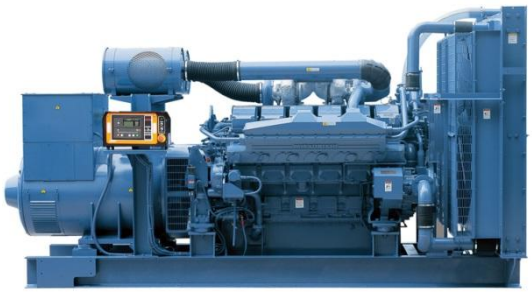
FDK ENERGY
GUANGDONG FUDIANKANG DIESEL GENSET CO., LTD
SHENZHEN FUDIANKANG DIESEL GENESET CO., LTD
Tel: 86-1371008799
Web: www.fdkenergy.com Email: info@fdkenergy.com

DATA SHEET

DIESEL GENERATOR 1320KW
MODEL#FDK-M1650/H1
50HZ/1500RPM
MITSUBISHI MODEL: S12R-PTAA2-C



General Features:

- All qualified generator sets are subjected to a comprehensive performance test which includes 50% load, 70% load, 100% load, 110% load and to check, verify that all control systems, alarm and shut-down protection.
- Equipped with battery charger and 24V high performance maintenance-free lead-acid starting batteries and connecting cables.
- Stainless galvanized zinc plates with strong corrosion-proof.
- Vibration isolators between the engine/alternator and base frame.
- Equipped with industrial silencer and flexible exhaust hose.
- Designed to comply with ISO8528/GB2820.
- Powered by Mitsubishi engine and coupled with Stamford alternator.
- Water jacket preheater, oil heater and double air cleaner, etc. are available.

FDK Diesel Generator Set Data

Genset Model	FDK-M1650/H1	Engine Make	Mitsubishi China
Prime Power	1200KW/1500KVA	Engine Model	S12R-PTAA2-C
Standby Power	1320KW/1650KVA	Alternator model	Stamford PI734C
Output Frequency / Rated speed	50Hz/1500rpm	Control System	DSE7320
Rated Voltage	230V/400V	Phase	Three

(1) **Prime power**: The rating is available for an unlimited of annual operating hours in variable load applications, in accordance with ISO8528-1.A 10% overload is available for a period of 1 hour within 12-hour period of operation, in accordance with ISO 3046-1.

(2) **Standby power**: The rating is applicable for supplying emergency power in variable load applications for up to 200 hours per year in accordance with ISO8528-1. Overload is not allowed.

(3) **Rated voltage**: available with customer requirement.

Engine Specifications (DETAILED in APPENDIX)

Engine Model	S12R-PTAA2-C	Bore x Stroke (mm x mm)	170×180
Engine Manufacturer	Mitsubishi China	Displacement	49.03L
Cylinder quantity	12	Compression Ratio	13.5:1
Cylinder Arrangement	V type	Prime power / Speed (KW/RPM)	1277/1500
Cycle	Four stroke	Standby power/ Speed (KW/RPM)	1404/1500
Aspiration	Turbo charged	Speed governor	Electronic

CE ISO9001:2008 FDK reserves the right to change the specifications and designs without noice.

Piston Speed	9m/s
Maximum Regenerative Power	105kw
Total Lubrication System Capacity (L)	180
Coolant Capacity Engine Only (L)	125

Fuel Consumption at 100% load	N.A.
Starter motor	24V
Alternator	24V
Maximum Overspeed Capacity	2100RPM

Alternator Specifications

Alternator model	PI734C
Alternator manufacturer	STAMFORD
Exciter type	Single bearing, Brushless, Self-excited
Rated output prime power	1550 KVA
Rated speed	1500 rmp
Rated frequency	50Hz

Number of phase	3
Rated voltage	400V (Available with custom requirements)
Power factor	0.8
Voltage regulation NL-FL	≤±1%
Insulation grade	H
Protection grade	IP23

Alternator option: Leroy Somer, MECC, Marathon, Engga, Faraday

Control System DSE7320 (DETAILED in INSTRUCTION)

DSE7320 is an advanced control module based on micro-processor, containing all necessary functions for protection of the genset and the breaker control. It can monitor the mains supply, breaker control and automatically start the engine when the mains are abnormal. Accurately measure various operational parameters and display all values and alarms information on the LCD. In addition, the control module can automatically shut down the engine and indicate the engine failure.

FEATURES

- Microprocessor control, with high stability and credibility.
- Monitoring and measuring operational parameters of the mains supply and genset.
- Indicating operation status, fault conditions, all parameters and alarms.
- Multiple protections; multiple parameters display, like pressure, temp. etc.
- Manual, automatic and remote work mode selectable.
- Real time clock for time and date display, overall runtime display, 250 log entries.
- Overall power output display.
- Integral speed/frequency detecting, telling status of start, rated operation, overspeed etc.
- Communication with PC via RS485 OR RS232 interface, using MODBUS protocol.

Soundproof Enclosure Specification

FDK silent generator is designed by professional acoustic engineers based on years of experience. Now we can make the noise of the generator less than 80-85dB(A) at 1m, or 70-75dB(A) at 7m, 60-65dB(A) at 15m.

FEATURES

- Multi-way air intake and exhaust guarantee the power performance of the generator.
- Large-scale impedance combined type silencer effectively reduce noise of the generator.
- Internal high performance rubber damper and flexible materials reduce vibration.
- Base mounted fuel tank supports the generator running for 8 hours.

Optional

Generator set	Alternator	Low environment Temp	ATS
☐ Open generator set	☐ Stamford	☐ Water heater	☐ CHINT
☐ Silent generator set	☐ Marathon	☐ Oil heater	☐ SCHNEIDER
☐ Trailer generator set	☐ Mecc Alte	☐ Battery heater	☐ ABB
☐ ABB MCCB circuit breaker	☐ Leroy Somer		
	☐ Farady		
	☐ Engga		
Fuel system	**Control system**	**Voltage**	**Synchronized system**
☐ 12hrs base tank	☐ AMF function	☐ 415/240V	☐ CHINT Cabinet
☐ 24hrs base tank	☐ ATS control cabinet	☐ 400/230V	☐ SCHNEIDER Cabinet
☐ Dual wall base fuel tank	☐ DSE7320	☐ 380/220V	☐ DSE8610 Module
☐ Outside fuel tank	☐ DSE7510	☐ 220/127V	☐ COMAQ Module
	☐ GU620A	☐ 200/115V	☐ DEIF Module

Dimension & Weight

Open

Overall Size: L×W×H (mm)	4900×2150×2450
Weight (kg)	9600

Soundproof Version

Overall Size: L×W×H (mm)	40FT CONTAINER
Weight (kg)	18200

Sales Promises

- FDK provides a full line of brand new and high quality products. Each and every unit is strictly factory tested before shipment.
- Quality warranty is according to our standard conditions: 12 months from BL date or 1000 running hours, whichever comes first.
- Service and parts are available from FDK or distributors in your location.
- FDK guarantee use **BRAND NEW & GENUINE MACHINE.**

SPECIFICATION

OF

MITSUBISHI DIESEL ENGINE

MODEL : S12R-PTAA2-C

FOR DIESEL GENERATOR SET

								APPROVED BY	DRAWN BY
				DATE		2013.07.15			

1. GENERAL

Object and use	:	Diesel generator
Color of painting	:	GB02(GSB05-1426-2001)
Applicable conditions		
Ambient temperature	:	5℃ ~ 40℃
Altitude	:	1500m above sea level
Max ,humidity	:	85%
Place of installation	:	In door

Shop test

Diesel engine running tests shall be carried out by the following items.

Starting test		
Load test	:	1/4, 2/4, 3/4 Load each
	:	4/4 Load
Governor test	:	Governor test should be done along with respective governor controller
Safety stop device test		

Standard

All items, unless otherwise specified, are in accordance with JIS, GB and manufacturer's standards.

2. PRINCIPAL PARTICULARS

Model	:	S12R-PTAA2-C
Type	:	4cycle stroke, water cooled diesel engine
Combustion chamber	:	Direct injection type
Aspiration	:	Tarbocharged with inter cooler
Number of cylinders	:	12-V
Bore × stroke	:	170mm × 180mm
Total displacement	:	49.03 liter
Compression ratio	:	13.5 : 1
firing order	:	1 - 12 - 5 - 8 - 3 - 10 - 6 - 7 - 2 - 11 - 4 - 9
Direction of rotation	:	Counter clockwise as viewed from flywheel side
Engine dimensions (Approx.)	:	Length Apx. 3418mm
with radiator	:	width Apx. 2192mm
	:	Height Apx. 2676mm
Dry weight (Approx.)	:	5520kg (without accessories)
Fuel oil	:	ASTM D975 No. 2 - D or BS 2869 class A or GB 252-0
Lubricating oil	:	API service CF class or CH-4 class

Output at ISO 8528 standard air conditions (25°C, 100kPa, 30% Humid)

Stand-by rating	:	1404kW/1500min^{-1}
Prime rating	:	1277kW/1500min^{-1}

3. STANDARD EQUIPMENTS

(1) power line system

Flywheel	:	DWG.NO.38E96-21001
		SAE J620d 21in, except screw size
Flywheel housing	:	DWG.NO.38E96-21001
		SAE J617c No.00, except screw size
Engine mounting	:	DWG.NO.38E96-14001
		4 points mounting, C = 250mm
Torsional vibration damper	:	Viscous type × 2pcs

(2) Air intake system

Air cleaner	:	DWG.NO.38E96-30305 loose supply
		DWG.NO.S35-1032
		2pcs
		Paper element type without inlet cap
Turbocharger	:	MITSUBISHI TD and TF Type
		Model : TD13L
Charged air cooler	:	Air cooled type
Air heater	:	Not supply

(3) Exhaust system

Exhaust manifold	:	Air cooled type with heat insulator
Muffler	:	Not supply
Flexible pipe	:	DWG.NO.S37-1021 loose supply
		JIS 300A, L=370mm, weight 70kg
Companion flange	:	Not supply
Breather	:	DWG.NO.38E96-43007
		Down side direction type

(4) Lubricating system

Oil pump	:	Gear pump type
Capacity of oil pump	:	480L/min (at Engine Speed 1500min^{-1})
Lub. oil pressure	:	0.5~0.65 Mpa
Quantity of oil (Approx.)	:	Oil pan full level : 150 liter low level : 110 liter Others (filter etc.) : 30 liter Total : 180 liter
Lub. oil filter (Full flow)	:	DWG.NO.38E96-40001 Paper element cartridge type × 4pcs filter mesh : 20 μ with by - pass alarm switch
Lub. oil filter (By - pass flow)	:	DWG.NO.38E96-40001 Paper element cartridge type × 1pc filter mesh : 2 μ
Lub. oil cooler	:	Water cooled corrugated type with by - pass valve

(5) Cooling system

Water pump	:	Gear drive centrifugal type
Capacity of water pump	:	1650 L/min (at Engine Speed 1500min^{-1})
Thermostat	:	Wax pellet type Open at 71℃ ~ 85℃
Fan	:	Not supply
Radiator & Inter cooler piping	:	Not supply
Radiator & I/C Assy.	:	Not supply
Quantity of Coolant	:	Approx.125L (only Engine)

Jacket water heater

Water heater piping	:	DWG.No.38E96-46308
		Install on common bed
Water heater	:	DWG. No.S12-0014
		2.0kW, 3 phase, 220 ~ 480V
		1 Phase, 110 ~ 480V
Operation	:	Convection type
		Controlled by thermo switch
Thermo switch	:	DWG.No.S11-0781
		42℃ - off, 35℃ - on
		Contactor capacity
		DC24V : 3A
		AC100V : 1A, DC100V : 0.05A

(6) Fuel system

Fuel inlet pipings	:	DWG.NO.38E96-62112 loose supply
		flexible hose (Rc 3/4 joint)
Fuel return pipings	:	DWG.NO.38E96-61312 loose supply
		flexible hose (Rc 3/4 joint)

Fuel overflow of Inj. Pump and fuel leak - off of Nozzle have to return to fuel tank

Injection pump	:	Bosch type "PS6A" without timer
Feed pump	:	Piston type with priming pump
Injection Nozzle	:	Hole type 0.31mm × 10 holes
Fuel filter	:	DWG, No.38E96-62002
	:	Paper element cartridge type filter mesh : 5 μ

(7) Control system

Governor	:	DWG.NO.38E96-63005
		Electronic speed governor
		Speed droop ： 0 ~ 5% adjustable
Actuator	:	DWG.NO.S13-1761
		Supply voltage ： DC24V± 20%
		Current consumption
		At starting : 13A
		Normal operation : 0.5 ~ 2A
		Min. Supply voltage : DC16V50%ED
Controller	:	DWG.NO.S13-1042 loose supply
		Model : XS-400B-03 (04410-33100)
		Supply voltage ： DC24V± 20%
Potentiometer	:	PM10kΩ， For low idling speed setting
		Not supply
Potentiometer	:	PM10kΩ，For rated speed setting
		Not supply
Connector	:	DWG.NO.S13-1022 loose supply
		From actuator to controller
		5000mm length
Magnetic pick up	:	DWG.NO.S13-2011
		With connector
Cable	:	DWG.NO.S13-2020 loose supply
		From magnetic pick up to controller
		4300mm length

(8) Starting system

Starter switch	:	with key, with heat position
		Not supply
Starting motor	:	DWG.NO.38E96-66001
		DC24V, 7.5KW × 2pcs
		Reduction type with safety relay
		with 2 poles connector (DWG.NO.S14-0320)

Safety relay	:	Not supply The following Starter Protection functions shall be provided by Customer. 1) Function for concurrent engagement of the two Starter. 2) Function for engagement operation again when engagement of pinion gear fails.
Current of starter	:	Rush 1250A Cranking 400A (Ambient temp : 5℃, Lub. oil : SAE No. 30)
Fuel limit solenoid	:	DWG.NO.38E96-87503 DWG.NO.S13-0282 Fuel limit at engine starting Energized to fuel control until rated speed
Alternator	:	DWG.NO.S10-0540 DC24V, 30A, with voltage regulator with 2 poles connector (DWG.NO.S10-0550)
Recommended battery capacity	:	DC24V, 400AH
Battery switch	:	Not supply
(9) Stopping system	:	DWG.NO.38E96-87503
Automatic stop		Automatically shut - down by stop solenoid and electronic governor power off simultaneously
Stop solenoid	:	DWG.NO.S13-0282 Energized to run type DC24V, 30.7A(pull), 0.58A(hold)
Manual stop	:	By stop lever
(10) Safety device		
Alarm swtitches	:	DWG.NO.38E96-90206
Alarm and trip		
Low oil press. switch	:	DWG.NO.S11-0796 (04442-45400) Diaphragm type : 0.15 MPa switch on
High water temp. switch	:	DWG.NO.S11-0551 (04442-34500) Wax type : 98℃ switch on

Alarm

Oil filter alarm switch	:	DWG.NO.S11-1371
		Piston type : 0.15 MPa switch on
Oil filter alarm lamp	:	Not supply
Air filter alarm indicator	:	DWG.NO.S11-0920 loose supply
		Machanical type : 635mmH_2O switch on

(11) Instrument

Meter and sensor	:	DWG.NO.38E96-90119
Tachometer	:	Pulse type for engine speed
		With electrical hour meter
		Not supply
Magnetic pick up	:	DWG.NO.S13-2011
		For tachometer, pin-joint type
Cable	:	For magnetic pick up, 4300mm length
		Not supply
Thermometer	:	Electrical type for jacket water and lub. oil temp.
		Not supply
Pressure gage	:	Electrical type for lub. oil press.
		Not supply
		With 2 poles connector (DWG.NO.S14-0330)
Thermometer	:	For exhaust gas temp.
		Not supply

(12) Others

Turning device	:	DWG.NO.37796-71001
		Gear type, for maintenance
Tools	:	Not supply

Declaration:
To maintain and optimize product performance and reliability, we will do some necessary change timely to product or parts in this specification without altering the basic parameters . If you need more information, please refer to our comp

4. ACCESSORIES (Loose supply parts)

NO.	PARTS NO.	PARTS NAME	Q' TY	DWG. NO.	
1	47220-47703	AIR CLEANER ASSY.	2	S35-1032	38E96-30305
2	47220-47600	HOSE, ELBOW	2	S35-0701	
3	47510-77300	DUCT, AIR	2		
4	47220-47300	HOSE, RUBBER	2	S35-0711	
5	05317-52001	CLAMP	4		
6	05317-52801	CLAMP	4		
7	47910-81400	FLEXIBLE PIPE	1	S37-1021	
8	45955-20160	HOSE, VINYL	2		38E96-43007
9	05317-50401	CLAMP	4		
10	04393-33820	HEATER, WATER	2	S12-0014	38E96-46308
11	47521-62901	CASE, HEATER	2		
12	45961-13068	PIPE, FLEXBLE	1		
13	45961-13074	PIPE, FLEXBLE	1		
14	45961-13115	PIPE, FLEXBLE	1		
15	45961-13154	PIPE, FLEXBLE	1		
16	30007-65200	PIPE, VINYL	2		
17	33407-16100	COCK, DRAIN	2		
18	05946-02001	WASHER, SEALING	2		
19	47521-63100	SYAY	1		
20	F2882-25000	CLIP	3		
21	F4300-01600	CLAMP	2		
22	F4656-15000	ELBOW	6		
23	F5006-21000	PLUG, TAPER	2		
24	04410-33100	CONTROLLER	1	S13-1042	38E96-63005
25	04410-32902	CONNECTOR, ACTUATOR	1	S13-1022	
26	04410-43500	CABLE, PICK UP	1	S13-2020	
27	F8665-02100	CONNECTOR	2	S14-0320	for starter
28	32B90-00300	CONNECTOR	1	S10-0550	for alternator
29	MH052231	CONNECTOR	1	S14-0330	38E96-90119
30	47220-34401	INDICATOR	4	S11-0920	38E96-90206

5. DRAWINGS

NO.	DWG. NO.	DWG. NAME	REV.
1	38E96-00401	ENGINE OUTLINE	
2	38E96-01001	JOINT DETAIL	
3	38E96-04029	WIRING DIAGRAM	
4	38E96-14001	MOUNTING DETAIL	
5	38E96-21001	FLYWHEEL & HOUSING DETAIL	
6	38E96-30305	AIR CLEANER	
7	38E96-40001	OIL FILTER	
8	38E96-43007	BREATHER	
9	38E96-46308	WATER HEATER PIPING	
10	38E96-61312	FUEL RETURN PIPING	
11	38E96-62002	FUEL FILTER	
12	38E96-62112	FUEL INLET PIPING	
13	38E96-63005	GOVERNOR	
14	38E96-66001	STARTING MOTOR	
15	38E96-71001	TURNING GEAR	
16	38E96-87503	STOP & FUEL LIMIT SOLENOID	
17	38E96-90119	METER & SENSOR	
18	38E96-90206	ALARM SWITCH	
19	S10-0540	ALTERNATOR	
20	S10-0550	CONNECTOR	
21	S11-0551	THERMO SWITCH	
22	S11-0781	THERMO SWITCH	
23	S11-0796	PRESSURE SWITCH	
24	S11-0920	INDICATOR	
25	S11-1371	FILTER ALARM SWITCH	
26	S12-0014	WATER HEATER	
27	S13-0282	SOLENOID	
28	S13-1022	CONNECTOR	
29	S13-1042	CONTROLLER	
30	S13-1761	ACTUATOR	

NO.	DWG. NO.	DWG. NAME	REV.
31	S13-2011	MAGNETIC PICK UP	
32	S13-2020	CABLE, PICK UP	
33	S14-0320	CONNECTOR	
34	S14-0330	CONNECTOR	
35	S35-0701	HOSE, ELBOW	
36	S35-0711	HOSE, RUBBER	
37	S35-1032	AIR CLEANER ASSY.	
38	S37-1021	FLEXIBLE PIPE	