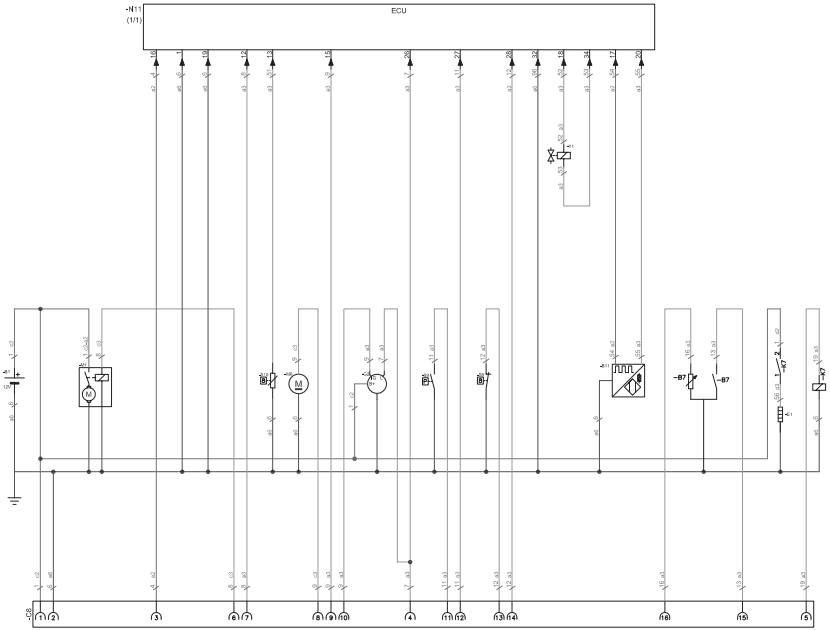
(*) CONNECTION SHUNT COIL TO 380/220V 50HZ, 400/230V 50HZ, 415/240V 50HZ, 380/220V 60HZ CONFIGURATIONS

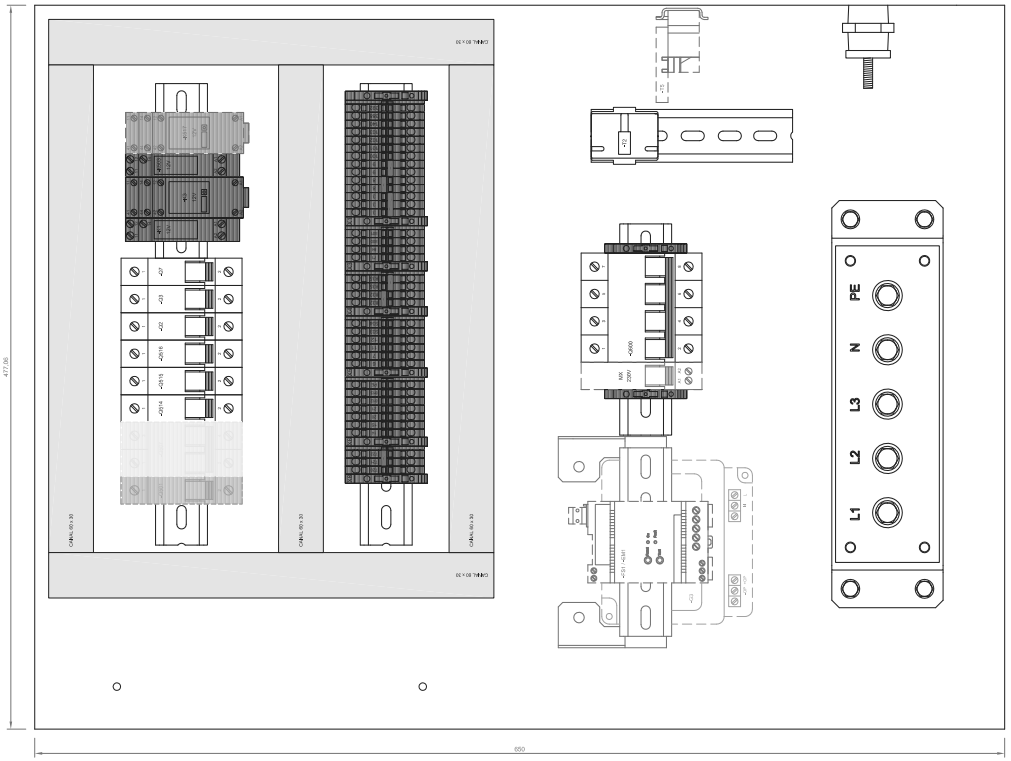
(**) CONNECTION SHUNT COIL TO 220/127V 60HZ AND 208/120V 60HZ CONFIGURATIONS

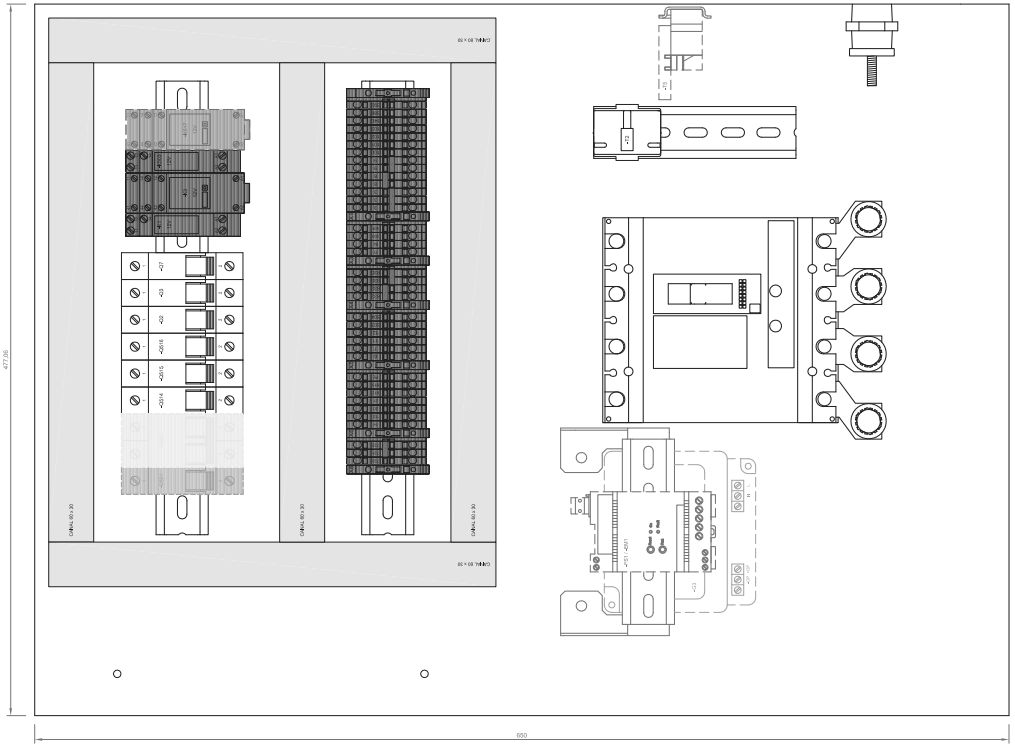
(+) DIRECT CURRENT METER TO CIRCUIT BREAKER UNTIL 50A

(++) CURRENT METER AND CURRENT TRANSFORMER CIRCUIT BREAKER FROM 63A


-EM1
-FS1
-G1
-Q600
-Q601
-Q602
-Q501
-XS1
-XS2
-XS3
-T5
USE
230V 50Hz


-N1
(1/1)
ECU


PE
N
L3
L2
L1
650


477,66
600

COD.SECCION	SECCION
aa	0,5mm²
a	1mm²
b	1,5mm²
c	2,5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
64	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
16	380/220V 50Hz	25A	25A	2,5mm²	0,5mm²
20	380/220V 50Hz	32A	40A	6mm²	6mm²
30	380/220V 50Hz	40A	60A	10mm²	10mm²
40	380/220V 50Hz	63A	75A	16mm²	16mm²

POWER PRP KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
14	400/230V 50Hz	25A	25A	2,5mm²	0,5mm²
20	400/230V 50Hz	32A	40A	6mm²	6mm²
30	400/230V 50Hz	40A	60A	10mm²	10mm²
40	400/230V 50Hz	63A	75A	16mm²	16mm²

POWER PRP KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
16	415/240V 50Hz	25A	25A	2,5mm²	0,5mm²
20	415/240V 50Hz	32A	40A	6mm²	6mm²
30	415/240V 50Hz	40A	60A	10mm²	10mm²
40	415/240V 50Hz	63A	75A	16mm²	16mm²

POWER PRP KVA	CONFIGURATION	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
16	208/120V 60Hz	40A	60A	10mm²	10mm²
20	208/120V 60Hz	63A	75A	16mm²	16mm²
35	208/120V 60Hz	100A	125A	16mm²	16mm²
50	208/120V 60Hz	160A	150A	25mm²	25mm²

POWER PRP KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
16	220/127V 60Hz	40A	60A	10mm²	10mm²
20	220/127V 60Hz	63A	75A	16mm²	16mm²
35	220/127V 60Hz	100A	125A	16mm²	16mm²
50	220/127V 60Hz	160A	150A	25mm²	25mm²

POWER PRP KVA	VOLTAGE	-Q600	-FA1	WIRE SIZE x	WIRE SIZE y
16	3602/20V 60Hz	25A	40A	4mm²	4mm²
20	3602/20V 60Hz	40A	60A	10mm²	10mm²
35	3602/20V 60Hz	50A	60A	16mm²	16mm²
50	3602/20V 60Hz	100A	100A	16mm²	16mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - Qc1011
	-M11	ECU
	-PV1	VOLUTMETER
	-PA1	AMMETER
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-S1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q515	CIRCUIT BREAKER - 1P 2A
	-Q516	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-B11	SPEED SENSOR
	-M1	STARTER
	-M6	FUEL PUMP
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER

TERMINALS LIST

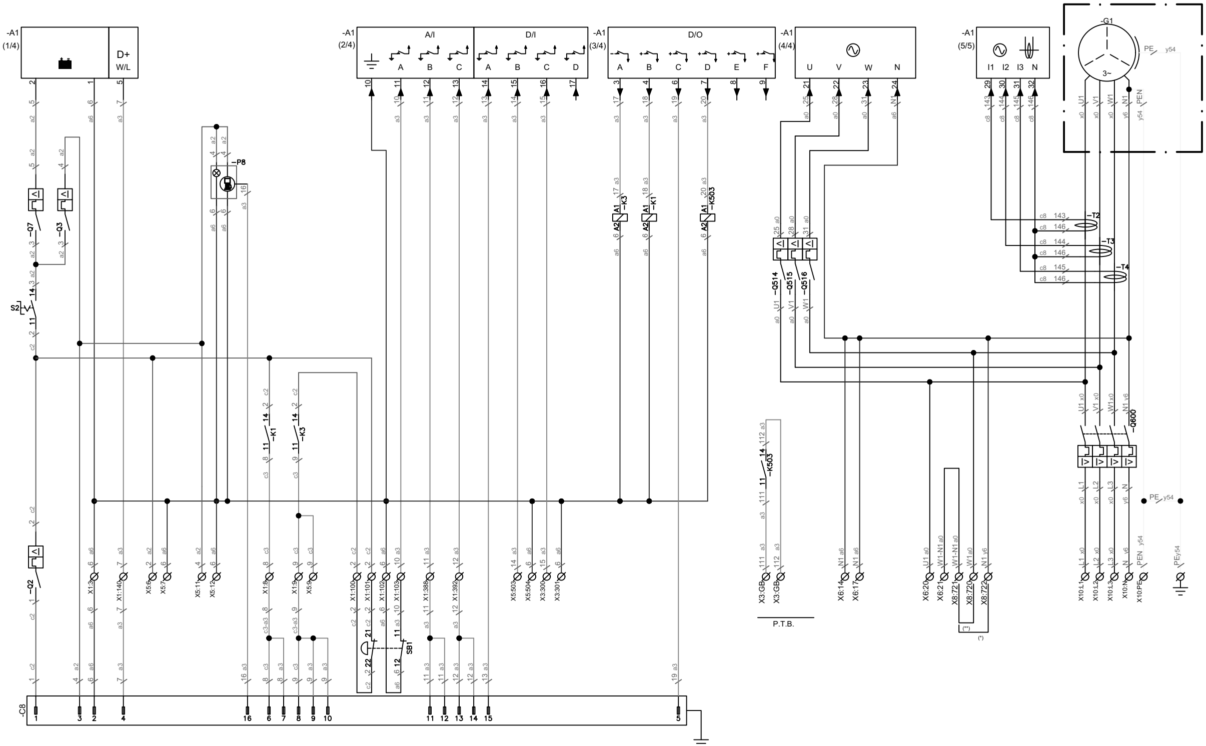
ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	71	CLOSE GENERATOR OUTPUT
	DC	84	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	AC	832	AUX. INPUT AC SUPPLY
	AC	835	AUX. INPUT AC SUPPLY
-X5	DC	6	BATTERY CHARGUER +
	DC	7	BATTERY CHARGUER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	503	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - U
	AC	15	VOLTAGE REFERENCE - V
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X8	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	721	SELECTION CONFIGURARTION SUPPLY
	AC	722	SELECTION CONFIGURARTION SUPPLY
-X10	AC	L1	GENSET - L1
	AC	L2	GENSET - L2
	AC	L3	GENSET - L3
	AC	N	GENSET - N
	AC	PE	GENSET - PE

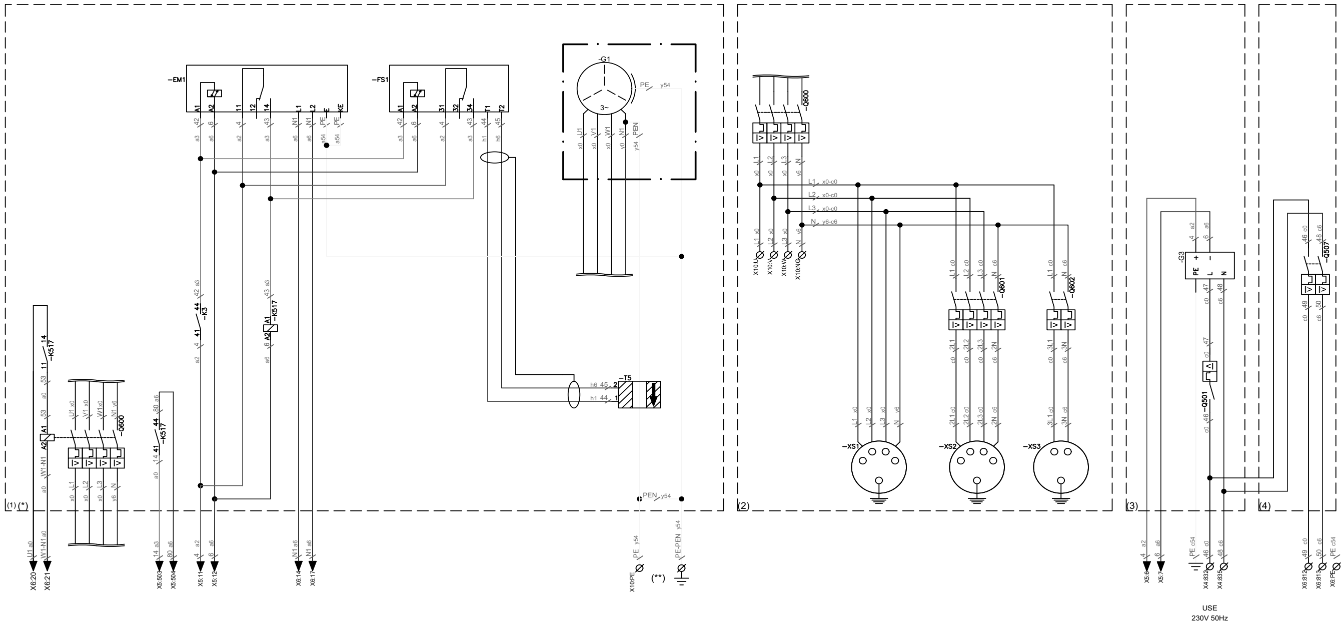
PROGRAMMING DSE

N°	OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT

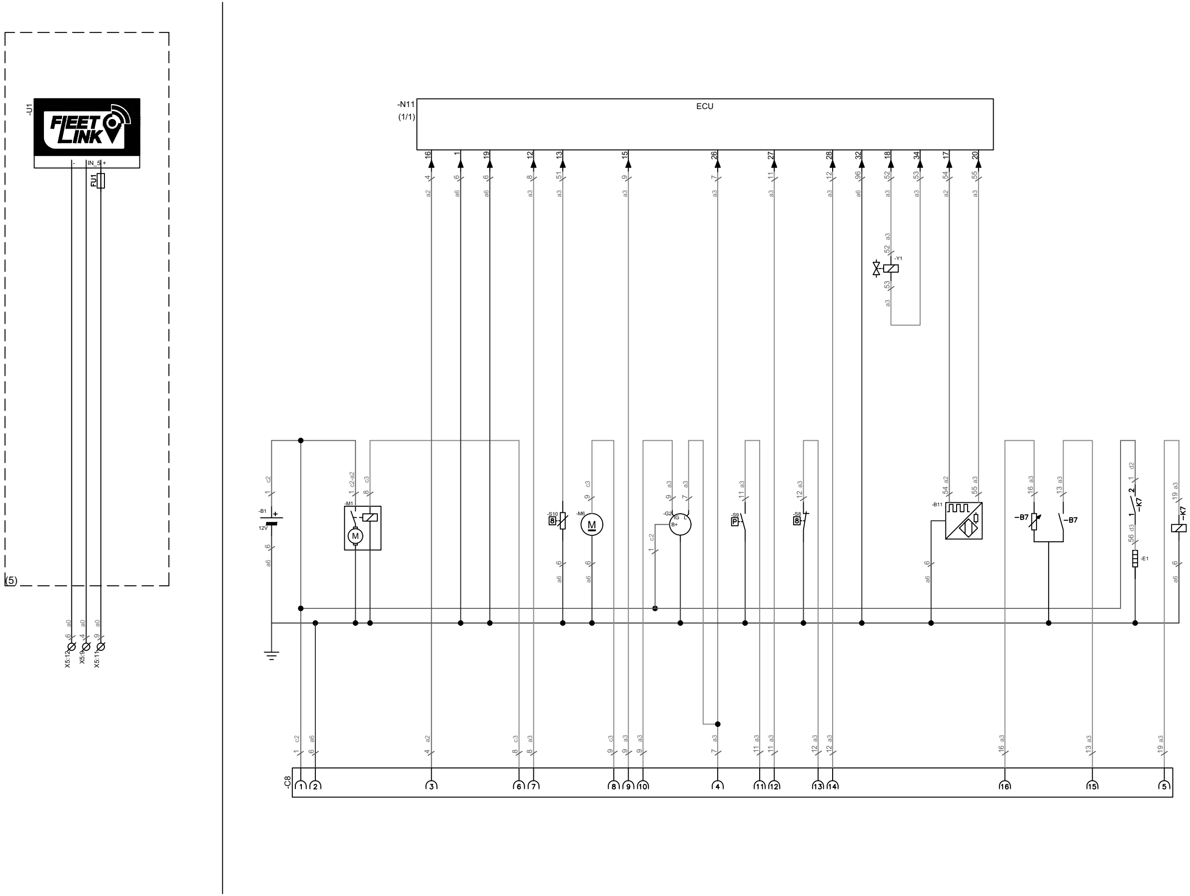
N°	DIGITAL INPUTS
A	EMERGENCY STOP
B	OIL PRESSURE SWITCH
C	COOLANT TEMPERATURE SWITCH
D	LOW FUEL LEVEL SWITCH
E	DIFFERENTIAL TRIP
F	REMOTE START SIGNAL

Qc1112 - 1636 0214 19
Applicable for QES 14-20 - 3-phase



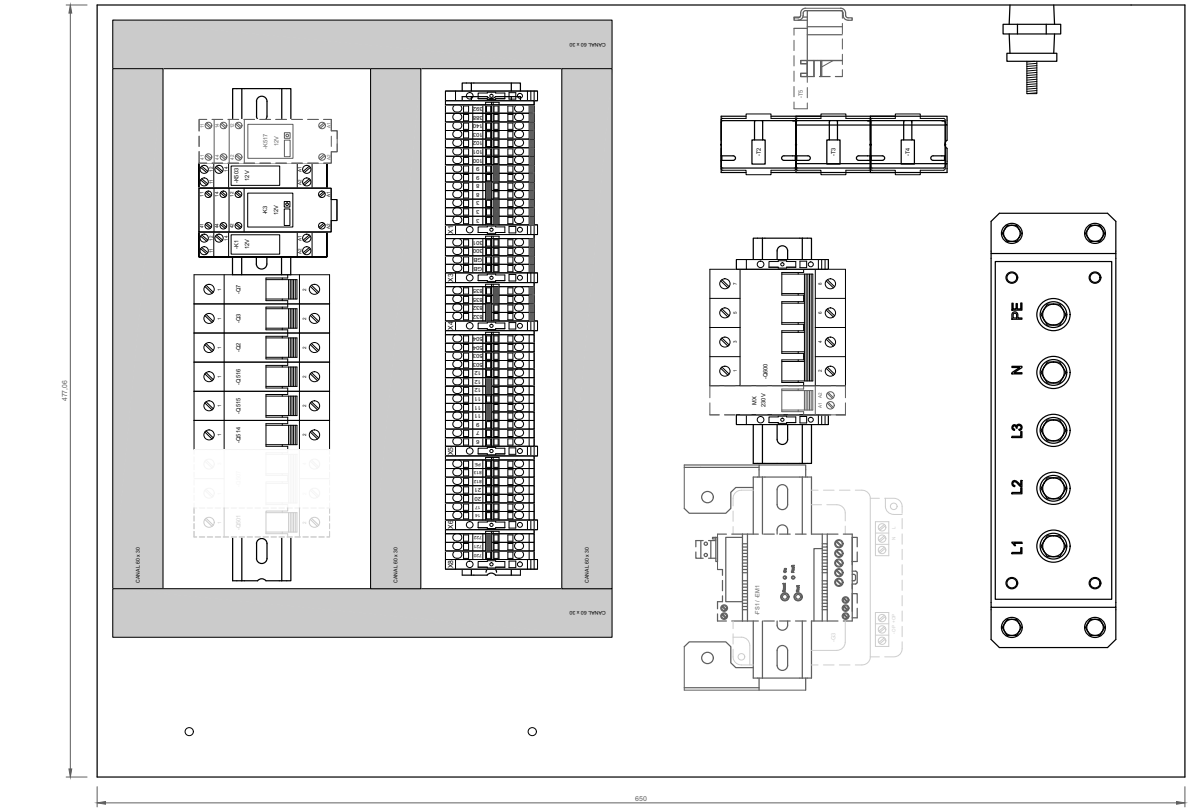

-EM1
-FS1
-G1
3~
-T5
-K517
-K3
-Q600
-Q601
-Q602
-XS1
-XS2
-XS3
-G3
-Q501
-Q507
(1) (*)
(2)
(3)
(4)
(**)
X6:20
X6:21
X5:503
X5:504
X5:11
X5:12
X6:14
X6:17
X10:PE
X5:6
X5:7
X4:832
X4:835
X6:812
X6:813
X6:PE
USE
230V 50Hz

Atlas Copco

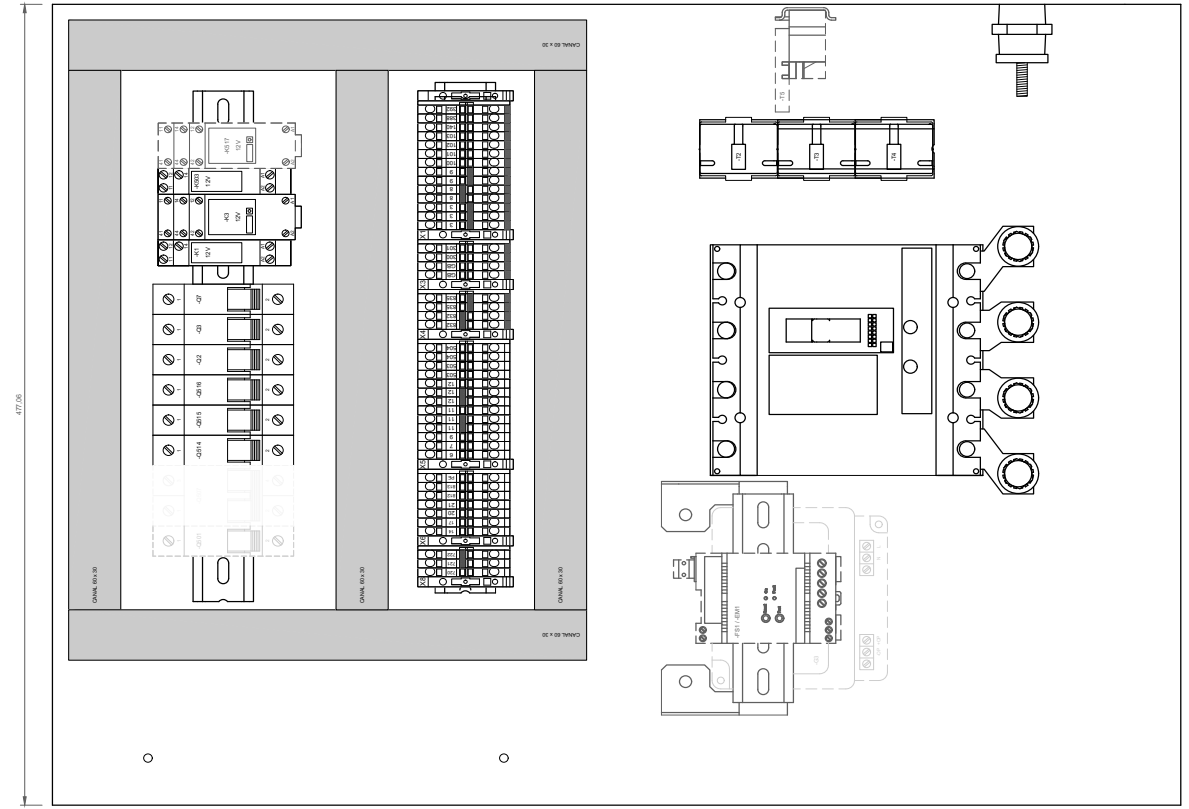


-U1
FLEET LINK
FU1
(5)
X5:12
X5:9
X5:11
-N11
(1/1)
ECU
-B1
12V
-M1
-S10
-M6
-G2
-B11
-B7
-K7
-E1
-Y1
-C8

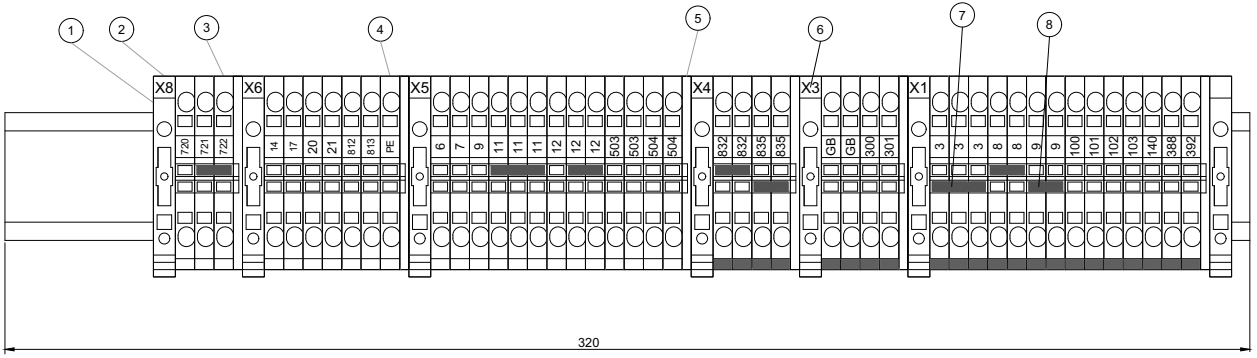
Atlas Copco



(*) EL-RELAY AND IT-RELAY SHARE THE LOCATION



(*) EL-RELAY AND IT-RELAY SHARE THE LOCATION



ITEM	DESCRIPCION COMPONENTE	CANTIDAD
1	CARRIL DIN TS 35X7.5 PERFORADO	320mm
2	TOPE FIJACION BORNAS	7
3	BORNA PUSH-IN 2,5-4 mm²	40
4	BORNA PUSH-IN 2,5-4 mm² PE	1
5	TAPA BORNA PUSH-IN 2,5-4 mm²	6
6	SEÑALIZACION BORNAS SERIE W Y P	47
7	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 3 POLOS	1
8	PUENTE ENCHUFABLE BORNAS PUSH-IN 2,5-4, 2 POLOS	7

COD.SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WIHTE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
14	380/220V 50Hz	20A	200/5A	2.5mm²	2.5mm²
20	380/220V 50Hz	32A	200/5A	6mm²	6mm²
30	380/220V 50Hz	40A	200/5A	10mm²	10mm²
40	380/220V 50Hz	63A	200/5A	16mm²	16mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
14	400/230V 50Hz	20A	200/5A	2.5mm²	2.5mm²
20	400/230V 50Hz	32A	200/5A	6mm²	6mm²
30	400/230V 50Hz	40A	200/5A	10mm²	10mm²
40	400/230V 50Hz	63A	200/5A	16mm²	16mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
14	415/240V 50Hz	20A	200/5A	2.5mm²	2.5mm²
20	415/240V 50Hz	32A	200/5A	6mm²	6mm²
30	415/240V 50Hz	40A	200/5A	10mm²	10mm²
40	415/240V 50Hz	63A	200/5A	16mm²	16mm²

POWER PRP KVA	CONFIGURATION	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
16	208/120V 60Hz	40A	200/5A	10mm²	10mm²
25	208/120V 60Hz	63A	200/5A	16mm²	16mm²
35	208/120V 60Hz	100A	200/5A	16mm²	16mm²
50	208/120V 60Hz	160A	200/5A	25mm²	25mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
16	220/127V 60Hz	40A	200/5A	10mm²	10mm²
25	220/127V 60Hz	63A	200/5A	16mm²	16mm²
35	220/127V 60Hz	100A	200/5A	16mm²	16mm²
50	220/127V 60Hz	160A	200/5A	25mm²	25mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
16	380/220V 60Hz	25A	200/5A	4mm²	4mm²
25	380/220V 60Hz	40A	200/5A	10mm²	10mm²
35	380/220V 60Hz	50A	200/5A	16mm²	16mm²
50	380/220V 60Hz	100A	200/5A	16mm²	16mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4510MKII
	-N11	ECU
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
	-K503	RELAY 12V 1C - CLOSE GENERATOR
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T3	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T4	ELECTRICAL CURRENT TRANSFORMER 200/5A
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-Q501	CIRCUIT BREAKER - 1P 6A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
	-Q514	CIRCUIT BREAKER - 1P 2A
	-Q515	CIRCUIT BREAKER - 1P 2A
	-Q516	CIRCUIT BREAKER - 1P 2A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx5mm
(5)	-U1	FLEETLINK MODULE
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
	-M6	FUEL PUMP
	-B11	SPEED SENSOR
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPCIONALES
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER
(5) FLEETLINK MODULE

TERMINALS LIST

ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	101	EMERGENCY STOP
	DC	102	EMERGENCY STOP
	DC	103	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	GB	CLOSE GENERATOR OUTPUT
	DC	GB	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	**AC**	**832**	**AUX. INPUT AC SUPPLY**
	AC	**835**	**AUX. INPUT AC SUPPLY**
-X5	**DC**	**6**	BATTERY CHARGER +
	DC	**7**	BATTERY CHARGER -
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	9	FLEETLINK INS
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - N (IT RELAY)
	AC	17	VOLTAGE REFERENCE - N (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
	AC	PE	PE
-X8	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	**722**	**SELECTION CONFIGURARTION SUPPLY**
-X10	AC	L1	GENSET - L1
	AC	L2	GENSET - L2
	AC	L3	GENSET - L3
	AC	N	GENSET - N
	AC	PE	GENSET - PE

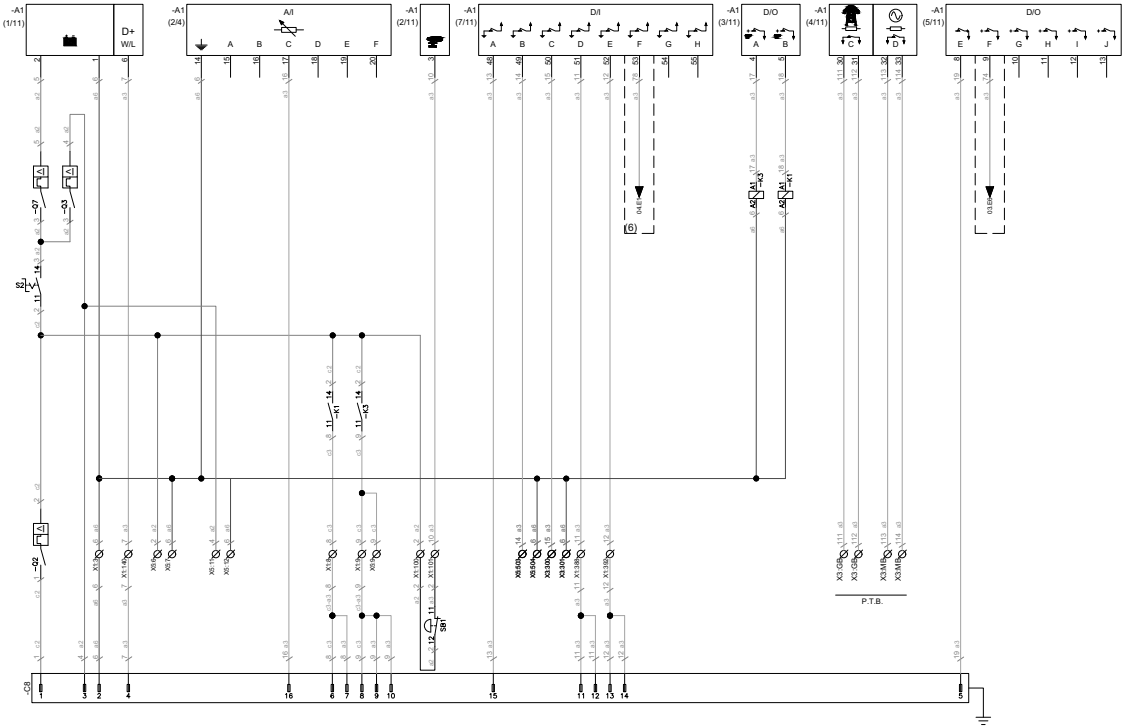
PROGRAMMING DSE

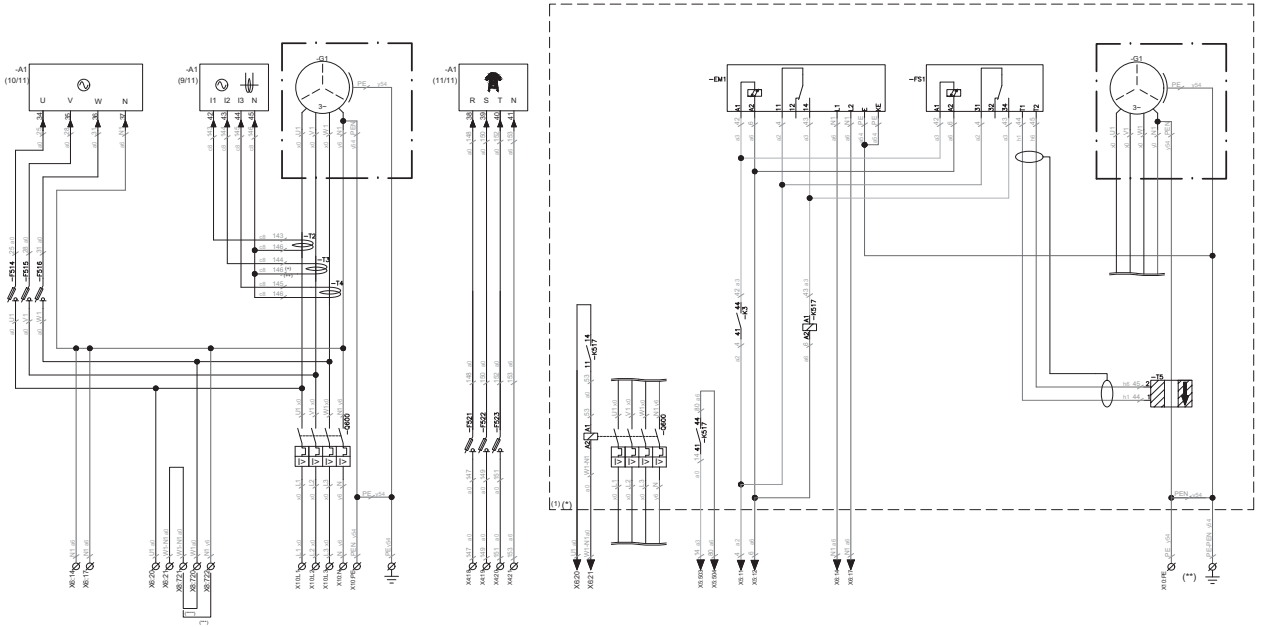
Nº	DIGITAL OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT
E	NOT USED
F	NOT USED

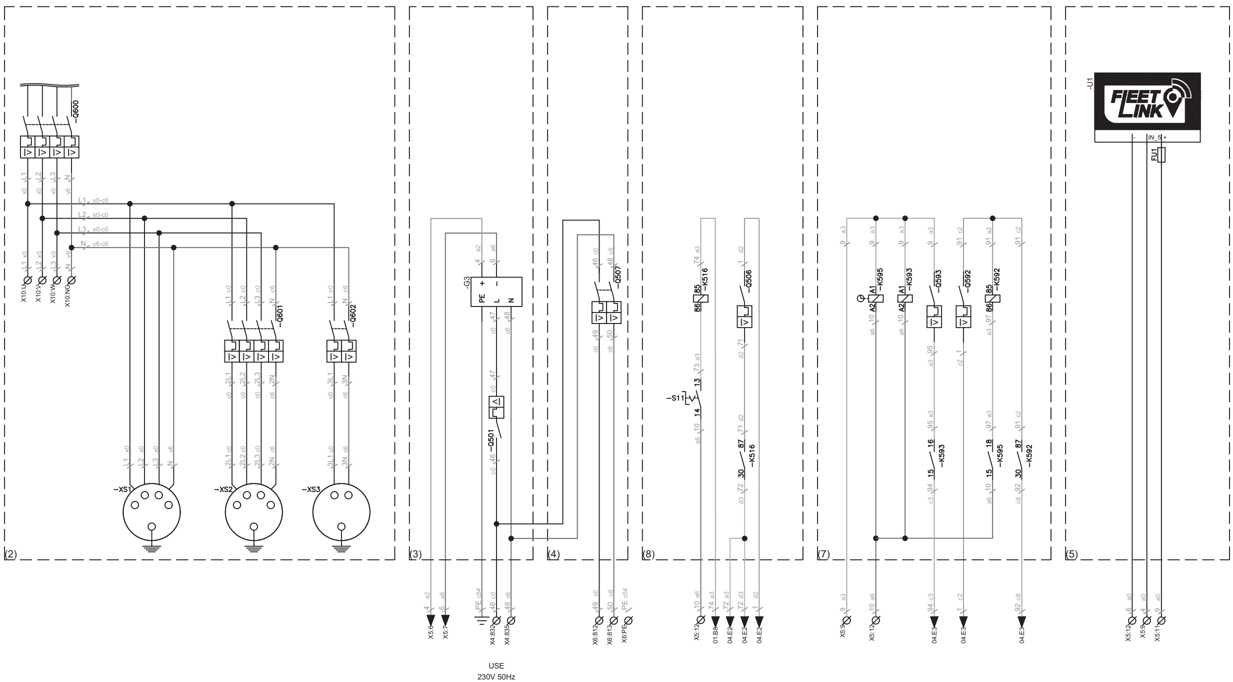
Nº	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	NOT USED

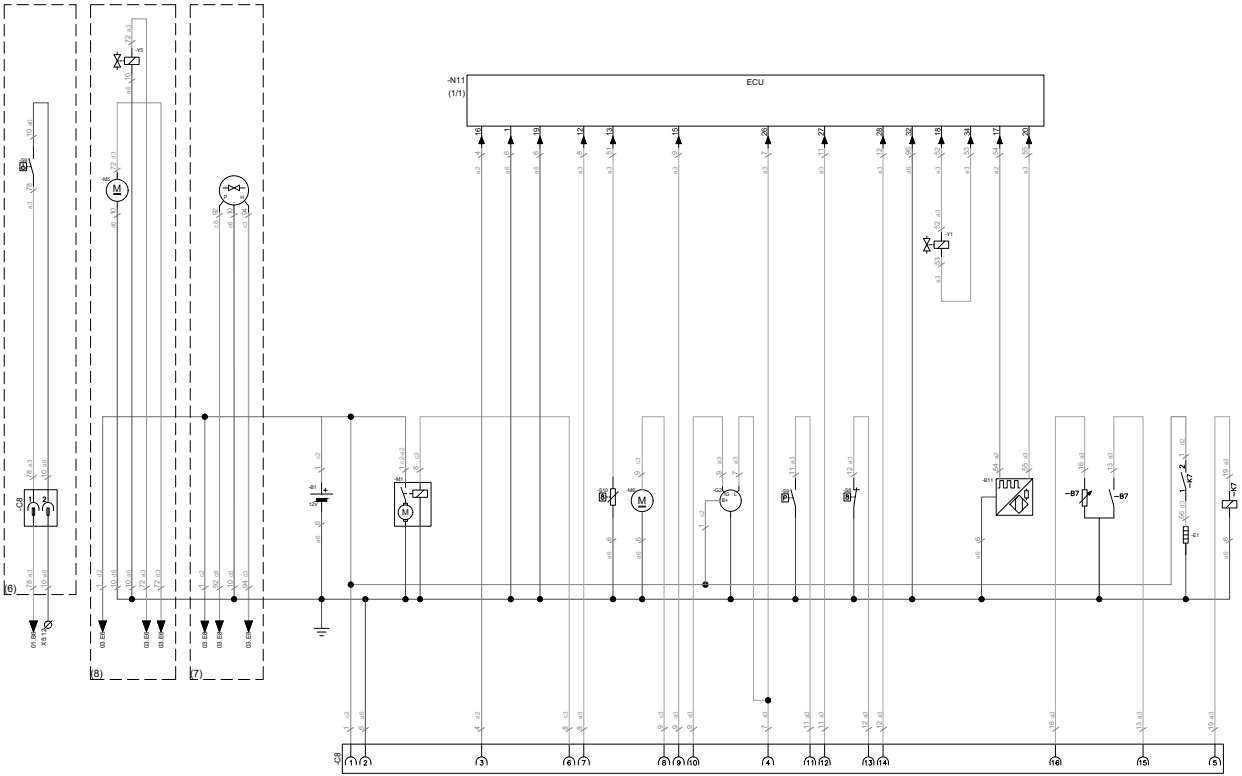
Nº	ANALOG INPUTS
A	EMERGENCY STOP (As a digital input)
B	OIL PRESSURE SWITCH (As digital input)
C	COOLANT TEMP. SWITCH (As digital input)

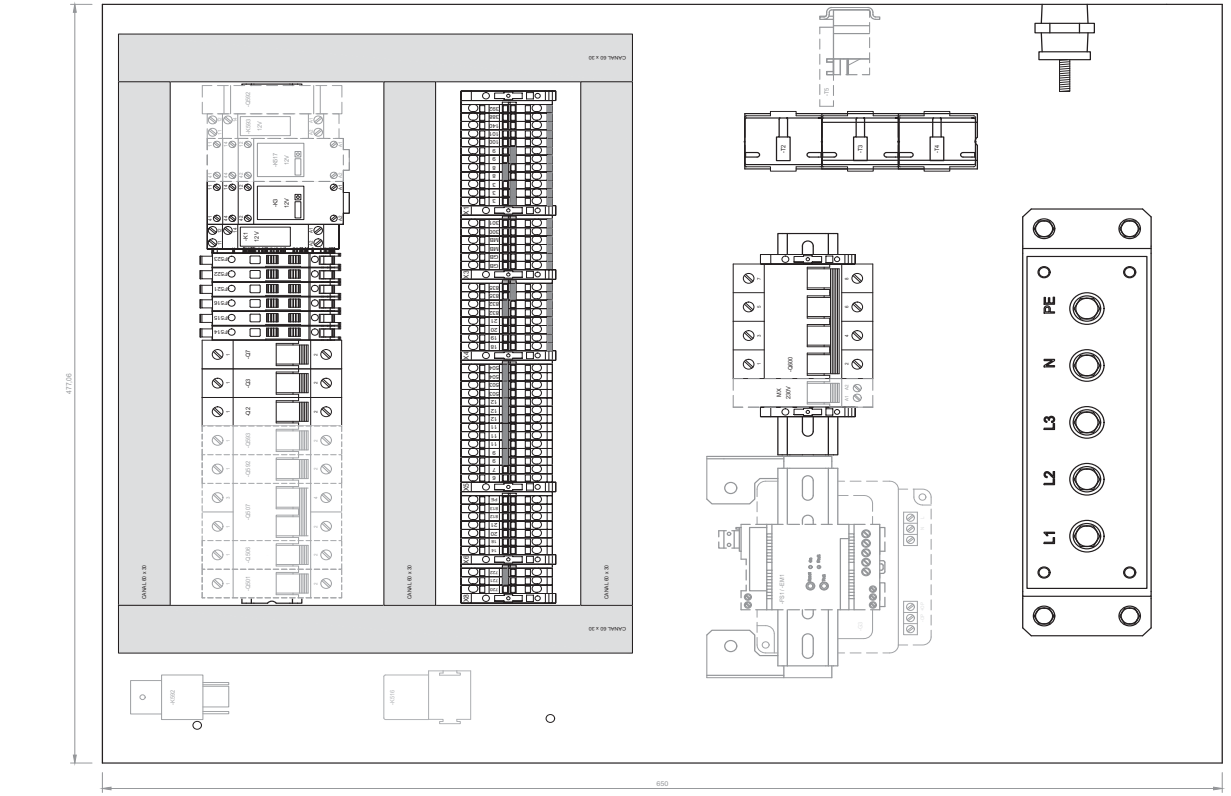
Qc2212 - 1640 0106 30
Applicable for QES 14-20 - 3-phase



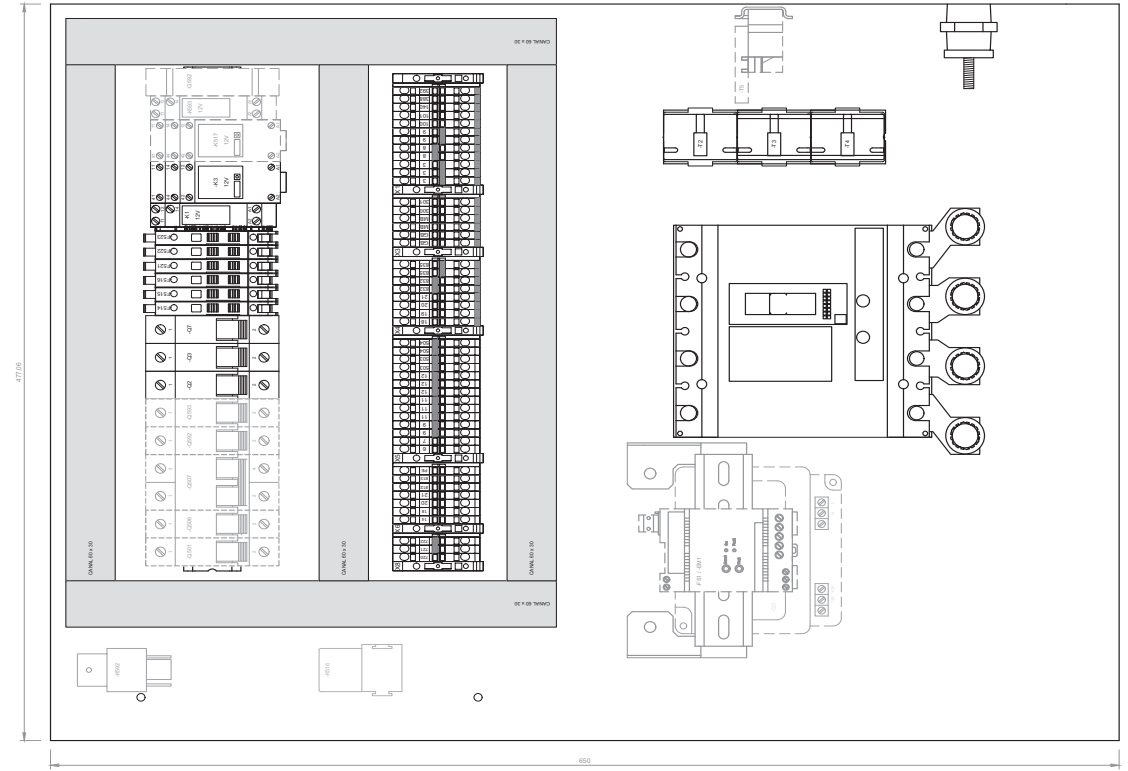



-Q600
-Q601
-Q602
-XS1
-XS2
-XS3
-G3
-Q501
-Q507
-K516
-Q506
-S11
-K595
-K593
-Q593
-Q592
-K592
-U1
FLEET LINK
FU1
(2)
(3)
(4)
(8)
(7)
(5)
USE
230V 50Hz


-N11
(1/1)
ECU
(6)
(8)
(7)
-C8



(*) EL-RELAY AND IT-RELAY SHARE THE LOCATION



(*) EL-RELAY AND IT-RELAY SHARE THE LOCATION

COD SECCION	SECCION
aa	0.5mm²
a	1mm²
b	1.5mm²
c	2.5mm²
d	4mm²
e	6mm²
f	10mm²
g	16mm²
h	2x1mm² Apantallado

COD.SECCION	SECCION
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	PURPLE
8	GREY
9	WHITE
54	GREEN/YELLOW

POWER PRP KVA	CONFIGURATION	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
14	380/220V 50Hz	20A	200/5A	2.5mm²	2.5mm²
20	380/220V 50Hz	32A	200/5A	6mm²	6mm²

POWER PRP KVA	CONFIGURATION	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
16	208/120V 60Hz	40A	200/5A	10mm²	10mm²
25	208/120V 60Hz	63A	200/5A	16mm²	16mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
14	400/230V 50Hz	20A	200/5A	2.5mm²	2.5mm²
20	400/230V 50Hz	32A	200/5A	6mm²	6mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
16	220/127V 60Hz	40A	200/5A	10mm²	10mm²
25	220/127V 60Hz	63A	200/5A	16mm²	16mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
14	415/240V 50Hz	20A	200/5A	2.5mm²	2.5mm²
20	415/240V 50Hz	32A	200/5A	6mm²	6mm²

POWER PRP KVA	VOLTAGE	-Q600	-T2-T3-T4	WIRE SIZE x	WIRE SIZE y
16	380/220V 60Hz	25A	200/5A	4mm²	4mm²
25	380/220V 60Hz	40A	200/5A	10mm²	10mm²

COMPONENT LIST

	ID.	COMPONENT
	-A1	CONTROL MODULE - DSE4520MKII
	-N11	ECU
	-P8	FUEL LEVEL INDICATOR
	-K1	RELAY 12V 1C - CRANK
	-K3	RELAY 12V 2C - FUEL RELAY
	-K7	GLOW PLUGS RELAY
(8)	-K516	RELAY 12V 1C - AUTO. FUEL TRANSFER
(1)	-K517	RELAY 12V 2C - EARTH LEAKAGE
(7)	-K592	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K593	RELAY 12V 1C - INLET SHUTDOWN VALVE
(7)	-K595	RELAY 12V 1C - INLET SHUTDOWN VALVE
	-SB1	EMERGENCY STOP
	-S2	OFF / ON
	-T2	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T3	ELECTRICAL CURRENT TRANSFORMER 200/5A
	-T4	ELECTRICAL CURRENT TRANSFORMER 200/5A
(1)	-T5	TOROIDAL
(1)	-FS1	EARTH LEAKAGE RELAY
(1)	-EM1	IT-RELAY
	-F514	FUSE 2A
	-F515	FUSE 2A
	-F516	FUSE 2A
	-F521	FUSE 2A
	-F522	FUSE 2A
	-F523	FUSE 2A
	-Q2	CIRCUIT BREAKER - 1P 10A
	-Q3	CIRCUIT BREAKER - 1P 6A
	-Q7	CIRCUIT BREAKER - 1P 2A
(3)	-QS01	CIRCUIT BREAKER - 1P 6A
(8)	-Q506	CIRCUIT BREAKER - 1P 32A
(4)	-Q507	CIRCUIT BREAKER - 2P 6A
(7)	-Q592	CIRCUIT BREAKER - 2P 6A
(7)	-Q593	CIRCUIT BREAKER - 2P 6A
	-Q600	CIRCUIT BREAKER - 4P (GENERAL)
(2)	-Q601	CIRCUIT BREAKER - 4P 16A
(2)	-Q602	CIRCUIT BREAKER - 2P 16A
(2)	-XS1	SOCKET CEE FULL A 3P+N+T
(2)	-XS2	SOCKET CEE 16A 3P+N+T
(2)	-XS3	SOCKET 16A 2P+T
(3)	-G3	BATTERY CHARGER
(5)	-FU1	FLEETLINK FUSE 2A 20mmx5mm
(5)	-U1	FLEETLINK MODULE
	-B1	BATTERY
	-G2	CHARGING ALTERNATOR
	-M1	STARTER
(8)	-M5	TRANSFER FUEL PUMP
	-M6	FUEL PUMP
	-B11	SPEED SENSOR
	-B7	FUEL LEVEL SENSOR
	-Y1	FUEL SOLENOID
(8)	-Y5	ELECTROVALVE
	-E1	GLOW PLUGS
	-S8	COOLANT TEMPERATURE SWITCH
	-S9	OIL PRESSURE SWITCH
	-S10	COOLANT TEMPERATURE SENSOR
	-X1	CONTROL TERMINALS - DC
	-X3	CUSTOMER TERMINALS - DC
	-X4	CUSTOMER TERMINALS - AC
	-X5	OPTIONS TERMINALS - DC
	-X6	OPTIONS TERMINALS - AC
	-X8	CONFIGURATION TERMINALS - AC
	-X10	POWER TERMINAL BOX - AC
	-C8	INDUSTRIAL CONNECTOR 16+TT

OPTIONAL EQUIPMENT
(1) EL-RELAY OR IT-RELAY
(2) SOCKET PANEL
(3) BATTERY CHARGUER
(4) HEATER
(5) FLEETLINK MODULE
(6) FLUID LEAKAGE SENSOR
(7) INLET SHUTDOWN VALVE
(8) AUTOMATIC FUEL TRANSFER

TERMINALS LIST

ID.	TYPE	TERMINAL	DESCRIPTION
-X1	DC	3	BATTERY 0V
	DC	8	CRANK
	DC	9	FUEL RELAY
	DC	100	EMERGENCY STOP
	DC	140	B/C EXCITE
	DC	388	OIL PRESSURE ALARM
	DC	392	COOLANT TEMPERATURE ALARM
-X3	DC	GB	CLOSE GENERATOR OUTPUT
	DC	GB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	MB	CLOSE GENERATOR OUTPUT
	DC	300	REMOTE START
	DC	301	REMOTE START
-X4	DC	18	MAIN REF. L1
	DC	19	MAIN REF. L2
	DC	20	MAIN REF. L3
	DC	21	MAIN REF. N
	AC	**832**	**AUX. INPUT AC SUPPLY**
	AC	**835**	**AUX. INPUT AC SUPPLY**
-X5	**DC**	**6**	BATTERY CHARGER +
	DC	**7**	BATTERY CHARGER -
	DC	9	FUEL RELAY
	DC	11	DC POWER OUTPUT - 12V
	DC	12	DC POWER OUTPUT - 0V
	DC	503	EL-RELAY / IT-RELAY
	DC	504	EL-RELAY / IT-RELAY
-X6	AC	14	VOLTAGE REFERENCE - N (IT RELAY)
	AC	17	VOLTAGE REFERENCE - N (IT RELAY)
	AC	20	CIRCUIT BREAKER SHUNT COIL
	AC	21	CIRCUIT BREAKER SHUNT COIL
	AC	812	HEATER
	AC	813	HEATER
-X8	AC	PE	PE
	AC	720	SELECTION CONFIGURARTION SUPPLY
	AC	721	SELECTION CONFIGURARTION SUPPLY
	AC	722	SELECTION CONFIGURARTION SUPPLY
-X10	AC	L1	GENSET - L1
	AC	L2	GENSET - L2
	AC	L3	GENSET - L3
	AC	N	GENSET - N
	AC	PE	GENSET - PE

CONFIGURATION -K595

PROGRAMMING DSE

N°	DIGITAL OUTPUTS
A	FUEL RELAY
B	CRANK
C	PREHEAT
D	CLOSE GENERATOR OUTPUT
E	CLOSE MAIN OUTPUT
F	FUEL PUMP

N°	DIGITAL INPUTS
A	LOW FUEL LEVEL SWITCH
B	DIFFERENTIAL TRIP
C	REMOTE START SIGNAL
D	OIL PRESSURE SWITCH
E	COOLANT TEMP. SWITCH
F	FLUID LEAKAGE SENSOR

N°	ANALOG INPUTS
C	FUEL LEVEL

Following documents are provided with this unit:

- Test Certificate
- EC Declaration of Conformity
  Translations: see following pages

1 **EC DECLARATION OF CONFORMITY**

2 We, Grupos Electrogenos Europa S.A., declare under our sole responsibility, that the product
3 Machine name : **Power Generator**
4 Commercial name :
5 Serial number :

6 Which falls under the provisions of the article 12.2 of the EC Directive 2006/42/EC on the approximation of the laws of the Member States relating to machinery, is in conformity with the relevant Essential Health and Safety Requirements of this directive.

The machinery complies also with the requirements of the following directives and their amendments as indicated.

7

	Directive on the approximation of laws of the Member States relating to		Harmonized and/or Technical Standards used	Att' mnt
b.	Machinery safety	2006/42/EC	EN ISO 12100 EN ISO 12100-2 EN ISO 8528-13	
d.	Electromagnetic compatibility	2014/30/EU	EN 61000-6-2 EN 61000-6-4	
e.	Low voltage equipment	2014/35/EU	EN 60034 EN 60204-1 EN 61439	
f.	Outdoor noise emission	2000/14/EC	ISO 3744	X
i.	Ecodesign, energy-using products Ecodesign, energy-related products	2005/32/EC 2009/125/EC		
j.	Radio equipment	2014/53/EU		X
k.	ROHS Directive	2011/65/EU		
l.	WEEE Directive	2012/19/EU		

8.a The harmonized and the technical standards used are identified in the attachments hereafter
8.b Grupos Electrógenos Europa, S.A. is authorized to compile the technical file

9 10	**Conformity of the specification to the Directives**	**Conformity of the product to the specification and by implication to the directives**
11 12 Issued by	Product Engineering	Manufacturing
13 14 Name	*Ruben Trevejo*	*Rodolfo Reimberg*
15 Signature		

16 Place , Date *Muel (Zaragoza), Spain*

Grupos Electrógenos Europa, S.A. A company within the Atlas Copco Group

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50450 Muel ZARAGOZA
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Fax: +34 902 110 318
For info, please contact your local Atlas Copco representative

V.A.T A50324680

Form 1636016535
ed. 03, 2019-07-22

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Atlas Copco

– Outdoor Noise Emission Directive 2000/14/EC:

Outdoor Noise Emission Directive 2000/14/EC

1. Conformity assessment procedure followed	:	Full Quality Assurance
2. Name and address of the notified body	:	Notified body number 0499 SNCH, Societé Nationale de Certification et d´Homologation L-5201 Sandweiler
3. Measured sound power level	:	dB(A)
4. Guaranteed sound power level	:	dB(A)
5. Electric power	:	kW

Grupos Electrógenos Europa, S.A. — A company within the Atlas Copco Group

Postal address
Polígono Pitarco II, Parcela 20
50450 Muel ZARAGOZA
Spain
www.atlas copco.com

Phone: +34 902 110 316
Fax: +34 902 110 318

For info, please contact your local Atlas Copco representative

V.A.T A50324680

Form 1636016535
ed: 03, 2019-07-22

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Radio equipment 2014/53/EU

1. Description

Only applicable when the machine is equipped with optional device to transmit machine status data.

a. **Component** b. **Description and/or** c. **Part number**	d. **Declaration of conformity attached** (including conformity assessment procedure followed, identification of standards)
Fleet link	

2. Harmonised standards used :

- See table
- See front page of Declaration

3. National technical standards and specifications used : see table

GRUPOS Electrógenos Europa, S.A.
A company within the Atlas Copco Group

Postal address
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50450 Muel ZARAGOZA
Spain
www.atlas copco.com

Phone: +34 902 110 316
Fax: +34 902 110 318

For info, please contact your local Atlas Copco representative

V.A.T A50324680

Form 1636016535
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– Translations of Declaration of Conformity

nl

1. EC-VERKLARING VAN CONFORMITEIT 2. Wij, Grupos Electrogenos Europa S.A., verklaren onder eigen verantwoordelijkheid dat dit product 3. Soort machine: 4. Commerciële naam: 5. Serienummer: 6. dat valt onder de bepalingen van artikel 12.2 van de EG-Richtlijn 2006/42/EG inzake de onderlinge aanpassing van de wetgevingen van de lidstaten betreffende machines, in overeenstemming is met de toepasselijke essentiële gezondheids- en veiligheidseisen van deze richtlijn. De machine voldoet ook aan de eisen van de volgende richtlijnen en hun wijzigingen zoals aangegeven. 7. Richtlijn inzake de onderlinge aanpassing van de wetgevingen van de lidstaten betreffende / Gebruikte geharmoniseerde en/of technische normen / Bijlage b. Machineveiligheid - d. Elektromagnetische compatibiliteit - e. Laagspanningsapparatuur: f. Geluidsemissies buitenshuis – g. Radio en telecommunicatie - 8.a De gebruikte geharmoniseerde en technische normen vindt u in de bijlage 8.b Grupos Electrógenos Europa, S.A. is gemachtigd om het technisch dossier samen te stellen 9. Conformiteit van de specificaties met de Richtlijnen 10. Conformiteit van het product met de specificaties en bijgevolg met de richtlijnen 11. 12. Uitgegeven door / Product-engineering / Fabricage 13. 14. Naam: 15. Handtekening 16. Plaats, datum:
Richtlijn 2000/14/EG betreffende geluidsemissie buitenshuis 1. Gevolgde procedure voor conformiteitsboordeling: 2. Naam en adres van de aangemelde instantie: Nummer van de aangemelde instantie: 3. Gemeten geluidsenergieniveau: 4. Gegarandeerd geluidsenergieniveau: 5. Elektrisch vermogen:
Richtlijn radiocommunicatie 2014/53 / EU 1. Beschrijving: 2. Geharmoniseerde normen die zijn gebruikt 3. Nationale technische normen en specificaties die zijn gebruikt:

fr

1. DÉCLARATION DE CONFORMITÉ CE 2. Nous, Grupos Electrógenos Europa S.A., déclarons sous notre entière responsabilité, que le produit 3. Nom de la machine : 4. Nom commercial : 5. Numéro de série : 6. Qui relève des dispositions de l'article 12.2 de la directive européenne 2006/42/EC, sur le rapprochement des législations des États membres relatives aux machines, est conforme aux exigences essentielles de santé et de sécurité pertinentes de cette directive. La machine est également conforme aux exigences des directives suivantes et de leurs amendements, comme indiqué. 7. Directive sur le rapprochement des législations des États membres relatives / Normes harmonisées et/ou techniques utilisées / Pièce jointe b. Sécurité des machines - d. Compatibilité électromagnétique - e. Équipements basse tension - f. Émissions sonores à l'extérieur – g. Radio et télécommunications - 8.a. Les normes harmonisées et techniques utilisées sont identifiées dans les pièces ci-jointes 8.b. Grupos Electrógenos Europa, S.A. est autorisé à constituer le dossier technique 9. Conformité des caractéristiques techniques aux directives 10. Conformité du produit aux caractéristiques techniques et, par conséquent, aux directives 11. 12. Rédigé par / Département Ingénierie du produit / Département Fabrication 13. 14. Nom : 15.Signature 16. Lieu, Date :
Directive 2000/14/EC relative aux émissions sonores à l'extérieur 1. Procédure d'évaluation de la conformité : 2. Nom et adresse de l'organisme notifié : Organisme notifié 3. Niveau de puissance acoustique mesuré : 4. Niveau de puissance acoustique garanti : 5. Puissance électrique :
Directive sur les télécommunications radioélectriques 2014/53 / UE 1. Description: 2. Normes harmonisées utilisées 3. Normes techniques et spécifications nationales utilisées:

de

1. EG-KONFORMITÄTSERKLÄRUNG 2. Wir, Grupos Electrogenos Europa S.A., erklären unter unserer alleinigen Verantwortung, dass das Produkt 3. Maschinenbezeichnung : 4. Handelsname : 5. Seriennummer : 6. welches unter die Bestimmungen des Artikels 12.2 der EU-Richtlinie 2006/42/EG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten für Maschinen fällt, die relevanten grundlegenden Sicherheits- und Gesundheitsschutzanforderungen dieser Richtlinie erfüllt. Die Maschine erfüllt ebenfalls die Anforderungen der folgenden Richtlinien und ihrer angegebenen Änderungen : 7. Richtlinie zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten in Bezug auf / Angewandte harmonisierte und/oder technische Normen / Anhang b. Maschinensicherheit - d. Elektromagnetische Verträglichkeit - e. Niederspannungsgeräte - f. Geräuschemissionen im Freien – g. Radio und Telekommunikation - 8.a Die angewandten harmonisierten und technischen Normen werden in den Anhängen an dieses Dokument gekennzeichnet. 8.b Grupos Electrógenos Europa, S.A. ist bevollmächtigt, die technischen Unterlagen zusammenzustellen. 9. Konformität der Spezifikation mit den Richtlinien 10. Konformität des Produkts mit der Spezifikation und damit indirekt mit den Richtlinien 11. 12. Ausgestellt von / Product Engineering / Manufacturing 13. 14. Name : 15. Unterschrift 16. Ort und Datum :
Richtlinie über Geräuschemissionen im Freien 2000/14/EG 1. Befolgtes Verfahren zur Bewertung der Konformität : 2. Name und Adresse der benannten Stelle : Nummer der benannten Stelle : 3. Gemessener Schallleistungspegel : 4. Garantierter Schallleistungspegel : 5. Elektrische Leistung :
Funktelekommunikationsrichtlinie 2014/53 / EU 1. Beschreibung: 2. Angewandte harmonisierte Normen 3. Verwendete nationale technische Normen und Spezifikationen:

es

1. DECLARACIÓN DE CONFORMIDAD CE 2. Grupos Electrógenos Europa S.A. declara, bajo responsabilidad exclusiva, que el producto 3. Nombre de la máquina: 4. Nombre comercial: 5. Número de serie: 6. Lo que queda sujeto a las disposiciones del artículo 12.2 de la Directiva 2006/42/CE sobre la aproximación de las leyes de los Estados Miembros relativa a maquinaria, y se da en conformidad con los requisitos básicos de salud y seguridad de esta directiva. Asimismo, la máquina cumple los requisitos de las siguientes directivas y sus enmiendas tal y como se indica. 7. Directiva sobre la aproximación de las leyes de los Estados Miembros relativa a Estándares armonizados y/o técnicos utilizados / Documentación adjunta b. Seguridad relativa a maquinaria - d. Compatibilidad electromagnética - e. Equipo de bajo voltaje - f. Emisiones de ruido en exteriores – g. Radio y telecomunicaciones- 8.a. Los estándares armonizados y técnicos utilizados están identificados en la documentación adjunta. 8.b. Grupos Electrógenos Europa S.A. cuenta con autorización para compilar el archivo técnico. 9. Conformidad de la especificación con las directivas 10. Conformidad del producto con la especificación y por implicación con las directivas 11. 12. Emitido por / Ingeniería de productos/Fabricación 13. 14. Nombre 15. Firma 16. Localidad, Fecha:
Directiva sobre emisiones de ruido en exteriores 2000/14/CE 1. Procedimiento de evaluación de conformidad observado: 2. Nombre y dirección de institución notificada: Número de institución notificada 3. Nivel de potencia acústica medido: 4. Nivel de potencia acústica garantizado: 5. Potencia eléctrica:
Directiva sobre Radio telecomunicaciones 2014/53/UE 1. Descripción: 2. Normas armonizadas usadas 3. Normas tecnicas nacionales y especificaciones usadas:

sv

1. EG-FÖRSÄKRAN OM ÖVERENSSTÄMMELSE 2. Vi, Grupos Electrogenos Europa S.A., försäkrar under eget ansvar att produkten 3. Maskinnamn: 4. Kommersiellt namn: 5. Serienummer: 6. Vilken omfattas av bestämmelserna i punkt 12.2 i rådets direktiv 2006/42/EG om tillnärmning av medlemsstaternas lagstiftning om maskiner, överensstämmer med de relevanta och väsentliga hälso- och säkerhetskraven i detta direktiv. Utrustningen överensstämmer även med kraven i följande direktiv med tillhörande ändringar enligt vad som anges. 7. Direktiv om tillnärmning av medlemsstaternas lagstiftning avseende / Tillämpade harmoniserade och/eller tekniska standarder / Bilaga b. Maskinsäkerhet - d. Elektromagnetisk kompatibilitet - e. Lågspänningsutrustning - f. Buller från utomhusutrustning – g. Radio och telekommunikation - 8.a. De tillämpade harmoniserade och tekniska standarderna identifieras i följande bilagor 8.b. Grupos Electrógenos Europa, S.A. har behörighet att upprätta den tekniska dokumentationen 9. Specifikationens överensstämmelse med direktiven 10. Produktens överensstämmelse med specifikationen och underförstått med direktiven 11. 12. Utfärdat av / Produktutveckling / Tillverkning 13. 14. Namn: 15. Underskrift 16. Ort, Datum:
Direktiv om buller från utomhusutrustning 2000/14/EG 1. Tillämpat förfarande vid bedömning av överensstämmelse : 2. Namn och adress till det anmälda organet : Anmält organ 3. Uppmätt ljudeffektnivå: 4. Garanterad ljudeffektnivå: 5. Effekt:
Direktivet om radiotelefon 2014/53 / EU 1. Beskrivning: 2. Harmoniserade standarder används 3. Nationella tekniska standarder och specifikationer som används:

it

1. DICHIARAZIONE DI CONFORMITÀ CE 2. Il Grupos Electrógenos Europa S.A., sotto la propria esclusiva responsabilità, dichiara che il prodotto 3. Nome macchina: 4. Nome commerciale: 5. Numero di serie: 6. Che rientra nell'ambito delle disposizioni dell'articolo 12.2 della direttiva CE 2006/42/CE concernente il ravvicinamento delle legislazioni degli Stati membri relative a macchinari, è conforme ai Requisiti essenziali di salute e sicurezza di questa direttiva. Questo macchinario è inoltre conforme con i requisiti delle seguenti direttive e successivi emendamenti, come indicato. 7. Direttiva concernente il ravvicinamento delle legislazioni degli Stati membri relative a / Norme armonizzate e/o tecniche utilizzate / Allegato b. Sicurezza dei macchinari - d. Compatibilità elettromagnetica - e. Apparecchiature a bassa tensione - f. Emissione acustica all'aperto – g. Radio e telecomunicazioni - 8.a. Le norme armonizzate e tecniche utilizzate sono identificate nell'allegato seguente 8.b. Grupos Electrógenos Europa, S.A. è autorizzata a compilare il fascicolo tecnico 9. Conformità delle specifiche alle direttive 10. Conformità del prodotto alle specifiche e, implicitamente, alle direttive 11. 12. Rilasciato da / Ingegneria dei prodotti / Produzione 13. 14. Nome: 15. Firma 16. Luogo, data:
Direttiva 2000/14/CE sull'emissione acustica all'aperto 1. Procedura di valutazione della conformità seguita: 2. Nome e indirizzo dell'organismo notificato: Organismo notificato numero 3. Livello di potenza acustica misurato: 4. Livello di potenza acustica garantito: 5. Potenza elettrica:
Direttiva sulle telecomunicazioni radio 2014/53 / UE 1. Descrizione: 2. Norme armonizzate utilizzate 3. Norme e specifiche tecniche nazionali utilizzate:

da

1. EF-overensstemmelseserklæring 2. Vi, Grupos Electrogenos Europa S.A., erklærer under eneansvar, at produktet 3. Maskinnavn: 4. Handelsnavn: 5. Serienummer: 6. som falder ind under bestemmelserne i artikel 12.2 af EF-direktivet 2006/42/EF om indbyrdes tilnærmelse af medlemsstaternes lovgivning om maskiner, er i overensstemmelse med de relevante væsentlige sundheds- og sikkerhedskrav i dette direktiv. Maskinen overholder også bestemmelserne i de nedenfor oplyste direktiver og deres ændringer. 7. Direktiv om indbyrdes tilnærmelse af medlemsstaternes lovgivning om / Anvendte harmoniserede og/eller tekniske standarder / Bilag b. Maskinsikkerhed - d. Elektromagnetisk kompatibilitet - e. Lavspændingsudstyr - f. Udendørs støjemission – g. Radio og telekommunikation - 8.a. De anvendte harmoniserede og tekniske standarder identificeres i de følgende bilag. 8.b. Grupos Electrógenos Europa, S.A. Er autoriseret til at sammenstille den tekniske dokumentation. 9. Specifikationens overensstemmelse med direktiverne 10. Produktets overensstemmelse med specifikationen og implicit med direktiverne 11. 12. Udstedt af / Produktteknik / Produktion 13. 14. Navn: 15. Underskrift: 16. Sted, dato:
Direktiv om udendørs støjemission 2000/14/EF 1. Overensstemmelsesvurderingsprocedure fulgt: 2. Navn og adresse på bemyndiget organ: Bemyndiget organ nummer 3. Målt lydeffektniveau: 4. Garanteret lydeffektniveau: 5. Elektrisk strøm:
Direktivet om radiotelefoni 2014/53 / EU 1. Beskrivelse: 2. Harmoniserede standarder anvendt 3. Nationale tekniske standarder og specifikationer anvendt:

no

1. EU-SAMSVARSERKL.ÆRING 2. Vi, Grupos Electrogenos Europa S.A., erklærer under eneansvar at produktet 3. Maskinens navn: 4. Kommersielt navn: 5. Serienummer: 6. som dekkes av bestemmelsene i artikkel 12.2 i EU-direktiv 2006/42/EF om tilnærming av medlemsstatenes lovgivning om maskiner, samsvarer med relevante grunnleggende krav til helse og sikkerhet i dette direktivet. Maskineriet overholder også kravene i følgende direktiver med endringer som angitt. 7. Direktiv om tilnærming av medlemsstatenes lovgivning om / Harmoniserte og/eller tekniske standarder som brukes / Vedlegg b. Maskinsikkerhet - d. Elektromagnetisk kompatibilitet - e. Lavspenningsutstyr - f. Støyutslipp i miljøet fra utstyr til utendørs bruk – g. Radio og telekommunikasjon - 8.a. De harmoniserte og tekniske standardene som brukes, er definert i nedenstående vedlegg 8.b. Grupos Electrógenos Europa, S.A. er autorisert til å utarbeide det tekniske arkivet 9. Samsvar med spesifikasjonene i direktivene 10. Produktets samsvar med spesifikasjonen, med henvisning til direktivene 11. 12. Utstedt av / Product Engineering / Manufacturing 13. 14. Navn: 15. Underskrift: 16. Sted, dato:
Direktivet 2000/14/EF om støyutslipp i miljøet fra utstyr til utendørs bruk 1. Prosedyre for samsvarsvurdering som er fulgt: 2. Navn og adresse på meldt organ: Meldt organ nummer 3. Målt lydeffektnivå: 4. Garantert lydeffektnivå: 5. Elektrisk kraft:
Radio telekommunikasjon Direktiv 2014/53 / EU 1. Beskrivelse: 2. Harmoniserte standarder brukt 3. Nasjonale tekniske standarder og spesifikasjoner som brukes:

fi

1. EY-VAATIMUSTENMUKAISUUSVAKUUTUS 2. Me, Grupos Electrogenos Europa S.A., vakuutamme ja otamme täyden vastuun siitä, että tuote 3. Koneen nimi: 4. Kaupallinen nimi: 5. Sarjanumero: 6. Jota koskevat jäsenvaltioiden koneisiin liittyvien lakien lähentämistä koskevan EY-direktiivin 2006/42/EY artiklan 12.2 ehdot, on tämän direktiivin sovellettavien olennaisten terveys- ja turvallisuusvaatimusten mukainen. Kone täyttää myös seuraavien direktiivien ja niiden ilmoitettujen liitteiden vaatimukset. 7. Direktiivit alla olevia seikkoja koskevien jäsenvaltioiden lakien lähentämisestä / Käytetyt harmonisoidut ja/tai tekniset standardit / Liite b. Koneturvallisuus - d. Sähkömagneettinen yhteensopivuus - e. Pienjännitelaitteet - f. Ulkona käytettävien koneiden melupäästöt – g. Radio ja televiestintä - 8.a. Käytetyt harmonisoidut ja tekniset standardit on ilmoitettu liitteissä jäljempänä. 8.b. Grupos Electrógenos Europa, S.A. on valtuutettu laatimaan teknisen eritelmän. 9. Erittelyn direktiivinmukaisuus 10. Tuotteen erittelyn- ja siten direktiivinmukaisuus 11. 12. Laatinut / Tuotesuunnittelu / Valmistus 13. 14. Nimi: 15. Allekirjoitus 16. Paikka ja päiväys:
Ulkona käytettävien koneiden meludirektiivi 2000/14/EY 1. Noudatettu vaatimustenmukaisuuden arviointimenetely : 2. Ilmoitetun tarkastuslaitoksen nimi ja osoite: Ilmoitetun tarkastuslaitoksen 3. Mitattu ääniteho: 4. Taattu ääniteho: 5. Sähköteho:
Radiotekniikka Direktiivi 2014/53 / EU 1. Kuvaus: 2. Yhdenmukaistetut standardit 3. Käytetyt kansalliset tekniset standardit ja eritelmät:

el

1. ΣΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ ΕΚ 2. Εμείς, η Grupos Electrogenos Europa S.A., δηλώνουμε υπό την αποκλειστική μας ευθύνη ότι το προϊόν 3. Όνομα μηχανήματος: 4. Εμπορικό όνομα: 5. Σειριακός αριθμός: 6. Το οποίο, σύμφωνα με τις διατάξεις του άρθρου 12.2 της Οδηγίας ΕΚ 2006/42/ΕΚ για την προσέγγιση των νομοθεσιών των κρατών μελών σχετικά με τις μηχανές, συμμορφώνεται με τις σχετικές Βασικές Απαιτήσεις Υγείας και Ασφάλειας της παρούσας οδηγίας. Το μηχάνημα συμμορφώνεται επίσης με τις απαιτήσεις των ακόλουθων οδηγιών και των τροποποιήσεών τους όπως αναφέρεται. 7. Οδηγία για την προσέγγιση των νομοθεσιών των κρατών μελών σχετικά με / τα εναρμονισμένα ή/και τα τεχνικά πρότυπα που χρησιμοποιούνται / Προσάρτημα b. Ασφάλεια μηχανών - d. Ηλεκτρομαγνητική συμβατότητα - e. Εξοπλισμός χαμηλής τάσης - f. Εκπομπή θορύβου στο περιβάλλον – g. Ραδιόφωνο και τηλεπικοινωνίες - 8.a. Τα εναρμονισμένα και τα τεχνικά πρότυπα που χρησιμοποιούνται προσδιορίζονται στα συνημμένα 8.b. Η Grupos Electrógenos Europa, S.A. έχει εξουσιοδοτηθεί για την κατάρτιση του τεχνικού φακέλου 9. Συμμόρφωση των προϊοντων/παραόν των Οδηγιών 10. Συμμόρφωση του προϊόντος προς τις προδιαγραφές και έμμεσα με τις οδηγίες 11. 12. Εκδόθηκε από / Εφαρμοσμένη μηχανική / Κατασκευή 13. 14. Όνομα: 15. Υπογραφή 16. Τόπος, Ημερομηνία:
Οδηγία 2000/14/ΕΚ σχετικά με την Εκπομπή θορύβου στο περιβάλλον 1. Διαδικασία αξιολόγησης της συμμόρφωσης που ακολουθήθηκε : 2. Όνομα και διεύθυνση του κοινοποιημένου φορέα: Αριθμός κοινοποιημένου φορέα 3. Μετρούμενη στάθμη ηχητικής πίεσης: 4. Εγγυημένη στάθμη ηχητικής πίεσης: 5. Ηλεκτρική ισχύς:
Οδηγία για τις ραδιοτηλεπικοινωνίες 2014/53 / ΕΕ 1. Περιγραφή: 2. Εναρμονισμένα πρότυπα που χρησιμοποιήθηκαν 3. Εθνικά τεχνικά πρότυπα και προδιαγραφές που χρησιμοποιήθηκαν:

pt

1. DECLARAÇÃO DE CONFORMIDADE CE: 2. Nós, Grupos Electrogenos Europa S.A., declaramos, sob a nossa inteira responsabilidade, que o produto 3. Nome da máquina: 4. Nome comercial: 5. Número de série: 6. Enquadrado nas disposições do artigo 12.2 da Directiva CE 2006/42/CE relativa à aproximação das legislações dos Estados-Membros respeitantes às máquinas, está em conformidade com os Requisitos Essenciais de Saúde e de Segurança pertinentes da presente directiva. As máquinas estão também em conformidade com os requisitos das seguintes directivas e respectivas alterações, tal como indicado. 7. Directiva relativa à aproximação das legislações dos Estados-Membros respeitantes a / Normas Técnicas e/ou Harmonizadas utilizadas / Anexo b. Segurança de máquinas - d. Compatibilidade electromagnética - e. Equipamento de baixa tensão - f. Emissões sonoras no exterior – g. Rádio e telecomunicações - 8.a. As normas técnicas e harmonizadas utilizadas encontram-se identificadas nos anexos incluídos 8.b. A Grupos Electrogenos Europa, S.A. está autorizada a compilar o processo técnico 9. Conformidade das especificações das Directivas 10. Conformidade do produto com as especificações e, implicitamente, com as directivas 11. 12. Emitido por / Engenharia de Produto / Fabrico 13. 14. Nome: 15. Assinatura 16. Local, Data:
Directiva 2000/14/CE relativa às emissões sonoras no exterior 1. Procedimento de avaliação da conformidade adoptado : 2. Nome e morada do organismo notificado: Número do organismo notificado 3. Nível de potência medido: 4. Nível de potência garantido: 5. Potência eléctrica:
Directiva de telecomunicações de rádio 2014/53 / UE 1. Descrição: 2. Normas harmonizadas utilizadas 3. Normas técnicas e especificações técnicas utilizadas:

pl

1. DEKLARACJA ZGODNOŚCI WE 2. Firma Grupos Electrogenos Europa S.A., oświadcza z pełną odpowiedzialnością, że wyrób 3. Nazwa urządzenia: 4. Nazwa handlowa: 5. Numer seryjny: 6. który podlega przepisom artykułu 12.2 dyrektywy WE 2006/42/WE w sprawie zbliżenia ustawodawstw państw członkowskich odnoszących się do maszyn, jest zgodny z odpowiednimi zasadniczymi wymaganiami bezpieczeństwa i ochrony zdrowia tej dyrektywy. Maszyna jest również zgodna z wymaganiami następujących dyrektyw wraz późniejszymi zmianami, jak wskazano poniżej. 7. Dyrektywa w sprawie zbliżenia ustawodawstw państw członkowskich odnoszących się do następujących zagadnień / Zastosowane normy zharmonizowane i/lub techniczne / Załącznik b. Bezpieczeństwo maszyn - d. Kompatybilność elektromagnetyczna - e. Urządzenia niskiego napięcia - f. Emisja hałasu przez urządzenia używane na zewnątrz pomieszczeń – g. Radio i telekomunikacja - 8.a. Zastosowane normy zharmonizowane i techniczne są wyszczególnione w załącznikach 8.b. Firma Grupos Electrógenos Europa, SA jest upoważniona do sporządzania dokumentacji technicznej 9. Zgodność specyfikacji z dyrektywą 10. Zgodność wyrobu ze specyfikacją, a tym samym z dyrektywami 11. 12. Wystawca / Inżynier produktu / Producent 13. 14. Nazwisko: 15. Podpis 16. Miejscowość, data:
Dyrektywa w sprawie hałasu powodowanego przez urządzenia używane na zewnątrz pomieszczeń 2000/14/WE 1. Zastosowana procedura oceny zgodności: 2. Nazwa i adres jednostki notyfikowanej: Jednostka notyfikowana 3. Zmierzony poziom mocy akustycznej: 4. Gwarantowany poziom mocy akustycznej: 5. Moc elektryczna:
Dyrektywa w sprawie telekomunikacji radiowej 2014/53 / UE 1. Opis: 2. Zastosowane normy zharmonizowane 3. Stosowane krajowe normy techniczne i specyfikacje:

hu

1. EC MEGFELELŐSÉGI NYILATKOZAT 2. Alulírott Grupos Electrogenos Europa S.A. kizárólagos felelősségünk tudatában kijelentjük, hogy az alábbi termék: 3. Berendezés neve: 4. Kereskedelmi megnevezés: 5. Sorozatszám: 6. Mely a tagállamok gépekre vonatkozó jogszabályainak közelítéséről szóló 2006/42/EK irányelv 12.2 szakaszában foglalt rendelkezések hatálya alá esik, megfelel az említett irányelv vonatkozó alapvető egészségvédelmi és biztonsági követelményeinek. A berendezés megfelel továbbá az alábbi irányelvekben, illetve jelzett esetekben azok módosított változataiban foglalt követelményeknek. 7. A tagállamok alábbiakra vonatkozó jogszabályainak közelítéséről szóló irányelv / Felhasznált harmonizált, illetve műszaki szabványok / Csatolmány b. Gépek biztonsági követelményei - d. Elektromágneses összeférhetőség - e. Alacsony feszültségű berendezések - f. Kültéri zajkibocsátás – g. Rádió és távközlés - 8.a. A felhasznált harmonizált és műszaki szabványokat az alábbi csatolmányok tartalmazzák 8.b. A Grupos Electrógenos Europa, S.A. jogosult a műszaki dokumentáció összeállítására 9. Az Irányelvek előírásainak megfelel 10. A termék az előírásoknak, valamint ebből kifolyólag az Irányelveknek megfelel 11. 12. Kibocsátó fél / Termékfejlesztés / Gyártás 13. 14. Név: 15. Aláírás 16. Kelt, dátum:
Kültéri zajkibocsátásról szóló irányelv 2000/14/EK 1. Alkalmazott megfelelőségértékelő eljárás: 2. Az értesített testület megnevezése és címe: Értesített testület száma: 3. Hangteljesítmény mért szintje: 4. Hangteljesítmény garantált szintje: 5. Elektromos teljesítmény:
Rádiótávközlési irányelv 2014/53 / EU 1. Leírás: 2. Harmonizált szabványok 3. Az alkalmazott nemzeti műszaki szabványok és előírások:

cs

1. ES PROHLÁŠENÍ O SHODĚ 2. My, společnost Grupos Electrogenos Europa S.A. prohlašujeme na naši vlastní odpovědnost, že produkt 3. Název stroje: 4. Obchodní název: 5. Výrobní číslo: 6. který spadá pod ustanovení článku 12.2 směrnice Evropského společenství 2006/42/ES o sbližování právních předpisů členských států týkajících se strojních zařízení, odpovídá příslušným základním zdravotním a bezpečnostním požadavkům této směrnice. Toto strojní zařízení též odpovídá požadavkům následujících směrnice v platném znění, jak je uvedeno. 7. Směrnice o sbližování právních předpisů členských států týkajících se / používaných harmonizovaných nebo technických norem / Příloha b. Bezpečnost strojů - d. Elektromagnetická kompaktibilita - e. Nízkonapěťová zařízení - f. Emise hluku venkovní – g. Rozhlas a telekomunikace - 8.a. Použité harmonizované a technické normy jsou uvedeny v přílohách dále. 8.b. Společnost Grupos Electrógenos Europa, S.A. je oprávněna vydávat technickou dokumentaci. 9. Shoda specifikace se směrnicemi 10. Shoda výrobku se specifikacemi a implicitně se směrnicemi 11. 12. Vydal / Technické oddělení / Výroba 13. 14. Jméno: 15. Podpis 16. Místo, datum:
Směrnice o emisích hluku zařízení určených pro použití ve venkovním prostoru 2000/14/ES 1. Použitý postup posuzování shody: 2. Název a adresa oznámeného subjektu: Číslo oznámeného subjektu 3. Naměřená hladina akustického výkonu: 4. Zaručená hladina akustického výkonu: 5. Elektrický výkon:
Směrnice o rádiových telekomunikacích 2014/53 / EU 1. Popis: 2. Použité harmonizované normy 3. Použité národní technické normy a specifikace:

sk

1. Vyhlásenie o zhode ES 2. My, Grupos Electrogenos Europa S.A., na našu výhradnú zodpovednosť vyhlasujeme, že výrobok 3. Názov stroja: 4. Obchodný názov: 5. Sériové číslo: 6. na ktorý sa vzťahujú ustanovenia článku 12 ods. 2 smernice Európskeho parlamentu a Rady 2006/42/ES o strojových zariadeniach, je v súlade s príslušnými základnými požiadavkami na bezpečnosť a ochranu zdravia tejto smernice. Strojové zariadenie vyhovuje aj požiadavkám nasledujúcich smerníc a ich uvedených zmien. 7. Smernica o aproximácii právnych predpisov členských štátov týkajúcich sa / Použité harmonizované alebo technické normy / Príloha b. bezpečnosti strojových zariadení - d. elektromagnetickej kompatibility - e. nízkonapäťových zariadení - f. emisií hluku vo voľnom priestranstve – g. Rozhlas a telekomunikácie - 8.a. Použité harmonizované a technické normy sú uvedené v prílohách ďalej. 8.b. Spoločnosť Grupos Electrógenos Europa, S.A. je oprávnená zostaviť technickú dokumentáciu. 9. Zhoda špecifikácií so smernicami 10. Zhoda výrobku so špecifikáciami a nepriamo so smernicami 11. 12. Vydal / výrobný technik / Výroba 13. 14. Meno: 15. Podpis 16. Miesto, dátum:
Smernica o emisiách hluku vo voľnom prostredí 2000/14/ES 1. Dodržaný postup posudzovania zhody: 2. Meno a adresa notifikovaného orgánu : Notifikovaný orgán číslo 3. Nameraná hladina akustického výkonu: 4. Zaručená hladina akustického výkonu: 5. Elektrický výkon:
Smernica o rádiových telekomunikáciách 2014/53 / EÚ 1. Opis: 2. Použité harmonizované normy 3. Použité národné technické normy a špecifikácie:

sl

1. ES-IZJAVA O SKLADNOSTI 2. Mi, pri skupini Grupos Electrogenos Europa S.A., pod svojo lastno odgovornostjo izjavljamo, da je izdelek 3. Ime stroja: 4. Trgovsko ime: 5. Serijska številka: 6. ki ga urejajo določila člena 12.2 Direktive 2006/42/ES o približevanju zakonov držav članic o strojih, skladen z bistvenimi zdravstvenimi in varnostnimi zahtevami te Direktive. Stroj prav tako ustreza zahtevam direktiv in njihovih sprememb, ki so navedeni spodaj. 7. Direktiva o približevanju zakonov držav članic v zvezi / z uporabljenimi usklajenimi standardi in/ali tehničnimi standardi / Priloga b. Varnost strojev - d. Elektromagnetna združljivost - e. Nizkonapetostna oprema - f. Emisije hrupa v okolje – g. Radio in telekomunikacije - 8.a. Uporabljeni usklajeni standardi in tehnični standardi so opredeljeni v spodnjih prilogah 8.b. Za pripravo tehnične dokumentacije je pooblaščena družba Grupos Electrógenos Europa, S.A. 9. Skladnost tehničnih podatkov z Direktivami / 10. Skladnost izdelka s tehničnimi podatki in implicitno z direktivami 11. 12. Izdal/-a / Produktni inženiring / Proizvodnja 13. 14. Ime: 15. Podpis 16. Kraj, datum:
Direktiva 2000/14/ES o emisijah hrupa v okolje 1. Opravljen je bil naslednji postopek za oceno skladnosti : 2. Ime in naslov priglašenega organa: Številka priglašenega organa 3. Izmerjena raven moči zvoka: 4. Zagotovljena raven moči zvoka: 5. Električna moč:
Direktiva o radijskih telekomunikacijah 2014/53 / EU 1. Opis: 2. Uporabljeni usklajeni standardi 3. Uporabljeni nacionalni tehnični standardi in specifikacije:

et

1. EÜ VASTAVUSDEKLARATSIOON 2. Meie, Grupos Electrogenos Europa S.A., deklareerime oma ainuvastutusel, et toode: 3. Masina nimetus: 4. Kaubanduslik nimetus: 5. Seerianumber: 6. mis langeb EÜ liikmesriikides masinaid käsitlevate õigusaktide ühtlustamise direktiivi 2006/42/EÜ artikli 12.2 sätete alla, on kooskõlas antud direktiiviga ette nähtud oluliste tervishoiu- ja ohutusnõuetega. Masin on samuti kooskõlas järgmiste direktiivide nõuetega ja nende näidatud muudatustega. 7. EÜ liikmesriikide seadusandluse ühtlustamise direktiiv / Kasutatud ühtlustatud ja/või tehnilised standardid / Lisa b. Masinaohutus - d. Elektromagnetiline ühilduvus - e. Madalpingeseadmed - f. Välisseadmete müraemissioon – g. Raadio ja telekommunikatsioon - 8.a. Kasutatud ühtlustatud ja tehnilised standardid on esitatud toodud lisades 8.b. Tehnilise kausta koostamise eest vastutab Grupos Electrógenos Europa, S.A. 9. Spetsifikatsiooni vastavus direktiivide nõuetele 10. Toote vastavus spetsifikatsioonile ja kaudselt direktiividele 11. 12. Välja andnud / Toote projekteerimine / Tootmine 13. 14. Nimi: 15. Allkiri 16. Asukoht, kuupäev:
Välisseadmete müraemissiooni direktiiv 2000/14/EÜ 1. Järgitud vastavuse hindamise tegevuskord: 2. Teavitatud asutuse nimi ja aadress: Teavitatud asutus number 3. Mõõdetud helivõimsuse tase: 4. Garanteeritud helivõimsuse tase: 5. Elektriline võimsus:
Raadioside direktiiv 2014/53 / EL 1. Kirjeldus: 2. Kasutatud harmoneeritud standardid 3. Kasutatavad siseriiklikud tehnilised standardid ja spetsifikatsioonid:

lt

1. EB ATITIKTIES DEKLARACIJA 2. Mes, bendrovė „Grupos Electrogenos Europa S.A.“, prisiimdami visą atsakomybę pareiškiame, kad gaminys 3. Prietaiso pavadinimas: 4. Prekybinis pavadinimas: 5. Serijos numeris: 6. pagal EB Direktyvos 2006/42/EB 12.2 straipsnio nuostatas dėl su technika susijusių įstatymų valstybėse narėse suderinimo atitinka esminius šios direktyvos sveikatos ir saugos reikalavimus. Kaip nurodyta žemiau, šis prietaisas taip pat atitinka išvardintų direktyvų ir jų pataisų reikalavimus. 7. Valstybių narių įstatymų suderinimo direktyva, susijusi su / Remiamasi suderintais ir / ar techniniais standartais / Priedas b. Mašinų sauga - d. Elektromagnetiniu suderinamumu - e. Žemos įtampos elektros įrenginiais - f. Lauko sąlygomis naudojamos įrangos į aplinką skleidžiamo triukšmo – g. Radijas ir telekomunikacijos - 8.a. Suderinti ir techniniai standartai, kuriais remiamasi, nurodyti dokumento prieduose 8.b. Bendrovė „Grupos Electrógenos Europa, S.A.“ yra įgaliota sudaryti techninę bylą 9. Direktyvų reikalavimų atitiktis 10. Produkto atitiktis jo specifikacijai bei numanoma atitiktis direktyvoms 11. 12. Išdavė / Prekės inžinerija / Gamyba 13. 14. Vardas, pavardė: 15. Parašas 16. Vieta, data:
2000/14/EB direktyva dėl lauko sąlygomis naudojamos įrangos į aplinką skleidžiamo triukšmo 1 Atitikties vertinimo procedūra atlikta: 2 Informuotos įstaigos pavadinimas ir adresas: Informuotos įstaigos numeris 3. Išmatuotas garso galios lygis: 4. Garantuotas garso galios lygis: 5. Elektros energija:
Radijo ryšio direktyva 2014/53 / ES 1. Aprašymas: 2. Suderintieji standartai, naudojami 3. Taikomi nacionaliniai techniniai standartai ir specifikacijos:

lv

1. EK ATBILSTĪBAS DEKLARĀCIJA 2. Mēs, Grupos Electrogenos Europa S.A., uzņemoties pilnu atbildību, paziņojam, ka izstrādājums 3. Iekārtas nosaukums: 4. Komerciālais nosaukums: 5. Sērijas numurs: 6. Kam ir piemērojami EK Direktīvas 2006/42/EK panta 12.2 noteikumi par dalībvalstu tiesību aktu tuvināšanu attiecībā uz mašīnām, atbilst šīs direktīvas pamatprasībām saistībā ar veselību un drošību. Mašīna atbilst arī šādu norādītu direktīvu un to grozījumu prasībām. 7. Direktīva par dalībvalstu tiesību aktu tuvināšanu attiecībā uz / Izmantotie harmonizētie un/vai tehniskie standarti / Pielikums b. Mašīnu drošība - d. Elektromagnētiskā saderība - e. Zemsprieguma aprīkojums - f. Troksņu emisija no iekārtām, kuras izmanto ārpus telpām – g. Radio un telekomunikācijas - 8.a. Izmantotie harmonizētie un tehniskie standarti ir identificēti pielikumos turpmāk. 8.b. Uzņēmums Grupos Electrógenos Europa, S.A. ir pilnvarots sastādīt tehniskos dokumentus. 9. Specifikāciju atbilstība direktīvām 10. Izstrādājuma atbilstība specifikācijai un direktīvām 11. 12. Izdevējs / Tehniskā direkcija / Ražošana 13. 14. Vārds: 15. Paraksts 16. Vieta, datums:
Direktīva 2000/14/EK par trokšņa emisijām no iekārtām, kas paredzētas izmantošanai ārpus telpām 1. Ievērotā atbilstības novērtēšanas procedūra: 2. Pilnvarotās iestādes nosaukums un adrese: Pilnvarotās iestādes 3. Izmērītais skaņas jaudas līmenis: 4. Garantētais skaņas jaudas līmenis: 5. Elektriskā jauda:
Radio telesakaru direktīva 2014/53 / ES 1. Apraksts: 2. Izmantotie saskaņotie standarti 3. Izmantotie valsts tehniskie standarti un specifikācijas:

ro

1. DECLARAŢIE DE CONFORMITATE CE 2. Noi, Grupos Electrogenos Europa S.A., declarăm pe propria răspundere că produsul 3. Denumirea echipamentului: 4. Denumire comercială: 5. Număr de serie: 6. care face obiectul prevederilor articolului 12.2 al directivei CE 2006/42/CE privind armonizarea legislaţiilor statelor membre referitoare la echipamente industriale, este în conformitate cu cerinţele esenţiale în materie de sănătate şi siguranţă din această directivă. Echipamentul este, de asemenea, în conformitate cu cerinţele următoarelor directive şi ale modificărilor acestora. 7. Directiva privind armonizarea legislaţiilor statelor membre referitoare la / Standardele armonizate şi/sau tehnice utilizate / Anexă b. Siguranţa echipamentelor industriale - d. Compatibilitatea electromagnetică - e. Echipamentele de joasă tensiune - f. Emisiile de zgomot în mediu – g. Radio şi telecomunicaţii - 8.a. Standardele armonizate şi tehnice utilizate sunt identificate în documentele anexate 8.b. Grupos Electrógenos Europa, S.A. este autorizată să întocmească dosarul tehnic 9. Conformitatea specificaţiilor cu directivele 10. Conformitatea produsului cu specificaţiile şi, implicit, cu directivele 11. 12. Emitent / Proiectant / Producător 13. 14. Numele: 15. Semnătura 16. Locul şi data:
Directiva 2000/14/CE privind emisiile de zgomot în mediu 1. Procedura de evaluare a conformităţii urmată: 2. Denumirea şi adresa organismului notificat: Numărul organismului notificat 3. Nivelul de putere acustică măsurat: 4. Nivelul de putere acustică garantat: 5. Energie electrică:
Directiva privind radiocomunicaţiile 2014/53 / UE 1. Descrierea: 2. Standardele armonizate utilizate 3. Standardele tehnice şi specificaţiile tehnice naţionale utilizate:

bg

1. ДЕКЛАРАЦИЯ ЗА СЪОТВЕТСТВИЕ НА ЕО 2. Ние, Grupos Electrogenos Europa S.A., декларираме на своя лична отговорност, че продуктът 3. Наименование на оборудването: 4. Търговско наименование: 5. Сериен номер: 6. Който попада в обхвата на разпоредбите на член 12.2 на Директива 2006/42/ЕО на Съвета за сближаване на законодателствата на държавите-членки относно машините, е в съответствие със съответните съществени изисквания за здраве и безопасност на тази директива. Оборудването отговаря и на изискванията на следните директиви и техните изменения, както е посочено. 7. Директива за сближаване на законодателствата на държавите-членки относно / Използвани хармонизирани и / или технически стандарти / Приложение 6. Безопасност на машините - г. Електромагнитна съвместимост - д. Оборудване с ниско напрежение - е. Шумови емисии извън сградите – ѓ. Външни шумови емисии – g. Радио и телекомуникации - 8.а. Използваните хармонизирани и технически стандарти са посочени в приложенията по-долу 8.б. Grupos Electrógenos Europa, S.A. е упълномощена да съставя техническата документация 9. Съответствие на спецификациите с директивите 10. Съответствие на продукта със спецификациите и по подразбиране с директивите 11. 12. Издадена от / Отдел „Производствено проектиране" / Отдел „Производство" 13. 14. Име: 15. Подпис 16. Място, дата:
Директива 2000/14/ЕО относно шумовите емисии извън сградите 1. Следвана процедура за оценяване на съответствието: 2. Наименование и адрес на нотифициращия орган: Нотифициран орган 3. Измерено ниво на звуковата мощност: 4. Гарантирано ниво на звуковата мощност: 5. Електрическа мощност:
Директива за радиокомуникациите 2014/53 / ЕС 1. Описание: 2. Използвани хармонизирани стандарти 3. Използвани национални технически стандарти и спецификации:

mt

1. DIKJARAZZJONI TA' KONFORMITÀ TAL-KE 2. Ahna, Grupos Electrogenos Europa S.A., niddikjaraw taħt ir-responsabbiltà unika tagħna, li l-prodott 3. Isem tal-magna: 4. Isem kummerċjali: 5. Numru tas-serje: 6. li jaqa' taħt id-dispożizzjonijiet ta' Artikolu 12.2 tad-Direttiva tal-KE 2006/42/KE dwar l-approssimazzjoni tal-liġijiet tal-Istati Membri fir-rigward ta' makkinarju, hu f'konformità mar-Rekwiżiti Essenzjali dwar is-Saħħa u s-Sigurtà rilevanti ta' din id-Direttiva. Il-makkinarju hu konformi wkoll mar-rekwiżiti tad-direttivi li ġejjin u l-emendi tagħhom kif indikat. 7. Direttiva dwar l-approssimazzjoni tal-liġijiet tal-Istati Membri fir-rigward ta' / Standards Armonizzati u/jew Tekniċi użati / Anness b. Sigurtà tal-makkinarju - d. Kompatibbiltà elettromanjetika - e. Tagħmir ta' voltaġġ baxx - f. Emissjoni ta' ħsejjes fuq barra – g. Radju u telekomunikazzjonijiet - 8.a. L-istandards armonizzati u tekniċi użati huma identifikati fid-dokumenti mehmuża hawnhekk 8.b. Grupos Electrógenos Europa, S.A. hu awtorizzat biex jikkompila l-file tekniku 9. Konformità tal-ispeċifikazzjoni mad-Direttivi 10. Konformità tal-prodott mal-ispeċifikazzjoni u b'implikazzjoni mad-direttivi 11. 12. Maħrug minn / Product Engineering / Manufacturing 13. 14. Isem: 15. Firma 16. Post, Data:
Direttiva dwar Emissjonijiet ta' Ħsejjes fuq Barra 2000/14/KE 1. Proċedura ta' evalwazzjoni ta' konformità segwita: 2. Isem u indirizz tal-korp innotifikat: Numru tal-korp innotifikat 3. Livell imkejjel ta' qawwa ta' ħoss: 4. Livell garantit ta' qawwa ta' ħoss: 5. Enerġija elettrika:
Direttiva dwar il-telekomunikazzjoni bir-radju 2014/53 / UE 1. Deskrizzjoni: 2. Standards armonizzati użati 3. Standards u speċifikazzjonijiet tekniċi nazzjonali użati:

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