

**Stock #: 247349**



**Technical Specification  
and  
Scope of Supply**

**mtu 16V2000 DS1000  
DG16V2000B1N**

**Customer:** INDEL Power Group LLC

17.05.2024



I. 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 | kWeI |
| 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 | kWeI |
| 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 |



## II. Selection Criteria for the Scope of Supply

| <i>Criteria</i>              | <i>Selection</i>                    | <i>for Product No.</i> |
|------------------------------|-------------------------------------|------------------------|
| 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                 | 16V2000G86S (24volts)               | 1,                     |
| Exhaust Emissions (EPA)      | EPA Stationary EMERG T2 (40CFR60)   | 1,                     |
| Radiator Design Temperature  | 50°C                                | 1,                     |
| Temp Rise                    | 130°                                | 1,                     |
| Power Output                 | 1000 kW                             | 1,                     |
| Full Load Amps               | 1504                                | 1,                     |
| Generator Frame and Wire Qty | LSA 49.1 L11 (6 Wire)               | 1,                     |
| Generator Wire Configuration | Wye                                 | 1,                     |
| OPU/HSD                      | Level 3 - Maximum Sound Attenuation | 1,                     |
| Fuel Tank                    | Without Fuel Tank                   | 1,                     |
| Control panel                | With Control Panel                  | 1,                     |
| Circuit Breaker Options      | Single Circuit Breaker              | 1,                     |
| Breaker Wire Color Scheme    | Standard Breaker Wire Color Scheme  | 1,                     |
| Paralleling                  | No Parallel Operation               | 1,                     |
| Acceptance testing           | Factory acceptance                  | 1,                     |
| Publications                 | Standard Publications (English)     | 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,

#### 1.2 Cooling Package

1,

50 Deg C Cooling System

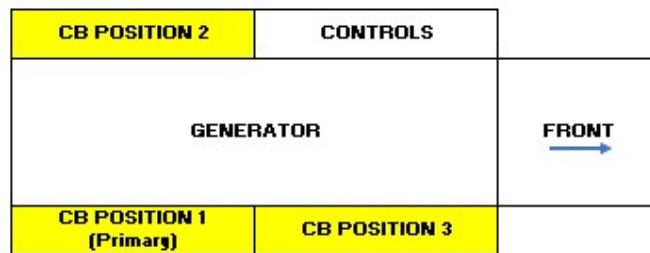
1,

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

#### 1.3 Circuit Breaker

1,

1,



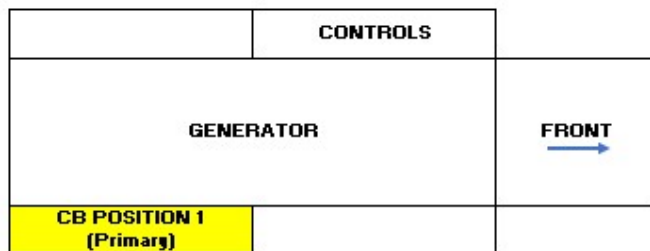
**Top View**      **Right Side**      CB Position 1/CB Position 3  
**Left Side**      Controls/CB Position 2

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

Non-Service Entrance Rated

1,

1,



**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:

1,

Circuit Breaker Motor Operator

1,

Circuit Breaker Position 1:

1,

1600 Amp 600 Volt 3 Pole 100% LSI MO Square-D WL1EEX33A9SCBBXXA

1,



|                                                                                                                                                                                                                                                                                     |                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
|                                                                                                                                                                                                                                                                                     | valid for<br>product no. |
| <b>Circuit Breaker #1 Accessories:</b>                                                                                                                                                                                                                                              | 1,                       |
| Standard on NW Frame CB:                                                                                                                                                                                                                                                            | 1,                       |
| <ul style="list-style-type: none"><li>• CB Closing Device (XF)</li><li>• Spring Charging Motor (MCH)</li><li>• CB Opening Device (MX1) wired to Control Panel</li></ul>                                                                                                             |                          |
| Auxiliary Contact (OF1)                                                                                                                                                                                                                                                             | 1,                       |
| Overcurrent Fault Switch (SDE)                                                                                                                                                                                                                                                      | 1,                       |
| <b>Circuit Breaker Position 1:</b>                                                                                                                                                                                                                                                  | 1,                       |
| LSI Breaker Trip:                                                                                                                                                                                                                                                                   | 1,                       |
| <ul style="list-style-type: none"><li>• 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.</li></ul>                       |                          |
| Standard Breaker Wire Scheme:                                                                                                                                                                                                                                                       | 1,                       |
| <ul style="list-style-type: none"><li>• Phase 1 (A) is Black label "L1"</li><li>• Phase 2 (B) is Red label "L2"</li><li>• Phase 3 (C) is Blue label "L3"</li><li>• Neutral is White label "NEU"</li></ul>                                                                           |                          |
| <b>1.4 Starting Aids</b>                                                                                                                                                                                                                                                            | 1,                       |
| Starting Batteries (8D) with Battery Rack                                                                                                                                                                                                                                           | 1,                       |
| <ul style="list-style-type: none"><li>• 8D Battery filled with Acid</li><li>• Battery Rack mounted and installed</li><li>• Qty 4 of each</li></ul>                                                                                                                                  |                          |
| Battery Charger SENS MicroGenius 2 10A                                                                                                                                                                                                                                              | 1,                       |
| <ul style="list-style-type: none"><li>• Manufacturer: SENS</li><li>• Power: 300W</li><li>• Output Voltage: 12/24V</li><li>• Output Current: 10A @ 12V;120A @ 24V</li><li>• Options: Base Model + LCD Display + 2 each Form C Alarm Relays</li><li>• Model #: M3-22-1210-E</li></ul> |                          |
| Battery Charger Mounted & DC Wired                                                                                                                                                                                                                                                  | 1,                       |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Battery Charger mounted on the same side of unit as the control panel or No Control Panel box.                                                                                                                                                                                                                                                                                                                                                                                                               | valid for<br>product no.<br>1, |
| <b>*Note*</b> - This option will be factory-wired to the distribution panel (if selected)                                                                                                                                                                                                                                                                                                                                                                                                                    | 1,                             |
| Coolant Preheater                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1,                             |
| <ul style="list-style-type: none"><li>-20 Deg F Coolant Preheater (208V 1PH - 9000W)</li><li>Model: CSM10908-000</li><li>Qty 1</li></ul>                                                                                                                                                                                                                                                                                                                                                                     |                                |
| <b>**</b> To wire accessory options to distribution panel from factory you will need to select one of the following: <ul style="list-style-type: none"><li>For use with 1 Phase Distribution Panel:<ul style="list-style-type: none"><li>1 Phase 208V accessory option**</li><li>1 Phase 240V accessory option**</li></ul></li><li>For use with 3 Phase Distribution Panel:<ul style="list-style-type: none"><li>3 Phase 208V accessory option**</li><li>1 Phase 208V accessory option**</li></ul></li></ul> | 1,                             |
| Coolant Preheater Mounted                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1,                             |
| With Coolant Preheating System Isolation Valves                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1,                             |
| <b>1.5 Genset Enclosure</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1,                             |
| Genset Enclosure S2000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1,                             |
| 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.<br>Enclosure consists of: <ul style="list-style-type: none"><li>Bolted and welded construction</li><li>Unit-mounted internal silencer included</li><li>Hinged, lockable double-doors with door restraints provide access on both sides of enclosure</li></ul>                                                                                |                                |
| Aluminum Enclosure Type                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 1,                             |
| 130mph Wind Rated Aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1,                             |
| Level 3 Enclosure 130mph                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1,                             |
| 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.<br>Enclosure consists of: <ul style="list-style-type: none"><li>Bolted and welded construction</li></ul>                                                                                                                                                            |                                |



valid for  
product no.

- 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 1,

Interior Enclosure Lighting: 1,

- Interior enclosure lighting is designed to automatically use either AC or DC power. The lights will use the DC supply (genset batteries) if no AC supply is available. The lights may be powered via AC supply if connected by the customer.

**\*Note\*** - This option will be factory-wired to the distribution panel (if selected) 1,

Enclosure Heater: 120V 1PH 1500W with Thermostat 1,

**\*Note\*** - This option will be factory-wired to the distribution panel (if selected) 1,

Motorized Intake Louver (Aluminum) 1,

**\*Note\*** - This option will be factory-wired to the distribution panel (if selected) 1,

Gravity Exhaust Louver (Aluminum) 1,

## 1.6 Vibration Isolation 1,

X54599100330 Pad Isolators 1,

- 1/4-inch thick elastomeric pad in rectangular shape placed under the base frame at each of the pre-drilled isolator mounting holes.

## 2 ENGINE CONFIGURATION 1,

### 2.1 Engine System 1,

Oil Drain 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.

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|            |                                                                                                                                                                                           | valid for<br>product no. |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| <b>2.2</b> | <b>Exhaust System</b>                                                                                                                                                                     | 1,                       |
|            | Internal Silencer 14"                                                                                                                                                                     | 1,                       |
|            | <ul style="list-style-type: none"><li>Silencer Model Number: OHS-14X-90042966</li></ul>                                                                                                   |                          |
|            | <ul style="list-style-type: none"><li>Qty 1</li></ul>                                                                                                                                     |                          |
| <b>2.3</b> | <b>FUEL SYSTEM</b>                                                                                                                                                                        | 1,                       |
|            | Fuel Water Separator - Standard (Dual)                                                                                                                                                    | 1,                       |
| <b>2.4</b> | <b>Air Intake System</b>                                                                                                                                                                  | 1,                       |
|            | Air Filter (Standard)                                                                                                                                                                     | 1,                       |
|            | MTU Air Filter                                                                                                                                                                            | 1,                       |
|            | <ul style="list-style-type: none"><li>SUA90069</li></ul>                                                                                                                                  |                          |
|            | <ul style="list-style-type: none"><li>Qty 2</li></ul>                                                                                                                                     |                          |
| <b>3</b>   | <b>GENERATOR CONFIGURATION</b>                                                                                                                                                            | 1,                       |
| <b>3.1</b> | <b>Generator Specification</b>                                                                                                                                                            | 1,                       |
|            | Includes D550 Digital Automatic Voltage Regulator (AVR)                                                                                                                                   | 1,                       |
|            | With PMG                                                                                                                                                                                  | 1,                       |
|            | Generator Strip Heater                                                                                                                                                                    | 1,                       |
|            | <ul style="list-style-type: none"><li>Strip heater mounted permanently in the generator winding to prevent condensation in the generator.</li></ul>                                       |                          |
|            | <b>*Note*</b> - This option will be factory-wired to the distribution panel (if selected)                                                                                                 | 1,                       |
|            | IP23 Ingress Protection                                                                                                                                                                   | 1,                       |
|            | <ul style="list-style-type: none"><li>IP23 provides Ingress Protection against objects larger than 12 mm and Protection against dripping water <math>\pm 60^\circ</math> angle.</li></ul> |                          |
|            | LSA 49.1L11                                                                                                                                                                               | 1,                       |
| <b>4</b>   | <b>CONTROL PANEL CONFIGURATION</b>                                                                                                                                                        | 1,                       |
| <b>4.1</b> | <b>Control panel</b>                                                                                                                                                                      | 1,                       |
|            | <b>Circuit Breaker Position 1:</b>                                                                                                                                                        | 1,                       |
|            | Ground Fault Indication (GFI)                                                                                                                                                             | 1,                       |
|            | Modbus RTU                                                                                                                                                                                | 1,                       |
|            | <ul style="list-style-type: none"><li>ModBus RTU connects the MGC to Programmable Logic Controllers by means of</li></ul>                                                                 |                          |



valid for  
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communication transmission over serial lines (RS485).

### Modem RS-232

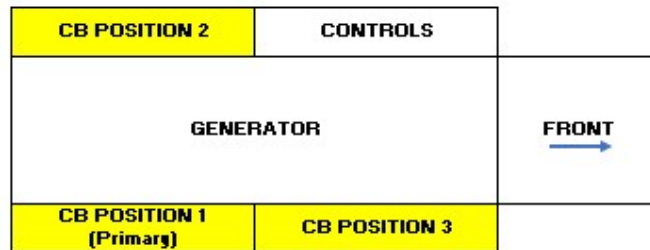
1,

- 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

1,

1,



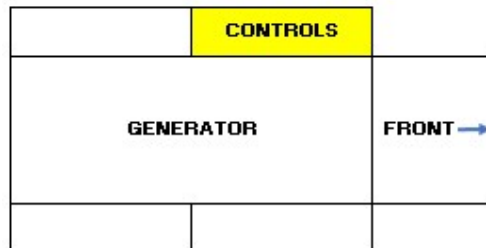
**Top View**      **Right Side**      CB Position 1/CB Position 3  
**Left Side**      Controls/CB Position 2

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### Control Panel Mounted LH Side

1,

1,

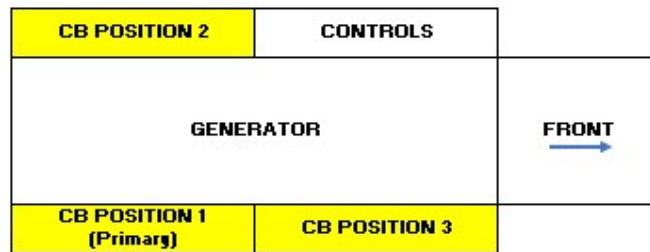


**Top View**      **Right Side**  
**left Side**      Controls

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



valid for  
product no.  
1,



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

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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,

- 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.

#### No Parallel Operation

1,

## 5 SERVICES AND AFTER SALES 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 Rolls Royce Power Systems Products (Rev. V-601-1803 MUS & MOE) and the Warranty will be the attached Standard



valid for  
product no.

Two (2) Year / 3,000 Hour Basic Standby (3D), Prime (3B), and Data Center Continuous Power (DCCP) (3F) Limited Warranty (SYS-M-GEN-S-026).

|            |                                                                                                                                                                           |    |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>6</b>   | <b>MISCELLANEOUS</b>                                                                                                                                                      | 1, |
| <b>6.1</b> | <b>Painting</b>                                                                                                                                                           | 1, |
|            | Paint Color: RAL 7001 Grey                                                                                                                                                | 1, |
| <b>6.2</b> | <b>Documentation</b>                                                                                                                                                      | 1, |
|            | Application 60Hz Standby                                                                                                                                                  | 1, |
|            | <u>English</u>                                                                                                                                                            | 1, |
|            | 1 Flash Drive                                                                                                                                                             | 1, |
|            | <u>English</u>                                                                                                                                                            | 1, |
|            | No 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, |
| <b>6.3</b> | <b>Additional Options</b>                                                                                                                                                 | 1, |
|            | 200 Amp Distribution Panel (UL)                                                                                                                                           | 1, |
|            | <ul style="list-style-type: none"><li>200A 120/240VAC 1PH UL Listed 20-Position with Main Breaker</li><li>Distribution Panel Mounted same side as Control Panel</li></ul> |    |
|            | Unit Includes One (1) Convenience Receptacle                                                                                                                              | 1, |
|            | Convenience Receptacle is mounted on the same side of the outlet box as the Control Panel/No Control Panel options.                                                       | 1, |
|            | <b>*Note*</b> - This option will be factory-wired to the distribution panel (if selected)                                                                                 | 1, |
|            | Mechanical Drawing: Genset Dimensional HSD                                                                                                                                | 1, |
|            | <ul style="list-style-type: none"><li>XZ54500100024</li></ul>                                                                                                             |    |



|            |                                                                      |                          |
|------------|----------------------------------------------------------------------|--------------------------|
|            |                                                                      | valid for<br>product no. |
|            | Mechanical Drawing: Genset Dimensional HSD<br>• XZ54500100026        | 1,                       |
|            | Electrical Drawing: Engine Starter Single<br>• XZ54530900048         | 1,                       |
|            | Electrical Drawing: Engine ECU<br>• XZ54530900063                    | 1,                       |
|            | Electrical Drawing: Generator<br>• XZ54530900060                     | 1,                       |
|            | Electrical Drawing: Circuit Breakers<br>• XZ54530900065              | 1,                       |
|            | Electrical Drawing: Control Panel MGC 3000 Series<br>• XZ54530900101 | 1,                       |
|            | Electrical Drawing: Options Sheet<br>• XZ54530900064                 | 1,                       |
| <b>8</b>   | <b>FUNCTIONAL TESTING</b>                                            | 1,                       |
| <b>8.1</b> | <b>Acceptance Testing</b>                                            | 1,                       |
|            | Standard Commercial Test                                             | 1,                       |
| <b>9</b>   | <b>SHIPPING CONDITIONS</b>                                           | 1,                       |
| <b>9.1</b> | <b>Freight</b>                                                       | 1,                       |
|            | Ship unit with fluids installed                                      | 1,                       |