

| Specification    | Standby Power | Prime Power |
|------------------|---------------|-------------|
| Genset Output    | 22KVA         | 20KVA       |
|                  | 17.6KW        | 16KW        |
| Frequency/RPM    | 50Hz /1500    |             |
| Standard Voltage | 400/230V      |             |
| Phase            | Three         |             |

| General Technical Data    |   |
|---------------------------|---|
| Genset Model              | LG22P                                   |
| Engine Brand/Model        | Perkins 404D-22G                        |
| Stamford Alternator       | PI144D \ S0L2-G1                        |
| Leroy Somer Alternator    | LSA40M5 \ TAL-A40-F                     |
| LEEGA Alternator          | LA184G16                                |
| Speed Control Type        | Mechanical                              |
| Standard Controller Model | ComAp IL4-AMF8/<br>Deepsea DSE6020 MKII |

| Generator Set Fuel Consumption (L/hr) |     |
|---------------------------------------|-----|
| 110% load-Standby Power               | 6.1 |
| 100% load-Prime Power                 | 5.3 |
| 75% load-Prime Power                  | 4   |
| 50% load-Prime Power                  | 2.9 |

| Generator Set Ratings |    |                |      |      |              |    |
|-----------------------|----|----------------|------|------|--------------|----|
| Voltage               | Ph | Standby Rating |      |      | Prime rating |    |
|                       |    | KVA            | KW   | AMPS | KVA          | KW |
| 415/240v              | 3  | 22             | 17.6 | 30.6 | 20           | 16 |
| 400/230v              | 3  | 22             | 17.6 | 31.8 | 20           | 16 |
| 380/220v              | 3  | 22             | 17.6 | 33.4 | 20           | 16 |

| Weight And Dimensions    |           |             |
|--------------------------|-----------|-------------|
|                          | Open Type | Silent Type |
| Length(mm)               | 1650      | 2100        |
| Width(mm)                | 730       | 730         |
| Height(mm)               | 1330      | 1140        |
| Net Weight (Kg)          | 550       | 770         |
| Fuel Tank Capacity(L)    | 140       | 66          |
| Running Hours -100% Load | 26        | 12.5        |

LEEGA Company are in conformity with certification ISO 9001/ ISO14001/ISO18001 and LEEGA gensets are compliant with CE Standard. Best quality of electricity, high starting and loading capacity according to ISO8528-5

Ambient conditions of reference according to ISO 8528-1:2018 normative: 1000 mbar,25°C, 30% relative humidity.

#### Prime Power (PRP):

According to ISO 8528-1:2018, Prime power is the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year under the agreed operating conditions with the maintenance intervals and procedures being carried out as prescribed by the manufacturer. The permissible average power output (Ppp) over 24 h of operation shall not exceed 70 % of the PRP.

#### Emergency Standby Power (ESP):

According to ISO 8528-1:2018, Emergency standby power is the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 200 h of operation per year with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. The permissible average power output over 24 h of operation shall not exceed 70 % of the ESP

#### Continuous Power (COP):

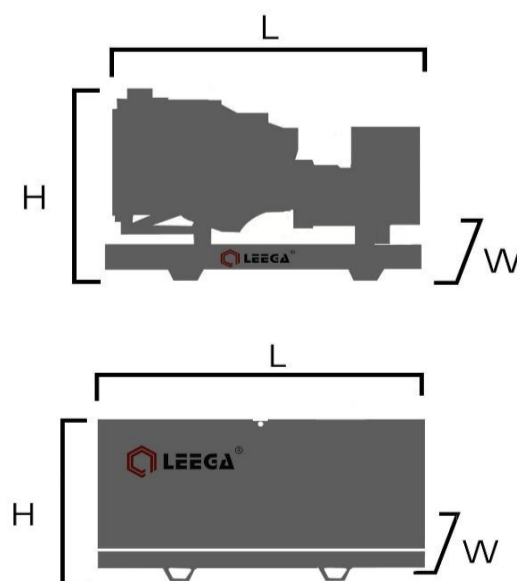
According to Standard ISO 8528-1:2018, this is the maximum power available for continuous loads for unlimited running hours a year between the maintenance times recommended by the manufacturer under the environmental conditions established by the same.

#### Operating Environmental Requirement

Ambient Temperature : -25°C-50°C (Heater must be included when in low temperature)

Humidity: Less than 80%

Altitude: Up to 1000meters (For higher altitude application, please consult with LEEGA Team)



Note: Weights and dimensions based on standard products, not used for installation.

## Diesel Engine Specifications | 1500RPM

| General Engine Spec        |                     |
|----------------------------|---------------------|
| Manufacturer:              | Perkins             |
| Model:                     | 404D-22G            |
| Cylinders No/ arrangement: | 4 / In-line         |
| Compression Ratio:         | 23.3:1              |
| Injection Type             | Direct              |
| Aspiration type:           | Naturally Aspirated |
| Bore x Stroke:             | 84x100mm            |
| Displacement               | 2.216L              |

| FUEL SYSTEM                     |               |
|---------------------------------|---------------|
| Type Injection System           | Direct        |
| Fuel injection pump..           | Cassette type |
| Nozzle opening pressure(MPa)    | 14.7          |
| Fuel lift pump Flow(L/h)        | 63            |
| Fuel lift pump Pressure (kPa)   | 10            |
| Maximum suction head(M)         | 0.8           |
| Maximum static pressure head(M) | 3             |

| INDUCTION SYSTEM               |                  |
|--------------------------------|------------------|
| Maximum air intake restriction |                  |
| Clean Filter(kPa)              | 3                |
| Dirty Filter(kPa)              | 6.4              |
| Air filter type                | Dry element type |

| LUBRICATION SYSTEM                          |          |
|---|----------|
| Lubricating oil capacity-Minimum/Maximum(L) | 8.9/10.6 |
| Minimum oil pressure (kPa)                  | 120      |
| Normal oil temperature(°C)                  | 125      |
| Oil flow at rated speed(L/min)              | 109      |

## Alternator Specifications | 50Hz

| General Alternator Spec |                         |
|-------------------------|-------------------------|
| Poles                   | 4                       |
| Insulation              | Class H                 |
| Protection Rating       | IP23                    |
| Exciter System          | Self-excited, Brushless |
| AVR Regulation Range    | ±1%                     |
| Number Of Bearing       | Single Bearing          |
| Coupling System         | Flexible Disc           |
| Winding Pitch           | 2/3                     |
| Overspeed Protection    | 2250R.P.M               |

| Engine Design Performance |               |             |
|---------------------------|---------------|-------------|
|                           | Standby Power | Prime Power |
| Gross Engine Output(KW):  | 20.6          | 18.7        |
| Net Engine Output(KW):    | 20.3          | 18.4        |
| Mean piston speed(M/s):   | 5             |             |
| Engine Water Flow(L/min): | 42.9          |             |
| Intake Air Flow(m³/min):  | 1.45          |             |
| Exhaust Gas Flow(m³/min): | 3.94          | 3.64        |
| Exhaust Gas Temp(°C):     | 505           | 445         |

| COOLING SYSTEM                                       |       |
|--|-------|
| Coolant Capacity - With radiator (L)                 | 7     |
| Maximum top tank temperature (°C)                    | 112   |
| Maximum permissible external system resistance (kPa) | 15    |
| Thermostat operation range(°C)                       | 82-95 |

| ELECTRICAL SYSTEM                          |                   |
|--|-------------------|
| Alternator                                 | 65 amps, 12 volts |
| Starter motor                              | 2 kW, 12 volts    |
| Cold start recommendations 0°C--15°C (CCA) | 740               |

| EXHAUST SYSTEM              |      |
|-----------------------------|------|
| Maximum Back Pressure (kPa) | 10.2 |

| Alternator Standard Features   |  |
|--|--|
| (1)  | All models are brushless, rotating-field alternators   |
| (2)  | Alternator meet the main international standard of IEC 60034, NEMA MG 1.32-33, BS 5000 Part 99, VDE 0530, ISO 8528/3 |
| (3)  | The AVR voltage regulator provides superior short circuit capability   |
| (4)  | Self-ventilated and dip proof construction   |
| (5)  | Superior voltage waveform  |
| Note: See Alternator Data Sheets for application data and ratings, efficiency curves, voltage dip with motor starting curves, and short circuit decrement curves |  |



## Control System- ComAp IL4 Controller Series

Controller model please refer to the scope of supply

| Model                     | AMF8 | AMF20 | AMF25 |
|---------------------------|------|-------|-------|
| Binary Inputs             | 6+1  | 6+1   | 8+1   |
| Binary Outputs            | 6    | 6     | 8     |
| Analog Inputs(U/I/R)      | 3    | 3     | 4     |
| 5V reference output       | ●    | ●     | ●     |
| Magnetic pick-up          | ●    | ●     | ●     |
| CAN (ECU)                 | ●    | ●     | ●     |
| RS485 (on board)          | x    | x     | ●     |
| USB Host (on board)       | x    | ●     | ●     |
| USB Device (on board)     | ●    | ●     | ●     |
| Plug-in modules           | 1    | 1     | 2     |
| CAN modules               | 2    | 2     | 5     |
| AirGate / WSV             | ●    | ●     | ●     |
| History records           | 150  | 350   | 350   |
| Alternative configuration | 3    | 3     | 3     |
| Calendar/Scheduler        | 2    | 4     | 4     |
| Remote display support    | ●    | ●     | ●     |
| Load Shedding             | 2    | 5     | 5     |
| Maintenance Timers        | 3    | 3     | 3     |
| Analogue switch           | x    | x     | 4     |
| AMF FUNCTION              | ●    | ●     | ●     |

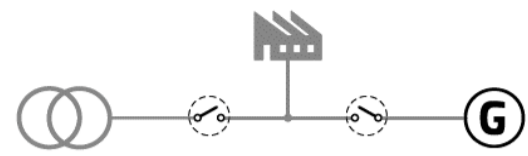
### Key Function

|                          |   |
|--------------------------|---|
| Control                  | Auto/Start/Stop Control                                 |
|                          | Emergency Stop Pushbutton/ Alarm                        |
|                          | Engine Cool Down Timer                                  |
|                          | Warm - up Timer   |
|                          | Load Switching Timer                                    |
|                          | Engine Cycle Crank                                      |
| Indications              | Operating Hours   |
|                          | 3 Phase Generator Voltage Sensing & Monitoring          |
|                          | Current Protection & Monitoring                         |
|                          | Measurement (kW, kVA, kVA <sub>r</sub> , kWh, kVAh, pf) |
|                          | Frequency Monitoring (Hz)                               |
|                          | Oil Pressure/Coolant Temperature/Fuel Level Monitoring  |
|                          | Battery Voltage Monitoring (DC)                         |
|                          | Alarm (Acknowledge)                                     |
| Warning & Sutdown Alarms | Generator Over/Under Voltage & Frequency                |
|                          | Crank Disconnect (Failure to Start)                     |
|                          | Under/Over Speed  |
|                          | Over Current  |
|                          | Low oil pressure  |
|                          | High Water Temperature                                  |
|                          | Low Fuel Level  |
|                          | Low Water Level   |

### Application Overview

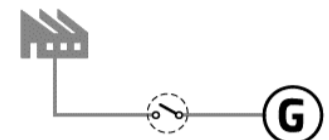
#### AMF

Mains & Generator  
Circuit Breaker



#### MRS

Generator Circuit  
Breaker



### Controller Overview



### Operating Conditions

|   |                          |
|---|--------------------------|
| Operating temperature                   | -20 °C to +70 °C         |
| Storage temperature                     | -30 °C to +80 °C         |
| Protection degree (front panel)         | IP 65                    |
| Operating humidity                      | 95 % w/o condensation    |
| Vibration                               | 5-25 Hz, ± 1.6 mm        |
|   | 25-100 Hz, a = 4 g       |
| Shocks                                  | a = 500 m/s <sup>2</sup> |
| Surrounding air temperature rating 70°C |                          |
| Suitable for pollution degree 2         |                          |

### Controller Optional Plug-in Modules

- CM-RS232-485 - Dual port interface
- CM2-4G-GPS - 4G & GPS plug-in communication module
- CM3-Ethernet - Internet / Ethernet plug-in communication module
- EM-BIO8-EFCP - 8 additional binary inputs/outputs

## DEEPSEA- DSE Controller Series

Controller model please refer to the scope of supply

| Model                     | DSE4520 | DSE6020 | DSE7320 | DSE7420 |
|---------------------------|---------|---------|---------|---------|
| Binary Inputs             | 4       | 6       | 8       | 8       |
| Binary Outputs            | 6       | 6       | 10      | 10      |
| Analog Inputs(U/I/R)      | 3       | 4       | 6       | 6       |
| Magnetic pick-up          | ●       | ●       | ●       | ●       |
| CAN (ECU)                 | ●       | ●       | ●       | ●       |
| RS485 (on board)          | x       | x       | ●       | ●       |
| USB (on board)            | ●       | ●       | ●       | ●       |
| RS232 (on board)          | x       | x       | ●       | ●       |
| Plug-in modules           | x       | x       | ●       | ●       |
| CAN modules               | ●       | x       | ●       | ●       |
| Modbus                    | ●       | ●       | ●       | ●       |
| History records           | 50      | 50      | 250     | 250     |
| Alternative configuration | 4       | 2       | 6       | 6       |
| Calendar/Scheduler        | ●       | ●       | ●       | ●       |
| Maintenance Timers        | 3       | 3       | 3       | 3       |
| AMF FUNCTION              | ●       | ●       | ●       | ●       |

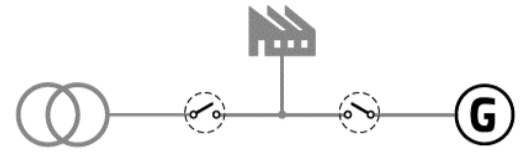
### Key Function

|                          |   |
|--------------------------|---|
| Control                  | Auto/Start/Stop Control                                 |
|                          | Emergency Stop Pushbutton/ Alarm                        |
|                          | Engine Cool Down Timer                                  |
|                          | Warm - up Timer   |
|                          | Load Switching Timer                                    |
|                          | Engine Cycle Crank                                      |
| Indications              | Operating Hours   |
|                          | 3 Phase Generator Voltage Sensing & Monitoring          |
|                          | Current Protection & Monitoring                         |
|                          | Measurement (kW, kVA, kVA <sub>r</sub> , kWh, kVAh, pf) |
|                          | Frequency Monitoring (Hz)                               |
|                          | Oil Pressure/Coolant Temperature/Fuel Level Monitoring  |
|                          | Battery Voltage Monitoring (DC)                         |
| Alarm (Acknowledge)      |   |
| Warning & Sutdown Alarms | Generator Over/Under Voltage & Frequency                |
|                          | Crank Disconnect (Failure to Start)                     |
|                          | Under/Over Speed  |
|                          | Over Current  |
|                          | Low oil pressure  |
|                          | High Water Temperature                                  |
|                          | Low Fuel Level  |
| Low Water Level          |   |

### Application Overview

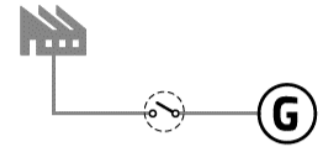
#### AMF

Mains & Generator  
Circuit Breaker



#### MRS

Generator Circuit  
Breaker



### Controller Overview



### Operating Conditions

|                                 |  |
|---------------------------------|--|
| Operating temperature           | -30 °C to +70 °C                                     |
| Storage temperature             | -40 °C to +85 °C                                     |
| Protection degree (front panel) | IP 65  |
| Operating humidity              | 95 % w/o condensation                                |
| Vibration                       | 5 Hz to 8 Hz at +/-7.5 mm,<br>8 Hz to 500 Hz at 2 gn |
| Shocks                          | 15 gn in 11 Ms                                       |

## LEEGA Genset Optional Specifications

| Generator Sets    |   |
|-------------------|---|
| Engine            | Water Jacket Pre-heater                       |
|                   | Oil Pre-heater                                |
|                   | Fuel-Water Separator                          |
| Alternator        | Winding and Bearing Temperature Detector(RTD) |
|                   | Anti-condensation Heater(Space Heater)        |
|                   | PMG / AREP                                    |
|                   | Anti-damp and anti-corrosion treatment        |
| Electrical System | ATS   |
|                   | Remote Control and Monitoring                 |
|                   | Synchronizing System                          |
|                   | 3/5 Pin sockets with RCBO protection          |
| Fuel System       | Bunded Double Wall Base Fuel Tank             |
|                   | Extended To Larger Capacity Base Tank         |
|                   | Free-stand Daily Fuel Tank                    |
|                   | Automatic fuel feeding system                 |
|                   | Fuel T-valves                                 |
| Canopy            | Trailer                                       |
|                   | Rental Type Design                            |

| Optional Controller Model                        |                            |
|--|----------------------------|
| ComAp Controller For Single Genset Application   | ComAp Nano MRS 3           |
|  | ComAp AMF8                 |
|  | ComAp AMF20                |
| ComAp Controller For Multi Genset Application    | ComAp AMF25                |
|  | ComAp IG200                |
|  | ComAp IG-NT                |
| Deepsea Controller For Single Genset Application | DSE4520 MKII               |
|  | DSE6020 MKII /DSE6120 MKII |
|  | DSE7320 MKII /DSE7420MKII  |
| Deepsea Controller For Multi Genset Application  | DSE8610 MKII               |
|  | DSE8810 MKII               |



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Note: Technical data described in this catalogue correspond to the available information at the moment of printing. LEEGA has the right to modify any feature without prior notice.

