



## Main Features

|                      |             |     |
|----------------------|-------------|-----|
| Frequency            | Hz          | 50  |
| Voltage              | V           | 400 |
| Power factor         | $\cos \phi$ | 0.8 |
| Phase and connection |             | 3   |

## Power Rating

|                   |     |       |
|-------------------|-----|-------|
| Standby power LTP | kVA | 46.19 |
| Standby power LTP | kW  | 36.95 |
| Prime power PRP   | kVA | 43.87 |
| Prime power PRP   | kW  | 35.10 |

### Ratings definition (According to standard ISO8528 1:2005)

#### PRP - Prime Power:

It is defined as being 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 over 24 h of operation shall not exceed 70 % of the prime power.

#### LTP - Limited-Time running Power:

It is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 h of operation per year (whose no more than 300 for continuative use) with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. No overload capability is available.

## Engine specifications

|                                     |                 |      |
|-------------------------------------|-----------------|------|
| Engine manufacturer                 | Yanmar          |      |
| Model                               | 4TNV98T-ZGPGE   |      |
| [50Hz] Exhaust emission level       | Stage IIIA      |      |
| Engine cooling system               | Water           |      |
| Nr. of cylinder and disposition     | 4 in line       |      |
| Displacement                        | cm <sup>3</sup> | 3319 |
| Aspiration                          | Turbocharged    |      |
| Speed governor                      | Electronic      |      |
| Prime gross power PRP               | kW              | 40.2 |
| Maximum gross power LTP             | kW              | 42.3 |
| Oil capacity                        | l               | 11.2 |
| Coolant capacity                    | l               | 8.0  |
| Fuel                                | Diesel          |      |
| Specific fuel consumption @ 75% PRP | g/kWh           | 232  |
| Specific fuel consumption @ PRP     | g/kWh           | 232  |
| Starting system                     | Electric        |      |
| Starting engine capability          | kW              | 2.3  |
| Electric circuit                    | V               | 12   |



## Engine Equipment

### Standards

The above ratings represent the engine performance capabilities to conditions specified in ISO 8528/1, ISO 3046/1:1986, BS 5514/1

### Fuel system

- Direct injection system
- Fuel filter paper element
- Fuel pump Bosch in-Line

### Lube oil system

- Forced feed system
- Trochoid pump
- Paper element lube oil filter

### Induction system

- Mounted air filter

### Cooling system

- Thermostatically-controlled system with gear-driven circulation pump and belt-driven pusher fan
- Mounted radiator and piping

## Alternator Specifications

|                           |               |      |
|---------------------------|---------------|------|
| Brand                     | Mecc Alte     |      |
| Model                     | ECP 32-3S/4 B |      |
| Voltage                   | V             | 400  |
| Frequency                 | Hz            | 50   |
| Power factor              | $\cos \phi$   | 0.8  |
| Type                      | Brushless     |      |
| Poles                     | 4             |      |
| Voltage regulation system | Electronic    |      |
| Standard AVR              | DSR           |      |
| Voltage tolerance         | %             | 1.5  |
| Efficiency @ 75% load     | %             | 88.7 |
| Class                     | H             |      |
| IP protection             | 23            |      |

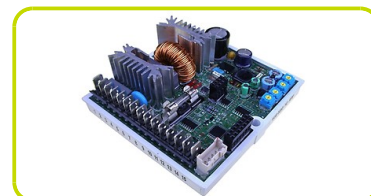


### Mechanical structure

Robust mechanical structure which permits easy access to the connections and components during routine maintenance check-ups.

### Voltage regulator

Voltage regulation with DSR. The digital DSR controls the range of voltage, avoiding any possible trouble that can be made by unskilled personnel. The voltage accuracy is  $\pm 1\%$  in static condition with any power factor and with speed variation between 5% and +30% with reference to the rated speed.



### Windings / Excitation system

Generator stator is wound to 2/3 pitch. This eliminates triplen (3rd, 9th, 15th ...) harmonics on the voltage waveform and is found to be the optimum design for trouble-free supply of non-linear loads. The 2/3 pitch design avoids excessive neutral currents sometimes seen with higher winding pitches. MAUX (Standard): The MAUX MeccAlte Auxiliary Winding is a separate winding within the main stators that feeds the regulator. This winding enables to take an overload of 300% forced current (short circuit maintenance) for 20 seconds. This is ideal for motor starting requirements.

### Insulation / Impregnation

Insulation is of class H standard. Impregnation is made with premium tropicalised epoxy resins by dipping and dripping. High voltage parts are impregnated by vacuum, so the insulation level is always very good. In the high-power models, the stator windings undergo a second insulation process. Grey protection is applied on the main and exciter stator to give enhanced protection.

### Reference standards

Alternator manufactured according to , and complies with , the most common specification such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, CAN/CSA-C22.2 No14-95-No100-95.

## Genset equipment

### BASE FRAME MADE OF WELDED STEEL PROFILE, COMPLETE WITH:

- Anti-vibration mountings properly sized
- Welded support legs

### PLASTIC FUEL TANK WITH THE FOLLOWING COMPONENT:

- Filler neck
- Air breather (ventilation pipe)
- Minimum fuel level sensor

### OIL DRAINING PIPE WITH CAP:

- Oil draining facilities

### ENGINE COMPLETE WITH:

- Battery
- Liquids (no fuel)

### CANOPY:

- Soundproof canopy made up of modular panels, realized with zined steel as treatment against corrosion and aggressive conditions, properly fixed and sealed allowing a full weatherproof enclosure.
- Easy access to the genset for maintenance purposes thanks to: Wide lateral access doors fixed by stainless steel hinges and provided with plastic lockable handles and internal perforated galvanized steel-sheet; Detachable panels, with screws holes protected by rubber tap.
- Control panel protection door provided with suitable window and lockable handle.
- Lateral air inlet opening properly protected and soundproofed. Exhaust air outlet from the roof, trough wet section protected by proper grid.
- Single detachable lifting eye placed on the roof.

### SOUNDPROOF:

- Noise attenuation thanks to soundproofing material (rock wool)
- Efficient residential silencer placed inside the canopy



### Dimensional data

|                    |        |      |
|--------------------|--------|------|
| Length             | (L) mm | 2000 |
| Width              | (W) mm | 920  |
| Height             | (H) mm | 1310 |
| Dry weight         | Kg     | 825  |
| Fuel tank capacity | l      | 68   |



### Autonomy

|                             |     |       |
|-----------------------------|-----|-------|
| Fuel consumption @ 75% PRP  | l/h | 8.34  |
| Fuel consumption @ 100% PRP | l/h | 11.10 |
| Running time @ 75% PRP      | h   | 8.15  |
| Running time @ 100% PRP     | h   | 6.13  |

### Noise level

|                              |       |    |
|------------------------------|-------|----|
| Guaranteed noise level (LWA) | dB(A) | 95 |
| Noise pressure level @ 7 mt  | dB(A) | 66 |



### Installation data

|                               |        |       |
|-------------------------------|--------|-------|
| Total air flow                | m³/min | 79.20 |
| Exhaust gas flow @ PRP        | m³/min | 9.6   |
| Exhaust gas temperature @ LTP | °C     | 530   |

### Data Current

|                 |   |       |
|-----------------|---|-------|
| MAX current     | A | 66.67 |
| Circuit breaker | A | 63    |

### Control panel availability

|                                  |     |
|----------------------------------|-----|
| MANUAL CONTROL PANEL             | MCP |
| MANUAL CONTROL PANEL FULL OPTION | MPF |
| AUTOMATIC CONTROL PANEL          | ACP |

## MCP - Manual control panel

Mounted on the genset and complete of: analogue instrumentation, control, protection of the generating set, protected through door with lockable handle.

### INSTRUMENTATION (ANALOGUE)

- Voltmeter (1 phase)
- Ammeter (1 phase)
- Hours-counter

### COMMANDS

- Start/stop selector switch with key (Glow plugs preheating function also included).
- Emergency stop button installed on canopy side.

### PROTECTION WITH ALARM

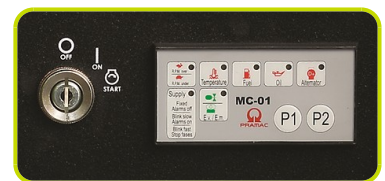
- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature
- Earth Fault.

### PROTECTIONS WITH SHUTDOWN

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature.
- Circuit breaker protection: III poles
- Emergency stop button

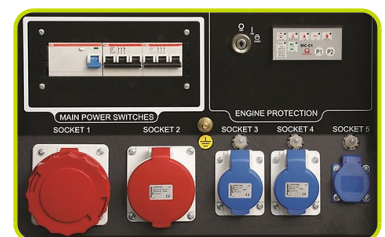
### OTHERS

- Panel protected through door with lockable handle.



### OUT PUT PANEL MCP

|   |   |          |
|---|---|----------|
| Power cables connection to Circuit Breaker. |   |          |
| Socket kit                                  |   | Standard |
| Thermal protections                         |   |          |
| 3P+N+T 400V 63A                             | n | 1        |
| 3P+N+T CEE 400V 32A                         | n | 1        |
| 2P+T CEE 230V 16A                           | n | 2        |
| 230V 16A SCHUKO                             | n | 1        |



## MPF - Manual control panel full option

Mounted on the genset and complete of: analogue instrumentation, control, protection of the generating set, protected through door with lockable handle

### INSTRUMENTATION (ANALOGUE)

- Voltmeter with selector switch (3 phases)
- Frequency meter
- Ammeter with selector switch (3 phases)
- Hours-counter
- Fuel level indicator
- Oil pressure indicator
- Engine temperature indicator

### COMMANDS

- Start/stop selector switch with key
- Emergency stop button

### PROTECTION WITH ALARM

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature
- Earth Fault

### PROTECTIONS WITH SHUTDOWN

- Low fuel level
- Battery charger failure
- low oil pressure
- high engine temperature
- Circuit breaker protection: III poles
- Emergency stop button

### OTHERS PROTECTIONS

- Panel protected through door with lockable handle

### OUT PUT PANEL MPF

|  |   |          |
|--|---|----------|
| ETB- External Terminal Board             |   | ETB      |
| Socket kit                               |   | Standard |
| Individual CB and Earth Fault protection |   |          |
| 3P+N+T 400V 63A                          | n | 1        |
| 3P+N+T CEE 400V 32A                      | n | 1        |
| 3P+N+T CEE 400V 16A                      | n | 1        |
| 230V/16A 2P+T CEE                        | n | 1        |
| 230V/16A SCHUKO                          | n | 1        |



## ACP - Automatic control panel

Mounted on the genset, complete with digital control unit AC03 for monitoring, control and protection of the generating set, protected through door with lockable handle.

### DIGITAL INSTRUMENTATION (through AC-03)

- Generating set voltage (3 phases).
- Mains voltage.
- Generating set frequency.
- Generating set current (3 phases).
- Battery voltage.
- Power (kVA - kW - kVAr).
- Power factor Cos  $\phi$ .
- Hours-counter.
- Engine speed r.p.m.
- Fuel level (%).
- Engine temperature (depending on model)

### COMMANDS AND OTHERS

- Four operation modes: OFF - Manual starting - Automatic starting - Automatic test.
- Pushbutton for forcing Mains contactor or Genset contactor.
- Push-buttons: start/stop, fault reset, up/down/page/enter selection.
- Remote starting availability.
- DC system disconnection switch.
- Acoustic alarm.
- Automatic battery charger.
- RS232 Communication port.
- Settable PASSWORD for protection level.

### PROTECTIONS WITH ALARM

- Engine protections: low fuel level, low oil pressure, high engine temperature.
- Genset protections: under/over voltage, overload, under/over frequency, starting failure, under/over battery voltage

### PROTECTIONS WITH SHUTDOWN

- Engine protections: low fuel level, low oil pressure, high engine temperature,
- Genset protection: under/over voltage, overload, under/over battery voltage, battery charger failure.
- Circuit breaker protection: III poles.
- Earth Fault included in the control unit.

### OTHERS PROTECTIONS

- Emergency stop button.
- Panel protected through door with lockable handle.



### OUT PUT PANEL ACP

|  |   |          |
|--|---|----------|
| Plinth row for connection from ACP to LTS panel. |   |          |
| 3P+N+T 400V 63A                                  | n | 1        |
| Predisposed for remote control optional:         |   | RCG      |
| Socket kit                                       |   | Optional |

## Supplements:

Only Available when order :

### CONTROL PANEL SUPPLEMENT

|   |         |
|---|---------|
| RCG - Various supplements for remote controls - available for models: | ACP     |
| TLP - Various supplements for remote signals - available for models:  | ACP     |
| ADI - Adjustable Differential Intensity - available only for models:  | ACP     |
| TIF - IV Poles Circuit Breaker instead of III - available for models: | ACP MCP |
| ETB - External Terminal Board - available for models:                 | MCP ACP |



### Socket kit

|  |         |
|--|---------|
| SKB socket kit B - available for models: | ACP MCP |
| Individual CB and Earth Fault protection |         |
| 3P+N+T 400V 63A                          | n 1     |
| 3P+N+T CEE 400V 32A                      | n 1     |
| 230V/16A 2P+T CEE                        | n 1     |
| 230V/16A SCHUKO                          | n 1     |
| NB: for assembly is necessary:           | ETB     |
| 3P+N+T CEE 400V 16A                      | n 1     |

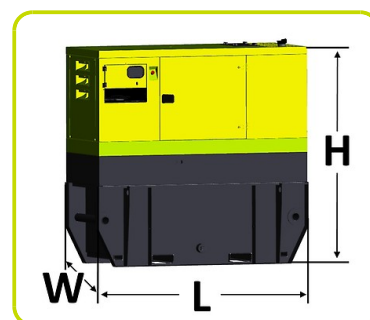


### GENSET EQUIPMENT

|   |     |
|---|-----|
| KPR - Premium Kit (Leak Proof Tray - Leakage detection sensor - Manual oil drain pump)                                      |     |
| AFP - Automatic Fuel Pump   | ACP |
| KRT - Kit Rental which includes fuel filter with water separator, 3-way fuel valve, battery switch, earth rod, docs folder) |     |

### Extended Fuel Tank

|                    |        |      |
|--------------------|--------|------|
| Fuel tank capacity | l      | 450  |
| Length (Genset)    | (L) mm | 2005 |
| Width (Genset)     | (W) mm | 1066 |
| Height (Genset)    | (H) mm | 1812 |



### ENGINE SUPPLEMENTS

|  |     |
|--|-----|
| PHS - Coolant Pre-Heating System - available for models: | ACP |
|--|-----|

## Accessories

Items available as accessory equipment

|                    |   |
|--------------------|---|
| STR - Site trailer | • |
| RTR - Road Trailer | • |



RTR

## LTS - LOAD TRANSFER SWITCH - Accessories ACP

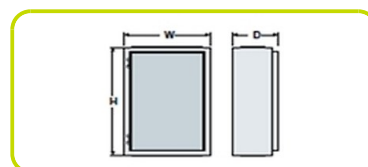
The Load Transfer Switch (LTS) panel operates the power supply changeover between the generator and the Mains in backup applications, guarantying the feeding to the load within a short period of time.

It consists of a standalone cabinet which can be installed separate from the generating set. The logic control of the power supply changeover is operated by means of the Automatic Control panel mounted on the generating set, so therefore none logic device is required on the LTS panel.



## NOMINAL CURRENT & DIMENSIONS PANEL LTS (standard\*)

|                                     |        |     |
|-------------------------------------|--------|-----|
| Nominal Current                     | A      | 60  |
| Width                               | (W) mm | 400 |
| Height                              | (H) mm | 400 |
| Depth                               | (D) mm | 240 |
| Weight                              | Kg     | 14  |
| * = Available electrical power more |        |     |



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