System Description

Product type	DG16V2000B1N mtu 16V2000 DS1000
Application Group	3D - Emergency Standby power, IFN

Power as per MTU Sales Program

Power per genset (ISO 8528)	1.000	kWel
Engine speed	1.800	rpm
Intake air temperature	25	°C
Coolant temperature	45	°C
Altitude	100	m

On-site Power

Power per genset (ISO 8528)	1.000	kWel
Engine speed	1.800	rpm
Intake air temperature	25	°C
Coolant temperature	45	°C
Altitude	100	m

Requirements

Frequency	60 Hz
Generator voltage	480 V
EngineType	16V2000G86S

Selection Criteria for the Scope of Supply

Criteria	*Selection*
Application	Emergency Standby (3D)
Frequency	60 Hz
Generator Voltage	480 V
Phase	3 Phase
Unit Specification	UL2200
IBC Seismic Certification	With IBC 50974-01C 2015 2018 2021
HCAI Certification	Without HCAI
Engine Model	16V2000G86S (24volts)
Exhaust Emissions (EPA)	EPA Stationary EMERG T2 (40CFR60)
Radiator Design Temperature	50°C
Temp Rise	105°
Power Output	1000 kW
Full Load Amps	1504
Generator Frame and Wire Qty	LSA 50.2 M6 (6 Wire)
Generator Wire Configuration	Wye
OPU/HSD	Level 3 - Maximum Sound Attenuation
Fuel Tank	With Fuel Tank
Control panel	With Control Panel
Circuit Breaker Options	Single Circuit Breaker
Breaker Wire Color Scheme	Standard Breaker Wire Color Scheme
Paralleling	Paralleling without MTU Components
Acceptance testing	Factory acceptance
Publications	Standard Publications (English)
Country of Operation	USA / Canada
Emission cert. authority	18 US EPA Agency

Scope of Supply

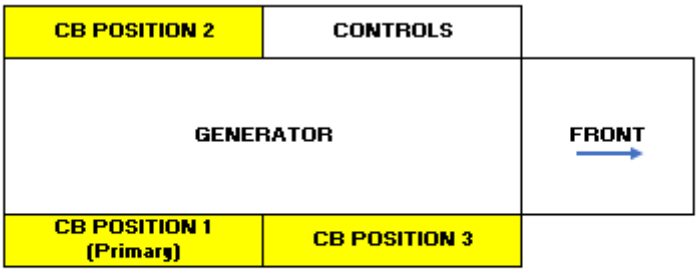
1 SYSTEM CONFIGURATION

1.2 Cooling Package

50 Deg C Cooling System

- Closed loop, liquid cooled, with radiator factory mounted on engine-generator set mounting frame and integral engine-driven coolant pump

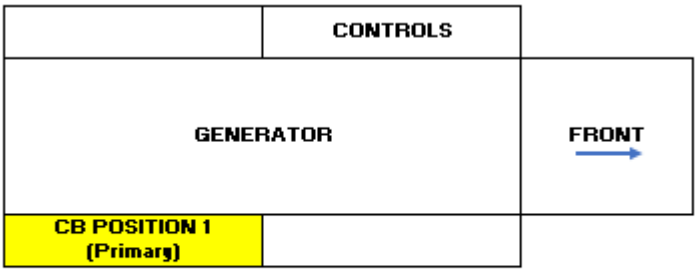
1.3 Circuit Breaker



Top View **Right Side** CB Position 1/CB Position 3
Left Side Controls/CB Position 2

* For technical data refer to the circuit breaker enclosure data sheets located on the Business Portal

Non-Service Entrance Rated



Top View **Right Side** CB Position 1
Left Side Controls

* For technical data refer to the circuit breaker enclosure data sheets located on the Business Portal

Circuit Breaker Position 1:

Circuit Breaker Motor Operator

Circuit Breaker Position 1:

1600 Amp 600 Volt 3 Pole 100% LSI MO Square-D WL1EEX33A9SCBBXXXA

Circuit Breaker #1 Accessories:

Standard on NW Frame CB:

- CB Closing Device (XF)
- Spring Charging Motor (MCH)
- CB Opening Device (MX1) wired to Control Panel

Auxillary Contact (OF1)

Overcurrent Fault Switch (SDE)

Circuit Breaker Position 1:

LSI Breaker Trip:

- LSI breakers provide protection from long time overload, short time overload and instantaneous short circuit events. Specific overload current values and time delays vary with breaker type and trip unit.

Standard Breaker Wire Scheme:

- Phase 1 (A) is Black label "L1"
- Phase 2 (B) is Red label "L2"
- Phase 3 (C) is Blue label "L3"
- Neutral is White label "NEU"

1.4 Starting Aids

Battery Rack Only

- Shipped with Battery Rack only (no battery included)

Battery Charger SENS MicroGenius 2 10A

- Manufacturer: SENS
- Power: 300W
- Output Voltage: 12/24V
- Output Current: 10A @ 12V;120A @ 24V
- Options: Base Model + LCD Display + 2 each Form C Alarm Relays
- Model #: M3-22-1210-E

Battery Charger Mounted & DC Wired

Battery Charger mounted on the same side of unit as the control panel or No Control Panel box.

__Note__ - This option will be factory-wired to the distribution panel (if selected)

Coolant Preheater

- -20 Deg F Coolant Preheater (240V 1PH - 9000W)
- Model: CSM10902-000
- Qty 1

** To wire accessory options to distribution panel from factory you will need to select one of the following:

- For use with 1 Phase Distribution Panel:
    - 1 Phase 208V accessory option**
    - 1 Phase 240V accessory option**
- For use with 3 Phase Distribution Panel:
    - 3 Phase 208V accessory option**
    - 1 Phase 208V accessory option**

Coolant Preheater Mounted

With Coolant Preheating System Isolation Valves

1.5 Genset Enclosure

Genset Enclosure S2000

Weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for either 130 mph or 190 mph wind load rating.
Enclosure consists of:

- Bolted and welded construction
- Unit-mounted internal silencer included
- Hinged, lockable double-doors with door restraints provide access on both sides of enclosure

Steel Enclosure Type

130mph Wind Rated Steel

Level 3 Enclosure 130mph
Weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 130 mph wind load rating with additional air intake baffles and exhaust scoop redirecting noise and air flow upward.
Enclosure consists of:

- Bolted and welded construction
- Additional air intake baffles
- Exhaust scoop
- UL94 HF-1 compliant , 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
- Unit-mounted internal silencer included

- Hinged, lockable double-doors access with door restraints located on both sides of enclosure

Sound Attenuation Kit

Intake Louver (Steel)

1.6 Vibration Isolation

SUA46908 Pad Isolators
• ¼ inch thick elastomeric pad in rectangular shape placed under the base frame at each of the pre-drilled isolator mounting holes

2 ENGINE CONFIGURATION

2.1 Engine System

Oil Drain

Note Emission Compliance:
The engines and/or systems, may only be certified to comply with the required country or region specific emission regulations. Where applicable, the engines and/or systems are only certified to those specific emission regulations/standards which are clearly stated in the respective RRPS/MTU defined technical specifications. It is the customer's sole responsibility to ensure that the export/import, installation and use of the engine and/or system complies with the applicable emissions regulations in the country or region where the engine and/or system will be used.

2.2 Exhaust System

Internal Silencer 14"

- Silencer Model Number: OHS-14X-90042966
- Qty 1

2.3 FUEL SYSTEM

Narrow Flange

Extended Fuel Tank exceeds genset base footprint

Colorado Code Tank
• MTU Fuel Alarm Panel 12/24V DC
• (MTU Panel Light 1) Not Used
• (MTU Panel Light 2) High Fuel Level Switch wired to Input H
• (MTU Panel Light 3) Low Fuel Level Switch wired to Input L
• (MGC Controller) Leak Switch wired to MGC controller
• Spill Box
• Overflow Protection Valve (OFPV)
• Hazmat Label
• Extended Vents
• Tank Risers

24 Hour 2200 Gallon Extended Sub Base Fuel Tank

- Base-Mounted Fuel Oil Tank. Factory-installed and piped, complying with UL 142. Fuel capacity for 24 hours continuous operation at 100 percent rated power output.

Fuel Tank Lifting Restrictions:

I. Cannot be lifted with Unit
II. Tank must be lifted separately

2.4 Air Intake System

Air Filter (Standard)

MTU Air Filter

- SUA90069
- Qty 2

3 GENERATOR CONFIGURATION

3.1 Generator Specification

Includes D550 Digital Automatic Voltage Regulator (AVR)

With AREP

Includes Winding RTD's

Includes Bearing RTD's

Generator Strip Heater

- Strip heater mounted permanently in the generator winding to prevent condensation in the generator.

__Note__ - This option will be factory-wired to the distribution panel (if selected)

IP23 Ingress Protection
• IP23 provides Ingress Protection against objects larger than 12 mm and Protection against dripping water ±60° angle.

LSA 50.2M6

4 CONTROL PANEL CONFIGURATION

4.1 Control panel

Circuit Breaker Position 1:

Without Ground Fault

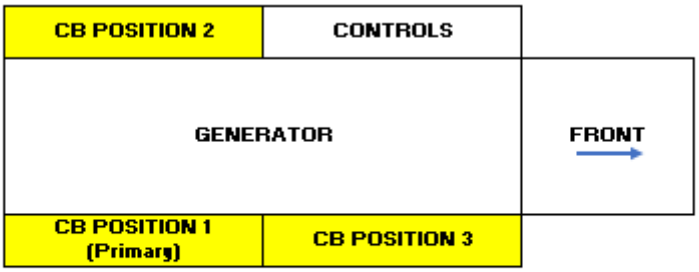
Modbus RTU

- ModBus RTU connects the MGC to Programmable Logic Controllers by means of communication transmission over serial lines (RS485).

Modem RS-232

- The MGC controller includes an external modem interface permitting an external modem to be connected to the controller via RS-232. A dial-out modem enables remote control, monitoring, and setting of the controller. When an alarm or pre-alarm condition occurs, the controller can dial up to four telephone numbers in sequence until an answer is received and the condition is annunciated.
    - Note: Only an external modem interface is provided. The external modem must be supplied by a third party

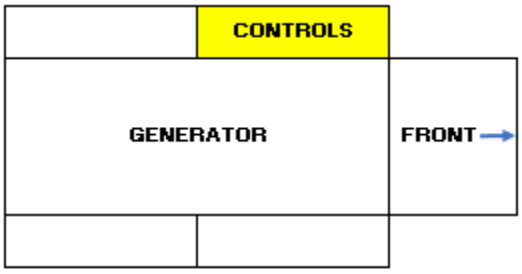
Control Panel Mounting



Top View **Right Side** CB Position 1/CB Position 3
Left Side Controls/CB Position 2

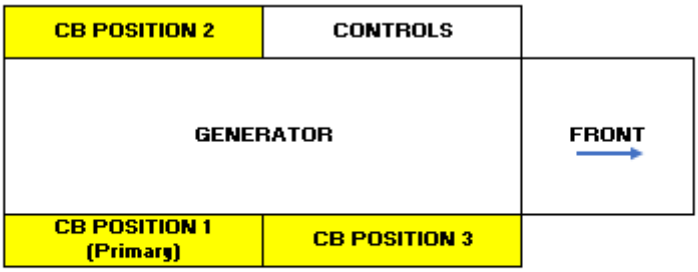
* For technical data refer to the circuit breaker enclosure data sheets located on the Business Portal

Control Panel Mounted LH Side



Top View **Right Side**
left Side Controls

* For technical data refer to the circuit breaker enclosure data sheets located on the Business Portal



Top View	**Right Side**	CB Position 1/CB Position 3
	Left Side	Controls/CB Position 2

* For technical data refer to the circuit breaker enclosure data sheets located on the Business Portal

Analog Meter Package (2 ½" VM/AM/FR Meters and 4-Position Selector Switch)

- Analog AC meter package for reading the following generator electrical output parameters:
    - AC Voltage
    - AC Current
    - Frequency
- Meters are provided with a rotary selector switch to read line to line voltage, Hz and current on all phases.

(4) Relay Option

The 4-relay board includes (4) 10 amp form C relays customizable for user defined functionality requirements. Standard outputs are as follows:

1. Engine Run
2. Engine Run
3. Engine Fail
4. Minor Alarm

Remote Emergency Stop

Analog Expansion Module (AEM)

- The AEM is a remote auxiliary device that provides additional MGC analog inputs and outputs.

Contact Expansion Module (CEM) 1,

- The CEM is a remote device that provides additional MGC contact inputs and outputs giving the user flexibility to use the same model MGC generator set controller for simple or more complicated applications that require contact functionality or duplication of contacts for remote annunciation.

RDP-110 Annunciator Panel 1,

- The RDP-110 is a remote annunciation device used in conjunction with the MGC family of digital generator set controllers to provide remote annunciation of the emergency standby generator system. This panel allows for two programmable alarms, two programmable pre-

alarms, and is compatible with NFPA 110. The MGC detects an alarm or pre-alarm condition and communicates via RS-485 to the RDP-110.

- Unit can be flush or surface mounted.

1 Remote Annunciator

MGC-3000 Series

- Rolls Royce Power Systems Generator Set Controllers (MGC Series) are rugged, reliable, all-in-one digital generator set control and load share systems. The MGC-3000 Series is designed to be a high end controller that is well suited for mains fail, paralleled units, and systems with multiple buses. The MGC-3000 Series has all of the necessary items for complete generator set control, protection, and metering with a massive, but easy-to-use, programmable logic system.

Parallel without Rolls Royce Power Systems Components

- Voltage and speed bias connections are provided on a terminal strip for customer connection.