

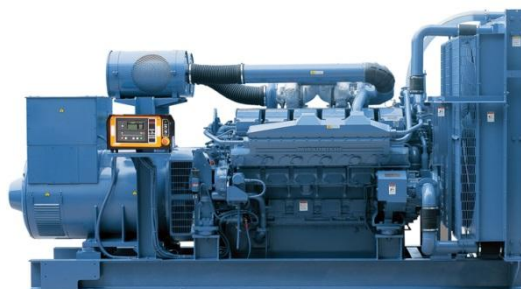
DATA SHEET

DIESEL GENERATOR 1800KW

MODEL#FDK-M2250/H1

50HZ/1500RPM

MITSUBISHI MODEL: S16R-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-MIT1760/H1
Prime Power	1600KW/2000KVA
Standby Power	1800KW/2250KVA
Output Frequency / Rated speed	50Hz/1500rpm
Rated Voltage	230V/400V

Engine Make	Mitsubishi China
Engine Model	S16R-PTAA2-C
Alternator model	Stamford PI734F
Control System	DSE7320
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	S16R-PTAA2-C
Engine Manufacturer	Mitsubishi China
Cylinder quantity	16
Cylinder Arrangement	V type
Cycle	Four stroke
Aspiration	Turbo charged

Bore x Stroke (mm x mm)	170×180
Displacement	65.37L
Compression Ratio	14:1
Prime power / Speed (KW/RPM)	1684/1500
Standby power/ Speed (KW/RPM)	1895/1500
Speed governor	Electronic



Piston Speed	9m/s
Maximum Regenerative Power	140kw
Total Lubrication System Capacity (L)	230
Coolant Capacity Engine Only (L)	170

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

Alternator Specifications

Alternator model	PI734F
Alternator manufacturer	STAMFORD
Exciter type	Single bearing, Brushless, Self-excited
Rated output prime power	2080 KVA
Rated speed	1500 rpm
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



ISO9001:2008

FDK reserves the right to change the specifications and designs without notice.

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

Dimension & Weight

Open

Overall Size: L×W×H (mm)	6500×2150×3500
Weight (kg)	12400

Soundproof Version

Overall Size: L×W×H (mm)	40FT CONTAINER
Weight (kg)	23000

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 : S16R-PTAA2-C
FOR DIESEL GENERATOR SET

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								APPROVED BY	DRAWN BY
				DATE	2013.07.17				

1. GENERAL

Object and use	:	Diesel generator
Color of painting	:	GB02(GSB05-1426-2001)
Applicable conditions		
Ambient temperature	:	5°C ~ 40°C
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
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Safety stop device test

Standard

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

2. PRINCIPAL PARTICULARS

Model	:	S16R-PTAA2-C
Type	:	4cycle stroke, water cooled diesel engine
Combustion chamber	:	Direct injection type
Aspiration	:	Turbocharged with inter cooler
Number of cylinders	:	16-V
Bore × stroke	:	170mm × 180mm
Total displacement	:	65.37 L
Compression ratio	:	14.0 : 1
firing order	:	1 - 9 - 6 - 14 - 2 - 10 - 4 - 12 - 8 - 16 - 3 - 11 - 7 - 15 - 5 - 13
Direction of rotation	:	Counter clockwise as viewed from flywheel side
Engine dimensions (Approx.)	:	Length Apx. 3975mm
with radiator	:	width Apx. 2392mm
	:	Height Apx. 3076mm
Dry weight (Approx.)	:	6650kg (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	:	1895kW/1500min ⁻¹
Prime rating	:	1684kW/1500min⁻¹

3. STANDARD EQUIPMENTS

(1) power line system

Flywheel	:	DWG.NO.38F96-21001	SAE J620d 21in, except screw size
Flywheel housing	:	DWG.NO.38F96-21001	SAE J617c No.00, except screw size
Engine mounting	:	DWG.NO.38F96-14001	6 points mounting, C = 250mm
Torsional vibration damper	:	Viscous type × 2pcs	

(2) Air intake system

Air cleaner	:	DWG.NO.38F96-30308 loose supply	DWG.NO.S35-1032	4 pcs	Paper element type without inlet cap
Turbocharger	:	MITSUBISHI TD Type	Model : TD10L		
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.S37-1090 loose supply	JIS 350A, L=335mm, weight 31.6kg		
Companion flange	:	Not supply			
Breather	:	DWG.NO.38F96-43012	Down side direction type		For blow - off to outside of engine room

(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 : 200 L low level : 140 L Others (filter etc.) : 30 L Total : 230 L
Lub. oil filter (Full flow)	:	DWG.NO.38F96-40001 Paper element cartridge type × 4pcs filter mesh : 20 μ with by - pass alarm switch
Lub. oil filter (By - pass flow)	:	DWG.NO.38F96-40001 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°C ~ 85°C
Fan	:	Not supply
Radiator & Inter cooler piping	:	Not supply
Radiator & I/C Assy.	:	Not supply
Quantity of Coolant	:	Approx.170L (only Engine)

Jacket water heater

- Water heater piping : DWG.No.38F96-46308
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°C - off, 35°C - on
Contactor capacity
DC24V : 3A
AC100V : 1A, DC100V : 0.05A

(6) Fuel system

- Fuel inlet pipings : DWG.NO.38F96-62112 loose supply
flexible hose (Rc 3/4 joint)
- Fuel return pipings : DWG.NO.38F96-61312 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 "PS8" without timer
- Feed pump : Piston type with priming pump
- Injection Nozzle : Hole type 0.325mm × 10 holes
- Fuel filter : DWG, No.38F96-62002
: Paper element cartridge type filter mesh : 5 μ

(7) Control system

- Governor : DWG.NO.38F96-63005
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.38F96-66001
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°C, Lub. oil : SAE No. 30)
Fuel limit solenoid	:	DWG.NO.38F96-87503 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 Not supply
Battery switch	:	Not supply
(9) Stopping system	:	DWG.NO.38F96-87503
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 switches	:	DWG.NO.38F96-90207
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°C 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
Mechanical type : 635mmH₂O switch on

(11) Instrument

- Meter and sensor : DWG.NO.38F96-90119
- 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
- Press. 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.38F96-71001
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 compa

4. ACCESSORIES (Loose supply parts)

NO.	PARTS NO.	PARTS NAME	Q' TY	DWG. NO.	
1	47220-47703	AIR CLEANER ASSY.	4	S35-1032	38F96-30308
2	47220-47600	HOSE, ELBOW	4	S35-0701	
3	47521-74100	PIPE, AIR (L.H.)	1		
4	47521-74200	PIPE, AIR (R.H.)	1		
5	47521-74300	PIPE, AIR (L.H.)	1		
6	47521-74400	PIPE, AIR (R.H.)	1		
7	47220-47300	HOSE, RUBBER	4	S35-0711	
8	47521-73800	STAY, PIPE (L.H.)	1		
9	47521-73900	SYAY, PIPE (R.H.)	1		
10	05317-52001	CLAMP	8		
11	05317-52801	CLAMP	8		
12	47920-12400	FLEXIBLE PIPE	1	S37-1090	38F96-43012
13	45955-20160	HOSE, VINYL	2		
14	05317-50401	CLAMP	4		
15	04393-32220	HEATER, WATER	2	S12-0014	
16	47521-62901	CASE, HEATER	2		38F96-46308
17	45961-13079	PIPE, FLEXIBLE	1		
18	45961-13125	PIPE, FLEXIBLE	1		
19	30007-65200	VINYL HOSE	2		
20	33407-16100	COCK, DRAIN	2		
21	05946-02001	WASHER, SPRING	2		
22	45961-13072	PIPE, FLEXIBLE	1		
23	45961-13154	PIPE, FLEXIBLE	1		
24	47521-63100	STAY	1		
25	F2882-25000	CLIP	1		
26	F4300-01600	CLAMP	2		
27	F4656-15000	ELBOW	6		
28	F5006-21000	PLUG, TAPER	2		

NO.	PARTS NO.	PARTS NAME	Q' TY	DWG. NO.	
29	45950-51700	PIPE,FLEXIBLE	1	38F96-61312	
30	45950-11300	CONNECTOR	1		
31	45950-51700	PIPE,FLEXIBLE	1	38F96-62113	
32	45950-11300	CONNECTOR	1		
33	04410-33100	CONTROLLER	1	S13-1042	38F96-63005
34	04410-32902	CONNECTOR, ACTUATOR	1	S13-1022	
35	04410-43500	CABLE, PICK UP	1	S13-2020	
36	F8665-02100	CONNECTOR	2	S14-0320	for starter
37	32B90-00300	CONNECTOR	1	S10-0550	for alternator
38	MH052231	CONNECTOR	1	S14-0330	38F96-90119
39	47220-34401	INDICATOR	4	S11-0920	38F96-90207

5. DRAWINGS

NO.	DWG. NO.	DWG. NAME	REV.
1	38F96-00401	ENGINE OUTLINE	
2	38F96-01001	JOINT DETAIL	
3	38F96-04029	WIRING DIAGRAM	
4	38F96-14001	MOUNTING DETAIL	
5	38F96-21001	FLYWHEEL & HOUSING DETAIL	
6	38F96-30308	AIR CLEANER	
7	38F96-40001	OIL FILTER	
8	38F96-43012	BREATHER	
9	38F96-46308	WATER HEATER PIPING	
10	38F96-61312	FUEL RETURN PIPING	
11	38F96-62002	FUEL FILTER	
12	38F96-62112	FUEL INLET PIPING	
13	38F96-63005	GOVERNOR	
14	38F96-66001	STARTING MOTOR	
15	38F96-71001	TURNING GEAR	
16	38F96-87503	STOP & FUEL LIMIT SOLENOID	
17	38F96-90119	METER & SENSOR	
18	38F96-90207	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	

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NO.	DWG. NO.	DWG. NAME	REV.
30	S13-1761	ACTUATOR	
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	S37-1090	FLEXIBLE PIPE	

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