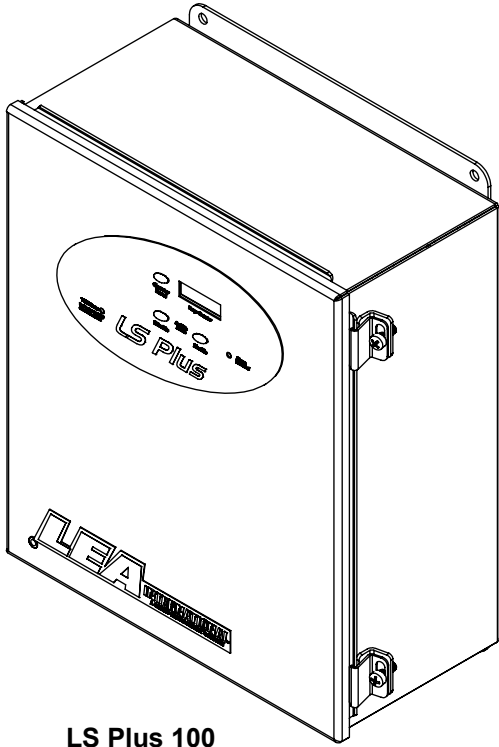
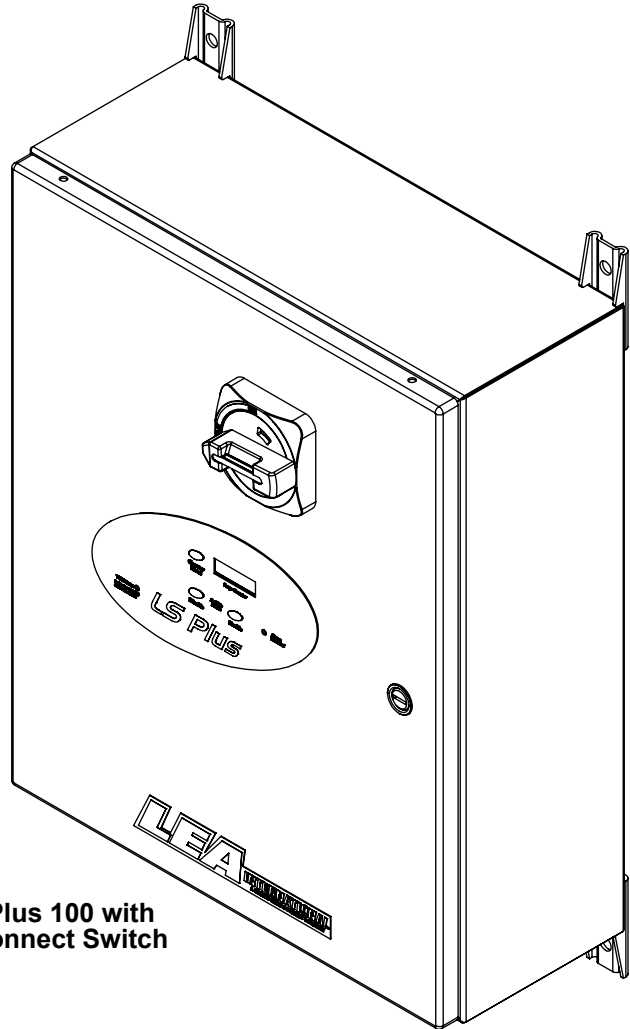


REVISIONS				
REV.	DESCRIPTION	ECN	DATE	APPROVED
A	DOCUMENT RELEASE	DD2922	3/7/2011	MPD



LS Plus 100



LS Plus 100 with Disconnect Switch

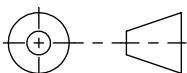
an INFINIT[®] company

ALL DIMENSIONS IN INCHES
UNLESS OTHERWISE SPECIFIED.

TOLERANCES:
FRACTIONS=± . . .XX=± .
ANGLES=± . ° .XXX=± .

MATERIAL
NOTED

THIRD-ANGLE PROJECTION



DRAWN	DAW	DATE	2/10/11
CHECKED	JRA		4/6/11
ENG APPD	DLR		4/6/11
PROJ APPD	MPD		4/6/11
PROJECT NO.	DD2922		

NOTICE: THE INFORMATION AND DESIGN IN THIS DOCUMENT IS THE PROPERTY OF LEA INTERNATIONAL. ALL RIGHTS RESERVED.

LEA INTERNATIONAL
©2009 LEA International. All rights reserved.

10701 Airport Drive, Hayden, ID 83835, USA
+1.208.772.8515 FAX +1.208.762.6117
800.882.9110 www.protectiongroup.com

TITLE
**INSTALLATION MANUAL
LS PLUS 100 AC PROTECTOR**

SIZE	CAGE	DRAWING NUMBER	REV
A	30992	B39-38-0001	A

SCALE	PRODUCT CATEGORY	PAGE	OF
1:8	ACL	1	12

Table of Contents

Pre-Install Notes	3
Install Procedure.....	4
AC Power Connection.....	5
Troubleshooting	6
Operation of Status Indicator on Enclosure Door	7
Mechanical Specifications for LS Plus	8
Wiring of LS Plus.....	9
Mechanical Specifications for LS Plus with Disconnect Switch	10
Wiring of LS Plus with Disconnect Switch	11
Disconnect Handle Operation	12

Pre-Install Notes

READ ALL WARNINGS BEFORE ANY SERVICE OR TESTING

Do not install, make any adjustments, or replace any components inside the enclosure with the power supply turned on. Under certain circumstances, dangerous potentials may exist even when the power supply is off. To avoid casualties, always turn the main power supply off before performing maintenance and/or testing.

HAZARD OF ELECTRIC SHOCK, BURN, OR EXPLOSION

CAUTION

The installation of a surge protection device (SPD) must be done by qualified electrical personnel. A SPD must be grounded through the power system ground for proper operation.

WARNING

Before installing the suppressor, AC power must be OFF. Failure to do so could result in damage to the suppressor and poses a potential electrical shock hazard to personnel. Always use a properly rated voltage sensing device to confirm that power is off.

Read SPD label on side of the enclosure to verify voltage configuration.

Discontinue installation if the measured voltage is not in the range of the model voltage configuration of the SPD being installed. Contact LEA International technical support with any questions concerning the voltage configuration prior to installation and application of power.

Perform such work only after reading and understanding all of the instructions contained in this manual.

Beware of potential hazards, wear personal protective equipment and take adequate safety precautions.

Before performing visual inspections, tests, or maintenance on the equipment, disconnect all sources of electric power. Assume that all circuits are live until they have been completely de-energized, tested, grounded, and tagged. Pay particular attention to the design of the power system. Consider all sources of power, including the possibility of back feeding.

Handle this equipment carefully and install, operate and maintain it correctly in order for it to function properly. Neglecting fundamental installation and maintenance requirements may lead to personal injury, as well as damage to electrical equipment or other property.

Carefully inspect your work area and remove any tools and objects left on /or in the enclosure.

Replace all devices and covers before turning on the power to this equipment. All instructions in this manual are written with the assumption that the customer has taken these measures before performing installation or testing.

Failure to follow these instructions could result in DEATH or serious injury.

Installation Procedure

Notes

Please read the entire installation manual before installing this SPD. Carefully unpack the SPD, removing all packaging material. Inspect for any signs of damage that may have occurred during shipment. If any damage is found, stop installation and contact LEA International.

The SPD should only be installed by a licensed electrician.

All local and National Electric Codes must be observed.

Verify the voltage configuration on the SPD label matches the actual system voltage configuration of service point.

For optimal SPD performance, verify that earth ground resistance is less than 25 ohms (per NEC).

Before installation, shut off power to prevent accidental electrical shock or injury.

Make sure all conductors are sized appropriately for this SPD.

Mounting

The SPD should be mounted as close as possible to the connection of service point.

The SPD is mounted using the four mounting holes located near the enclosure corners.

Electrical conductors should enter the top of the SPD enclosure, or on either side near the top of SPD enclosure.

Electrical conduit should be of sufficient size per NFPA 70 and National Electrical Code. For optimum SPD performance, conduit with no sharp bends.

Conductor Size

Terminal Block

The lugs accept phase and Neutral conductors #8 to #1/0 AWG, the Neutral and Safety Ground accept #8 to #1/0 AWG. All conductors recommended to be insulated stranded copper greater than #6 AWG diameter.

Disconnect

The disconnect switch lugs accept phase conductors #10 to # 4 AWG, the Neutral and Safety Ground accept #8 to #1/0 AWG. All conductors recommended to be insulated stranded copper greater than #6 AWG diameter.

AC Power Connection

The SPD is installed in parallel with the incoming phase conductors.

It is recommended to connect the SPD to a 60A circuit breaker. This allows for servicing of the SPD without shutting power off at the panel main breaker.

Route all SPD conductors taking care to avoiding sharp bends and keeping all leads as short as possible.

To ensure optimum SPD performance, verify that all electrical connections are clean.

Connect the phase and neutral wires to the terminals marked Phase 1, Phase 2, Phase 3, and Neutral.

Connect the green safety ground wire (building ground system) to the Safety Ground lug.

Tighten all connections to the recommended torque value.

Remote Alarm Connection

The SPD offers one set of dry contacts for remote alarm monitoring. These screw terminal connections are located on the PC board as shown on Pages 8 or 10. The three connections are labeled NC (Normally Closed), NO (Normally Open) and C (Common).

Remote Alarm Contact Maximum Ratings:

125 Vdc / 0.24 A
125 Vac / 0.5 A
30 Vdc / 2.0 A

Final Check

Apply AC power to the SPD.

The SPD **TVSS Status** LED should be illuminated green.

If the **TVSS Status** LED is red or not illuminated, contact LEA International's technical support at 800.882.9110

If the **Alarm Disabled** LED is red, press the audible alarm **Enable** button to **Enable** the audible alarm. The **Alarm Disabled** LED will turn dark

Troubleshooting

The SPD operational status can be seen on the front door of the enclosure. There is no need to open the unit for any reason.

TVSS Status LED

A green LED indicates power is applied and all SPD protection modes are normal.
A red LED indicates the SPD needs servicing.

Surge Counter

Surge Counter Display

The LCD display indicates there was an event and has recorded the number of surge/transients events since the counter has been reset.
If the surge counter display is blank, the battery may be defective or dead. Please contact LEA Technical support.

Counter Reset button

Press to reset the surge counter to zero.

Audible Alarm

Alarm Disabled LED

A dark LED indicates the audible alarm circuit is enabled.
A red LED indicates the Audible Alarm has been silenced and serves as a reminder that the SPD needs to be serviced.

Audible Alarm Disable button

Press to turn off the audible alarm. The **Alarm Disabled LED** will turn red and serves as a reminder that the SPD needs to be serviced. If the SPD has been severely damaged disconnect power to the SPD using the circuit breaker or disconnect switch to silence the alarm.
Maintenance of electrical devices should be done only by trained professional electrician.

Audible Alarm Enable button

Press the **Enable** button for the audible alarm. The **Alarm Disabled LED** will turn dark

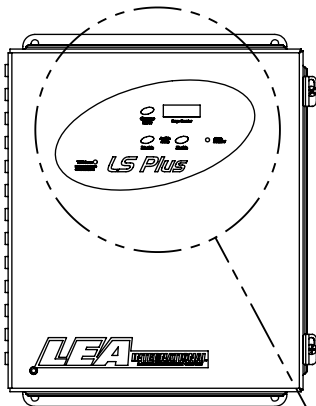
Maintenance

The SPD should be scheduled for periodic inspection to ensure the SPD is operational and all wire connections are tight.

If the SPD needs replacement, please contact LEA International for replacement at 800.882.9110 or online at www.protectiongroup.com.

Please Note:

LS Plus 100 shown without the Disconnect Switch.
The Operation of the Surge Counter and
Audible Alarm Switch is same for
both models.



Alarm Disabled

A Red Illuminated
Light Indicates
Audible Alarm
is Disabled

Surge Counter

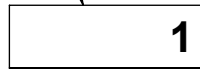
Records any
Suppressed Transients

Counter Reset

Press to reset
Surge Counter to zero



Counter
Reset



Surge Counter

**Audible Alarm
Disable Button**

Turns OFF the Alarm
and Illuminates the
Alarm Disable Light



Disable



Audible
Alarm



Enable



Alarm
Disabled

TVSS Status
Red-Replace Module(s)
Green-Protection OK

LS Plus

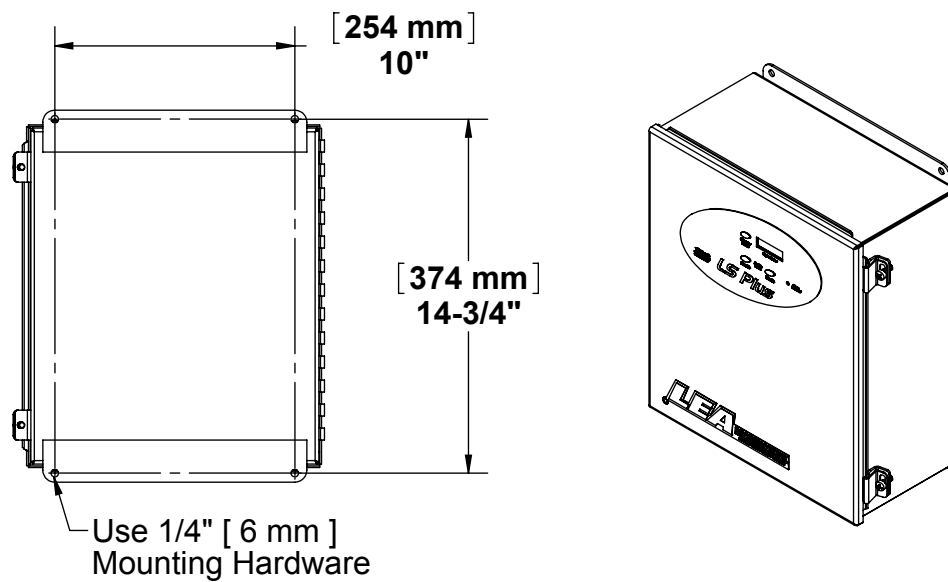
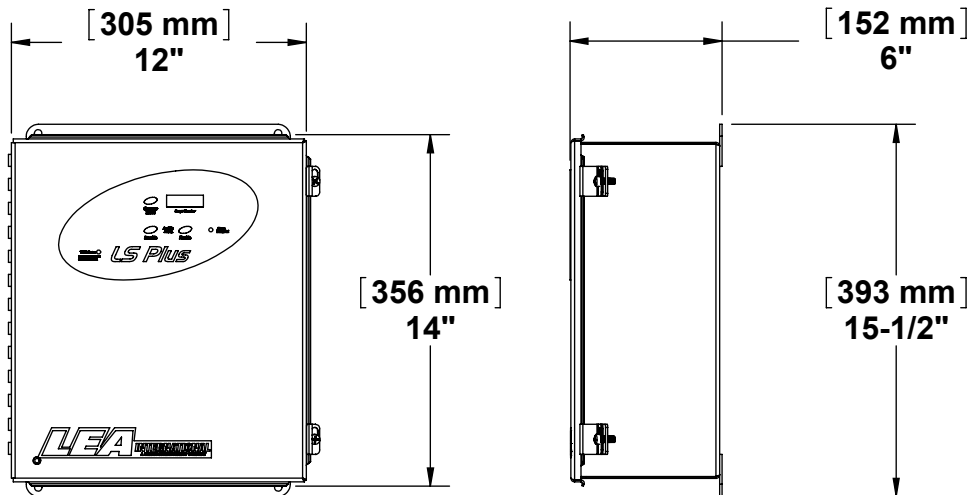
TVSS Status Indicator

Light Illuminated Green Indicates
Normal Operation with All
Protection Modes Functioning

Light Illuminated Red Indicates
SPD Needs Replacement

**Audible Alarm
Enable Button**

Enables the
Alarm and Turns
OFF the Alarm
Disabled Light



Mechanical Specifications for LS Plus 100
 [Dimensions are for Reference Only]

Mounting: External mounting brackets with 0.31" [7.9 mm] mounting holes.
Dimensions: 14" X 12" X 6" [356 mm X 305 mm X 152 mm]
Weight: 24 lbs / 11 kg

4X Wire Strip Lengths for Phase & Neutral Connections
0.5" [13 mm]

4X Torque Specification
50 in-lbs [5.6 Nm]

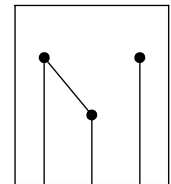
Wire Range
#8 to #1/0 AWG

Lug Torque Specification
50 in-lbs [5.6 Nm]

Wire Range
#8 to #1/0 AWG

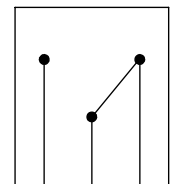
Wire Strip Length
0.5" [13 mm]

Remote Alarm Contacts
NC Contact Closed with SPD powered and Functional [Normal State]

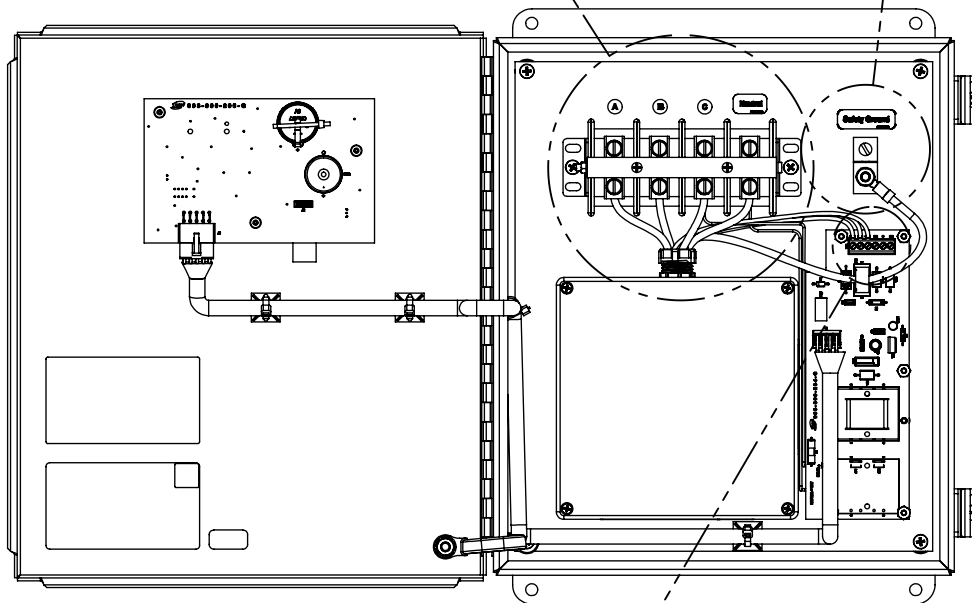


NC C NO

Remote Alarm Contacts
NO Contact Open with Power OFF or SPD Requires Replacement



NC C NO



Wire Range
#24 to #14 AWG

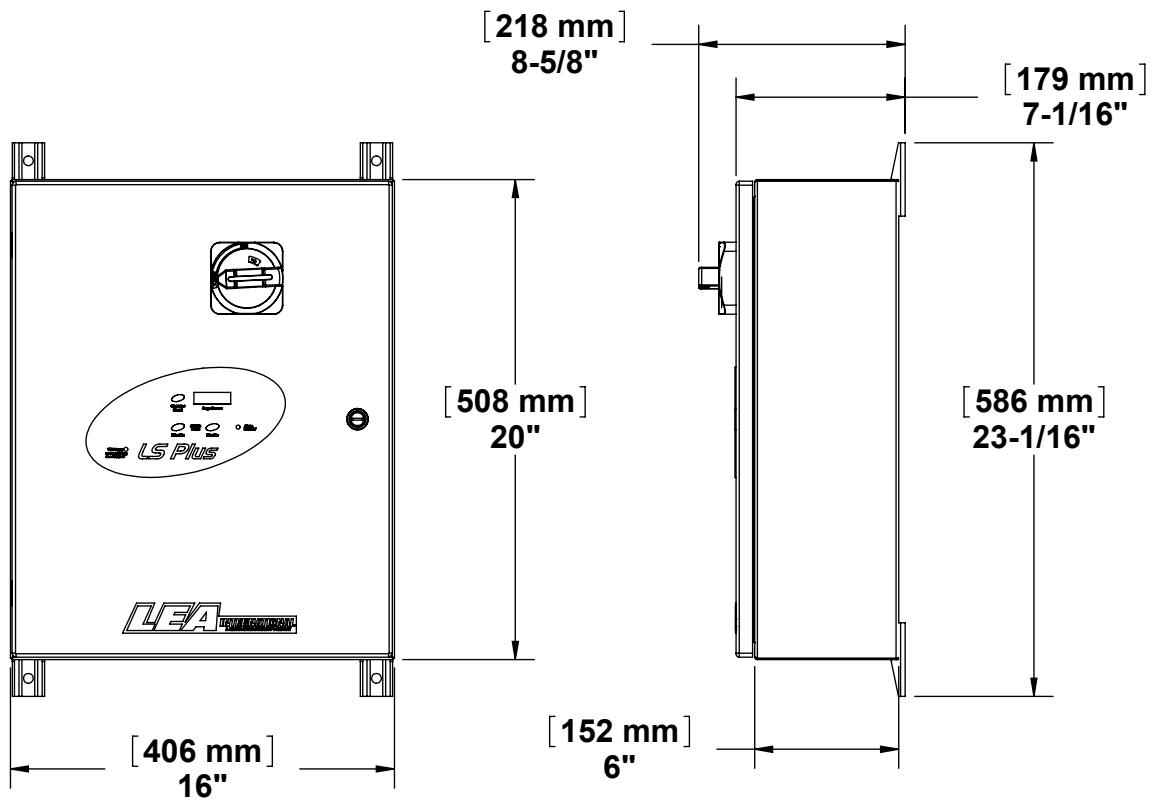
Remote Alarm Contacts

Note:
Remote Alarm Contacts Change State with Loss of Power

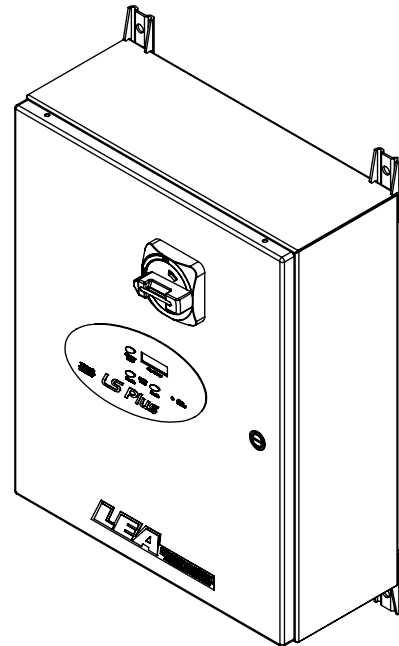
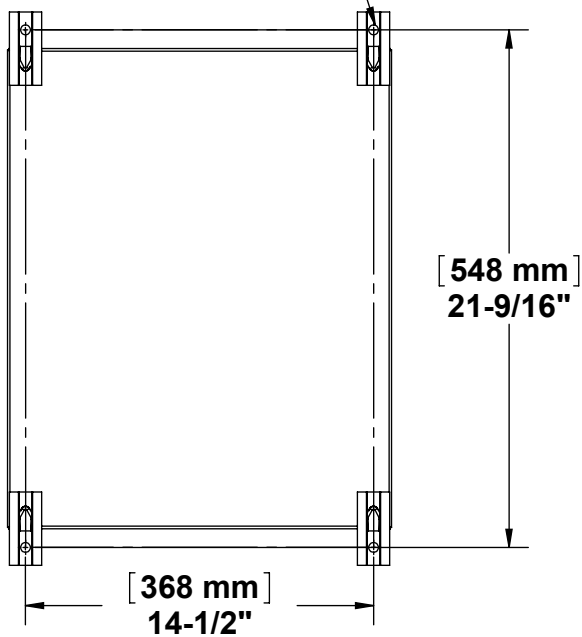
Normally Open

Common
3X Torque Specification
4.5 in-lbs [0.5Nm]

Normally Closed
Contact is Closed when SPD is Powered and Functional [Normal State]



Use 3/8" [10 mm]
Mounting Hardware



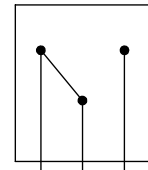
**Mechanical Specifications for LS Plus 100
with Disconnect Switch**
[Dimensions are for Reference Only]

Mounting: External mounting brackets with 0.41" [10.3 mm] mounting holes.
Dimensions: 20" X 16" X 6" [508 mm X 406 mm X 152 mm]
Weight: 32 lbs / 14.5 kg

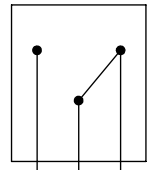
Note:
Remote Alarm Contacts
 Change State with Loss
 of Power

**Remote Alarm
 Contacts**
 NC Contact Closed with
 SPD powered
 and Functional
 [Normal State]

**Remote Alarm
 Contacts**
 NO Contact Open
 with Power OFF
 or SPD Requires
 Replacement



NC C NO



NC C NO

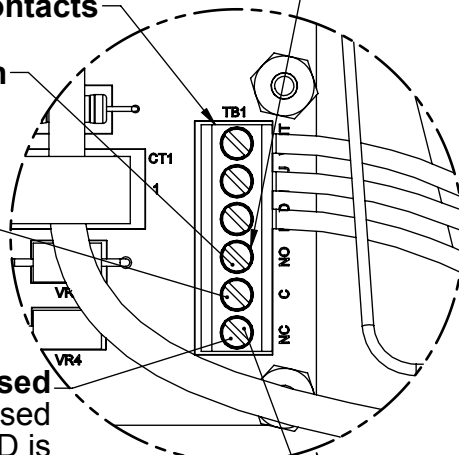
Remote Alarm Contacts

**Wire Range
 #24 to #14 AWG**

Normally Open

Common

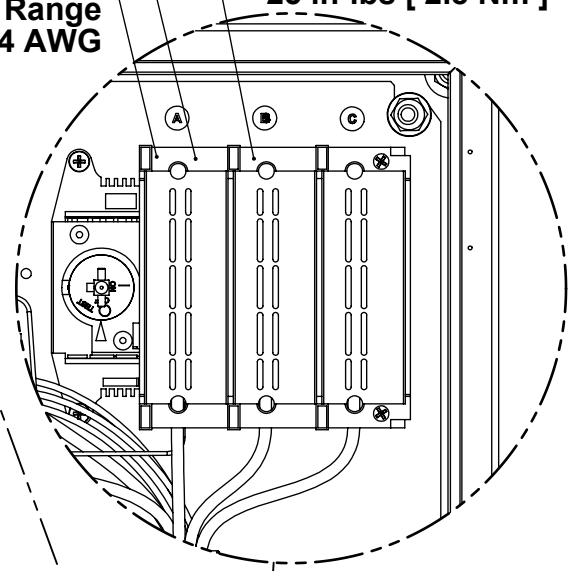
Normally Closed
 Contact is Closed
 when SPD is
 Powered and Functional
 [Normal State]



**3X Wire Strip Lengths
 for Phase Connections
 into the Disconnect
 Switch
 0.5" [13 mm]**

**3X Torque Specification
 for Disconnect Switch
 25 in-lbs [2.8 Nm]**

**Wire
 Range
 #10 to #4 AWG**



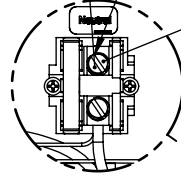
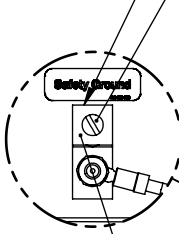
**3X Torque
 Specification
 4.5 in-lbs
 [0.5 Nm]**

**Torque
 Specification
 50 in-lbs [5.6 Nm]**

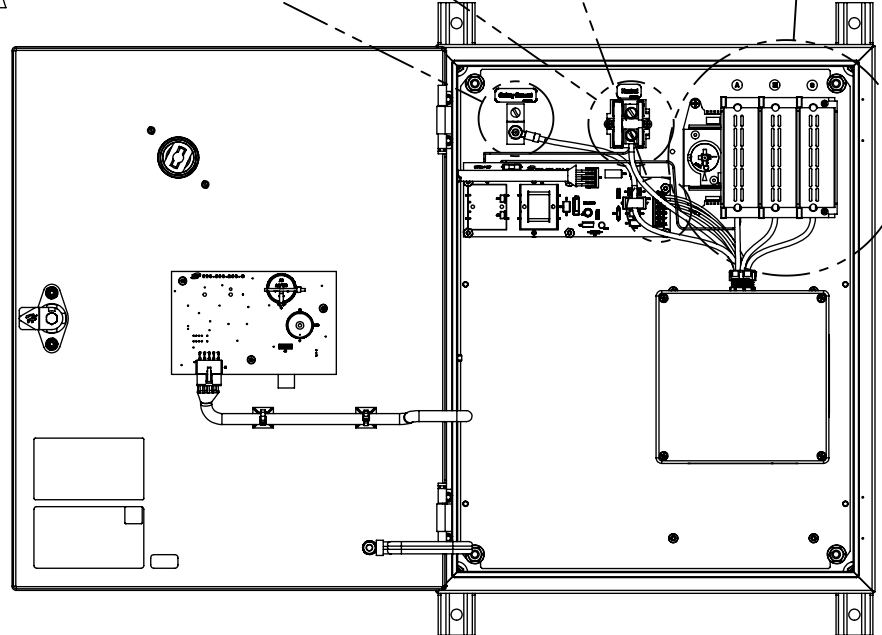
**Wire Range
 #8 to #1/0 AWG**

**Wire Range
 #8 to #1/0 AWG**

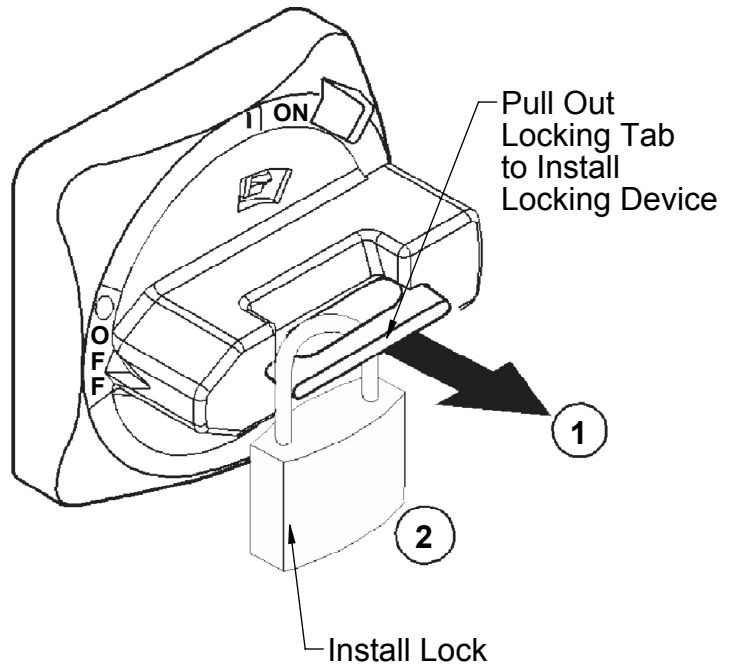
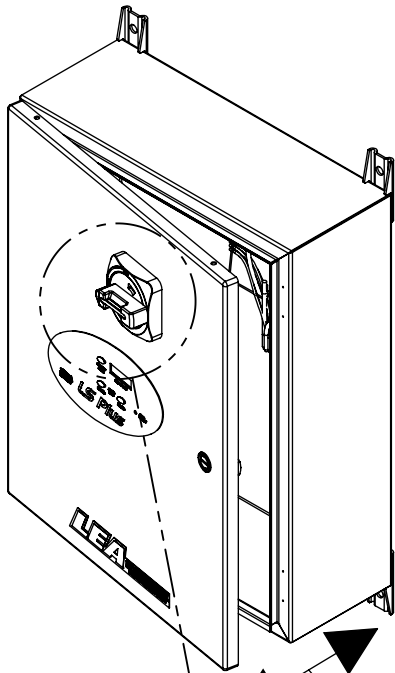
**Wire Strip
 Length
 Neutral
 Block
 0.7" [17.4 mm]**



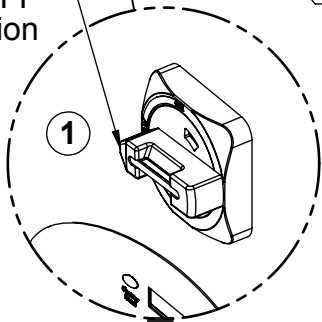
**Ground
 Lug
 Strip
 Length
 0.5" [13 mm]**



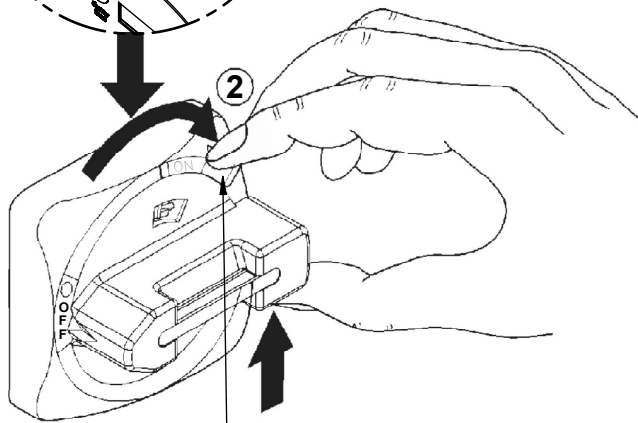
Lock Out of Enclosure in the OFF Position
if Required



Step 1
Turn Handle
to the OFF
Position

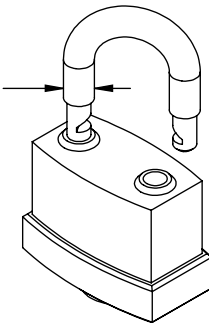


Disconnect Handle must
be in the OFF Position
to Open or Close
the Enclosure Door



Step 2
Press Release as
Shown to Release
Disconnect Handle
from the Disconnect
Switch to Open
or Close the
Enclosure Door

3/16"-5/16"
[5-8 mm]



Handle Locking Tab only
accepts a Shackle
Diameter as shown.
(Lock not supplied by LEA)

Disconnect Handle Operation