



I. System Description

Product type	DG12V4000B3N mtu 12V4000 DS1750
Application Group	3D - Emergency Standby power, IFN

Power as per MTU Sales Program

Power per genset (ISO 8528)	1.750	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)	1.750	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	12V4000G84S-TB



II. Selection Criteria for the Scope of Supply

Criteria	Selection	for Product No.
Application	Emergency Standby (3D)	1,
Frequency	60 Hz	1,
Generator Voltage	480 V	1,
Phase	3 Phase	1,
Unit Specification	UL2200	1,
IBC Seismic Certification	Without IBC	1,
HCAI Certification	Without HCAI	1,
Engine Model	12V4000G84S (24volts)	1,
Exhaust Emissions (EPA)	EPA Tier 2	1,
Radiator Design Temperature	40°C	1,
Temp Rise	105°	1,
Power Output	1750 kW	1,
Full Load Amps	2631	1,
Generator Frame and Wire Qty	LSA 641-M60 (6 wire)	1,
Generator Wire Configuration	Wye	1,
OPU/HSD	Level 0 - Open Power Unit	1,
Fuel Tank	Without Fuel Tank	1,
Control panel	With Control Panel	1,
Circuit Breaker Options	Dual Circuit Breaker	1,
Breaker Wire Color Scheme	Standard Breaker Wire Color Scheme	1,
Paralleling	No Paralleling Operation	1,
Acceptance testing	Factory Acceptance Testing	1,
Country of Operation	USA / Canada	1,
Emission cert. authority	18 US EPA Agency	1,

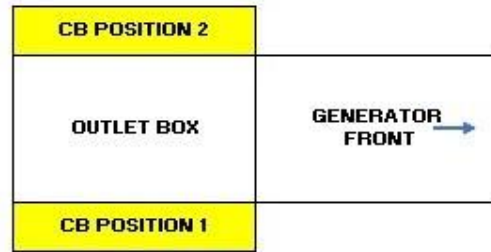


III. Scope of Supply

	valid for product no.						
1 SYSTEM CONFIGURATION	1,						
1.1 System Description	1,						
Model: DG12V4000B3N	1,						
Application 60Hz Standby	1,						
1.2 Cooling System	1,						
Standard Cooling Package	1,						
40 Deg C Cooling System	1,						
<ul style="list-style-type: none"> Closed loop, liquid cooled, with radiator factory mounted on engine-generator set mounting frame and integral engine-driven coolant pump with low water level probe and dual sight glasses 							
Ethylene Glycol Antifreeze	1,						
1.3 Circuit Breaker	1,						
	1,						
<table border="0" style="margin-left: 40px;"> <tr> <td>Top View</td> <td>Right Side</td> <td>CB Position 1</td> </tr> <tr> <td></td> <td>Left Side</td> <td>CB Position 2</td> </tr> </table>	Top View	Right Side	CB Position 1		Left Side	CB Position 2	
Top View	Right Side	CB Position 1					
	Left Side	CB Position 2					
* For technical data refer to the circuit breaker enclosure data sheets located on the Business Portal							
Non-Service Entrance Rated	1,						



valid for
product no.
1,



Top View **Right Side** CB Position 1
Left Side CB Position 2

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

Circuit Breaker Rated 100%	1,
Circuit Breaker Rated 100%	1,
Without Energy Reduction Maintenance Setting (ERMS) Rating	1,
Without Energy Reduction Maintenance Setting (ERMS) Rating	1,
Circuit Breaker Position 1:	1,
Without Circuit Breaker Motor Operator	1,
Circuit Breaker Position 2:	1,
Without Circuit Breaker Motor Operator	1,
Standard Circuit Breaker	1,
Alternate Circuit Breaker	1,
Circuit Breaker Position 1:	1,
3000 Amp 600 Volt 3 Pole 100% LSISquare-D RKF36300CU33A	1,
Circuit Breaker Position 2:	1,
700 Amp 600 Volt 3 Pole 100% LSISquare-D PKL36080CU33A	1,
Circuit Breaker #1 Accessories:	1,
Circuit Breaker 1 Accessories wired to MGC Control Panel	1,
Auxillary Contact (OF1)	1,
Circuit Breaker Shunt Trip (MX) (Customer Use)	1,
Without Circuit Breaker Bell Alarm	1,
Without Circuit Breaker Padlock Provision	1,



	valid for product no.
Circuit Breaker #2 Accessories:	1,
Circuit Breaker 1 Accessories Wired to Customer Connection	1,
Auxillary Contact (OF1)	1,
Circuit Breaker Shunt Trip (MX) (Customer Use)	1,
Without Circuit Breaker Bell Alarm	1,
Without Circuit Breaker Padlock Provision	1,
Circuit Breaker Position 1:	1,
LSI Breaker Trip:	1,
<ul style="list-style-type: none">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.	
Circuit Breaker Position 2:	1,
LSI Breaker Trip:	1,
<ul style="list-style-type: none">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:	1,
<ul style="list-style-type: none">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	1,
Battery Rack/Cables/Batteries 12V-16V4000 - Mounted	1,
<ul style="list-style-type: none">8D Batteries (Qty 4)Battery RacksBattery CablesBattery Disconnect	
Without Battery Warming Plate	1,
Battery Charger: MicroGenius 2 10A	1,
<ul style="list-style-type: none">300W10 Amp24VNFPA 110M3-22-1210-E	
Battery Charger Mounted & DC Wired	1,



	valid for product no.
Battery Charger Mounted Opposite of the Control Panel	1,
Coolant Preheater	1,
<ul style="list-style-type: none">• 20 Deg F Block Heater (240V 1PH - 12000W)• Model: CSM11202-000• Qty 1	
1.5 Genset Enclosure	1,
Open Power Unit (OPU)	1,
<ul style="list-style-type: none">• Engine Generator Set mounted on base with no enclosure	
1.6 Vibration Isolation	1,
Notice: Selected springs are rated from the factory for this unit's specific configuration. If modifications are made to this unit outside of the MTU factory the rating of the springs will need to be re-evaluated and may result in additional costs.	1,
Seismic Spring Isolators RJE-6080	1,
<ul style="list-style-type: none">• Freestanding, open-spring isolators designed to be used in docile environments (limited seismic activity, low wind loading) where customer wants enhanced level of vibration isolation.• Model: RJE-6080	
2 ENGINE CONFIGURATION	1,
2.1 Engine System	1,
EPA Certification Tier Level: Tier 2	1,
Engine Model: MTU 12V4000	1,
Engine Lubricant 10W-40	1,
Oil Sampling Port	1,
Without Oil Replenishment System	1,
Without Oil Pre-Lube Pump	1,
Note Emission Compliance:	1,
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	1,
Exhaust Bellows	1,



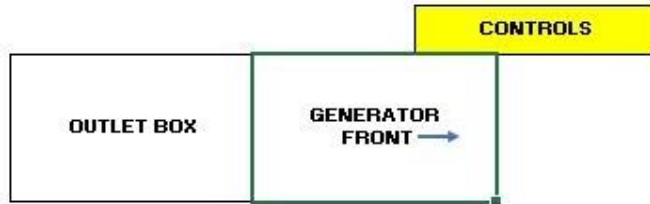
	valid for product no.
No Exhaust Silencer	1,
Exhaust Wye Header (2 into 1) - No Silencer	1,
Without OPU Exhaust Installation Kit	1,
Without Exhaust Thermocouple	1,
Without Exhaust Pyrometer	1,
2.3 FUEL SYSTEM	1,
Without Auxiliary Fuel Lift Pump	1,
Fuel Water Separator (Dual)	1,
Fuel Water Separator (Wire-Braid Reinforced Hose)	1,
Water in Bowl Sensor	1,
No Fuel Cooler	1,
2.4 Air Intake System	1,
Air Filter (Standard)	1,
MTU Air Filter	1,
• SUA90069	
• Qty 4	
3 GENERATOR CONFIGURATION	1,
3.1 Generator Specification	1,
<u>LS641 – Enhanced</u>	1,
Features:	
• Metering CT (3 mounted and wired)	
• PTs	
• Paralleling CT (1 mounted and wired)	
• Winding RTDs (2 per phase) and Bearing RTDs (1 per bearing)	
• Heater with thermostat	
• Qty 16 two-hole NEMA Lugs Per Phase	
DECS 150 Digital Excitation Control System	1,
Includes Winding RTD's	1,
Includes Bearing RTD's	1,
Bearing/Winding RTDs are not wired to Control Panel	1,
Generator Strip Heater	1,
• Strip heater mounted permanently in the generator winding to prevent condensation in the	



	valid for product no.
generator.	
IP23 Ingress Protection • IP23 provides Ingress Protection against objects larger than 12 mm and Protection against dripping water $\pm 60^\circ$ angle.	1,
LSA 641-M60-M (6 Wire)	1,
Circuit Breaker Position 1:	1,
Customer-selected Bottom Entry to Circuit Breaker Factory to wire to top of Circuit Breaker.	1,
Circuit Breaker Position 2:	1,
Customer-selected Bottom Entry to Circuit Breaker Factory to wire to top of Circuit Breaker.	1,
4 CONTROL PANEL CONFIGURATION	1,
4.1 Control panel	1,
Circuit Breaker Position 1:	1,
Ground Fault Indication (GFI)	1,
ModBus™ TCP/IP	1,
<ul style="list-style-type: none">The MGC-3000 series controller has Ethernet ports that may be configured for ModBus™ TCP/IP allowing control systems such as PLCs, SCADA, or BMS to communicate with the 3000 series controller over Ethernet.	
Modem RS-232	1,
<ul style="list-style-type: none">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.<ul style="list-style-type: none">Note: Only an external modem interface is provided. The external modem must be supplied by a third party	
Ethernet	1,
<ul style="list-style-type: none">Ethernet ports provide communications between the MGC-3000 Series and a PC via BESTCOMSPPlus® or other MGC-3000 Series controller(s) in a network. An Ethernet connection to a PC running BESTCOMSPPlus® provides remote metering, setting, annunciation, and control of the MGC-3000 Series. Ethernet communication between MGC-3000 Series controller(s) allows for generator sequencing on an islanded system.<ul style="list-style-type: none">MGC-3000 Series controllers can be monitored and controlled via Ethernet using the ModBus™ TCP/IP.	

Control Panel Mounting

valid for product no.



Top View **Right Side**
Left Side Controls

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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 1,

MGC-3000 Series 1,

- MTU Onsite Energy 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.

No Parallel Operation 1,

5 SERVICES AND AFTERSALES SUPPLY 1,

5.1 Warranty 1,

General Terms and Conditions of Sale, Warranty and After Sales Supply 1,

Our offer is based on the attached General Terms and Conditions of Sale for MTU Products (Rev. V-601-1803 MUS & MOE) and the Warranty will be the attached Standard Two (2) Year / 3,000 Hour Basic Standby (3D), Prime (3B), and Data Center Continuous Power (DCCP) (3F) Limited



valid for
product no.

Warranty (SYS-M-GEN-S-026).

6	MISCELLANEOUS	1,
6.1	Painting	1,
	Paint Color: RAL 7001 Grey	1,
6.2	Documentation	1,
	Application 60Hz Standby	1,
	<u>English</u>	1,
	1 Flash Drive	1,
	<u>English</u>	1,
	1 Hard Copy	1,
	No Flash Drive	1,
	<u>French</u>	1,
	No Hard Copy	1,
	No Flash Drive	1,
	<u>Spanish</u>	1,
	No Hard Copy	1,
	No Flash Drive	1,
6.3	Additional Options	1,
	Without Convenience Receptacle	1,
	Dimensional Drawing: Genset Dimensional OPU	1,
	• XZ54700100087	
	Mechanical Drawing: Spring Installation	1,
	• XZ54700100089	
	Electrical Drawing: Engine Starter	1,
	• XZ54930900140	
	Electrical Drawing: Engine ECU	1,
	• XZ54930900146	
	Electrical Drawing: Generator	1,
	• XZ54930900147	



		valid for product no.
Electrical Drawing: Generator		1,
• XZ54930900149		
Electrical Drawing: Circuit Breakers		1,
• XZ54930900151		
Electrical Drawing: Circuit Breakers		1,
• XZ54930900152		
Electrical Drawing: Control Panel Accessories		1,
• XZ54930900139		
Electrical Drawing: Control Panel 3000 Series		1,
• XZ54930900504		
Quantity (1) Service Filter Kit:		1,
Service Filter Kit - Standard with F/W Separator (Air/Oil/Fuel/FW Separator) 12V/16V 4000 G04		1,
• SUA90069 Air Filter (Qty 4)		
• 0031845301 Oil Filter (Qty 5)		
• X00042421 Fuel Filter (Qty 2)		
• X54941200006 Fuel/Water Separator Element (Qty 2)		
8	FUNCTIONAL TESTING	1,
8.1	Acceptance Testing	1,
	Standard Commercial Test	1,
	Witness Test	1,
	Transients	1,
	Standard Block Loads:	1,
	• Block rated loads of 0-25-0%, 0-50-0%, 0-75-0% and 0-100-0% will be applied to the gen-set and recorded with a high-speed power analyzer.	
	• Results will be shown graphically and will include annotations.	
	Steady State/Harmonics: Steady state at 0% and 100%	1,
	Tests to be reviewed and signed off by test engineer	1,
9	SHIPPING CONDITIONS	1,
9.1	Freight	1,
	Ship unit with fluids installed	1,
	Genset Unit is enclosed in a Shipping Bag	1,
