

# GENERATING SET GE 20 YR-5

The images are for reference



## FEATURES

- Fuel pre-filter and filter with indicator of the presence of water in the fuel
- Sealed base capable of containing any leaks of liquids present in the engine, avoiding environmental pollution
- 3-way valve for transferring fuel from an external tank with quick filling connections housed in a special niche (OPTIONAL)
- Fuel level sensors - coolant temperature - engine oil pressure - crankcase leak detection
- Battery disconnect switch
- Emergency button
- Power cable connection terminal block
- Electrical distribution panel with three-phase and single-phase output sockets
- General four-pole thermomagnetic switch
- Electronic differential relay adjustable in current and trip time
- Insulation monitor (as an alternative to the electronic differential relay)
- Brushless alternator with electronic voltage regulation "AVR" with three-phase sensing
- Alternator windings protected with marine impregnation



| POWER RATINGS                |                               |
|------------------------------|-------------------------------|
| * Stand-By three-phase power | 20 kVA (16 kW) / 400V / 28,9A |
| * PRP three-phase power      | 18 kVA (14,4 kW) / 400V / 26A |
| * PRP single-phase power     | 7 kVA / kW / 230V / 30,4A     |
| * COP power                  | /                             |
| Frequency                    | 50 Hz                         |
| Cos φ                        | 0.8                           |

\* Output powers according to ISO 8528-1

## DEFINITION

Valid declared powers up to the followings environmental conditions: temperature 25°C, altitude 100 meters above sea level

**LTP power: stand-by power:** Maximum available power for use with variable loads for a yearly number of hours limited at 500 h. No overload is admitted.

**PRP power:** continue power with variable loads. Maximum power for use with variable loads for a yearly illimited nubers of hours.

**COP power:** continuous power with constant load. Maximum power for use with constant loads for a yearly unlimited numbers of hours.

## ENGINE 1500 RPM

| 4 STROKE, DIRECT INJECTION, TURBOCHARGED         |                                       |
|--|---------------------------------------|
| Model  | YANMAR 4TNV88-BIGE                    |
| * Stand-By net power                             | 18 kW (24,5 hp)                       |
| * PRP net power                                  | 16,4 kW (22,3 hp)                     |
| * COP net power                                  | /                                     |
| Cylinders / Displacement                         | 4 / 2,19 lit. (2190 cm <sup>3</sup> ) |
| Bore / Stroke                                    | 88 / 90 (mm)                          |
| Compression ratio                                | 20 : 1                                |
| BMEP (Brake Mean Effective Pressure : LTP - PRP) | /                                     |
| Speed governor type                              | Electronic                            |
| FUEL CONSUMPTION                                 |                                       |
| 110 % (Stand-by power)                           | 5 lit./h                              |
| 100 % to PRP                                     | 4,5 lit./h                            |
| 75 % to PRP                                      | 3,4 lit./h                            |
| 50 % to PRP                                      | 2,6 lit./h                            |
| COOLING SYSTEM                                   |                                       |
| Total system cap. - only engine                  | / lit. - 2,7 lit.                     |
| Fan air flow                                     | 50 m <sup>3</sup> /min.               |
| LUBRICATION SYSTEM                               |                                       |
| Total oil system capacity                        | /                                     |
| Oil capacity in sump                             | 3,4 lit. (min) - 7,4 lit. (max)       |
| Oil consumption at full load                     | /                                     |

| EXHAUST SYSTEM                   |                           |
|----------------------------------|---------------------------|
| Maximum exhaust gas flow         | /                         |
| Max. exhaust gas temp.           | 520 °C                    |
| Maximum back pressure            | 9,8 kPa (0,1 bar)         |
| External diameter exhaust pipe   | /                         |
| ELECTRICAL SYSTEM                |                           |
| Starter motor power              | 1,4 kW                    |
| Battery charging alternator cap. | 40 A                      |
| Cold start                       | Glow plugs                |
| With cold start aid              | /                         |
| AIR FILTER                       |                           |
| Combustion air flow              | 1,48 m <sup>3</sup> /min. |
| HEAT REJECTED AT FULL LOAD       |                           |
| To exhaust system                | /                         |
| To water and oil                 | /                         |
| Radiated to room                 | /                         |
| To charge cooler                 | /                         |

\* Output powers according to ISO 3046-1

## ALTERNATOR

| SYNCHRONOUS, THREE-PHASE, SELF-EXCITED, SELF-REGULATED, BRUSHLESS |                           |
|---|---------------------------|
| Continuous power  | 20 kVA                    |
| Stand-by power  | 23 kVA                    |
| Three phase voltage   | 380-415 Vac               |
| Frequency   | 50 Hz                     |
| Cos φ   | 0.8                       |
| Model A.V.R.  | HVR-30                    |
| Voltage regulation acc.   | ± 1.0 %                   |
| Sustained short circuit current                                   | 3 In                      |
| Transient dip (100% load)   | 10 %                      |
| Recovery time   | ≤ 3 sec.                  |
| Efficiency at 100% load   | 86,1 % (400V - Cos φ 0.8) |
| Insulation  | Class H                   |
| Connection - Terminals  | Star (With N) - N°12      |
| Electromagnetic compatibility ( R.F.I. suppr.)                    | EN 55011                  |
| Waveform distortion - THD   | < 3 %                     |
| Telephone interference - THF                                      | /                         |

| REACTANCES (20 kVA - 400V)                   |                           |
|--|---------------------------|
| Direct axis synchronous - X <sub>d</sub>     | 242 %                     |
| Direct axis transient - X' <sub>d</sub>      | 19 %                      |
| Subdirect axis transient - X'' <sub>d</sub>  | 9 %                       |
| Quadrature axis synchronous - X <sub>q</sub> | 133 %                     |
| Quadr. axis subtransient - X'' <sub>q</sub>  | /                         |
| Negative sequence - X <sub>2</sub>           | /                         |
| Zero sequence - X <sub>0</sub>               | /                         |
| TIME CONSTANTS                               |                           |
| Transient - T' <sub>d</sub>                  | 0,007 sec                 |
| Subtransient - T'' <sub>d</sub>              | 0,005 sec                 |
| Open circuit - T' <sub>do</sub>              | 0,103 sec                 |
| Armature - T <sub>a</sub>                    | /                         |
| Short-circuit ratio K <sub>cc</sub>          | 0,57                      |
| IP protection degree                         | IP 23                     |
| Cooling air flow                             | 0.1 m <sup>3</sup> /sec.  |
| Coupling   Bearing                           | Direct SAE 3 - 11 ½ - N°1 |

## GENERAL SPECIFICATIONS

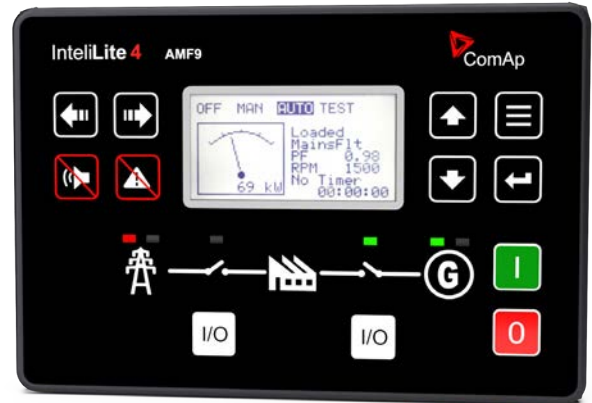
|                           |                              |
|---------------------------|------------------------------|
| Fuel tank capacity        | 100 lit.                     |
| Running time (75% to PRP) | 29,5 h                       |
| Starter battery           | 12 Vdc - 80Ah / 670A CCA(EN) |

|                              |               |
|------------------------------|---------------|
| IP protection degree         | IP 44         |
| Acoustic pressure            | 60 dB(A) @ 7m |
| Performance class (ISO 8528) | G2            |

# CONTROL PANEL

## DIGITAL CONTROL PANEL

- InteliLite4 AMF9 controller
- Power switch
- Siren
- Emergency stop button
- 16A 230V 2P+T CEE plug - Optional (Engine heater and battery charger power supply)
- Switch magnetemic
- Electronic differential relay
- Power terminal block
- Output sockets:
  - 1x 400V 32A 3P+N+T CEE IP67
  - 1x 400V 16A 3P+N+T CEE IP67
  - 1x 230V 16A 2P+T CEE IP67
  - 1x 230V 16A 2P+E SCHUKO IP68
- Differential circuit breaker for 400V 16A socket
- Differential circuit breaker for 230V 16A socket
- Earth terminal (PE)



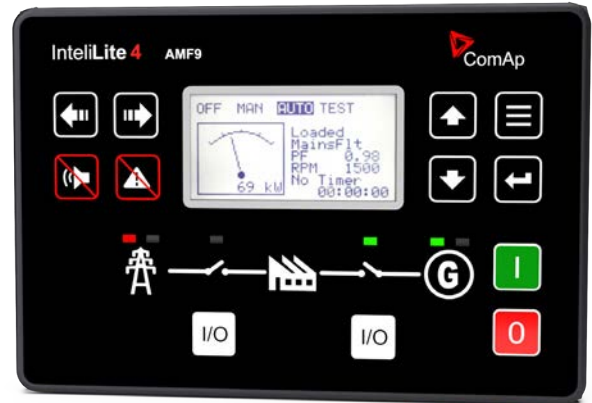
| INTELLILITE4 AMF9 CONTROLLER CHARACTERISTICS |  |
|--|--|
| <b>Operating mode</b>                        | <ul style="list-style-type: none"> <li>• OFF - MAN - AUTO - TEST</li> </ul>  |
| <b>Display - Buttons-LEDs</b>                | <ul style="list-style-type: none"> <li>• Backlit display, LCD 132x64 pixels</li> <li>• Buttons / Buttons: START - STOP - RESET ALARMS / FAULT RESET</li> <li>• LEDs: Generator / GCB ON status - Grid status</li> </ul>  |
| <b>Generator Measures</b>                    | <ul style="list-style-type: none"> <li>• Voltage : L1-L2 / L2-L3 / L3-L1 - N-L1/N-L2/N-L3</li> <li>• Current : I1 - I2 - I3</li> <li>• Frequency Hz</li> <li>• Powers : kVA - kW - kVAR (totali e per fase)</li> <li>• Energy : kVAh - kWh - kVARh</li> <li>• Cos φ (medium and per phase)</li> </ul>  |
| <b>Engine Measures</b>                       | <ul style="list-style-type: none"> <li>• Water temperature</li> <li>• Oil pressure</li> <li>• Fuel level</li> <li>• Rpm meter</li> <li>• Battery voltage</li> <li>• Maintance</li> <li>• Hours meter</li> <li>• Starts number</li> </ul>   |
| <b>Generator Protections</b>                 | <ul style="list-style-type: none"> <li>• Overload</li> <li>• Overcurrent</li> <li>• Short circuit</li> <li>• Over-Undervoltage</li> <li>• Over-Underfrequency</li> <li>• Voltage asymmetry</li> <li>• Unbalanced current</li> <li>• Phase sequence</li> </ul>  |
| <b>Engine Protections</b>                    | <ul style="list-style-type: none"> <li>• Overspeed</li> <li>• High water temperature warning</li> <li>• Low oil pressure warning</li> <li>• Low fuel level warning</li> <li>• Over-Under battery voltage</li> <li>• Battery charge alternator failure</li> <li>• Start failure</li> <li>• Stop failure</li> <li>• Emergency stop</li> <li>• Low water level shutdown (option)</li> </ul> |

|  |   |
|--|---|
| <b>AMF functins (Automatic control panel only)</b> | <ul style="list-style-type: none"> <li>• Measure mains voltage : L1-L2 / L2-L3 / L3-L1 - N-L1/N-L2/N-L3</li> <li>• Measure mains frequency</li> <li>• Three phase detection</li> <li>• Over-Under mains voltage</li> <li>• Over-Under mains frequency</li> <li>• Voltage asymmetry</li> <li>• Phase sequence</li> <li>• Dual mutual stand-by application</li> </ul>   |
| <b>Features</b>                                    | <ul style="list-style-type: none"> <li>• Event history, 150 stored events</li> <li>• 3 programmable test timers</li> <li>• Programming from panel or from PC</li> <li>• 3 selectable languages (other languages available)</li> <li>• Direct connection to engines with ECU (Stage V, Tier 4 Final) via Can Bus J1939</li> <li>• External Start and Stop</li> <li>• Programmable inputs and outputs</li> <li>• Alternative configurations (50 / 60Hz)</li> <li>• IP 65 protection</li> <li>• Operating temperature: -20 ° C - + 70 ° C</li> </ul> |
| <b>Communication</b>                               | <ul style="list-style-type: none"> <li>• USB port</li> <li>• RS232- RS485 (optional)</li> <li>• Modbus RTU / TCP (optional)</li> <li>• Internet connection with Ethernet (optional)</li> <li>• Online control and monitoring on web pages (embedded web server) (optional)</li> <li>• GPS / 4G modem (optional) (geographical tracking via WebSupervisor)</li> <li>• Internal PLC support</li> </ul>  |

# CONTROL PANEL

## DIGITAL CONTROL PANEL (VERS. DGUV- "B")

- InteliLite4 AMF9 controller
- Power switch
- Siren
- Emergency stop button
- 16A 230V 2P+T CEE plug - Optional (Engine heater and battery charger power supply)
- Switch magnetomic
- Isolation monitor
- Power terminal block
- Output sockets: 1x 400V 32A 3P+N+T CEE IP67  
1x 400V 16A 3P+N+T CEE IP67  
2 x 230V 16A 2P+E SCHUKO IP68
- Differential switch for 400V 32A socket
- Differential circuit breaker for 400V 16A socket
- Differential circuit breaker for 230V 16A socket
- Equipotential earth terminal (PE)



| INTELLILITE4 AMF9 CONTROLLER CHARACTERISTICS |  |
|--|--|
| <b>Operating mode</b>                        | • OFF - MAN. - AUTO - TEST   |
| <b>Display - Buttons-LEDs</b>                | • Backlit display, LCD 132x64 pixels<br>• Buttons / Buttons: START - STOP - RESET ALARMS / FAULT RESET<br>• LEDs: Generator / GCB ON status - Grid status  |
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| <b>Generator Protections</b>                 | • Overload<br>• Overcurrent<br>• Short circuit<br>• Over-Undervoltage<br>• Over-Underfrequency<br>• Voltage asymmetry<br>• Unbalanced current<br>• Phase sequence  |
| <b>Engine Protections</b>                    | • Overspeed<br>• High water temperature warning<br>• Low oil pressure warning<br>• Low fuel level warning<br>• Over-Under battery voltage<br>• Battery charge alternator failure<br>• Start failure<br>• Stop failure<br>• Emergency stop<br>• Low water level shutdown (option) |

|  |   |
|--|---|
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# WEIGHT - DIMENSIONS AND ACCESSORIES

GE 20 YR-5

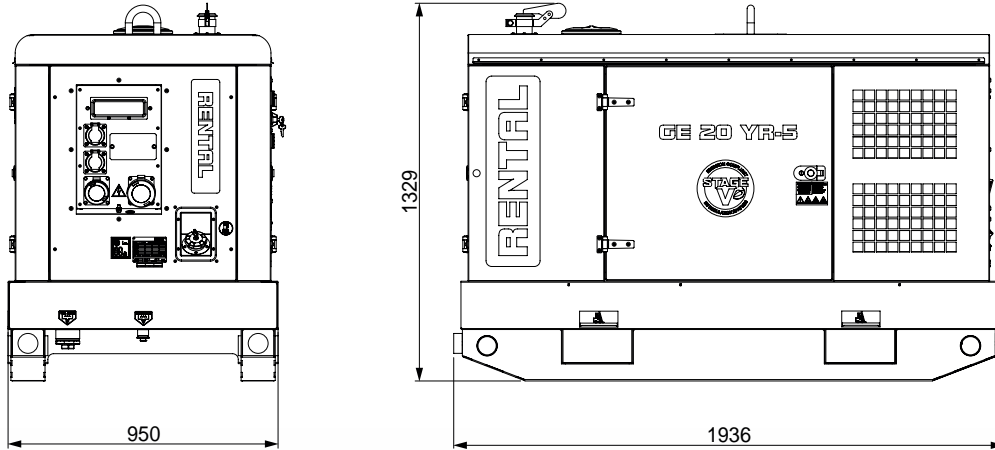


**DRY WEIGHT MACHINE:**  
• 840 Kg

Generating set pictured may include optional accessories.



**DIMENSIONS DRAW**



## VERSIONS IN ADDITION TO THE STANDARD FEATURES

|                     | HEATER | 3WAY | PLUS |
|---------------------|--------|------|------|
| 3-way valve         |        | ✓    | ✓    |
| Engine water heater | ✓      |      | ✓    |

### ACCESSORIES ON REQUEST

- Internet/Ethernet plug-in module with Web Server
- GPS/4G modem with antenna
- Report card for 15 alarms/statuses (configurable)
- Teleswitching panel (ATS) PAC-I 28 (40A)
- TCM35 remote control
- Fast towing trolley CTV1
- MT25 earthing

### AVAILABLE VERSIONS

|            |                     |
|------------|---------------------|
| CP0Q30G1   | STANDARD            |
| CP0Q3G1A   | HEATER              |
| CP0Q30G1H  | 3WAY                |
| CP0Q3G1AH  | PLUS                |
| CP0Q30U1   | STANDARD (DGUV-"B") |
| CP0Q30U1A  | HEATER (DGUV-"B")   |
| CP0Q30U1H  | 3WAY (DGUV-"B")     |
| CP0Q30U1AH | PLUS (DGUV-"B")     |

### GENERAL INFORMATION

#### COMPLIANCE GENERATING SETS WITH EC DIRECTIVES AND STANDARDS

- 2006/42 / EC (Machines Directive)
- 2014/35 / EU (Low Voltage Directive)
- 2014/30 / EU (EMC Directive)
- 2000/14 / EC (Directive Acoustic Emission for machines for use outdoors)
- ISO 8528 (Reciprocating internal combustion engine driven alternating current generating sets)



ISO 9001:2008 - Cert. 0192

#### WARRANTY

All devices are covered by the manufacturer's warranty.

Non-contractual document. Specification subject to change without notice.

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