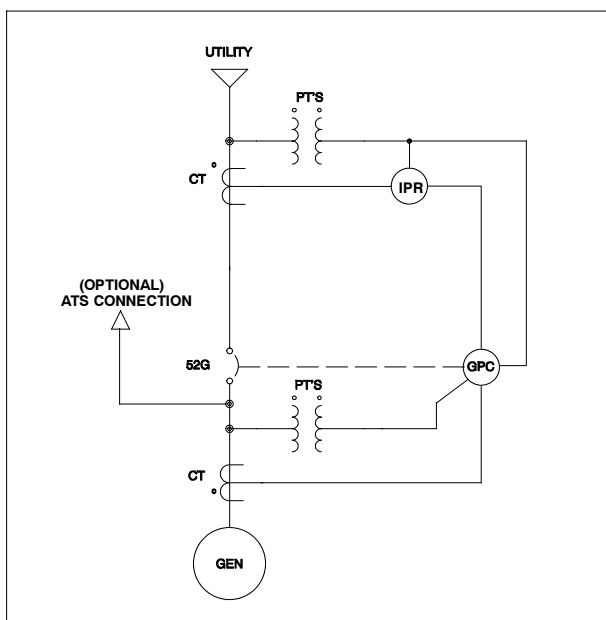


PD-100 Front View



PD-100 One-Line Drawing

**Models:**

**Single Breaker  
800-4000 Amps  
208-600 Volts; 50/60 Hz**

**General Description**

The single-breaker PD-100 provides an economical method of operating one generator set in parallel with a single utility source for base load/peak shaving operation.

The design allows for automatic starting, stopping, and paralleling the generator set through multiple control inputs. The PD-100 contains the intuitive touch screen operator interface, controls, protective relays, and circuit breaker required to operate in parallel with the utility.

**Standard Features**

- UL 891 and cUL listed
- 3- and 4-pole models
- NEMA 3, 3R, and special enclosures available
- Fixed or draw-out breakers
- Utility and generator set protective relaying
- 100 kA withstand rating
- Top or bottom cable entry
- Full capacity neutral bus
- Compatible with both diesel and natural gas generator sets
- Can be applied to generator sets from any manufacturer
- Intuitive color touch screen user interface for all metering, annunciation, setup, and control functions
- Modbus® RS-485 and TCP/IP communications connections
- Internal web server allowing standard web browser remote access
- Available in voltage systems through 600 VAC

**Available Options**

- Service entrance rating
- Full range of utility-intertie relays available
- Breaker trip selections (LSI standard, LSIG standard on service entrance)
- Remote operation touch screens
- IBC Seismic Certification available on units up to and including 2000 amps

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## PD-100 Modes of Operation

### No Load Test

The generator set starts and accelerates to rated voltage and frequency. The generator set breaker remains open and the PD-100 does not parallel to the utility.

### System Start Methods

- Remote (network or dry contact)
- Local operator interface
- Plant exerciser
- Load/no-load test

### Base Load Generator

The generator set synchronizes to the utility. When synchronized, the generator set breaker closes. The generator set soft-loads to a user-adjustable kW level.

When the generator set output exceeds the plant load requirements, the excess power is exported to the utility. If the plant load requirements exceed the generator set output, the utility supplies the difference to meet the load requirements.

## Components

### Circuit Breakers

Draw-out or fixed-mounted electrically operated power circuit breakers are standard. The 800- to 4000-amp breakers are UL listed and equipped with shunt trip and a microprocessor-based, true RMS sensing trip unit for overload and short circuit protection (50/51). Service entrance-rated utility breakers of 1000 amps and over include ground fault protection (51G). Ground fault/service entrance optional on 800-amp units.

The circuit breakers are available in the following frame ratings: 800, 1200, 1600, 2000, 2500, 3000, and 4000 amps.

## Environmental Requirements

**NEMA Type 1:** Ambient temperature rating of 0°C to 40°C (32°F to 104°F)

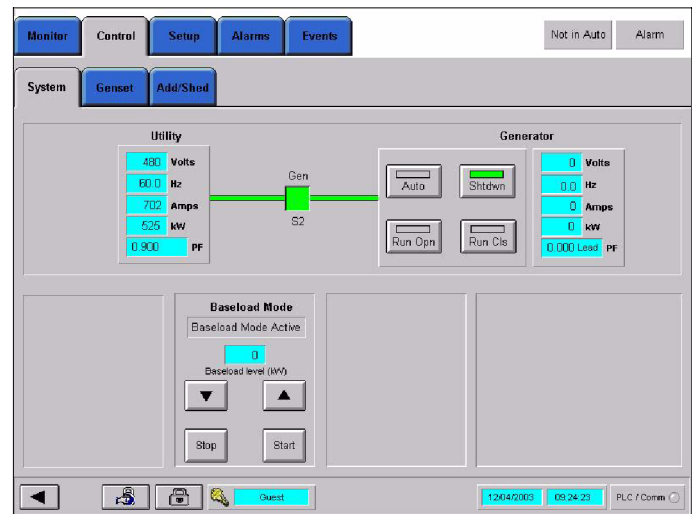
**NEMA Type 3R:** Ambient temperature rating of 0°C to 40°C (32°F to 104°F).

**NEMA Type 3R Walk-In:** NEMA 3R structure with exterior walls and roof fabricated from self-framing interlocking panels. Consult factory for temperature ratings with installed heating and cooling units.

For climates with temperatures outside these parameters, consult the factory for required heaters and low temperature touch screen options.

## Operator Interface

A 12-inch color touch screen provides the operator interface to the system. The touch screen displays system status and metering data. The operator also controls the system and changes system setpoints via the touch screen. See typical screen illustration below.



# Components

## Generator Set Power Controller

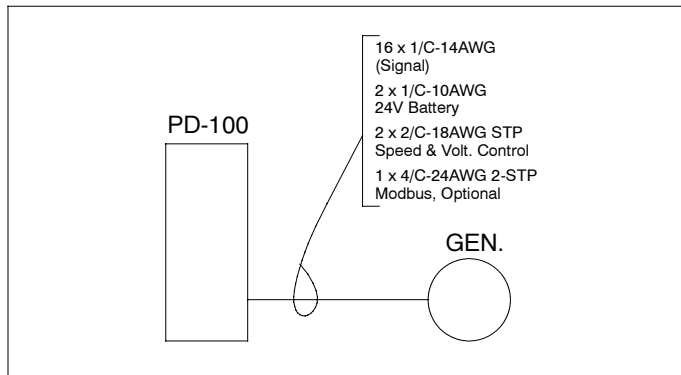
The generator set power controller contains the generator set relaying, system logic, synchronizer, and generator set load control.

### Generator Set Protective Relays

- Over/Undervoltage (27/59)
- Over/Underfrequency (81 O/U)
- Reverse Power (32G)

### Automatic Synchronizer (25A)

An automatic synchronizer electronically adjusts the voltage and frequency of the generator set to the voltage and frequency of the utility bus.



**Generator Interconnect, Typical**

## Intertie Protective Relay

### Standard

- Over/Undervoltage (27/59)
- Over/Underfrequency (81 O/U)
- Directed Power (32)
- Current Unbalance (46)
- Voltage Unbalance (47)

### Optional

If the utility requires additional protection, an optional utility-grade Beckwith M-3520 multifunctional intertie protective relay is available with the following protection.

- Phase Undervoltage (27)
- Reverse Power (32)
- Phase Overvoltage (59)
- Over/Underfrequency (81O/U)
- Negative Sequence Current (46)
- Dual Setpoint Negative Sequence Voltage (47)
- Potential Transformer Fuse Loss Detection (60FL)
- Phase Directional Overcurrent (67)
- Reconnect Enable (79)
- Rate of Change Frequency (81R)

# Construction

## Bus System

Bus construction uses silver-flashed copper bars for phases, neutral, and ground. The system is sized to UL standards for the total load demand. The neutral bus is rated to 100% of phase current. A secured copper ground bus in the structure has a short-time withstand rating equal to the rating of the circuit breaker.

## Cable Connections

Drilled bus bars and setscrew-type Cu/Al cable lugs (3/0 to 500) are standard for generator set, utility, and load connections.

Ampacity	Lugs per Phase
800	3
1200	4
1600	5
2000	6
2500	8
3000	9
4000	12

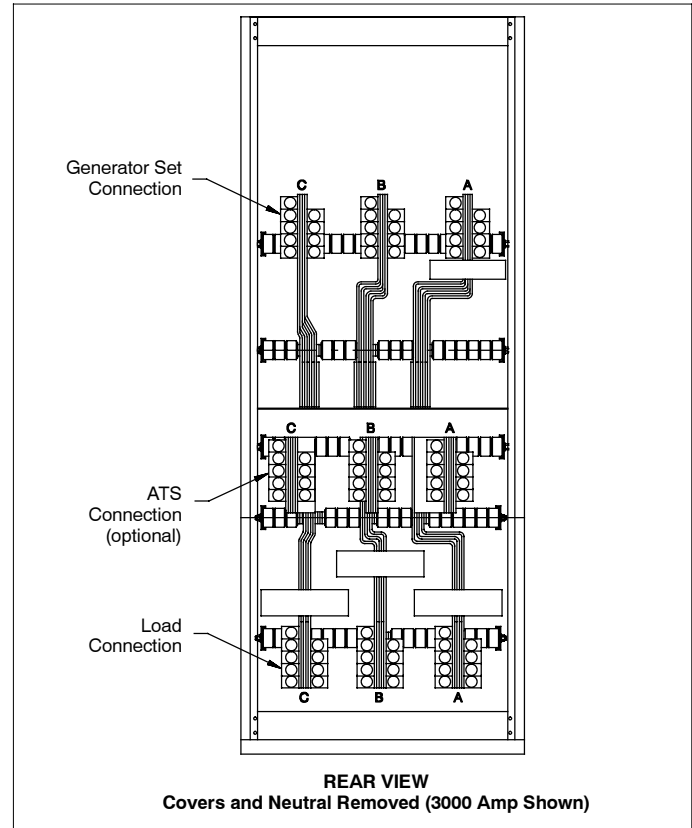
The cable bending space of the PD-100 is designed for a maximum cable sizing of 500 MCM. Optional configurations are available.

## Structure

The 800- to 4000-amp freestanding switchboard cubicle is built of formed, bolted sheetmetal for indoor installation. Cables can enter the top and/or bottom of the structure.

## Finish

Sheetmetal parts are cleaned and phosphatized prior to painting. Parts are painted ANSI No. 49 gray.



PD-100 Bus Layout

## PD-100 Structure Weights

### NEMA Type 1 Structure Weight, kg (lb.)

Frame (A)	800	1200	1600	2000	2500	3000	4000
Fixed	368 (812)	368 (812)	383 (844)	406 (896)	540 (1191)	540 (1191)	*
Drawout	411 (905)	411 (905)	469 (1033)	456 (1006)	636 (1401)	636 (1401)	*

### NEMA Type 3R Structure Weight, kg (lb.)

Frame (A)	800	1200	1600	2000	2500	3000	4000
Fixed	550 (1212)	550 (1212)	564 (1244)	588 (1296)	722 (1591)	722 (1591)	*
Drawout	592 (1305)	592 (1305)	650 (1433)	638 (1406)	817 (1801)	817 (1801)	*

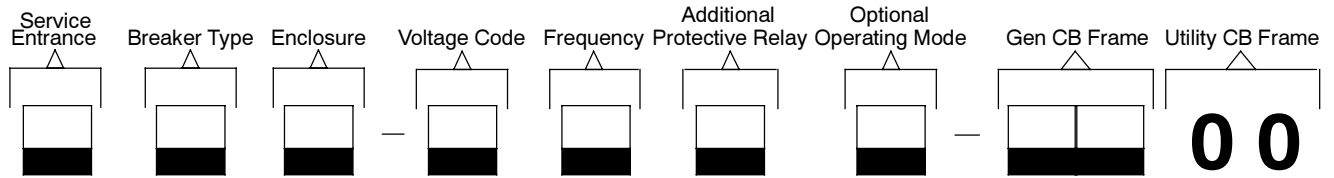
\* Consult factory

### NEMA Type-3R Walk-In Structure Weight

Nominal walk-in structure weights range from 2495-3402 kg (5500-7500 lb.)

# System Nameplate Model Designation

Use this chart and the part number on the system nameplate to select your PD-100 switchgear system configuration.



### Kohler® Model Designation Key

This chart explains the Kohler® PD-100 switchboard designation system. The sample model designation shown is for a 480 volt, 60 Hz service-entrance rated switchboard with a 1200 amp fixed-mount, 3-pole generator set circuit breaker in a NEMA 3R enclosure. The switchboard is equipped with the optional Beckwith M-3520 Intertie Protective Relay.

**SAMPLE MODEL DESIGNATION**  
**PD100C-SF3-M6RB-1200**

#### Service Entrance

N = Not Service Entrance Rated      S = Service Entrance Rated

#### Circuit Breaker Mounting/Poles

F = Fixed-Mount, 3-Pole                  G = Fixed-Mount, 4-Pole  
D = Drawout, 3-Pole                      H = Drawout, 4-Pole

#### Enclosure

1 = NEMA Type 1                              3 = NEMA Type 3R

#### Voltage Code

C = 208 V	G = 380 V	K = 440 V
D = 220 V	H = 400 V	M = 480 V
F = 240 V	J = 416 V	N = 600 V

#### Frequency

6 = 60 Hz    5 = 50 Hz

#### Optional Utility Protective Relay

R = Beckwith M-3520                          N = Standard

Use of extended parallel features may require Option R or other relay types. Consult with local utility or factory before ordering.

#### Operating Mode

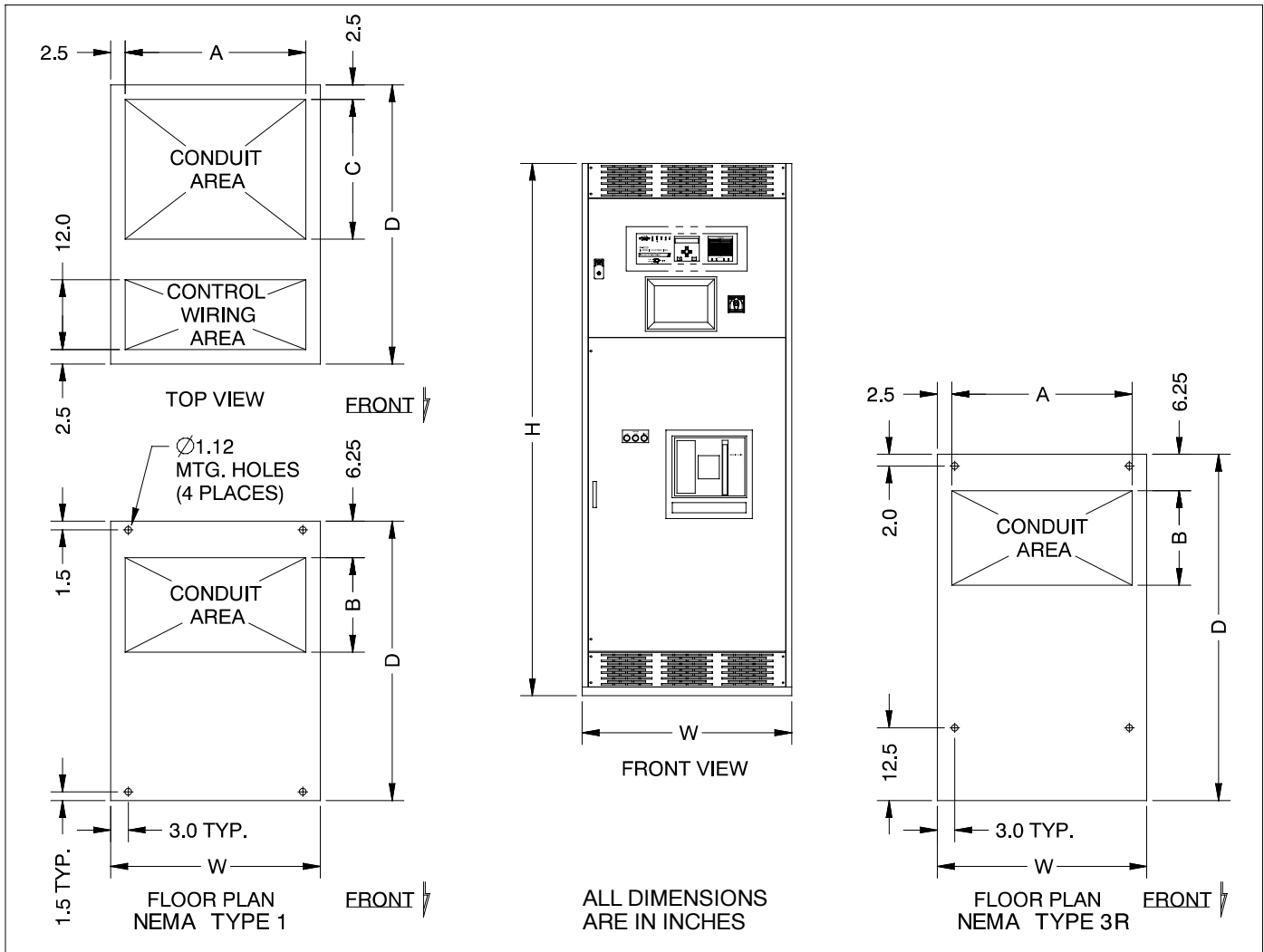
B = Base Load Generator

#### Circuit Breaker Frame Rating (Generator Set)

08 = 800 A	12 = 1200 A	16 = 1600 A	20 = 2000 A
25 = 2500 A	30 = 3000 A	40 = 4000 A	

#### Circuit Breaker Frame Rating (Utility)

00 = None



NEMA TYPE 1						
FRAME SIZE	W	D	H	A	B	C
800A	36.0	48.0	91.5	31.0	16.25	24.0
1200A						
1600A	36.0	54.0	91.5	31.0	22.25	30.0
2000A						
2500A	36.0	60.0	91.5	31.0	28.25	36.0
3000A						
4000A	42.0	60.0	91.5	37.0	28.25	36.0

NEMA TYPE 3R					
FRAME SIZE	W	D	H	A	B
800A	36.0	59.5	92.5	31.0	16.25
1200A					
1600A	36.0	65.5	92.5	31.0	22.25
2000A					
2500A	36.0	71.5	92.5	31.0	28.25
3000A					
4000A	42.0	71.5	92.5	37.0	28.25

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