

## Vertically Polarized, Log Periodic 80° / 17.5 dBi

### LPA-185080/12CF \_\_ 2°

When ordering replace " \_\_ " with connector type.

#### Mechanical specifications

Length	1806 mm	71.1 in
Width	104 mm	4.1 in
Depth	150 mm	5.9 in
Depth with t-bracket	178 mm	7.0 in
4) Weight	4.8 kg	10.5 lbs
Wind Area		
Fore/Aft	0.19 m <sup>2</sup>	2.0 ft <sup>2</sup>
Side	0.27 m <sup>2</sup>	2.9 ft <sup>2</sup>
Rated Wind Velocity (Safety factor 2.0)		
	>270 km/hr	>168 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	325 N	73.1 lbs
Side	440 N	98.9 lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

#### Mounting and Downtilting

Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in).

Mounting bracket kit #26799997

Downtilt bracket kit #26799999

The downtilt bracket kit includes the mounting bracket kit.

#### Electrical specifications

Frequency Range	1850-1990 MHz
Impedance	50Ω
3) Connector(s)	NE or E-DIN 1 port / center
1) VSWR	≤ 1.4:1
Polarization	Vertical
1) Gain	17.5 dBi
2) Power Rating	250 W
1) Half Power Angle	
H-Plane	80°
E-Plane	5°
1) Electrical Downtilt	2°
1) Null Fill	10%
Lightning Protection	Direct Ground

1) Typical values.

2) Power rating limited by connector only.

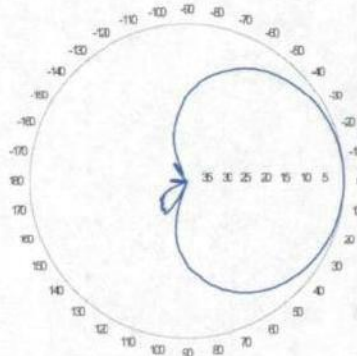
3) NE indicates an elongated N connector.

E-DIN indicates an elongated DIN connector.

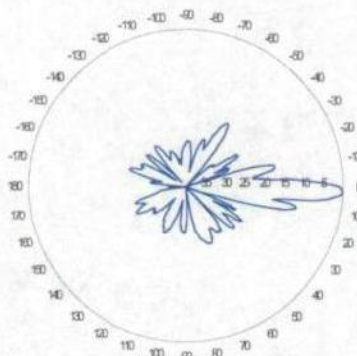
4) The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

#### Radiation pattern<sup>1)</sup>



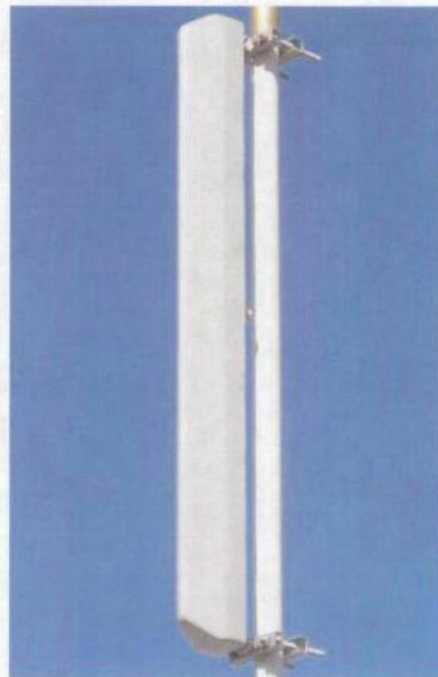
Horizontal



Vertical

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back ratio.



**Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:**

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

*This Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.*

**Antenna available with center-fed connector only.**

**CF Denotes a Center-Fed Connector.**

**1850-1990 MHz**

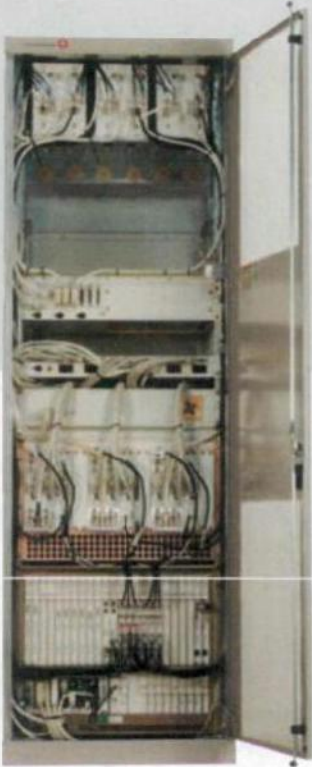
**Amphenol Antel, Inc.**  
The Antenna Technology Company

Revision Date: 7/12/07



# Lucent CDMA Modular Cell 4.0B Indoor

## For CDMA Networks



Lucent CDMA Modular Cell 4.0B is a high capacity base station equipped with the state-of-the-art technologies developed by Bell Labs. The product brings you outstanding carrier density and immediate OPEX savings. This indoor product can support up to 8 carriers/3 sectors per frame. It is twice the density of Modular Cell 4.0 (indoor). Modular Cell 4.0B offers full spectrum coverage in a single frame, dramatically simplifying growth patterns. As the leader in spread spectrum technology, Lucent Technologies continues to introduce innovations to the market: Multi-Carrier Radio (15MHz), Block Filters/Wideband Filters, and 40W Power Amplifier Modules are the latest assets integrated in the base station.

### Features

The Modcell 4.0B indoor version offers a small footprint with exceptional carrier density in a standard ETSI cabinet.

- Indoor Single Frame Configuration
- 1-8 carriers per frame at 3 sectors (will support up to 11 carriers with Auxiliary Amplifier Frame)
- Dual Band: one cell to the ECP & mobile
- Close Loop Gain Control
- Timing and Controller Redundancy
- Integrated Power option
- Support CDMA2000™1X, and EV-DO Rev.0, with future support to EV-DO Rev. A
- IP Backhaul and Ethernet Backhaul capable
- 6-Sector option ready
- Intelligent Antenna option ready

### Benefits

- Optimized for highest carrier density, smooth growth in one frame
- Conserves indoor footprint, reducing hardware and floor space requirements
- Minimizes configuration complexity
- Software-Only Carrier Add at certain carrier counts
- Flexible channel growth planning
- Designed to use existing power supply
- Grow CDMA carriers on only 2 antennas/sector
- Multi-Carrier Radio (15MHz), Block Filters/Wideband Filters, and 40W Power Amplifier Modules





## Technical Specifications

Description	Specification
<b>1. Configurations</b>	
a. Sectors	3, 4 and 6
b. Carriers	1-8 per frame at 3 sectors (up to 11 with Auxiliary Amplifier Frame)
<b>2. CDMA Channel Card Capacity</b>	12 slots; CMU IVB capable
<b>3. T1, E1 Facilities</b>	Maximum of 20 per cabinet when equipped with URC-II's
<b>4. User Alarms</b>	7 Power Alarms, 25 User Alarms
<b>5. GPS Antenna</b>	Yes
<b>6. Air Interface Standards</b>	T1A/E1A 95-A plus TSB-74; T1A/E1A 95-B for 850 MHz; CDMA 2000
<b>7. Frequency Bands</b>	850MHz/1900 MHz; 300 to 2100 MHz capable
<b>8. Vocoder</b>	8 Kbps; 8 Kbps EVRC; 13 Kbps; SMV-ready
<b>9. Environmental Cabinet Housing</b>	Standard ETSI cabinet; UL50 compliant; zero rear clearance
<b>10. Cabinet Access</b>	Front Access
<b>11. Operating Temperature Range</b>	Range: -5 to +40°C (continuous)
<b>12. Dimensions</b>	600 mm W x 600 mm D x 1880 mm H (23.6 x 23.6 x 74) inches
<b>13. Estimated Installed Weight</b>	365 kg (785 lbs.) DC [8 carriers in one cabinet]
<b>14. Power Options</b>	Integrated Power, AC 120/240 Volt Input, -48V or +24 V DC Conversion Non-integrated Power requires either + 24 VDC Input or - 48 VDC Input
<b>15. Power Consumption</b>	
a. 3 Carrier/3 Sectors	2167 W
b. 6 Carrier/3 Sectors	5449 W
c. 11 Carrier/3 Sectors	10026 W
<b>16. RF Power (at J4)</b>	25 W per carrier (850) FCC Rated short-term average 20 W per carrier (850) FCC Rated long-term average 20 W per carrier (1900) FCC Rated short-term average 16 W per carrier (1900) FCC Rated long-term average
<b>17. Minimal Antenna Configuration</b>	2 antennas/sector
<b>18. Filter</b>	Block and Wide Band Dual Duplex
<b>19. Growth Frame</b>	PCS AUX Frame, Dual Band Growth Frame
<b>20. Operational Accessories</b>	Integrated Power
<b>21. Channel Elements</b>	Channel pooling across sectors or carriers

To learn more about our comprehensive portfolio, please contact your Lucent Technologies Sales Representative or visit our web site at <http://www.lucent.com>.

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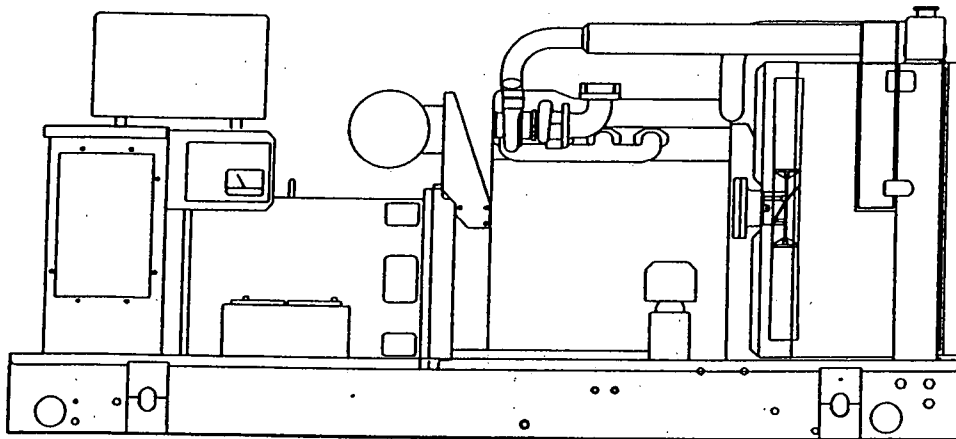


# SD060

## Liquid Cooled Diesel Engine Generator Sets

Continuous Standby Power Rating  
60KW 60 Hz / 60KVA 50 Hz

Prime Power Rating  
48KW 60 Hz / 48KVA 50 Hz



Power Matched  
**GENERAC 3.9DTA ENGINE**  
Turbocharged

## FEATURES

- **INNOVATIVE DESIGN & PROTOTYPE TESTING** are key components of GENERAC'S success in "IMPROVING POWER BY DESIGN." But it doesn't stop there. Total commitment to component testing, reliability testing, environmental testing, destruction and life testing, plus testing to applicable CSA, NEMA, EGSA, and other standards, allows you to choose GENERAC POWER SYSTEMS with the confidence that these systems will provide superior performance.
- **TEST CRITERIA:**
  - ✓ PROTOTYPE TESTED
  - ✓ SYSTEM TORSIONAL TESTED
  - ✓ ELECTRO-MAGNETIC INTERFERENCE
  - ✓ NEMA MG1-22 EVALUATION
  - ✓ MOTOR STARTING ABILITY
  - ✓ SHORT CIRCUIT TESTING
  - ✓ UL 2200 COMPLIANCE AVAILABLE
- **SOLID-STATE, FREQUENCY COMPENSATED VOLTAGE REGULATION.** This state-of-the-art power maximizing regulation system is standard on all Generac models. It provides optimized
- FAST RESPONSE to changing load conditions and MAXIMUM MOTOR STARTING CAPABILITY by electronically torque-matching the surge loads to the engine.
- **SINGLE SOURCE SERVICE RESPONSE** from Generac's dealer network provides parts and service know-how for the entire unit, from the engine to the smallest electronic component. You are never on your own when you own a GENERAC POWER SYSTEM.
- **ECONOMICAL DIESEL POWER.** Low cost operation due to modern diesel engine technology. Better fuel utilization plus lower cost per gallon provide real savings.
- **LONGER ENGINE LIFE.** Generac heavy-duty diesels provide long and reliable operating life.
- **GENERAC TRANSFER SWITCHES, SWITCHGEAR AND ACCESSORIES.** Long life and reliability is synonymous with GENERAC POWER SYSTEMS. One reason for this confidence is that the GENERAC product line includes its own transfer systems, accessories, switchgear and controls for total system compatibility.

# GENERAC®

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## POWER SYSTEMS, INC.

# APPLICATION & ENGINEERING DATA

SD060

## GENERATOR SPECIFICATIONS

TYPE .....	Four-pole, revolving field
ROTOR INSULATION .....	Class H
STATOR INSULATION .....	Class H
TOTAL HARMONIC DISTORTION .....	<3%
TELEPHONE INTERFERENCE FACTOR (TIF) .....	<50
ALTERNATOR .....	Self-ventilated and drip-proof
BEARINGS (PRE-LUBED & SEALED) .....	1
COUPLING .....	Direct, Flexible Disc
LOAD CAPACITY (STANDBY) .....	100%
LOAD CAPACITY (PRIME) .....	110%

**NOTE: Emergency loading in compliance with NFPA 99, NFPA 110, paragraph 5-13.2.6. Generator rating and performance in accordance with ISO8528-5, BS5514, SAE J1349, ISO3046 and DIN6271 standards.**

### EXCITATION SYSTEM

- BRUSHLESS ..... Magnetically coupled DC current ✓  
     Eight-pole exciter w/ battery-driven field boost ✓  
     Mounted outboard of main bearing ✓
- PERMANENT MAGNET EXCITER ..... Eighteen pole exciter ✓  
     Magnetically coupled DC current ✓  
     Mounted outboard of main bearing ✓
- REGULATION ..... Solid-state ✓  
     ±1% regulation ✓

## GENERATOR FEATURES

- Four pole, revolving field generator is directly connected to the engine shaft through a heavy-duty, flexible disc for permanent alignment.
- Generator meets temperature rise standards for class "F" insulation as define by NEMA MG1-32.6 and NEMA1-1.65, while the insulation system meets the requirements for the higher class "H" rating.
- All models have passed a three-phase symmetrical short circuit test to assure system protection and reliability.
- Unit is tested with an oscillograph for motor-starting ability by measuring instantaneous voltage dip.
- All models utilize an advanced wire harness design for reliable interconnection within the circuitry.
- Magnetic circuit, including amortisseur windings, tooth and skewed stator design, provides a minimal level of waveform distortion and an electromagnetic interference level which meets accepted requirements for standard AM radio, TV, and marine radio telephone applications.
- Voltage waveform deviation, total harmonic content of the AC waveform, T.I.F. (Telephone Influence Factor) and non-linear loading have been evaluated to acceptable standards in accordance with NEMA MG1.
- Alternator is self-ventilated and drip-proof constructed.
- Fully life-tested protective systems, including "field circuit and thermal overload protection" and optional main-line circuit breakers are capable of handling full output capacity.
- System Torsional acceptability confirmed during Prototype Testing.

Rating definitions - Standby: Applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. (All ratings in accordance with BS5514, ISO3046 and DIN6271). Prime (Unlimited Running Time): Applicable for supplying electric power in lieu of commercially purchased power. Prime power is the maximum power available at variable load. A 10% overload capacity is available for 1 hour in 12 hours. (All ratings in accordance with BS5514, ISO3046, ISO8528 and DIN6271).

## ENGINE SPECIFICATIONS

MAKE .....	GENERAC
MODEL .....	3.9DTA
CYLINDERS .....	4 in-line
DISPLACEMENT .....	3.9 Liter (238 cu.in.)
BORE .....	104 mm (4.09 in.)
STROKE .....	115 mm (4.52 in.)
COMPRESSION RATIO .....	16.5:1
INTAKE AIR .....	Turbocharged/Aftercooled
NUMBER OF MAIN BEARINGS .....	5
CONNECTING RODS .....	4-Drop Forged Steel
CYLINDER HEAD .....	Cast Iron Overhead Valve
PISTONS .....	4- Aluminum Alloy
CRANKSHAFT .....	Hardened, Steel

### VALVE TRAIN

LIFTER TYPE .....	Solid
INTAKE VALVE MATERIAL .....	Special Heat Resistant Steel
EXHAUST VALVE MATERIAL .....	Special Heat Resistant Steel
HARDENED VALVE SEATS .....	Replaceable

### ENGINE GOVERNOR

- MECHANICAL (Gear Driven) ..... Standard  
     FREQUENCY REGULATION, NO-LOAD TO FULL LOAD ... 5.0%  
     STEADY STATE REGULATION ..... ±0.33%
- ELECTRONIC ..... Optional  
     FREQUENCY REGULATION, NO-LOAD TO FULL LOAD ... 0.5%  
     STEADY STATE REGULATION ..... ±0.25%

### LUBRICATION SYSTEM

TYPE OF OIL PUMP .....	Gear
OIL FILTER .....	Full flow, Cartridge
CRANKCASE CAPACITY .....	18 Litres (19 qts.)
OIL COOLER .....	Oil to water

### COOLING SYSTEM

TYPE OF SYSTEM .....	Pressurized, Closed Recovery
WATER PUMP .....	Pre-Lubed, Self-Sealing
TYPE OF FAN .....	Pusher
NUMBER OF FAN BLADES .....	7
DIAMETER OF FAN .....	457 mm (18 in.)
COOLANT HEATER .....	120V, 1800 W

### FUEL SYSTEM

FUEL .....	#2D Fuel (Min Cetane #40) (Fuel should conform to ASTM Spec.)
FUEL FILTER .....	Single Cartridge
FUEL INJECTION PUMP .....	Stanadyne
FUEL PUMP .....	Mechanical
INJECTORS .....	Multi-Hole, Nozzle Type
ENGINE TYPE .....	Direct Injection
FUEL LINE (Supply) .....	7.94 mm (0.31 in.)
FUEL RETURN LINE .....	6.35 mm (0.25 in.)
STARTING AID .....	Glow Plugs

### ELECTRICAL SYSTEM

BATTERY CHARGE ALTERNATOR .....	30 Amps at 24 V
STARTER MOTOR .....	24 V
RECOMMENDED BATTERY .....	(2)—12 Volt, 90 A.H., 4DLT
GROUND POLARITY .....	Negative

SD060

**OPERATING DATA**

	<b>STANDBY</b>		<b>PRIME</b>	
	<b>SD060</b>		<b>SD060</b>	
<b>GENERATOR OUTPUT VOLTAGE/KW-60Hz</b>		<b>Rated AMP</b>		<b>Rated AMP</b>
120/240V, 1-phase, 1.0 pf	60	250	48	200
120/208V, 3-phase, 0.8 pf	60	208	48	166
120/240V, 3-phase, 0.8 pf	60	180	48	144
277/480V, 3-phase, 0.8 pf	60	90	48	72
600V, 3-phase, 0.8 pf	60	72	48	58
<b>GENERATOR OUTPUT VOLTAGE/KVA-50Hz</b>		<b>Rated AMP</b>		<b>Rated AMP</b>
110/220V, 1-phase, 1.0 pf	48	218	38	172
115/200V, 3-phase, 0.8 pf	60	173	48	138
100/200V, 3-phase, 0.8 pf	60	173	48	138
231/400V, 3-phase, 0.8 pf	60	87	48	69
480V, 3-phase, 0.8 pf	60	72	48	58
<b>MOTOR STARTING KVA</b>				
Maximum at 35% instantaneous voltage dip with standard alternator; 50/60 Hz	<b>120/208/240V</b>	<b>277/480V</b>	<b>120/208/240V</b>	<b>277/480V</b>
with optional alternator; 50/60 Hz	100/120 234/281	117/141 276/331	100/120 234/281	117/141 276/331
<b>FUEL</b>				
Fuel consumption—60 Hz	Load	<b>100%</b>	<b>80%</b>	<b>100%</b>
	gal./hr.	4.3	3.6	3.6
	liters/hr.	16.3	13.5	13.6
Fuel consumption—50 Hz	gal./hr.	3.6	3.0	3.0
	liters/hr.	13.5	11.2	11.3
Fuel pump lift				2.5
				9.3
<b>COOLING</b>				
Coolant capacity	System - lit. (US gal.)	15.9 (4.2)		15.9 (4.2)
	Engine - lit. (US gal.)	6.4 (1.7)		6.4 (1.7)
	Radiator - lit. (US gal.)	9.5 (2.5)		9.5 (2.5)
Coolant flow/min.	60 Hz - lit. (US gal.)	128 (34)		128 (34)
	50 Hz - lit. (US gal.)	107 (28)		107 (28)
Heat rejection to coolant 60 Hz full load	BTU/hr.	170,900		136,700
Heat rejection to coolant 50 Hz full load	BTU/hr.	142,400		113,900
Inlet air to radiator	60 Hz - m <sup>3</sup> /min. (cfm)	204 (7,200)		204 (7,200)
	50 Hz - m <sup>3</sup> /min. (cfm)	170 (6004)		170 (6004)
Max. air temperature to radiator	°C (°F)	54.4 (130)		54.4 (130)
Max. ambient temperature	°C (°F)	48.9 (120)		48.9 (120)
<b>COMBUSTION AIR REQUIREMENTS</b>				
Flow at rated power	60 Hz - cfm	209		168
	50 Hz - m <sup>3</sup> /min.	4.7		3.8
<b>EXHAUST</b>				
Exhaust flow at rated output	60 Hz - m <sup>3</sup> /min. (cfm)	15.5 (549)		12.4 (439)
	50 Hz - m <sup>3</sup> /min. (cfm)	12.3 (434)		10 (353)
Max recommended back pressure	"Hg	1.5		1.5
Exhaust temperature 60 Hz (full load)	°C (°F)	524 (975)		459 (858)
Exhaust outlet size		3"		3"
<b>ENGINE</b>				
Rated RPM	60 Hz	1800		1800
	50 Hz	1500		1500
HP at rated KW	60 Hz	92		74
	50 Hz	73		59
Piston speed	60 Hz - m/min. (ft./min.)	414 (1358)		414 (1358)
	50 Hz - m/min. (ft./min.)	345 (1132)		345 (1132)
BMEP	60 Hz - psi	170		138
	50 Hz - psi	161		130
<b>DERATION FACTORS</b>				
Temperature				
	5% for every 10°C above - °C	25		25
	2.77% for every 10°F above - °F	77		77
Altitude				
	1.1% for every 100 m above - m	1829		1829
	3.5% for every 1000 ft. above - ft.	6000		6000

# STANDARD ENGINE & SAFETY FEATURES

SD060

- High Coolant Temperature Automatic Shutdown
- Low Coolant Level Automatic Shutdown
- Low Oil Pressure Automatic Shutdown
- Overspeed Automatic Shutdown (Solid-state)
- Crank Limiter (Solid-state)
- Oil Drain Extension
- Radiator Drain Extension
- Factory-Installed Cool Flow Radiator
- Closed Coolant Recovery System
- UV/Ozone Resistant Hoses
- Rubber-Booted Engine Electrical Connections
- Secondary Fuel Filter

- Fuel Lockoff Solenoid
- Stainless Steel Flexible Exhaust Connection
- Battery Charge Alternator
- Battery Cables
- Battery Tray
- Vibration Isolation of Unit to Mounting Base
- 12 Volt, Solenoid-activated Starter Motor
- Air Cleaner
- Fan Guard
- Control Console
- Radiator Duct Adapter

## OPTIONS

### ■ OPTIONAL COOLING SYSTEM ACCESSORIES

- Coolant Heater 120V

### ■ OPTIONAL FUEL ACCESSORIES

- Flexible Fuel Lines
- UL Listed Fuel Tanks
- Base Tank Low Fuel Alarm
- Primary Fuel Filter
- Primary Fuel Filter with Heater

### ■ OPTIONAL EXHAUST ACCESSORIES

- Critical Exhaust Silencer

### ■ OPTIONAL ELECTRICAL ACCESSORIES

- Battery, 12 Volt, 135 A.H., 4DLT
- 2A Battery Charger
- 10A Dual Rate Battery Charger
- Battery Heater

### ■ OPTIONAL ALTERNATOR ACCESSORIES

- Alternator Upsizing
- Alternator Strip Heater
- Alternator Tropicalization
- Voltage Changeover Switch
- Main Line Circuit Breaker

### ■ CONTROL CONSOLE OPTIONS

- Analog Control "C" Panel (Bulletin 0151160SBY)
- Analog/Digital Control "E" Panel (Bulletin 0161310SBY)

### ■ ADDITIONAL OPTIONAL EQUIPMENT

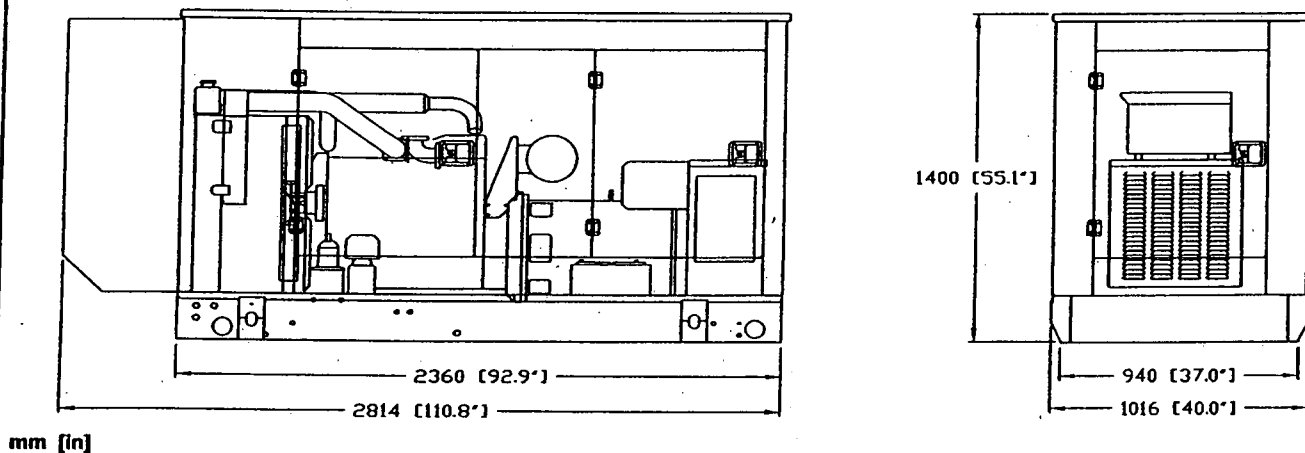
- Automatic Transfer Switch
- Isochronous Governor
- 3 Light Remote Annunciator
- 5 Light Remote Annunciator
- 20 Light Remote Annunciator
- Remote Relay Panels
- Unit Vibration Isolators (Pad/Spring)
- Oil Make-Up System
- Oil Heater
- 5 Year Warranties
- Export Boxing
- GenLink® Communications Software

### ■ OPTIONAL ENCLOSURE

- Weather Protective
- Sound Attenuated
- Aluminum and Stainless Steel
- Enclosed Muffler

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