



Image for demonstration purposes

 **Generating Set**  
**PROFESSIONAL - Diesel**

## GE.PK.450/400.PRO+011

1500 rpm - Threephase - 50Hz - 400V  
Multifunction panel without switching on board



## Standard equipment

### **Canopy Soundproofing**

Removable soundproof canopy  
Painting canopy (RAL) in galvanized sheet steel  
Soundproofing with class 1 polyester material  
Handles with key lock and automatic closing  
Inspection doors for controls and maintenance  
Inspection doors with hermetic gasket

### **Exhaust**

Exhaust rain cap  
Insulated exhaust pipes  
Internal residential muffler

### **Fuel Supply**

Single wall daily tank with bunded base  
Automatic shutdown system for low fuel level  
Fuel gauge

### **Handling**

n.4 lifting hooks integrated into the bearing structure  
Loadable side by side for truck transportation

### **Base Frame**

Anti-vibrating mounting pads  
Anti pollution Bunded base

### **Engine**

Oil pressure and coolant temperature gauge (only with QPE or +14 variant)  
Tropicalized radiator  
Electronic speed governor

### **Alternator**

AVR Automatic Voltage Regulator  
AVR Pre-arranged for parallel  
Impregnation for marine environment  
IP23

### **Panel & connection**

Emergency Stop button  
Magnetothermal circuit breaker on alternator board  
Tamperproof panel IP55  
Cable output from the bottom  
IP44 wiring  
Start-up battery (pre-charged)  
Grounding point

### **Documentation**

CE conformity declaration  
User and Maintenance manual  
Wirings diagrams

### **Normatives**

All Generating sets are compliant to CE Marking  
2014/30/UE Electromagnetic compatibility  
2000/14/CE Noise Emission for outdoor use  
Factory-designed systems built according to ISO 9001:2015  
CEI EN 60204-1:2018 - Electrical equipment of machines

## Primary data

### General Information

Speed	RPM	1500
Frequency	Hz	50
PRP	KVA	400
PRP - Prime power	KW	320,0
LTP - Standby power	KVA	450
LTP - Standby power	KW	360,0
Standard Voltage	V	400/230
Current	A	578,03
Voltage for current calculation	V	400
COSFI	0,8	0,8

### General electrical protection

Circuit-breaker rated current	A	630
Type	Magnetothermal switch on the alternator board	
Circuit-breaker poles	N	4P

### Noise level +/- 3dB(A)

LWA	dB(A)	96
Sound pressure level @ 7 mt	dB(A)	71
Sound pressure level @ 1 mt	dB(A)	80

### Fuel Consumption

TYPE		Diesel
Standard Fuel Tank capacity	lt	560
Autonomy @ 75% load	h	10
Fuel consumption at 100% load	lt/h	81
Fuel consumption at 75% load	lt/h	62
Fuel consumption at 50% load	lt/h	42

### General data

Rated capacity	Ah	2x120
Auxiliary Voltage	V	24
Exhaust gas temperature	°C	630
Exhaust gas flow	l/s	1200
Combustion air flow	l/s	445
Cooling fan airflow	mc/s	10,9
Exhaust diameter	mm	140

### Weight and Dimensions

Dimensions (L x w x h)	cm	395x154x220
Weight with liquids (excluding optionals and fuel)	Kg (+/-3%)	4334

## ⚙️ Engine

Factory		<b>Perkins</b>
Model		<b>2206A-E13TAG3</b>
Emissions stage		<b>Stage 0</b>
Speed governor		<b>Electronic</b>
Radiator	°C	<b>50</b>
Cooling	Tipo	<b>liquid (water + 50% Paraflu11)</b>
Active net power	Kwm	<b>349</b>
Nominal net power	CV	<b>474</b>
Cycle	Tipo	<b>4 strokes</b>
Injection	Tipo	<b>Direct</b>
Aspiration	Tipo	<b>Turbo</b>
Numbers of cylinders	N	<b>6</b>
Cylinders arrangement		<b>L</b>
Bore	mm	<b>130</b>
Stroke	mm	<b>157</b>
Total displacement	lt	<b>12,497</b>
Engine oil features		<b>15W40-API CI-4/CH-4 ACEA E5-E7</b>
Total oil capacity	lt	<b>40</b>
Total coolant capacity	lt	<b>51</b>
ISO 8528-5 class		<b>G2</b>

## ⚙️ Alternator

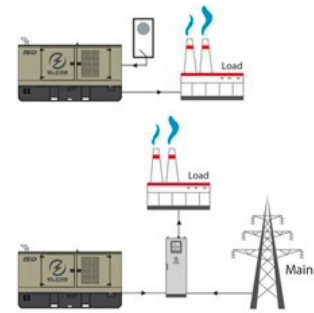
**\* May vary based on stock availability. However, a primary brand will be used.**

Factory		<b>Stamford</b>
Model		<b>S4L1D-F</b>
Single-phase Range	KVA	<b>415</b>
Voltage Regulator (voltage accuracy)	+/- %	<b>1</b>
Poles	N°	<b>4</b>
Phases	N°	<b>3+N</b>
Standard windings connection		<b>Star Series</b>
Stator/rotor impregnation		<b>H (Outdoor Temp 40°C)</b>
Efficiency	%	<b>93,2</b>
Engine coupling		<b>Elastic disk</b>
Short circuit current		<b>&gt;= 300% (3In)</b>
Protection degree	IP	<b>23</b>
Cooling system		<b>Self ventilating</b>
Maxium overspeed	rpm	<b>2250</b>
Waveform distortion	%	<b>&lt;5</b>
Exciter		<b>Diode bridge</b>

## ⚙️ Standard operating environmental conditions

Ambient temperature	°C	<b>25</b>
Relative Humidity	%	<b>30</b>
Max altitude	mt	<b>1000</b>

# Control Systems on board QLE-B-SC-3F-V1



operating scheme - schema di funzionamento

## QLE Multifunction panel without switching on board

The QLE command and control panel offers outstanding protection, monitoring and control for small and middle size generator sets. Elcos's control module MC2 Plus offers advanced features to meet the most demanding on-site application. Elcos's control module MC2 Plus is designed to offer an easy user interface. Variant without transfer switch. The panel directly manages the QLTS and QC panels. The output line is protected from overload and short-circuit by a magnetothermic breaker mounted on alternator board.

### Mechanical features

Protection degree	IP	55
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### Battery charger

Model		ELCOS - CB1
Maximum output current	A	2,5
Output DC voltage (selectable)	V <sub>dc</sub>	12-24
Input AC voltage (selectable)	V <sub>ac</sub>	220-260
Frequency	Hz	50-60

### Data Communication

Data connection port		RS-485
Communication protocol		Mod-bus RTU-8N1

### Remotable functions in terminal box

GS start	Genset contactor close/open command (1)
Mains contactor close/open command (2)	Remote horn - DC output
Programmable output - Volt free output	

(1) Ready to load function (ARS mode without QC or QLTS panel)(1) Genset contactor open and close command (AMF mode with QC or QLTS panel)(2) Mains contactor open and close command (AMF mode with QC or QLTS panel)

## Control Module



Model	<b>MC2 Plus</b>
Operating mode	<b>AMF - ARS</b>

### Specifics

#### Applications

Emergency to the Mains  
Stand-alone  
Construction site/Rental  
Self-production

#### ENGINE MEASURES

Fuel tank level %  
Engine oil pressure BAR (1)  
Engine Coolant temperature °C (1)  
Total run time  
Battery voltage  
Start-ups counter  
Engine speed

#### ALTERNATOR MEASURES

Generator Voltage L1, L2, L3  
Generator Voltage L1-N, L2-N, L3-N  
Generator frequency  
Generator current L1, L2, L3  
Generator Apparent Power kVA  
Generator Active Power kW

#### COMMUNICATION PORTS

Can-bus port  
RS485 port with Mod-bus RTU communication  
USB port for parameters saving and firmware update

#### EQUIPMENT

Microprocessor Logic  
Back-lit display  
Programmable from display  
16 event log  
Icons management  
STOP button  
START button  
TEST button  
Reset alarm button  
Alarm mute button

#### PRE-ALARMS/ ALARMS

Common Alarm  
Fuel reserve (pre-alarm)  
Low fuel level (alarm)  
Charge alternator failed (dinamo)  
Low oil pressure (alarm)  
Oil sensor failed (alarm)  
High coolant temperature (alarm)  
Low water level (1)  
Water in fuel (1)  
Battery undervoltage  
Battery overvoltage  
GS failure to start  
GS failure to stop  
Can-bus Failure  
No Can-bus communication  
Genset overload L1, L2, L3 phases  
Genset short circuit  
Genset overvoltage  
Genset undervoltage  
Genset high frequency  
Genset low frequency  
overspeed  
Earth fault (alarm)  
Maintenance request  
Emergency button pressed  
Remote emergency active  
Genset negative phase sequence

#### VISUALIZATIONS ON CONTROL

##### MODULE/DISPLAY

Pre-alarms  
Alarms  
Engine measures  
Alternator measures  
Operating mode  
Genset status  
Genset contactor status  
Glow plugs status

##### CONTROL MODULE FUNCTIONS

Remote Start and Stop  
Manual Start and stop  
Emergency stop button on panel board  
Remote emergency stop  
Remote test on load  
Scheduled start-ups  
MODBUS commands (Start, Stop, Reset, Test)

Elcos MC2 control module is designed for diesel generating sets. It offers outstanding protection, monitoring and control for small and middle size generator sets.

AAABBB

## OPTIONAL

### Fuel Supply

**O.G-ACO-AT-CI-02**

External tank connections for supply only from external tank (g without tank) GE 130/700

### Batteries

**O.G-BAT-BAE-03**

Maintenance free high efficiency starter batteries (130/250 kVA)

**O.G-BAT-STB-02**

Battery isolator lockable(130/700 kVA)

### Canopy

**O.G-COF-PV-02**

Lift off doors kit for SS versione (130/400 kVA) and PRO version (130/500 kVA)

### Electrical on board

**O.Q-QBM-BMIN-230V-02**

Additional price for 230V minimum voltage coil on MCCB both on the control panel and on the alternator (check feasibility)

**O.Q-QBM-CPI-BEN-01**

Permanent insulation controller for IT networks up to 230V / 400V. BENDER IR423-D4-1. Adjustable threshold 10 ÷ 300 kohm. (2 DIN rail modules - check feasibility)

**O.Q-QLE-K-DIF-M3**

Adjustable differential protection only for MC2-PLUS controller for Gen Sets 10/500 kVA (+011 variant)

**O.Q-QLE-QBM-COM-AMF25**

Additional price for QBM COMAP AMF25 panel replacing the standard QLE-A.

**O.Q-QLE-QBM-DSE-7320**

Additional price for QBM DSE7320 panel replacing the standard QLE-A.

**O.Q-QLE-QPE-MC4**

Additional price for QPE-C panel with MC4 replacing the standard QLE-A.

**O.Q-QPE-INT-CST-CTR-03**

STATUS and TRIP contact of main breaker wired to terminal board inside the QPE panel (275 / 1000KVA) on board (not for variant +010).

### Engine

**O.G-MOT-K-40C-03**

Engine liquids suitable for -40°C ambient temperature for Gen Sets 130/250 kVA

**O.G-MOT-PO-02**

Oil change pump for Gen Sets 130/700 kVA

**O.G-MOT-SC-AC-EL-01**

Engine pre-heater 230V with thermostat on board for Gen Sets 10/100 kVA + 130/500 PRO version



**O.G-MOT-SC-AC-EL-03**

Super hot engine heater 230V with thermostat on board for Gen Sets 130/250 kVA

**Handling**



**O.G-MOV-GC-S2700**

Lifting hook (150/250 kVA) PRO Version

**ATS Panels**



**QLTS.630A**

Wall switching Panel 630 A 4-Poles (430kva 400V) - 80x128x60cm 45 kg

**Test**



**MS.CP-LT-02**

FAT - Factory Acceptance Test for single Gen Set from 130 to 400 kVA according to our standard procedures in Elcos factory (max 2 hours - max 4 people - max 1 hour of operation)



**MS.CP-SP-02**

FAT - Factory Acceptance Test for single custom Gen Set from 130 to 400 kVA max 4 operating hours or parallel system up to 4 units for 1 operating hour, in Elcos factory (max 4 hours - max 4 people)



**MS.CP-ST-02**

FAT - Factory Acceptance Test for single Gen Set from 130 to 400 kVA according to our standard procedures in Elcos factory (max 4 hours - max 4 people - max 2 hour of operation)

**Vari**

**O.G-VAR-PUN-TER-01**

Round earth spike, diam. 20 mm, height 1.5mt, galvanized, complete with clamp and 3m yellow/green cable model FS17 1x35mm<sup>2</sup> with cable lugs.

**O.G-VAR-PUN-TER-02**

Cross-shaped earth spike, height 1.5mt, galvanized, complete with clamp and 3m yellow/green cable model FS17 1x35mm<sup>2</sup> with cable lugs.

**PRP**

Engines of this rating provide unlimited hours of usage in a variable load application. The average load factor should not exceed 70% of the engine's prime power rating with a maximum number of 500 operational hours at 100% prime power rating. An overload capability of 10% is available, however, is limited to a period of 1 in every 12 hours

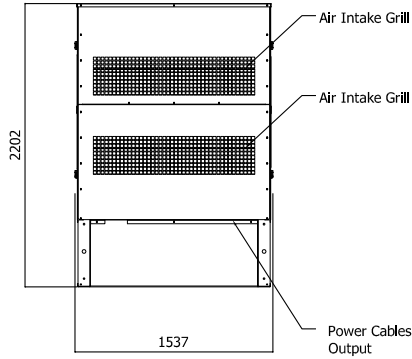
**LTP**

Limited-time running power is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500h of operation per year with the maintenance intervals. The overload is not allowed.

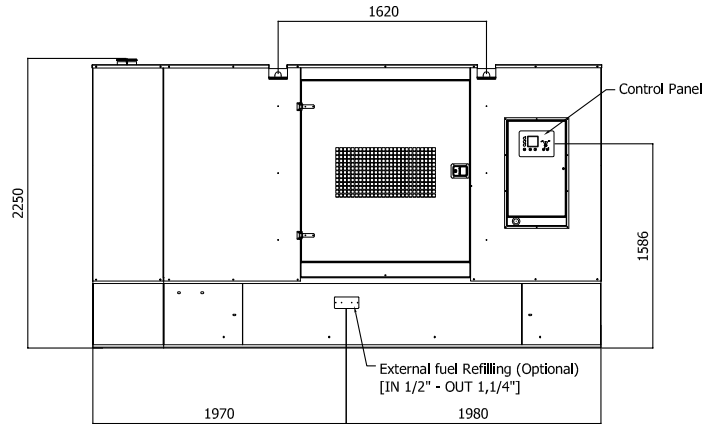
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**OVERALL DIMENSIONS [mm]**

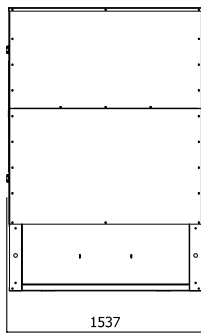
REAR VIEW



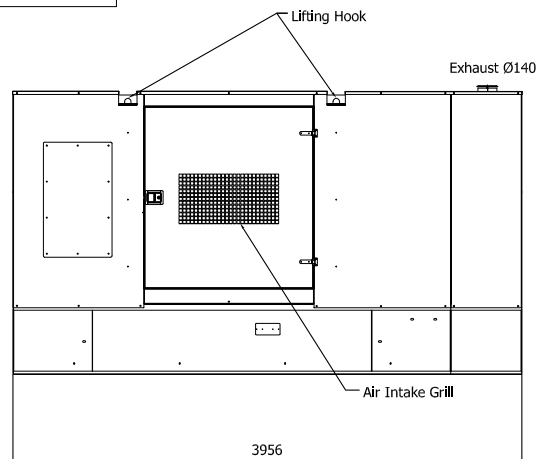
LEFT SIDE VIEW



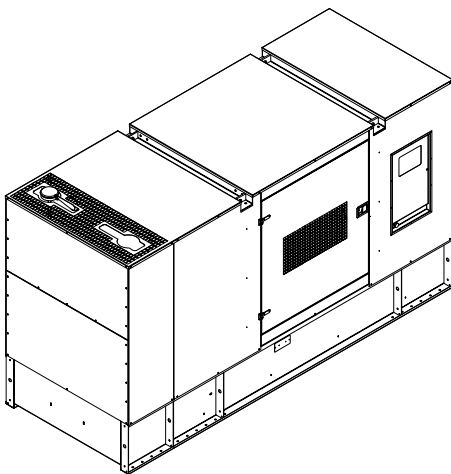
FRONT VIEW



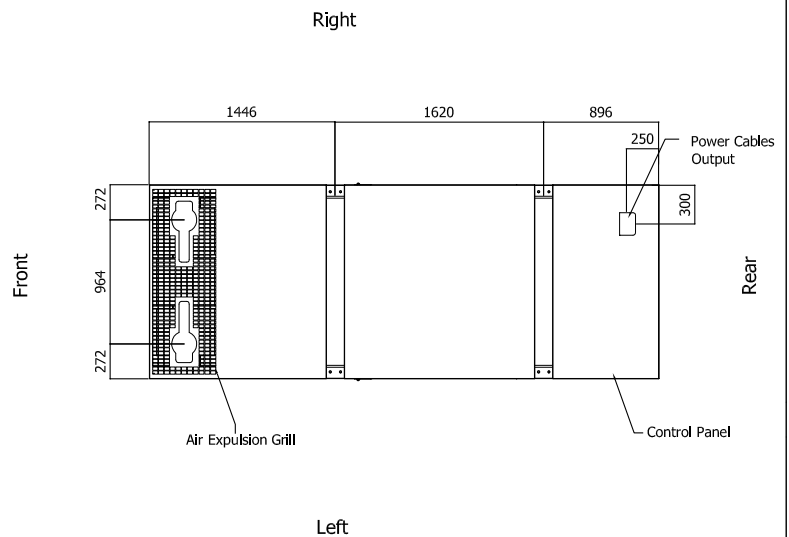
RIGHT SIDE VIEW



3D VIEW



TOP VIEW



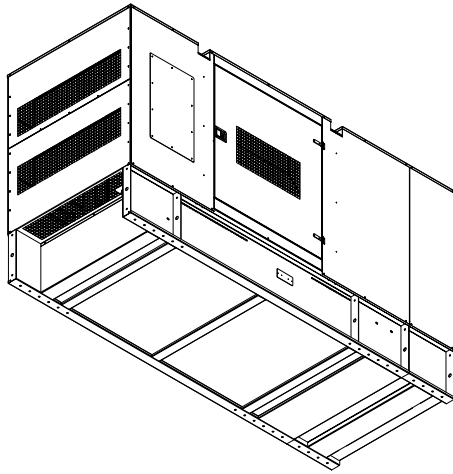
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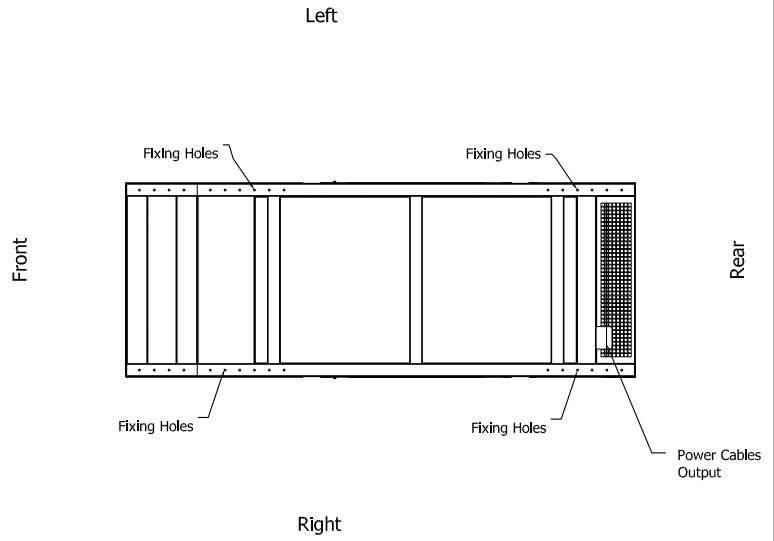


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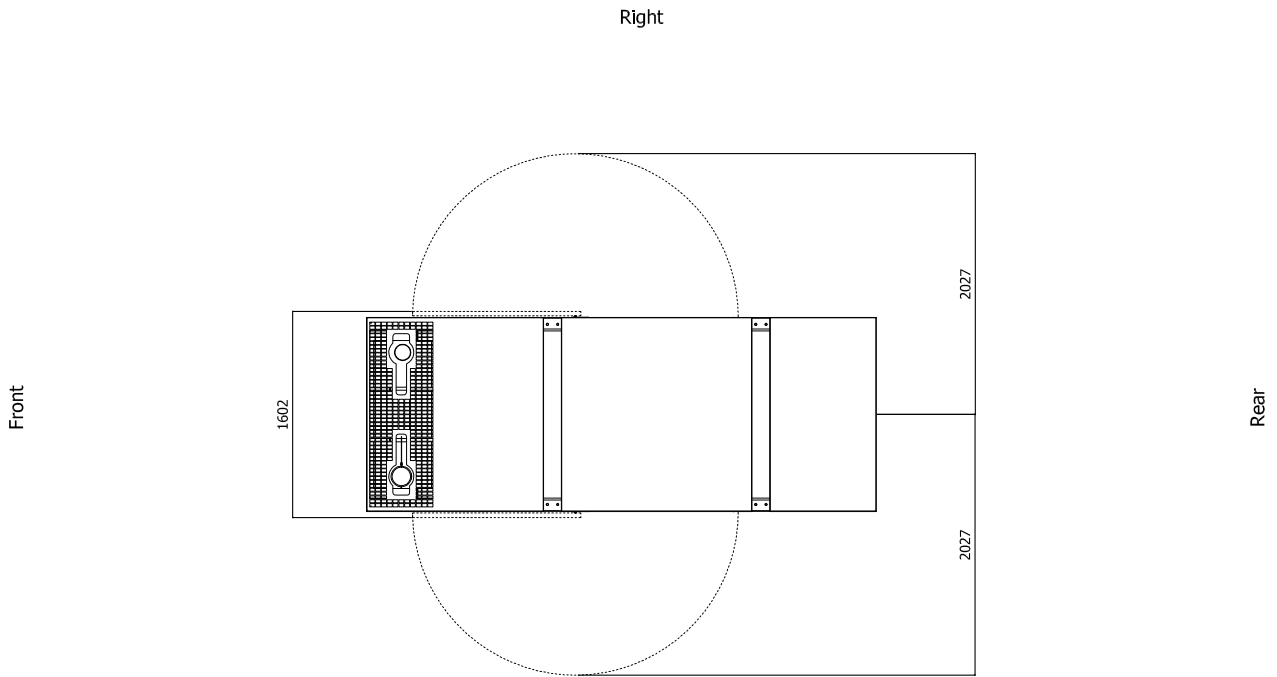
3D BOTTOM VIEW



BOTTOM VIEW



**DIMENSIONS WITH OPEN DOORS [mm]**



Note: With Lifting-Off Door Solution consider only canopy dimensions.  
(Models with "Control Panel" behind rear door will mount a special cover to protect it)

**VENTILATION OF THE ROOM**

The windows area in the generating set room needs to be (recommended):

Aspiration: 0.90 m<sup>2</sup>

Expulsion: 0.60 m<sup>2</sup>

ATTENTION: for a correct ventilation the expulsion air and the exhaust gas needs to be conveyed in the open-air

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