R20C5

Engine ref.	KDI1903M-EU5
Alternator ref.	KH00440T
Canopy	M3126
Performance class	G2

GENERAL CHARACTERISTICS

Frequency (Hz)	50 Hz
Voltage (V)	400/230
Standard Control Panel	APM303
Optional control panel	APM403

Voltage	ESP		PRP		Standby Amps
	kWe	kVA	kWe	kVA	
400/230	16	20	14,6	18,2	29

DESCRIPTIVE

- Stage V engine
- Four-pole circuit breaker
- Connection terminal box rental type
- Containment fuel tank and large autonomy
- Forks and frame protection pads
- Inlet air preheating
- Battery isolating switch
- Oil drainage pump
- Heavy duty air filter with interchangeable cartridge
- Primary fuel filter
- Heat hand protections (EC standards)

SMALL AUTONOMY DIMENSIONS

Length (mm)	1850
Width (mm)	901
Height (mm)	1355
Dry weight (kg)	815
Tank capacity (L)	153

SOUND LEVELS

Acoustic pressure level @1m in dB(A) 50Hz (75% PRP) (Associated uncertainty)	75
Acoustic pressure level @7m in dB(A) 50Hz (75% PRP) (Associated uncertainty)	62
Sound power level guaranteed (Lwa) 50Hz (75% PRP)	91

POWER DEFINITION

PRP : Prime Power is available for an unlimited number of annual operating hours in variable load applications, in accordance with ISO 8528-1. ESP : The standby power rating is applicable for supplying emergency power in variable load applications in accordance with ISO 8528-1. Overload is not allowed.

TERMS OF USE

According to the standard, the nominal power assigned by the genset is given for 25°C Air Intlet Temperature, of a barometric pressure of 100 kPA (100 m A.S.L), and 30 % relative humidity. For particular conditions in your installation, refer to the derating table.

ASSOCIATED UNCERTAINTY

For the generating sets used indoor, where the acoustic pressure levels depends on the installation conditions, it is not possible to specify the ambient noise level in the exploitation and maintenance instructions . You will also find in our exploitation and maintenance instructions a warning concerning the air noise dangers and the need to implement appropriated preventive measures.

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ENGINE CHARACTERISTICS

GENERAL ENGINE DATAS

Engine brand	KOHLER KDI
Engine ref.	KDI1903M-EU5
Air inlet system	Athmo
Cylinders configuration	L
Number of cylinders	3
Displacement (l)	1,86
Charge Air coolant	
Bore (mm) x Stroke (mm)	88 x 102
Compression ratio	18.5 : 1
Speed (RPM)	1500
Pistons speed (m/s)	5,10
Maximum stand-by power at rated RPM (kW)	18
Frequency regulation, steady state (%)	+/- 2.5%
BMEP @ PRP 50 Hz (bar)	7,40
Governor type	Mechanical

COOLING SYSTEM

Radiator & Engine capacity (l)	6,80
Fan power 50Hz (kW)	0,50
Fan air flow w/o restriction (m3/s)	0,63
Available restriction on air flow (mm H2O)	20
Type of coolant	Glycol-Ethylene

EMISSIONS

Emission PM (g/kW.h)	0,40
Emission CO (g/kW.h)	6,60
Emission HC+NOx (g/kWh)	0
Emission HC (g/kW.h)	

EXHAUST

Exhaust gas temperature @ ESP 50Hz (°C)	540
Exhaust gas flow @ ESP 50Hz (l/s)	54,90
Max. exhaust back pressure (mm H2O)	500

FUEL

Consumption @ 100% load ESP (l/h)	5,10
Consumption @ 100% PRP load (l/h)	4,80
Consumption @ 75% PRP load (l/h)	3,70
Consumption @ 50% PRP load (l/h)	2,60
Maximum fuel pump flow (l/h)	30

OIL

Oil system capacity including filters (l)	8,70
Min. oil pressure (bar)	1,50
Max. oil pressure (bar)	10
Oil consumption 100% ESP 50Hz (l/h)	0,01
Oil sump capacity (l)	8,50

HEAT BALANCE

Heat rejection to exhaust (kW)	13
Radiated heat to ambiant (kW)	4
Heat rejection to coolant HT (kW)	17

AIR INTAKE

Max. intake restriction (mm H2O)	150
Intake air flow (l/s)	18,70

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ALTERNATOR CHARACTERISTICS

Alternator ref.	KH00440T
Number of Phase	Three phase
Power factor (Cos Phi)	0,80
Altitude (m)	0 à 1000
Overspeed (rpm)	2250
Number of pole	4
Capacity for maintaining short circuit at 3 In for 10 s	Yes
Insulation class	H
T° class (H/125°), continuous 40°C	H / 125°K
T° class (H/163°C), standby 27°C	H / 163°K
AVR Regulation	Yes
Total Harmonic Distortion in no-load DHT (%)	<3.5
Total Harmonic Distortion, on linear load DHT (%)	<5
Wave form : NEMA=TIF	<50
Wave form : CEI=FHT	<2
Number of bearing	Single Bearing
Coupling	Direct
Voltage regulation at established rating (+/- %)	0,50
Recovery time (Delta U = 20% transcient) (ms)	500
Indication of protection	IP 23
Technology	Brushless

Continuous Nominal Rating 40°C (kVA)	20
Standby Rating 27°C (kVA)	22
Efficiencies 100% of load (%)	87,10
Air flow (m3/s)	0,06
Short circuit ratio (Kcc)	0,6080
Direct axis synchro reactance unsaturated (Xd) (%)	193
Quadra axis synchro reactance unsaturated (Xq) (%)	98
Open circuit time constant (T'do) (ms)	926
Direct axis transcient reactance saturated (X'd) (%)	15,40
Short circuit transcient time constant (T'd) (ms)	74
Direct axis subtranscient reactance saturated (X"d) (%)	7,70
Subtranscient time constant (T"d) (ms)	7
Quadra axis subtranscient reactance saturated (X"q) (%)	16,20
Subtranscient time constant (T"q) (ms)	7
Zero sequence reactance unsaturated (Xo) (%)	0,60
Negative sequence reactance saturated (X2) (%)	12,01
Armature time constant (Ta) (ms)	11
No load excitation current (io) (A)	0,98
Full load excitation current (ic) (A)	2,66
Full load excitation voltage (uc) (V)	17
Engine start (Delta U = 20% perm. or 30% trans.) (kVA)	61,37
Transcient dip (4/4 load) - PF : 0,8 AR (%)	11
No load losses (W)	644,97
Heat rejection (W)	2352,29
Unbalanced load acceptance ratio (%)	100

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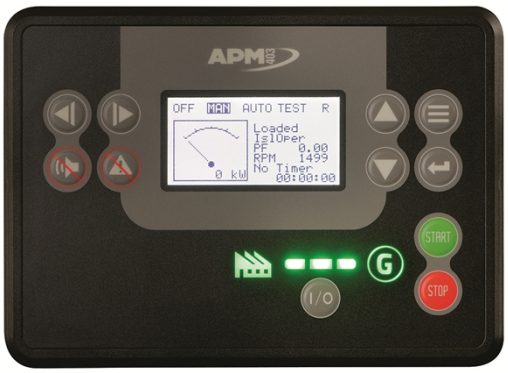
CONTROL PANEL

APM303, comprehensive and simple

The APM303 is a versatile unit which can be operated in manual or automatic mode. It offers the following features:
Measurements:
phase-to-neutral and phase-to-phase voltages, fuel level (In option : active power currents, effective power, power factors, Kw/h energy meter, oil pressure and coolant temperature levels)
Supervision:
Modbus RTU communication on RS485
Reports:
(In option : 2 configurable reports)
Safety features:
Overspeed, oil pressure,coolant temperatures, minimum and maximum voltage, minimum and maximum frequency (Maximum active power P<66kVA)
Traceability:
Stack of 12 stored events
For further information, please refer to the data sheet for the APM303.

APM403, basic generating set and power plant control



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