# Industrial Generator Set - T1900

## Ratings Range

**400/230 V - 50 Hz**

| | | |
|---|---|---|
| **Standby** | **kW** | 1520 |
| | **kVA** | 1900 |
| **Prime** | **kW** | 1382 |
| | **kVA** | 1727 |

## Benefits and features

**Rehlko premium quality**

- Rehlko provides **one source responsibility** for the generating set and accessories
- The generator set, its components and a wide range of options have been **fully developed, prototype tested, factory built**, and production tested
- The generator sets are designed in accordance to ISO8528
- Approved for use with HVO (Hydrotreated Vegetable Oil) according to EN15940

**Rehlko premium performances**

**Engines**

- High reliability enhanced through a simple design for optimal functional performances
- High performances turbochargers providing high engine performances under all loads
- Easy operation and maintenance: accessories requiring daily maintenance are conveniently located on the same side of the engine

**Alternator**

- Provide industry leading motor starting capability
- Excitation system to permit sustained overcurrent > 300% In, during 10 sec
- Built with a class H insulation and IP23

**Cooling**

- A compact and complete solution using a mechanical or an electrical radiator fan (depending of genset type)
- High temperature and altitude product capacity available

**Control panel**

- The Rehlko wide controller range provides the reliability and performances you expect from your equipment. You can program, manage and diagnose it easily and in an efficient way

**Rehlko worldwide support**

- A standard two-year or 1000-hours limited warranty for standby applications.
- A standard one-year or 2500 hours limited warranty for prime power applications.
- A worldwide product support

## General Specifications

| | |
|---|---|
| Manufacturer | Rehlko |
| Engine ref. | S16R-PTA |
| Alternator choices | KH04402T<br>KH04403T |
| Performance class | G3 |
| Voltage (V) | 400/230<br>380/220<br>415/240 |
| Controllers | Terminal block M80 APM403<br>APM802 |
| Consumption @ 100% load ESP (L/h)* | 380 |
| Consumption @ 100% load PRP (L/h)* | 347 |
| Emission level | |
| Data Center / Mission Critical Rating | Same as the Standby Rating below |
| Type of Cooling | Radiator |
| Factory installed enclosures | ISO40 |

"* Volumetric Fuel consumption is up to 4% higher when using HVO than Diesel Fuel"

## Generator sets ratings

| | | Standby rating | | | Prime rating | |
|---|---|---|---|---|---|---|
| | Hz | kWe | kVA | Amps | kWe | kVA |
| 400/230 | 50 | 1520 | 1900 | 2742 | 1382 | 1727 |
| 380/220 | 50 | 1520 | 1900 | 2887 | 1382 | 1727 |
| 415/240 | 50 | 1520 | 1900 | 2643 | 1382 | 1727 |

| Engine Specifications | |
|---|---|
| Engine brand | MITSUBISHI |
| Engine ref. | S16R-PTA* |
| Air inlet system | Turbo |
| Cylinder configuration | 16 - V |
| Displacement (l) | 65,37 |
| Bore (mm) x Stroke (mm) | 170 x 180 |
| Compression ratio | 14 : 1 |
| Speed 50Hz (RPM) | 1500 |
| Maximum stand-by power at rated RPM (kW) | 1620 |
| Governor type | Electronic |
| Frequency regulation, steady state (%) | +/- 0.25% |

| Lubrication System | |
|---|---|
| Oil Filter Quantity and type**** | |
| Charge Air coolant | Water/Air |

*****Rehlko recommends the use of genuine oil and filters.*

| Fuel System | |
|---|---|
| Maximum fuel pump flow (l/h) | 588 |
| Max head on fuel return line (m fuel) | 2 |
| Fuel Filter Quantity and type | |

* Engine reference may be partially modified depending on genset application, options selected by the customer and lead time required.

| Consumption with cooling system | |
|---|---|
| Specific consumption @ ESP Max Power (g/kW.h) | 197 |
| Specific consumption @ PRP Max Power (g/kW.h) | 198 |
| Specific consumption @ 75% of PRP Power (g/kW.h) | 199 |
| Specific consumption @ 50% of PRP Power (g/kW.h) | 207 |

| Cooling system | |
|---|---|
| Radiator & Engine capacity (l) | 420 |
| Fan power 50Hz (kW) | 43 |
| Fan air flow w/o restriction (m3/s) | 33,5 |
| Available restriction on air flow (mm H2O) | 20 |
| Type of coolant | Glycol-Ethylene |
| Radiated heat to ambiant (kW) | 112 |
| Heat rejection to coolant HT (kW) | 934 |
| Coolant capacity HT, engine only (l) | 170 |
| Outlet coolant temperature (°C) | 95 |
| Max coolant temperature, Shutdown (°C) | 98 |
| Max. pressure at inlet of HT water pump (mbar) | 981 |
| Thermostat begin of opening HT (°C) | 71 |
| Thermostat end of opening HT (°C) | 85 |

| Exhaust system | |
|---|---|
| Heat rejection to exhaust (kW) | 977 |
| Exhaust gas temperature @ ESP (°C) | 539 |
| Exhaust gas flow @ ESP (l/s) | 5650 |
| **Electrical system** | |
| Battery voltage (V) | 24 |
| **Air Intake system** | |
| Combustion air flow (l/s) | 2133 |
| Radiated heat to ambiant (kW) | 112 |

| Alternator Specifications | |
|---|---|
| Number of pole | 4 |
| Technology | Brushless |
| AVR Regulation | Yes |
| Insulation class | H |
| Indication of protection | IP23 |
| Number of bearing | 1 |
| Number of wires | 06 |
| Coupling | Direct |
| Overspeed (rpm) | 2250 |
| Voltage regulation at established rating (+/- %) | 0,5 |
| Unbalanced load acceptance ratio (%) | 8 |

# Alternator standard features

- All models are brushless, rotating-field alternators
- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- The AVR voltage regulator provides superior short circuit capability
- Self-ventilated and dip proof construction
- Sustained short-circuit current of up to 300% of the rated current for up to 10 seconds
- Superior voltage waveform

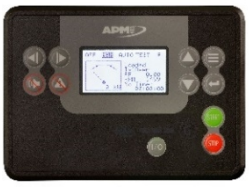
*Note: See Alternator Data Sheets for alternator application data and ratings, efficiency curves, voltage dip with motor starting curves, and short circuit decrement curves.*

**Basic terminal block**
It is used as a basic terminal block for connecting a control unit. Offers the following functions:

- emergency stop button
- customer connection terminal block
- CE certified

**M80 controller**
The M80 is a dual-function control panel. It can be used as a basic terminal block for connecting a control unit and as an instrument panel with a direct read facility, with displays giving a global view of your generating set's basic parameters. Offers the following functions:

- Engine parameters: tachometer, working hours counter, coolant temperature indicator, oil pressure indicator
- emergency stop button
- customer connection terminal block
- CE certified



**APM403 controller**
The APM403 is a versatile control unit which allows operation in manual or automatic mode

- Measurements : voltage and current
- kW/kWh/kVA power meters
- Standard specifications: Voltmeter, Frequency meter.
- Optional : Battery ammeter.
- J1939 CAN ECU engine control
- Alarms and faults: Oil pressure, Coolant temperature, Overspeed, Start-up failure, alternator min/max, Emergency stop button.
- Engine parameters: Fuel level, hour counter, battery voltage.
- Optional (standard at 24V): Oil pressure, water temperature.
- Event log/ Management of the last 300 genset events.
- Mains and genset protection
- Clock management
- USB connections, USB Host and PC,
- Communications : RS485 INTERFACE
- ModBUS protocol /SNMP
- Optional : Ethernet, GPRS, remote control, 3G, 4G
- Websupervisor, SMS, E-mails

**APM802 controller**
**Advanced power plant management control**
Dedicated to power plant management APM802 provides advanced control, system monitoring, and system diagnostics for optimum performance and compatibility

## Codes and Standards

Engine-generators set is designed and manufactured in facilities certified to standards ISO9001:2015 & ISO14001:2015. The generator sets and its components are prototype-tested, factory built and production tested and are in compliance with the relevant standards:

- Machinery Directive 2006/42/EC of May 17th 2006
- EMC Directive2014/30/UE
- Safety objectives set out in the Low Voltage Directive 2014/35/UE
- EN ISO 8528-13, EN 60034-1, EN 61000-6-1, EN 61000-6-2, EN 61000-6-3, EN 55011, EN 1679-1 et EN 60204-1

## Power ratings definition according to ISO8528-1 (2018-02 edition) and ISO-3046-1

**Emergency Standby Power (ESP):** The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Average load factor per 24 hours of operation is <80%.
**Prime Power (PRP):** At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour within 12 hour of operation. Average load factor per 24 hours of operation is <80%.
**Data Center Mission Critical (DCP):** Data Center Mission Critical power is defined as being the maximum power which a generating set is capable of delivering while supplying a variable or continuous electrical load and during unlimited run hours. Depending on the sites to supply and the availability of reliable utility, the generating set manufacturer is responsible to define what power level is able to supply to fulfil that requirement including hardware or software or maintenance plan adaptation.

## Warranty informations

Standard warranty period:

- for Products in "back-up" service
  - 30 months from the date the Product leaves the plant
  - 24 months from the Product’s commissioning date
  - 1,000 running hours

The warranty expires when one of the above conditions is met.

- for Products in “prime” or "continuous" service (continuous supply of electricity, either in the absence of any normal electricity grid or to complement the grid),
  - 18 months from the date the Product leaves the plant
  - 12 months from the Product’s commissioning date
  - 2,500 running hours

The warranty expires when one of the above conditions is met.
For more details regarding conditions of application and scope of the warranty please refer to our General “terms & conditions of sales”.

## Standard scope of supply

All our gensets are fitted with:

- Industrial water cooled DIESEL engine
- Radiator with coolant
- Electric starter & charge alternator 24 V D.C
- Electronic governor
- Standard air filter
- Single bearing alternator IP 23 T° rise/ insulation to class H/H
- Welded steel base frame with vibration attenuation mounts
- Flexible fuel lines & lub oil drain pump
- Exhaust outlet with flexible and flanges
- M80 control panel
- User’s manual (1 copy)
- Packing under plastic film
- Delivered with oil
- Delivered with antifreeze liquid

- Graphic display with touchscreen
- User language selectable
- Specially researched ergonomics
- High level of equipment availability
- USB and Ethernet ports
- Modbus protocol
- Making it easy to extend the installation
- -Complies with the international standard IEC 61131-3

# Dimensions and Weights

| Compact version | |
|---|---|
| Overall Size, max., L x W x H, (mm) | 5520 x 2286 x 2658 |
| Dry weight (kg) | 12979 |
| Tank capacity (L) | 0 |

| Container dimensions ISO40 version | |
|---|---|
| Overall Size, max., L x W x H, (mm) | 12192 x 2438 x 2896 |
| Tank capacity (L) | 500 |
| Dry weight (kg) | 22760 |
| Sound power level guaranteed (Lwa) 50Hz (75% PRP) | 114 |
| Acoustic pressure level @1m in dB(A) 50Hz (75% PRP) | 91 |
| Acoustic pressure level @7m in dB(A) 50Hz (75% PRP) | 83 |

** dimensions and weight without options*

Reference Conditions: 25°C Air Inlet Temperature, 40°C Fuel Inlet Temperature, 100 kPa Barometric Pressure; 10.7 g/kg of dry air Humidity. Intake Restriction set to maximum allowable limit for clean filter; Exhaust Back pressure set to maximum allowable limit; Fuel density at 0.85 kg/L.
Data was taken from a single engine test according to the test methods, fuel specification and reference conditions stated above and is subjected to instrumentation and engine-to-engine variability. Test conducted with alternate test methods, instrumentation, fuel or reference conditions can yield different results. Data and specifications subject to change without notice.