

# PowerGATE™ Company Switch Installation Instructions & User Manual



**US Patent No. 7,136,278 B2**

**Specifically designed for  
safe power access in the  
following locations:**

- **Theaters**
- **Convention Centers**
- **Studios**
- **Theme Parks**
- **Recreational Facilities**



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## Important:

This manual contains information critical to the proper installation and operation of the Lex Products PowerGATE™ Company Switch. Be certain to read and understand all instructions prior to installation and operation.

This manual is furnished exclusively to support installation and operation of the Lex Products PowerGATE Company Switch. All concepts and ideas are the sole property of Lex Products and are not to be duplicated or utilized in any manner without written permission.

## Prior to Installation: Site Preparation

Prepare installation site according to local codes.

The PowerGATE Company Switch is to be secured to a structure using appropriate 3/8" fasteners (See Figures 11 through 14).

The surface where the PowerGATE Company Switch is to be secured must be capable of supporting the weight of the device as well as the cable attached to it.

The following should be taken into consideration when locating the PowerGATE Company Switch:

- The PowerGATE Company Switch is available in both an interior (Type 1) and exterior (Type 3R) configurations. Be certain to select the appropriate device for the given install location.
- Identify and meet local codes and local Authority Having Jurisdiction (AHJ).
- The mounting location is to be carefully selected to allow convenient connection between the PowerGATE Company Switch and those devices that are to draw power from it.
- Proper clearance must be allowed in front of the PowerGATE Company Switch to allow for operation of access doors and attachment of externally connected cables. The clearance should be no less than six (6) feet from the face of the panel and no less than two (2) feet beneath the panel.
- While keylock protection is provided, access by unauthorized personnel and vandals should be taken into consideration when locating this device.

## Shipment: Unpacking and Inspection

**Note:** Be careful in the use of sharp object when cutting packaging as damage to the outer coating may result.

Perform a visual inspection to ensure the keylocks and doors are in functioning condition and that the panel integrity is intact.

## Product Features

Figure 1



Figure 2



Figure 3



Product Features

Figure 4

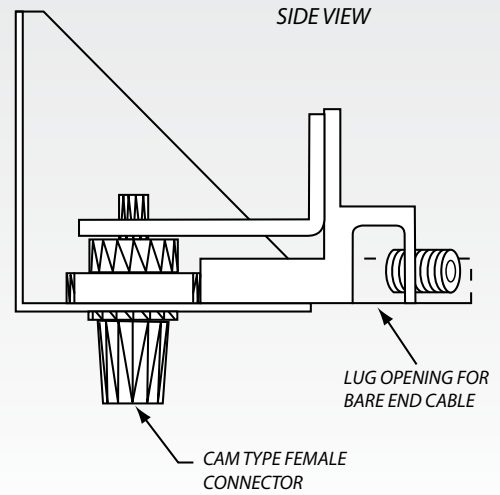


Indicator lights signal whether power is on or off and ground presence (one light for each phase, one for grounding)

Stainless Steel Handles prevent tripping of circuit breaker handle through incidental contact

Cam/Lug Connection Chamber

Figure 5

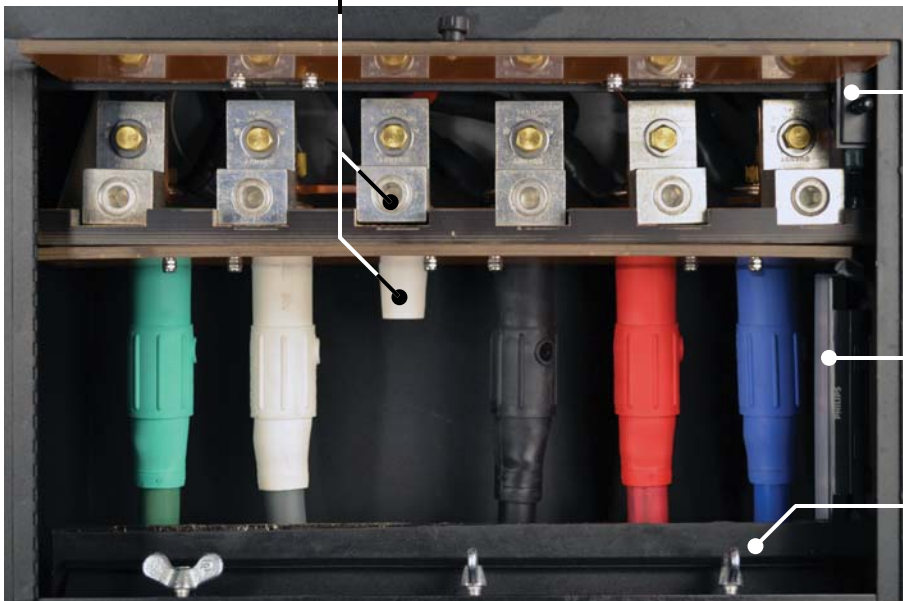


The exclusive cam/lug connection combination is at the heart of the PowerGATE™ Company Switch.

The detachable Cam-type outlet and the direct wire lug have been combined in a compact and convenient arrangement, providing a host of unique features and benefits.

Figure 6

Cam-type receptacle and lug combination for bare end wire



Auto Shut-Off interlock switch to main breaker shuts off power when door opened; prevents making or breaking a connection under load

Automatic chamber light enhances visibility when making connections

Strain relief secures cable connections and prevents cables from being pulled out of the connection lugs

## Installation

The installation of the PowerGATE Company Switch should be carried out by qualified personnel in accordance with local electrical codes.

### Step 1: Fasten the PowerGATE Company Switch to secure location

**NOTE: The PowerGATE Company Switch can weigh as much as 130 lbs. without cables attached.**

1. The panel should be located so there is adequate room for the externally connected cables to hang below the panel.
  - A. Typically allow a minimum of 24" clearance from the bottom of the panel to finished ground level
  - B. A mounting height of 44" A.F.F. is recommended wherever conditions allow
2. Installation must be level and plumb
3. Fastening onto a wall using 3/8" fasteners must be completed prior to proceeding with any terminations (See Figures 10 through 13 for hole spacing)

### Step 2: Installing the Conduit

**NOTE: Conduit to enter through the top of the device (See Figure 9).**

**NOTE: To maintain TYPE 3R Rating compliance for the relevant enclosure, proper sealing procedures must be followed. This is to include, but not limited to, the use of proper gaskets.**

**NOTE: In order to prevent enclosure damage and to maintain the enclosure requirements, the conduit must be aligned to prevent unnecessary stress on the enclosure walls.**

1. Unfasten the upper front panel by removing the twenty (20) Phillips-headed 10-32 x 1/2" screws securing it (See Figure 7 and 8)
2. Conduit to be sized according to cabling rating
3. The completed conduit, when connected to the box, must be a minimum of one inch (1") from any of the top edges of the enclosure to ensure proper clearance (see Figure 9)

4. It is recommended that a knockout punch be used to cut hole for conduit
  - A. Cover the main switch to prevent metal shaving intrusion
  - B. Place the punch on the inside of the enclosure and draw the punch through to the die on the outside.
5. Vacuum entire upper chamber to ensure no shavings are left behind

Figure 7

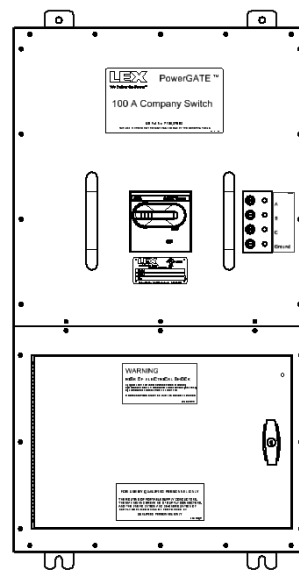


Figure 8

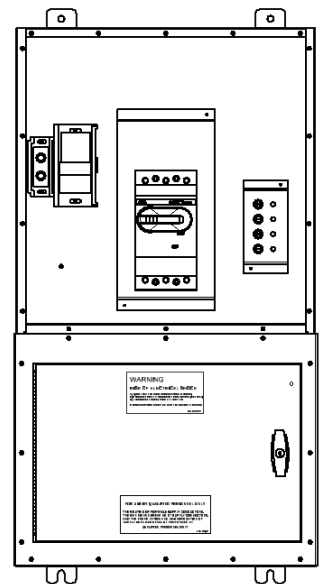


Figure 9

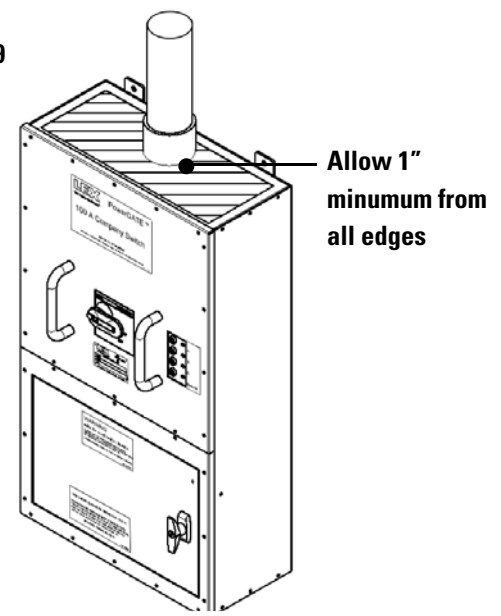
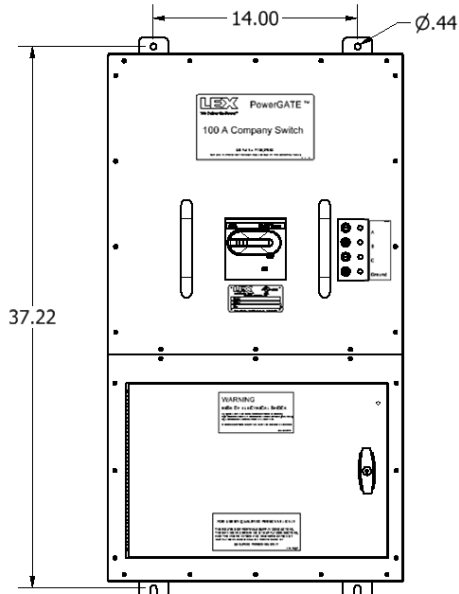
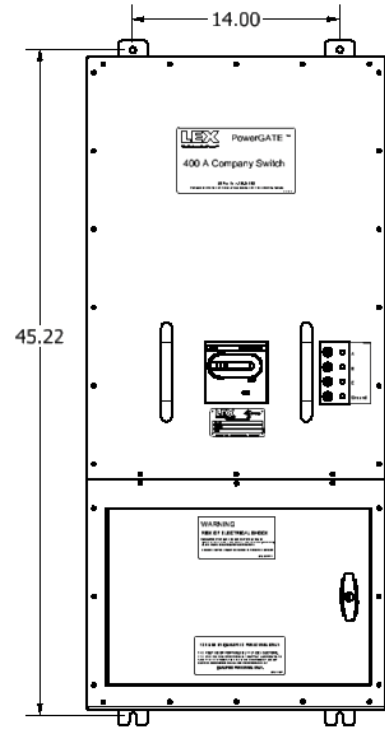


Figure 10



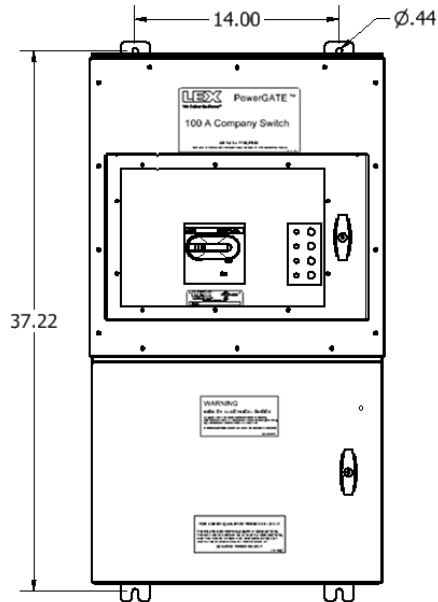
- CS-60F-CxDx1
- CS-100F-CxDx1
- CS-200F-CxDx1
- CS-60F-D5PS1
- CS-100F-D5PS1

Figure 11



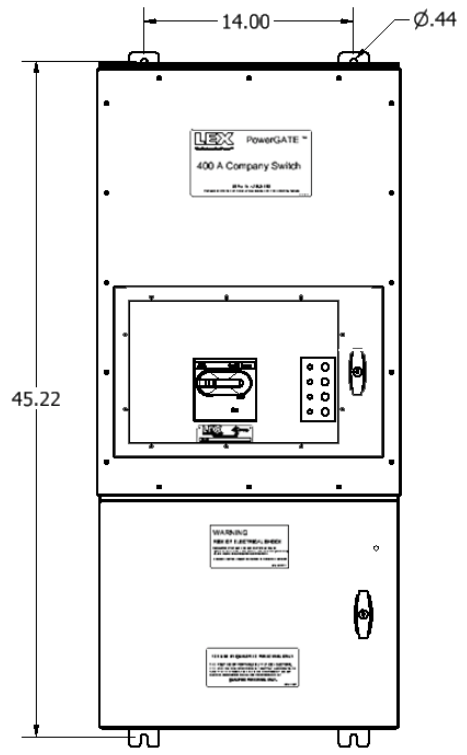
CS-400F-CxDx1

Figure 12



- CS-60F-CxDx3
- CS-100F-CxDx3
- CS-200F-CxDx3

Figure 12



CS-400F-CxDx3

NOTE: All measurements in inches



## Installation – Continued

### Step 3: Wiring the Lug Terminals

#### **⚠ WARNING**

Ensure circuit breakers are OFF and locked out from utility power prior to connection.

**The PowerGATE Company Switch is for the connection of portable power devices to utility power. It is available in four (4) standard amperage types: 60 Amp, 100 Amp, 200 Amp and 400 Amp.**

1. Pull the cables from the utility source to the PowerGATE Company Switch Panel
2. Beginning with the Ground, strip and install the cables in the appropriate compression terminals (See Figure 14)

**NOTE:** Conduit shall NOT be relied upon to provide grounding protection to PowerGATE Company Switch

3. Cable installation notes:

- A. See chart (Figure 15) for proper strip length and torque
  - B. Fine stranded cable MUST be sleeved in copper shim stock before inserting into lugs or strands may interfere with threads of the binding screw resulting in false torque indication
  - C. The use of 600 kcmil cable will require different lugs and/or reducers. These are not supplied by Lex Products but are readily available from most electrical suppliers
4. Tighten individual terminal screws to the torque indicated on the chart using a 3/8" Allen wrench
  5. Continue to connect the Neutral and then the Phases (hots)
  6. Vacuum entire upper chamber to ensure no metal shavings are left behind

**Figure 14**



**Figure 15**

Circuit Breaker	Recommended Min. Wire Gauge	Wire Gauge Range	Torque (lb-in)	Torque (kg-cm)	Strip Length (in)	Strip Length (cm)
60 Amp	2 AWG	350 kcmil - 6 AWG	275	317	1 1/8	2.9
100 Amp	2 AWG	350 kcmil - 6 AWG	275	317	1 1/8	2.9
200 Amp	4/0 AWG	350 kcmil - 6 AWG	275	317	1 1/8	2.9
400 Amp	500 kcmil	500 kcmil - 250 kcmil 250 kcmil - 3/0 kcmil	380 275	323 317	1 1/8	2.9
Ground & Neutral Lugs		350 kcmil - 6 AWG	275	275	1 1/8	2.9



## Installation – Continued

### Step 4: Isolating the Chassis Ground

If you need to isolate the chassis from ground, proceed as follows:

The chassis ground (C.G.) termination is located next to the main ground cable (see Figure 16). To isolate this ground:

1. Remove the nut holding the chassis ground lug to the threaded stud
2. Wrap the chassis ground mounting lug with listed electrical tape or shrink wrap, if available
3. Using a plastic wire tie, secure the chassis ground to the main ground cable
4. Check to make sure that the chassis ground is secure and that it cannot come into contact with any metal surfaces of the cabinet (See Figure 16A)

### Step 5: Review Pre-Operation Checklist under Appendix A prior to operation (page 12)

### Step 6: Once Pre-Operation Checklist is complete finish assembly of panel

1. Fasten the upper front panel by securing the twenty (20) Phillips-headed 10-32 x 1/2" screws securing it (See Figure 8 and 9)

### Step 7: Powering Up

1. Turn the power lever to the ON position
  - A. LEDs for each phase as well as the ground continuity should be lit.

Figure 16

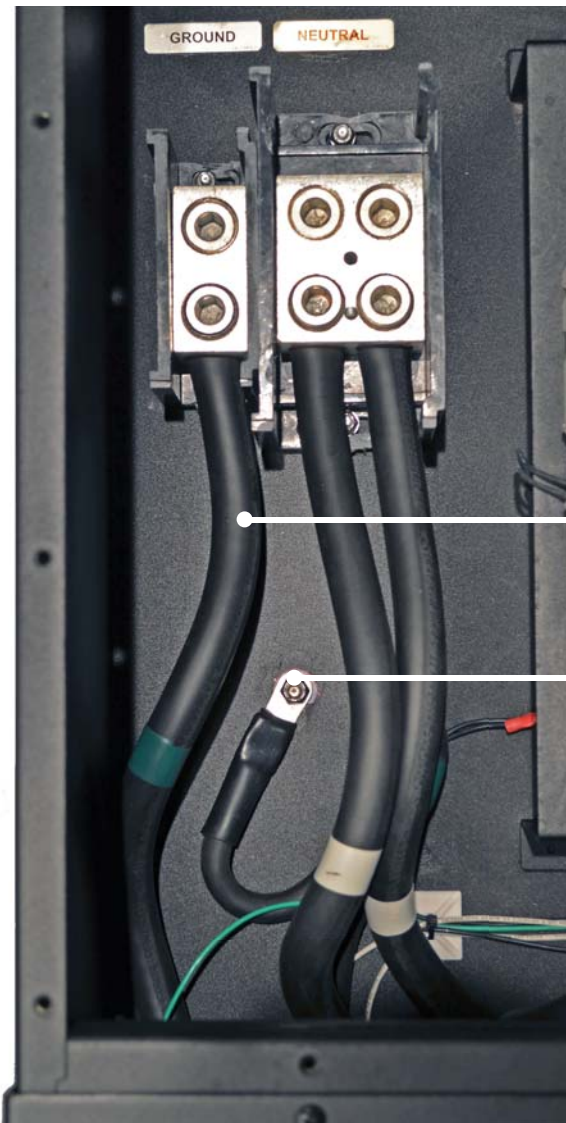
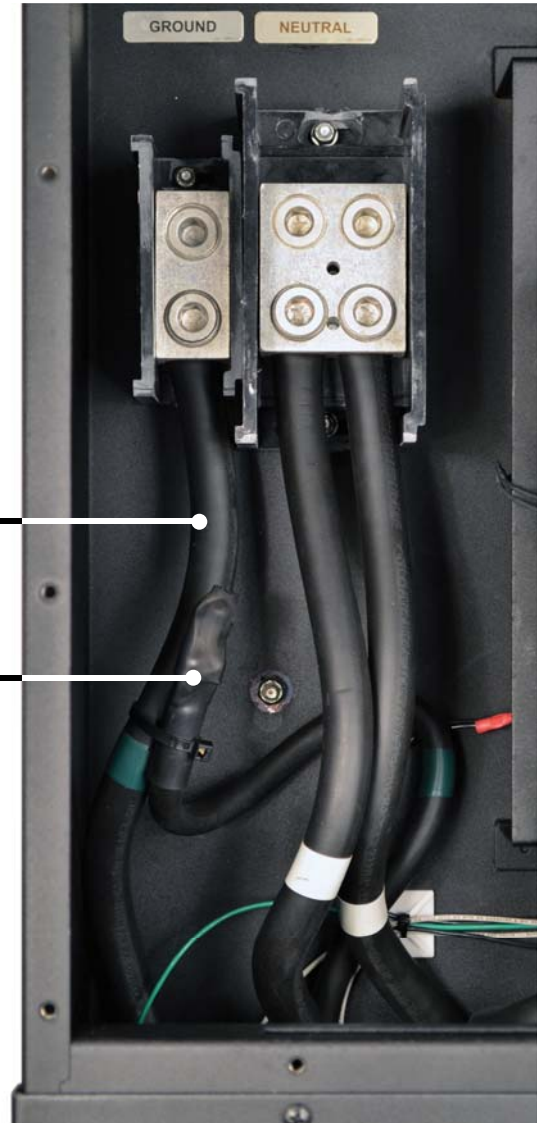


Figure 16A



## Set-up

### **WARNING**

Ensure the circuit breaker is OFF and locked out from utility power prior to connection.

### **Step 8A: Making Lug Connections**

1. Unsecure keylock on lower chamber and open chamber door

NOTE: As a safety feature of the PowerGATE Company Switch the power will be tripped off when the door is opened

2. Feed Ground (green) cable through appropriate port in bottom of the unit
  - A. Cut the cable end square
  - B. Strip the wire 1-1/2". Do not nick any strands.
  - C. Insert the bare end into the lug and torque per the label on the lug cover
4. Complete the Neutral (white) connection
  - A. Cut the cable end square
  - B. Strip the wire 1-1/2". Do not nick any strands.
  - C. Insert the bare end into the lug and torque per the label on the lug cover
5. Complete the Phase (hot) connections
  - A. Cut the cable end square
  - B. Strip the wire 1-1/2". Do not nick any strands.
  - C. Insert the bare end into the lug and torque per the label on the lug cover
6. Make sure all connections are right and secure
7. Tighten thubscrews on strain relief until the cables are held firmly
  - A. Be certain to leave a little slack in the cable so there is no strain on the lug connection

**Step 9A: Close chamber door, secure the keylock allowing cables to exit cable ports at bottom.**

### **WARNING**

Ensure the circuit breaker is OFF and locked out from utility power prior to connection.

### **Step 8B: Making Cam Connections**

1. Unsecure keylock on lower chamber and open chamber door

NOTE: As a safety feature of the PowerGATE Company Switch the power will be tripped off when the door is opened.

2. Feed Ground (green) cable through appropriate port in bottom
3. Complete the connection

Proper connection (See Figure 17):

- A. Grasp plug jacket and firmly insert cam connector into cam receptacle
  - B. Push on cam plug jacket until connector fully seats in cam receptacle
  - C. Rotate plug connector jacket counterclockwise until it stops
4. Feed Neutral (white) cable(s) through appropriate port(s) in bottom
  5. Complete the Neutral (white) connection(s)

Proper connection (See Figure 17):

- A. Grasp plug jacket and firmly insert cam connector into cam receptacle
- B. Push on cam plug jacket until connector fully seats in cam receptacle
- C. Rotate plug connector jacket counterclockwise until it stops

**Figure 17**



## Set-up – Continued

### Step 8B: Making Cam Connections (continued)

6. Feed Phase (black, red and blue) cables through appropriate ports in bottom
7. Complete the Phase (hot) connections

Proper connection (See Figure 17):

- A. Grasp plug jacket and firmly insert cam connector into cam receptacle
  - B. Push on cam plug jacket until connector fully seats in cam receptacle
  - C. Rotate plug connector jacket counterclockwise until it stops
8. Make sure all connections are right and secure

**Step 9B: Close chamber door, secure the keylock allowing cables to exit cable ports at bottom.**

## Disconnection

### Step 10: Disconnecting Circuits

#### **WARNING**

Ensure the circuit breaker is OFF and locked out from utility power prior to connection.

1. Unsecure keylock on lower chamber and open chamber door

NOTE: As a safety feature of the PowerGATE Company Switch the power will be tripped off when the door is opened.

2. Loosen thumbscrews on strain relief until the cables may move freely if using bare wire
3. Disconnect the Phase (hot) connections, beginning with the furthest to the right
4. Complete disconnect of ALL Phase connections and set aside prior to proceeding
5. Disconnect the Neutral (white) connection.
6. Complete disconnect of ALL Neutral connections and set aside prior to proceeding
7. Disconnect the Ground (green) connection.
8. Complete disconnect of the Ground connection and set aside prior to proceeding

**Step 11: Close chamber door, secure keylock.**

## Changing the Trip Current

- The trip current of the PowerGATE Company Switch may be adjusted in the field.

- Contact Lex Products Technical Services for instructions on adjusting the trip current.

NOTE: The revised trip current rating will NOT be reflected on the label [Lex Products Part Number LBL-CS(Amperage)] on the face of the device.

## Troubleshooting

- If the unit immediately trips off on power up, check to make sure the lower panel door is closed and secured.

- If any or all LEDs do not light, and there is power to the unit, turn main power switch off and check the fuses located to the left of the LEDs.

- If the breaker appears to be tripping too quickly, possibly due to inrush current, contact Lex Products Technical Services for instructions on adjusting the trip delay time.

## Limited Warranty

When this PowerGATE Company Switch is installed and operated according to the manual's instructions Lex Products will repair or replace any of its mechanical or electrical parts if they are found to be defective in material or workmanship within one year of the purchase date.

## Maintenance

The PowerGATE Company Switch will require periodic maintenance. Lex Products recommends annual inspections to keep the panel in safe operating condition. Lex Products recommends that the Pre-Operation and Maintenance Checklist under Appendix A serve as a basis for annual inspection.

## Technical Support

Lex Products Technical Services are available to assist in resolving issues by calling 1.855.LEX.1002 or emailing support@LexProducts.com. For any other information, please call Lex Products at 1.800.643.4460 or e-mail info@LexProducts.com.

## Appendix A

### Pre-Operation and Maintenance Checklist

1. Visual inspection of enclosure
  - Ensure the PowerGATE Company Switch is firmly secured to the building
  - Review conduit connection for signs of loosening or leakage
  - Ensure enclosure is intact with no signs of fatigue or rusting
2. Open the lower chamber door
  - Ensure the chamber is dry and free of debris
  - Ensure that gaskets are pliable and no cracking exists
  - Ensure that door hinges are secure and lubricated
  - Ensure that the keylock is intact and operational

### **WARNING**

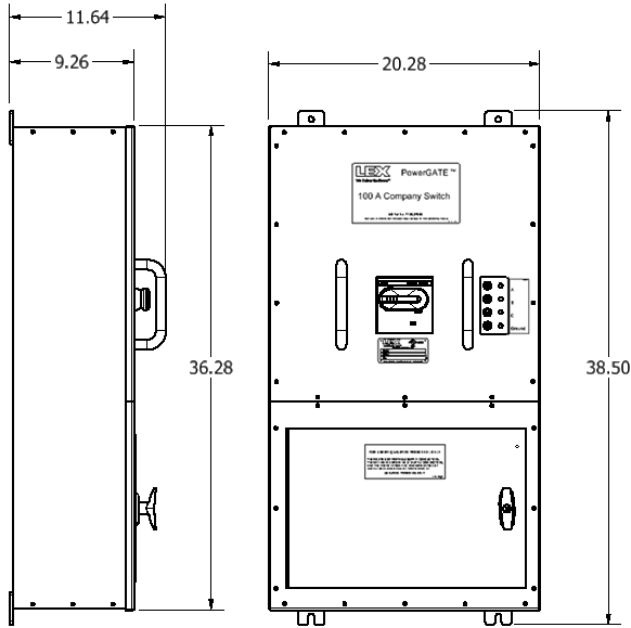
Ensure the circuit breaker is OFF and locked out from utility power prior to proceeding.

3. Remove dead front panel
  - Ensure that all load terminals are securely fastened and that the set screws are set at the torque rating as detailed in Figure 16
  - Ensure electrical connections are intact with no signs of corrosion or cracking
  - Ensure there is no debris left over from drilling and that no tools are left in cabinet
4. Review all safety labels and ensure that they are present and legible
  - See Appendix F for label nomenclature and location
  - Replace as needed
5. Inspect all portable cables
  - Do not use cables if they appear frayed
  - Do not use cable if connectors or plug do not seat properly
  - Do not use cables if any copper wiring is exposed

Appendix B

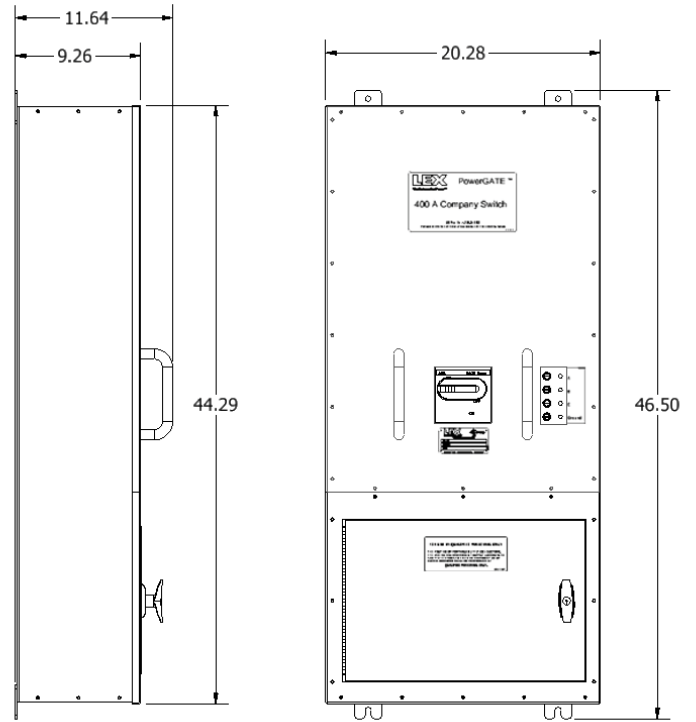
Parts Dimensions

Figure 18



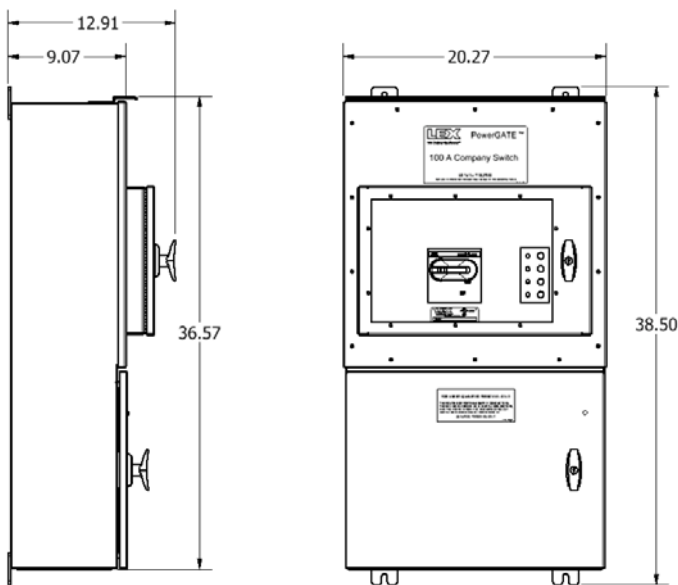
- CS-60F-CxDx1
- CS-100F-CxDx1
- CS-200F-CxDx1
- CS-60F-D5PS1
- CS-100F-D5PS1

Figure 19



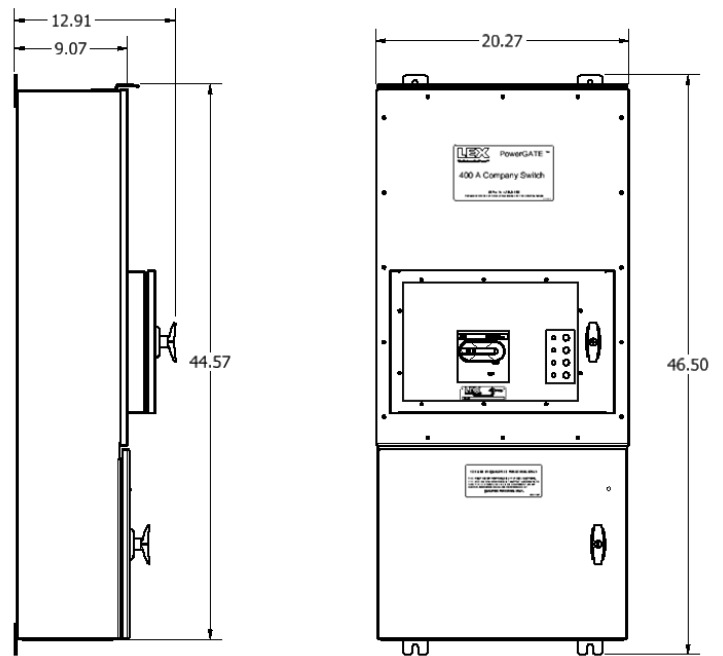
CS-400F-CxDx1

Figure 20



- CS-60F-CxDx3
- CS-100F-CxDx3
- CS-200F-CxDx3

Figure 21



CS-400F-CxDx3

NOTE: All measurements in inches

## Appendix C

### Represented Model Numbers of PowerGate™ Indoor Company Switches

CS-60F-C5DB1	CS-100F-C5DB1	CS-200F-C5DB1	CS-400F-C5DB1
CS-60F-C5DB1-BLK	CS-100F-C5DB1-BLK	CS-200F-C5DB1-BLK	CS-400F-C5DB1-BLK
CS-60F-C5DG1	CS-100F-C5DG1	CS-200F-C5DG1	CS-400F-C5DG1
CS-60F-C5DG1-BLK	CS-100F-C5DG1-BLK	CS-200F-C5DG1-BLK	CS-400F-C5DG1-BLK
CS-60F-C5DS1	CS-100F-C5DS1	CS-200F-C5DS1	CS-400F-C5DS1
CS-60F-C5DS1-BLK	CS-100F-C5DS1-BLK	CS-200F-C5DS1-BLK	CS-400F-C5DS1-BLK
CS-60F-C6DB1	CS-100F-C6DB1	CS-200F-C6DB1	CS-400F-C6DB1
CS-60F-C6DB1-BLK	CS-100F-C6DB1-BLK	CS-200F-C6DB1-BLK	CS-400F-C6DB1-BLK
CS-60F-C6DG1	CS-100F-C6DG1	CS-200F-C6DG1	CS-400F-C6DG1
CS-60F-C6DG1-BLK	CS-100F-C6DG1-BLK	CS-200F-C6DG1-BLK	CS-400F-C6DG1-BLK
CS-60F-C6DS1	CS-100F-C6DS1	CS-200F-C6DS1	CS-400F-C6DS1
CS-60F-C6DS1-BLK	CS-100F-C6DS1-BLK	CS-200F-C6DS1-BLK	CS-400F-C6DS1-BLK

#### Model Number Key:

CS	Company Switch
(Number)F	(Amperage Rating) with Female Connectors
C(Number) D(Letter) 1	Series 16 Cams (Quantity of Cams) Direct Wire (Cam Configuration) Type 1 Device
	Cam Configuration
	B - Reverse Both Neutral and Ground
	G - Reverse Ground Only
	S - Straight (All Female Connectors)
Color	No Entry - Tan, BLK - Black

## Appendix D

### Represented Model Numbers of PowerGate™ Outdoor Company Switches

CS-60F-C5DB3	CS-100F-C5DB3	CS-200F-C5DB3	CS-400F-C5DB3
CS-60F-C5DG3	CS-100F-C5DG3	CS-200F-C5DG3	CS-400F-C5DG3
CS-60F-C5DS3	CS-100F-C5DS3	CS-200F-C5DS3	CS-400F-C5DS3
CS-60FC6DB3	CS-100F-C6DB3	CS-200F-C6DB3	CS-400F-C6DB3
CS-60F-C6DG3	CS-100F-C6DG3	CS-200F-C6DG3	CS-400F-C6DG3
CS-60F-C6DS3	CS-100F-C6DS3	CS-200F-C6DS3	CS-400F-C6DS3

#### Model Number Key:

CS	Company Switch
(Number)F	(Amperage Rating) with Female Connectors
C(Number) D(Letter) 3	Series 16 Cams (Quantity of Cams) Direct Wire (Cam Configuration) Type 3 Device
	Cam Configuration
	B - Reverse Both Neutral and Ground
	G - Reverse Ground Only
	S - Straight (All Female Connectors)

## Appendix E

### Represented Model Numbers of PowerGATE™ Pin-and-Sleeve Company Switches

CS-60F-D5PS1

CS-100F-D5PS1

#### Model Number Key:

CS	Company Switch
(Number)F	(Amperage Rating) with Female Connectors
D5PS1	Direct Wire 5-Pin Pin-and-Sleeve Type 1 Device



## Appendix F

### Labels for Replacement



Lex Products Part Number – LBL-CS(Amperage)



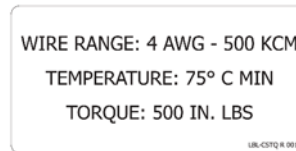
Lex Products PN – LBL-CSGC



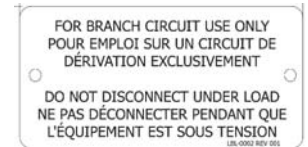
Lex Products Part Number – LBL-PGIP-W1



Lex Products Part Number – LBL-CSPQ



Lex Products PN – LBL-CSTQ



Lex Products PN – LBL-0002

Figure 22

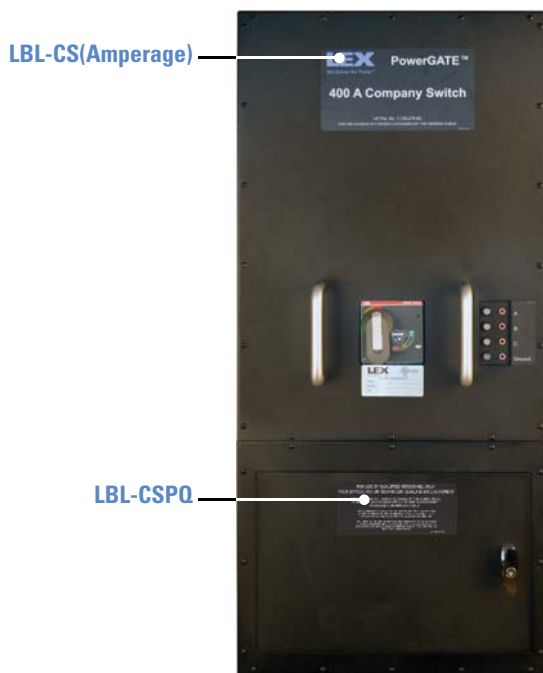


Figure 23





# PowerGATE™ Company Switch User Manual



## Company Switch with Cam-Type Outlets Ordering Information

	400 AMP	200 AMP	100 AMP
<b>Catalog Number (NEMA 1 Indoor)</b>	CS-400F-C6DS1 CS-400F-C6DB1 (reverse ground neutral)	CS-200F-C6DS1 CS-200F-C6DB1 (reverse ground neutral)	CS-100F-C6DS1 CS-100F-C6DB1 (reverse ground neutral)
<b>Catalog Number (NEMA 3R Weather Resistant)</b>	CS-400F-C6DS3 CS-400F-C6DB3 (reverse ground neutral)	CS-200F-C6DS3 CS-200F-C6DB3 (reverse ground neutral)	CS-100F-C6DS3 CS-100F-C6DB3 (reverse ground neutral)
<b>Rating</b>	400 Amp, 3 Phase, 120/208Y VAC	200 Amp, 3 Phase, 120/208Y VAC	100 Amp, 3 Phase, 120/208Y VAC
<b>Overcurrent Protection</b>	65,000 AIC Main Breaker 100% Rated	65,000 AIC Main Breaker 100% Rated	65,000 AIC Main Breaker 100% Rated
<b>Output</b>	(6) 16 Series Cam-type devices: Black – Hot      Blue – Hot Red – Hot      (2) White – Neutral Green – Ground	(6) 16 Series Cam-type devices: Black – Hot      Blue – Hot Red – Hot      (2) White – Neutral Green – Ground	(6) 16 Series Cam-type devices: Black – Hot      Blue – Hot Red – Hot      (2) White – Neutral Green – Ground
<b>Cabinet Finish Color</b>	Beige or matte black powder coat For black finish, add suffix “-BLK” to catalog number	Beige or matte black powder coat For black finish, add suffix “-BLK” to catalog number	Beige or matte black powder coat For black finish, add suffix “-BLK” to catalog number
<b>Dimensions (Indoor) Dimensions (Outdoor)</b>	46.50” H x 20.27” W x 11.64” D 46.50” H x 20.27” W x 12.91” D	38.50” H x 20.27” W x 11.64” D 38.50” H x 20.27” W x 12.91” D	38.50” H x 20.27” W x 11.64” D 38.50” H x 20.27” W x 12.91” D
<b>Approximate Weight</b>	130 lbs.	123 lbs.	123 lbs.

NOTE: For 5 Wire, replace 6 with 5 in catalog number

## Company Switch with IEC 60309 Pin & Sleeve Receptacle Ordering Information

	100 AMP	60 AMP
<b>Catalog Number</b>	CS-100F-D5PS1	CS-60F-D5PS1
<b>Rating</b>	100 Amp, 3 Phase (H,H,H,N,G), 120/208Y VAC	60 Amp, 3 Phase (H,H,H,N,G), 120/208Y VAC
<b>Overcurrent Protection</b>	65,000 AIC Main Breaker 100% Rated	65,000 AIC Main Breaker 100% Rated
<b>Output</b>	(1) 100 Amp, 3 Phase, 4 Pole, 5 Wire, 120/208Y IEC 60309 pin & sleeve receptacle; (5) Lugs for bare wire connection, in parallel with pin & sleeve receptacle	(1) 60 Amp, 3 Phase, 4 Pole, 5 Wire, 120/208Y IEC 60309 pin & sleeve receptacle; (5) Lugs for bare wire connection, in parallel with pin & sleeve receptacle
<b>Cabinet Finish Color</b>	Beige or matte black powder coat For black finish, add suffix “-BLK” to catalog number	Beige or matte black powder coat For black finish, add suffix “-BLK” to catalog number
<b>Dimensions</b>	38.50” H x 20.27” W x 11.64” D	38.50” H x 20.27” W x 11.64” D



**LEX**  
WE DELIVER THE POWER™

Lex Products  
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203.363.3738  
203.363.3742 Fax

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