



LifeGuard[®] LG2-Series

Protection Panels



LifeGuard® Protection Panels

This document is intended as a reference guide for installing and using a Bender LifeGuard® LG2-series protection panel. This document includes installation, setup, and usage instructions.

Only qualified maintenance personnel shall operate or service this equipment. These instructions should not be viewed as sufficient for those who are not otherwise qualified to operate or service this equipment. This document is intended to provide accurate information only. No responsibility is assumed by Bender for any consequences arising from use of this document.

Use of this document

This quick start applies to standard LifeGuard models with lighted push button front panels, as pictured above, as well as open panels with no enclosure.

Standard model

Installation

Mounting - NEMA 4X Polycarbonate Enclosure (enclosure code P)

The standard enclosure for LifeGuard protection panels is NEMA 4X polycarbonate. The enclosure includes mounting feet and separate instructions on wall-mounting the enclosure. Refer to these instructions for more information. Refer to the figure and table below for dimensions.

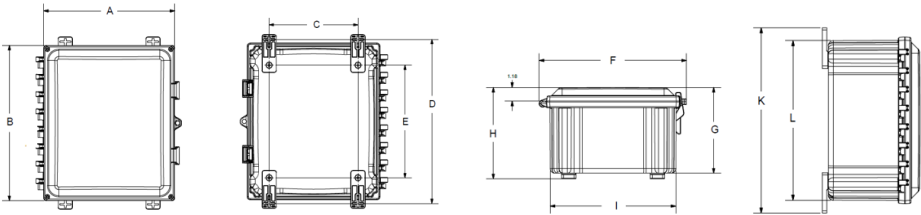


Figure 1 - Dimensions of NEMA 4X polycarbonate enclosure

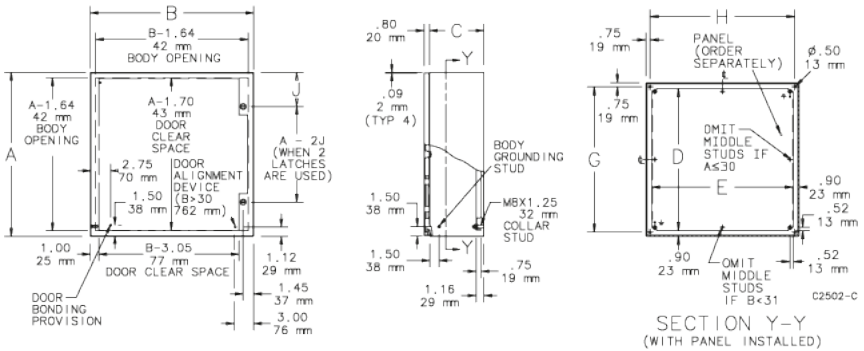
Table 1: Enclosure dimensions in inches (mm)

Models	Nominal	A x B	C	D	E
< 100 A	12" x 10" x 6"	11.41" x 13.41"	7.63"	14.03"	10.25"
	305 x 254 x 152 mm	290 x 340 mm	194 mm	357 mm	260 mm
100 A	16" x 14" x 8"	15.41" x 17.65"	11.63"	18.03"	14.25"
	406 x 356 x 203 mm	391 x 448 mm	296 mm	458 mm	362 mm

Models	F	G	H	I	K	L
< 100 A	12.68"	7.38"	7.87"	10.81"	14.88"	12.81"
	322 mm	187 mm	200 mm	275 mm	378 mm	325 mm
100 A	16.68"	9.40"	9.98"	14.79"	18.88"	16.79"
	424 mm	239 mm	253 mm	376 mm	480 mm	426 mm

NEMA 4X Stainless Steel Enclosure (enclosure code S Option)

LifeGuard protection panels are available with a NEMA 4X stainless steel enclosure. The enclosure includes separate instructions for wall-mounting the enclosure. Refer to those instructions for more information. Dimensions below are in inches (mm).



Type	Enclosure	A x B x C	D x E	G x H
Standard	16x12x6	16" x 12" x 6"	14.2" x 10.2"	14.5" x 10.5"
		(406 x 305 x 152)	(361 x 259)	(368 x 267)

If the LifeGuard was purchased without an enclosure (backplate only), consult the following section "Wiring," and the section "Backplate Only Models".

Wiring



HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- Disconnect all power before servicing.
- Observe all local, state, and national codes, standards, and regulations.

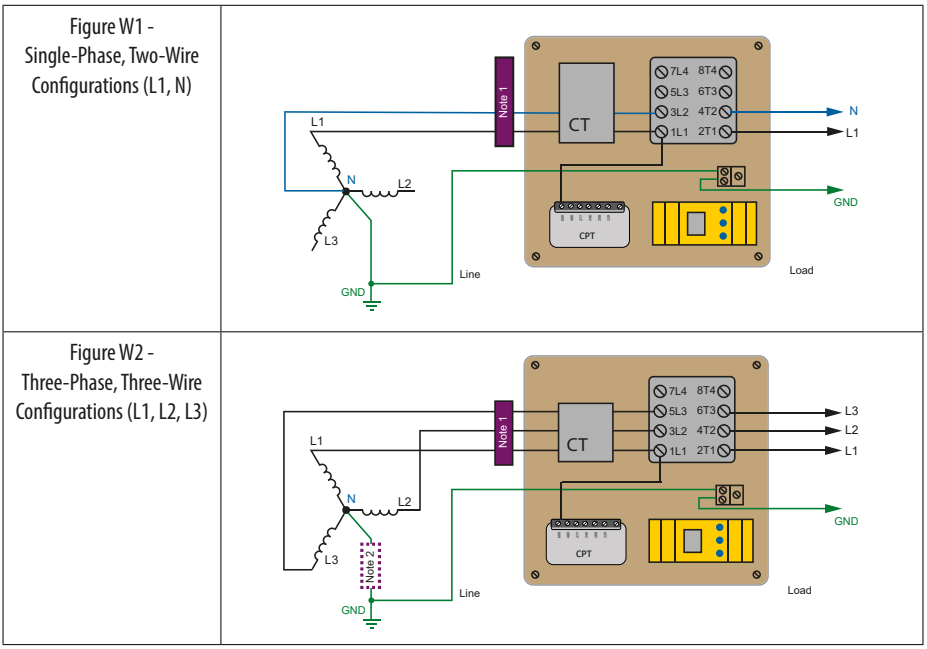
A professional electrician, licensed in accordance with local laws and regulations, must perform this installation. The enclosure must be penetrated in order to bring the line and load conductors to the protective circuit. Bender recommends making these penetrations on the bottom of the enclosure, and the use of NEMA 4X (minimum) fittings to maintain the environmental rating of the enclosure. The specifics of the installation will dictate further.

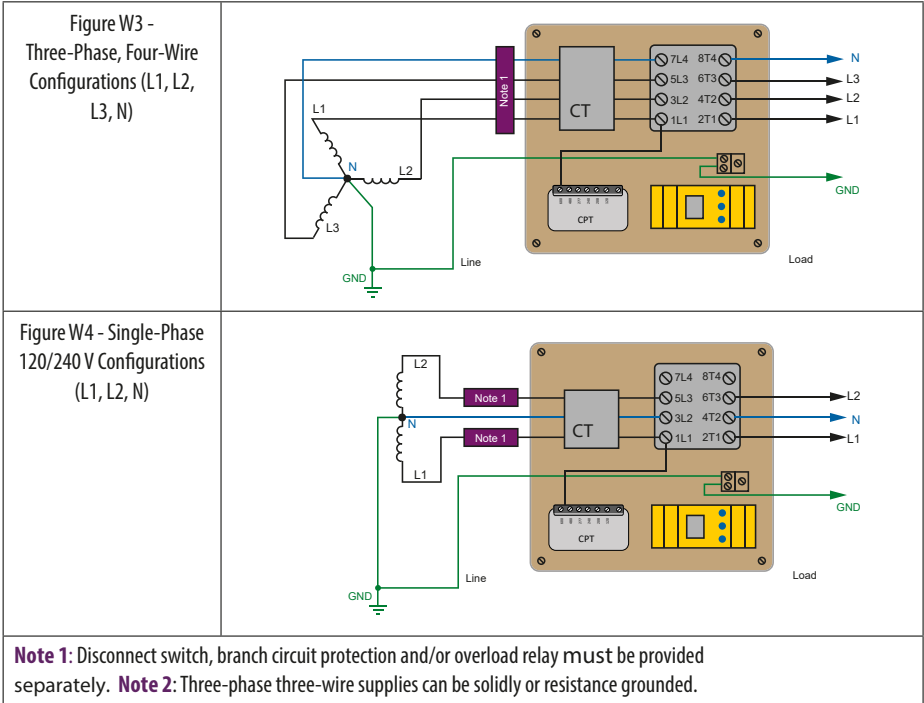
Connect the LifeGuard protection panel in series with the protected circuit. Circuit-conductor connection varies based on the number of conductors and system voltage. Observe the following requirements during installation:

- Use copper wire only. For models rated less than 100 A, use 60 °C /140 °F (minimum) rated conductors. For 100 A models (or for systems where the required 60 °C conductor cannot be accepted), use conductors rated for 75 °C (167 °F).
- Disconnect switch, branch circuit protection, and/or overload relay must be provided separately.

- All active conductors, including the neutral (when used), must be brought into the device and passed through the current transformer and connected to the line side of the contactor, as shown in the following diagrams. Standard LifeGuard models are suitable for 120 to 600-V circuits and are factory-configured for 600 V. For other voltages, relocate the control-transformer primary tap as required by following the included instructions.
- Connect the load or protected branch circuit to the load side of the contactor.
- Connect the line and load ground (bond) wires to the ground lug on the backplate. Do not route the ground wire through the current transformer.

Voltage	Conductors (not including ground)	Referenced Wiring Diagram
120 VAC	1ph / 2w (L1, N)	Figure W1
208 VAC	3ph / 3w (L1, L2, L3)	Figure W2
208/120 VAC	3ph / 4w (L1, L2, L3, N)	Figure W3
240/120 VAC	1ph / 3w (L1, L2, N)	Figure W4
480 VAC	3ph / 3w (L1, L2, L3)	Figure W2
480/277 VAC	3ph / 4w (L1, L2, L3, N)	Figure W3
600 VAC	3ph / 3w (L1, L2, L3)	Figure W2
600/347 VAC	3ph / 4w (L1, L2, L3, N)	Figure W3





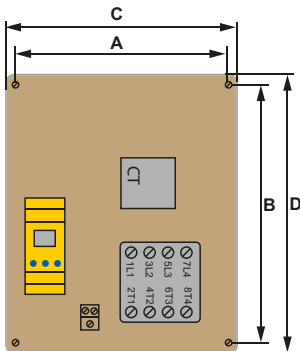
Additional requirements - Backplate-Only Models (enclosure type N)

This section applies to LifeGuard models purchased without an enclosure and on a backplate only. Refer to instructions below for additional requirements for installation and wiring. Backplate-only models must be installed in a suitable enclosure.

Mounting - Backplate Only

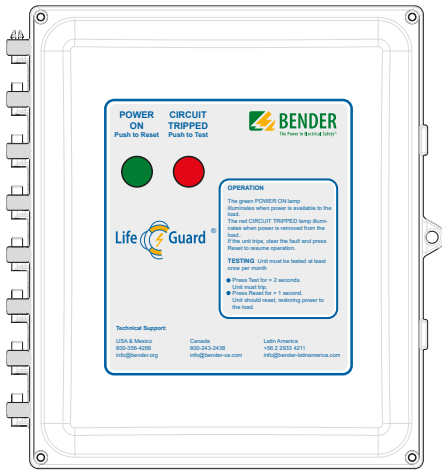
Refer to the figure below for dimensions. The unit must be mounted in a location sufficient to protect live electrical equipment. Use four #10 screws for mounting. It should be placed X inches away from other equipment. This vertical clearance X (minimum depth of enclosure, measured from the installed backplate) of the backplate is:

- 6" (152 mm) for models less than 100 A
 - 8" (203 mm) for 100 A models.
- The mounting hole diameter is 1/4" (6.4 mm).



Type	A x B	C x D
< 100 A	8.25" x 10.25" (210 x 260)	8.88" x 10.88" (225 x 276)
100 A	12.25" x 14.25" (311 x 362)	12.88" x 14.88" (327 x 378)

Use - Enclosure Front



green	<p>POWER LED / RESET button: Illuminates when the panel has power and is not tripped / RESET button: Resets the panel if faults have been cleared (momentary push).</p>
red	<p>TRIPPED LED / TEST button: Illuminates when tripped / TEST button: Performs a functional test (hold for at least 2 seconds).</p>

Apply Power

To apply power, close the customer-supplied circuit breaker / disconnect on the line side of the LifeGuard panel. If there are no ground faults present on the system, the green POWER ON LED will light.

Perform Test (Trip Level Option F)

To perform a test on fixed 6-mA models with trip level option F:

- Push TEST for at least two seconds.
- The unit will trip, the green POWER ON LED will go out, and the red CIRCUIT TRIPPED LED will illuminate. Power to connected loads will be interrupted.
- An internal self-test will initiate, taking approximately ten seconds.
- Push RESET for at least one second.
- If the internal self-test has completed, the unit will reset, the red CIRCUIT TRIPPED LED will go out, and the green POWER ON LED will illuminate. Power will be restored to the load.



Perform Test (Trip Level Option A)

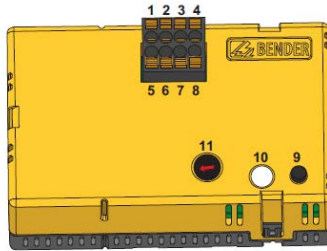
To perform a test on field-adjustable models with trip level option A:

- Push TEST for at least two seconds.
- The unit will trip, the green POWER ON LED will go out, and the red CIRCUIT TRIPPED LED will illuminate. Power to connected loads will be interrupted.
- Push RESET for at least one second.
- The unit will reset, the red CIRCUIT TRIPPED LED will go out, and the green POWER ON LED will illuminate. Power will be restored to the load.

Field Adjustment, Error Codes and troubleshooting

Models with trip level option A have field adjustable ground-fault-current trip level and trip time. The factory defaults are 30 mA and 0 s. These models have a CTUB101-CTBC35P current sensor, which has a three-position potentiometer that must be set to the correct position depending on the RCMA420-D-2 ground-fault-current trip setting. For trip settings up to 100 mA, the potentiometer must be rotated to the left position (pointing to 8 o'clock) and for setting above 100 mA the potentiometer must be rotated to the vertical position (12 o'clock).

	Response value RCM...	Measuring range rms	Measuring range peak
	$I_{\Delta n} \leq 0.1 \text{ A}$	0...450 mA	0...900 mA
	$0.1 \text{ A} < I_{\Delta n} \leq 0.5 \text{ A}$	0...0.75 A	0...3.5 A



For details about protection relay settings, error codes, and troubleshooting, please refer to the respective protection relay technical manuals, available online.

Approvals

UL 508A Industrial Control Panels



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