



Image for demonstration purposes


Generating Set
SUPERSILENT - Diesel

GE.MH.2500/2280.SS+011

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



Standard equipment

Canopy Soundproofing

Soundproofing with class 1 polyester material
 Handles with key lock and automatic closing
 Special baffles for air intake and air expulsion
 Inspection doors for controls and maintenance

Exhaust

Exhaust rain cap
 Insulated exhaust pipes
 Exhaust flexible expansion joint
 Internal residential muffler - 35dB(A)

Fuel Supply

Fuel connections
 Automatic shutdown system for low fuel level

Handling

n.4 lifting hooks integrated into the bearing structure

Base Frame

Bunded base at 110% of fuel tank capacity
 Anti-vibrating mounting pads

Engine

Engine pre-heater 230V
 High coolant temperature and low oil pressure shutdown system
 Oil pressure and coolant temperature gauge (only with QPE or +14 variant)
 Oil change pump
 Engine liquids (oil and antifreeze)
 40°C radiator
 Rotating parts protection
 Electronic speed governor
 Radiator level sensor

Alternator

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

Panel & connection

Emergency Stop button
 Magnetothermal circuit breaker on alternator board
 Tamperproof panel IP55
 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	2280
PRP - Prime power	KW	1824,0
LTP - Standby power	KVA	2500
LTP - Standby power	KW	2000,0
Standard Voltage	V	400/230
Current	A	3294,8
Voltage for current calculation	V	400
COSFI	0,8	0,8

General electrical protection

Rated current	A	4000
Type	Magnetothermal switch on the alternator board	
Poles	N	4P

Fuel Consumption

TYPE		Diesel
Standard Fuel Tank capacity	lt	1000
Autonomy @ 75% load	h	3
Fuel consumption at 100% load	lt/h	476
Fuel consumption at 75% load	lt/h	364

General data

Rated capacity	Ah	6x180
Auxiliary Voltage	V	24
Exhaust gas flow	l/s	7166
Combustion air flow	l/s	2716
Cooling fan airflow	mc/s	46

Weight and Dimensions

Dimensions (L x w x h)	cm	940x245x310
Weight with liquids (excluding optionals and fuel)	Kg (+/-3%)	22316

⚙️ Engine

Factory		Mitsubishi
Model		S16R2-PTAW
Emissions stage		Stage 0
Speed governor		Electronic
Radiator	°C	40
Cooling	Tipo	liquid (water + 50% Paraflu11)
Active net power	Kwm	1895
Nominal net power	CV	2574,7
Cycle	Tipo	4 strokes
Injection	Tipo	Direct
Aspiration	Tipo	Turbo
Numbers of cylinders	N	16
Cylinders arrangement		V
Bore	mm	170
Stroke	mm	220
Total displacement	lt	79,856
Engine oil features		15W40-API CI-4/CH-4 ACEA E5-E7
Total oil capacity	lt	290
Total coolant capacity	lt	450

The emission levels of the exhaust gas are indicated in the engine technical datasheet. Any changes due to more restrictive regulatory adjustments are excluded.

⚙️ Alternator

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

Factory		Stamford
Model		PI734H
Single-phase Range	KVA	2325
Voltage Regulator (voltage accuracy)	+/- %	1
Poles	N°	4
Phases	N°	3+N
Standard windings connection		Star Series
Stator/rotor impregnation		H (Outdoor Temp 40°C)
Efficiency	%	96,2
Engine coupling		Elastic disk
Short circuit current		>= 300% (3In)
Protection degree	IP	23
Cooling system		Self ventilating
Maxium overspeed	rpm	2250
Waveform distortion	%	<5
Exciter		PMG

⚙️ Standard operating environmental conditions

Ambient temperature	°C	25
Relative Humidity	%	30
Max altitude	mt	1000

Control Systems on board QPE-C-SC-3F-V1



operating scheme - schema di funzionamento

QPE Automatic panel without switching on board

The QPE-C control panel represents the evolution of the panel for the control and management of the gen set. With its microprocessor logic it is able to meet any user requested features. The dual operation mode manual and automatic guarantees to every type of functionality protection, analysis and control of the generating set in order to make the management easy and efficient. Variant without transfer switch on board. ATS panel type QC as optional. The panel manages the QC panels directly or any other ATS panel.

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 _{dc}	12-24
Input AC voltage (selectable)	V _{ac}	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	GS lock
Genset contactor close/open command (1)	Mains contactor close/open command (2)
Common Alarm - DC output	GS test without load
GS start with key in OFF position (Only in MRS mode)	Programmable output - Volt free output

Control Module



Model	MC4
Operating mode	AMF - MRS

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
Partial run time
Hours to maintenance
Battery voltage
Battery charging voltage
Start-ups counter
Engine speed (2)
Engine Oil temperature (2)
Cooler temperature (2)
Engine oil level (2)
Engine coolant level (2)
Engine coolant pressure (2)
Turbo pressure (2)
Fuel Consumption (2)
Tank autonomy - hrs (5)
Fuel remaining quantity (5)
Fuel used quantity (5)

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
Generator Reactive Power kVAR
Generator accumulated power kWh
Power factor Cosfi

MAINS MEASURES

Mains voltage L1, L2, L3
Mains voltage L1-N, L2-N, L3-N
Mains frequency

COMMUNICATION PORTS

Can-bus port
RS485 port with Mod-bus RTU communication
RS232 port for display connection
USB port for parameters saving and firmware update

EQUIPMENT

Microprocessor Logic
Back-lit display
Programmable from display
16 event log
Multiple display languages
STOP button
START button
TEST button
Reset alarm button
Alarm mute button
Fuel transfer pump activation button
Glow-plug activation button

PRE-ALARMS/ ALARMS

Common Alarm
Fuel reserve (pre-alarm)
Low fuel level (alarm)
Tank overflow
Charge alternator failed (dinamo)
Low oil pressure (pre-alarm) (1)
Low oil pressure (alarm)
Oil sensor failed (alarm)
High coolant temperature (pre-alarm) (1)
High coolant temperature (alarm)
Low coolant temperature (pre-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
Reverse power
Earth fault (pre-alarm)
Earth fault (alarm)
Block from password
CAN communication Failed
Maintenance request
Emergency button pressed
Remote emergency active
Forced stop
External battery failed
Fuel theft
Genset negative phase sequence
Mains negative phase sequence
Fuel theft protection

VISUALIZATIONS ON CONTROL

MODULE/DISPLAY

Pre-alarms
Alarms
Engine measures
Alternator measures
Mains measures
Date and time
Operating mode
Genset status
Mains status
Mains contactor status
Genset contactor status
Digital Input and Output status
Grounding current mA (3)
Grounding current threshold mA (3)
Delay time of differential protection (3)
Glow plugs status

CONTROL MODULE FUNCTIONS

Automatic start and stop when the Mains Fails (7)
Remote Start and Stop
Remote Start and Stop with key in OFF position
Manual Start and stop
Emergency stop button on panel board
Remote emergency stop
Remote lock
Remote test without load
Remote test on load
Scheduled start-ups
MODBUS commands (Start, Stop, Reset, Test)

CONTROL MODULE SPECIAL FUNCTIONS (on demand)

Automatic charging of an external battery
Dummy load (4)
Load shedding (4)
Redundant starter motor management
Fuel monitoring
GS battery Load test
Idle mode
Service phone number indication
Variable speed Generator
Master / Slave mode

- (1) Present with the sensor installed on engine
- (2) Present according to the engine equipment and to the ECU type (ECU - Canbus)
- (3) Present only with the residual current device mounted on genset board
- (4) Present with optional expansion modules
- (5) Present with special function activated
- (6) Only with the optional of the automatic fuel refilling system on board
- (7) Only in AMF mode

OPTIONAL

Fuel Supply



O.G-ACO-AT-C3V-03

External fuel tank connections with 3-way valve for supply from internal or external tank (750/3000 kVA)



O.G-ACO-AT-C3V-AR-03

Quick coupling connectors with 3-way valve for internal or external fuel tank connection (750/3000 kVA)



O.G-ACO-AT-CI-03

External tank connections for supply only from external tank (g without tank) GE 750/3000



O.G-ACO-GA-01

Mechanical analogue float for internal fuel tank on board



O.G-ACO-GA-02

Electrical analogue float to monitor the external refilling point on board



O.G-ACO-ST-2P

Double redundant electric pump kit for automatic fuel refilling system

O.G-ACO-ST-BG-HDT

"Heavy Duty" automatic fuel refilling system on board, controlled by QPE-C and QLE-B panels



O.G-ACO-ST-BG-STD

"Standard" automatic fuel refilling system on board, controlled by QPE-C and QLE-B panels

Alternator



O.G-ALT-AL-COTE-01

Temperature control unit up to 4 x PT100 probes for MC4 management

O.G-ALT-ST-ACO-02

Anti-condensation heater 230 V (on Stamford from 22000 kVA to 3000 kVA)



O.G-ALT-ST-AVR-MX321

Stamford MX321 automatic voltage regulator with PMG (Check dimensions)



O.G-ALT-ST-AVR-MX341

Stamford MX341 automatic voltage regulator with PMG (Check dimensions)



O.G-ALT-ST-PT100-1CU

1 x PT100 probe on bearing (80/3000 kVA)



O.G-ALT-ST-PT100-3AV

nr. 3 RTD-PT100 probes on stator windings (80/3000 kVA)



O.G-ALT-ST-PT100-6AV

nr. 3+3 RTD-PT100 probes on stator windings (80/3000 kVA)



O.G-ALT-ST-RIGU-01

Diode Failure Detector (DFD) mounted on the alternator. Alarm contact available into the panel

Batteries


O.G-BAT-DOB-07

Redundant battery kit for Gen Sets 1900/3000 kVA

 **Canopy**

O.G-COF-ANTI-RIL-02

Fire detection kit for containers 30,30HC,40', 40HC, for machine room

O.G-COF-ANTI-VALV-02

Firewatchman thermal fuel cut off valve kit for immediate cutoff of the diesel flow in case of fire inside the canopy. Suitable only for stationary SS units from 800 to 3000KVA.


O.G-COF-AP-01

Door opening alarm system (each door)


O.G-COF-IL-03

Internal LED lighting with micro-switches for Gen Sets 750/3000 kVA

O.G-COF-TRT-MAR-07

High resistance canopy treatment for corrosive environments for 1300/3000 kVA (SS Version)


O.G-COF-VER-PAR-07

Canopy custom paint (Grey base-frame) for 1250/3000 kVA (SS Version)


O.G-COF-VER-TOT-07

Total canopy custom paint for 1250/3000 kVA (SS Version)

 **Container**

O.CO-GR-VE-ESP-02

Frontal vertical ejection grilles for GE from 750 to 3000 kVA

 **Electrical on board**

O.G-USP-SW-MOT.1700-3000

Motorization switch mounted on alternator for Ge 1700/3000 Kva - (for variant +11)

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-QPA-COM-GC500

Option with COMAP GC500 controller on board instead of IntelliGen 200.

O.Q-QPA-COM-NTCBB

Option with COMAP INTELIGEN controller on board instead of IntelliGen 200.


O.Q-QPA-LOV-RGK900

Option with LOVATO RGK900 controller on board instead of IntelliGen 200.


O.Q-QPE-485.CONV-LAN

Converter 485/LAN for QPE-C, QLE-B panel


O.Q-QPE-485.CONV-USB

Converter 485/USB for QPE panel

O.Q-QPE-DIS-MS.01

MASTER/SLAVE device for QPE panel


O.Q-QPE-K-DIF

Differential protection adjustable for the MC4

O.Q-QPE-MD-QPE-C

GSM remote management modem for QPE panel


O.Q-QPE-PR-QPE-C

Remote panel for QPE-C, QLE-B - available only for variant +10/+11


O.Q-QPE-QBM-COM-AMF25

Option with QBM COMAP AMF25 controller on board instead of QPE


O.Q-QPE-QBM-DSE-7320

Option with QBM DSE7320 controller on board instead of QPE.


O.Q-QPE-RIL-16RELE

16-relay module for QPE panel


O.Q-QPE-RX8-QPE-C

Start-stop radio control with max. radius 500 mt indoors and 5 km outdoors (for QPE panel).


O.Q-QPE-SAS-02

Auto Start-Stop at load request (QPE, QLE panels)


O.Q-QPE-SCD-01

Anti-condensation heater inside the panel


O.Q-QPE-SEL-50-60

Switch selector 50Hz 400V / 60Hz 480V


O.Q-QPE-TG-EVO-GPS-2G

Remote management system via LAN/GSM 2G with WEB application and GPS location system


O.Q-QPE-TG-EVO-GPS-3G

Remote management system via LAN/GSM 3G with WEB application and GPS location system


O.Q-QPE-TG-QPE-C

Remote management software via LAN for QPE-C, QLE-B panel compatible with Windows XP and 7

 **Engine**

O.G-MOT-K-40C-08

Engine liquids suitable for -40°C ambient temperature for Gen Sets 1800/3000 kVA


O.G-MOT-MAG-07

Dual starter motor for Gen Sets 1700/2500 kVA (engine configuration to be checked)


O.G-MOT-SC-AC-EL-06

Super hot engine heater 230V with thermostat on board for Gen Sets 1250/3000 kVA



O.G-MOT-SC-AC-WE-04

Webasto diesel-operated water pre-heater (1250/3000 kVA)



O.G-MOT-SE-LR-03

Radiator coolant level sensor from 750 to 3000 kVA

ATS Panels



QC5.4000A

Separate ATS panel, 4000A motorized change-over (2700 kVA 400V) Dim. 260 x 100 x 190 cm - 700 kg. (ex QC5.2500)

QCP5.4000A

Separate ATS switching panel, with Lovato ATL 610 control unit, for variant +014,ABB motorized change-over 4000A 4P (2700kva 400V) and compartment for power cables inlet

Parallel panels

QP.APM9.4000A

APM Automatic Parallel Module Comap IntelliVision5 logic with motorized breaker (4000A) for gen set from 2300 to 2800 kVA.Dim. cm. 100 x 100 x 190H.

Test

MS.CP-LT-06

FAT - Factory Acceptance Test for single Gen Set from 2000 to 3000 kVA according to our standard procedures in Elcos factory (max 2 hours - max 4 people - max 1 hour of operation)



MS.CP-SP-06

FAT - Factory Acceptance Test for single custom Gen Set from 2000 to 3000 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-06

FAT - Factory Acceptance Test for single Gen Set from 2000 to 3000 kVA according to our standard procedures in Elcos factory (max 4 hours - max 4 people - max 2 hour of operation)



MS.RF-ST-04

Noise test report for single Gen Set from 1700 to 3000 kVA



MS.TV-ST-02

Vibration test on 10 points with certificate for single Gen Set from 275 to 3000 kVA

Vari



O.G-VAR-CAT-03

Toolbox for ordinary maintenance.

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 1x35mm² 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 1x35mm² with cable lugs.



O.G-VAR-TPD-01

IP 55 document holder

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.