



E-SWITCH®

**LAMB™
INDUSTRIES**

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TECHNICAL SPECIFICATIONS

PP1 Series



**1.0 SCOPE**

This specification describes the operating parameters, testing requirements, approvals, materials, and part numbering for the PP1 Series including all suffixes.

2.0 CLASS

INTERLOCK PUSHBUTTON SWITCH, WITH DEFEAT: A pushbutton switch designed to disable an appliance when the access door is opened while in operation. The defeat mechanism allows normal operation when the access door is opened.

3.0 SERIES FEATURES

1 Pole, 2 Throw Functions
High Electrical Ratings
Panel Mounting
Optional Defeat Mechanism
Various Actuator and Terminal Styles

4.0 MODELS**4.1 PP1-1T7-xBx**

Function: 1 Pole ON₂-ON₁-(ON₂), With Defeat
Actuator: 17.8mm with Finger Ridge
Terminals: 4.8mm x 0.8mm Tab, Vertical

4.2 PP1-DT7-xBx

Function: 1 Pole ON₂-ON₁-(ON₂), With Defeat
Actuator: 17.8mm with Finger Ridge
Terminals: 4.8mm x 0.8mm Tab, Horizontal

4.3 PP1-ET7-xBx

Function: 1 Pole ON₂-ON₁-(ON₂), With Defeat
Actuator: 17.8mm with Finger Ridge
Terminals: 6.3mm x 0.8mm Tab, Horizontal

4.4 PP1-EB7-xAx

Function: 1 Pole ON-(ON), Without Defeat
Actuator: 21.7mm Straight
Terminals: 6.3mm x 0.8mm Tab, Horizontal

4.5 PP1-EB7-xDx

Function: 1 Pole ON-(ON), Without Defeat
Actuator: 11.4mm Short Cylinder
Terminals: 6.3mm x 0.8mm Tab, Horizontal

4.6 PP1-FB7-xDx

Function: 1 Pole ON-(ON), Without Defeat
Actuator: 11.4mm Short Cylinder
Terminals: 1 x 6.3mm x 0.8mm Tab, 2 x 4.8mm x 0.5mm Tab, Angled

5.0 SPECIFICATIONS**5.1 CONTACT RESISTANCE**

Requirements: 30mΩ Max.

5.2 INSULATION RESISTANCE

Requirements: 2MΩ Min.

5.3 DIELECTRIC STRENGTH

Requirements: 1500V for 1 Minute

5.4 OPERATING FORCE

5.4.1 For PP1-1T7-xBx, PP1-DT7-xBx, and PP1-ET7-xBx Models
Requirements: 0.66±0.33lbf [0.3±0.15kgf]



5.4.2 For PP1-EB7-xAx Models
Requirements: 0.66±0.33lbf [0.3±0.15kgf]

5.4.3 For PP1-EB7-xDx and PP1-FB7-xDx Models
Requirements: 1.10±0.44lbf [0.5±0.20kgf]

5.5 TRAVEL DISTANCE

5.5.1 For PP1-1T7-xBx, PP1-DT7-xBx, and PP1-ET7-xBx Models
Requirements:
Pull: 0.268±0.020" [5.7±0.5mm]
Operating: 0.047±0.020" [1.2±0.8mm]
Maximum Travel: 0.197±0.020" [5.0±0.5mm]

5.5.2 For PP1-EB7-xAx Models
Requirements:
Operating: 0.098±0.020" [3.0±0.8mm]
Maximum Travel: 0.370±0.020" [9.4±0.5mm]

5.5.3 For PP1-EB7-xDx and PP1-FB7-xDx Models
Requirements:
Operating: 0.098±0.020" [2.2±0.8mm]
Maximum Travel: 0.370±0.020" [9.4±0.5mm]

5.6 OPERATING LIFE
Conditions: According to ANSI / UL 1054.

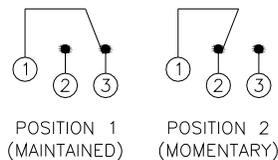
Requirements: 6,000 Cycles

5.7 OPERATING TEMPERATURE RANGE
Conditions: According to ANSI / UL 1054.

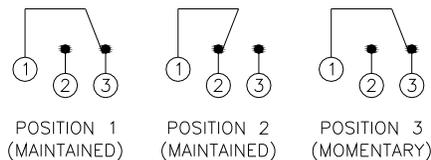
Requirements: 0°C to 85°C

6.0 ELECTRICAL SCHEMATICS

6.1 FUNCTION B: 1 POLE ON-(ON)



6.2 FUNCTION T: 1 POLE ON₂-ON₁-(ON₂)



7.0 MISCELLANEOUS
Refer to individual part number drawings for details per part number.
Specifications are subject to change without notice.

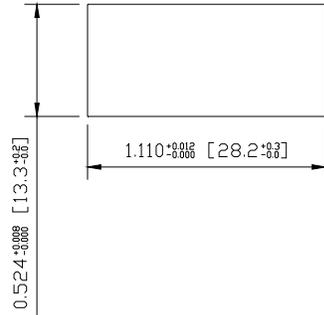
8.0 MOUNTING

8.1 SNAP-IN FRONT PANEL MOUNTING

This mounting style is designed to quickly and easily snap into a hole in a panel from the front side. The recommended hole size is shown below, but this can vary depending on the panel thickness and material. It is recommended to cut a test hole before final tooling.



8.1.1 Recommended Panel Cutout



8.1.2 Maximum Panel Thickness
0.079" [2.0mm]

9.0 STANDARDS COMPLIANCE

9.1 ANSI / UL 1054

Component Approval for the United States
Agency: Underwriters Laboratories
File Number: E194579
CCN: WOYR2
Marking:



9.1.1 All Models, Except PP1-1T7-xBx and PP1-FB7-xDx

Ratings: 16A 125VAC 50-60Hz 1HP
12A 250VAC 50-60Hz 1HP

Endurance: 6K
Temperature: 85°C
Poles: 1
Throws: 2
Circuit Code: -/
SPCOA: -

9.2 CAN / CSA C22.2 No. 55

Component Approval for the United States
Agency: Underwriters Laboratories
File Number: E194579
CCN: WOYR8
Marking:



9.2.1 All Models, Except PP1-1T7-xBx and PP1-FB7-xDx

Ratings: 16A 125VAC 50-60Hz 1HP
12A 250VAC 50-60Hz 1HP

Endurance: 6K
Temperature: 85°C
Poles: 1
Throws: 2
Circuit Code: -/
SPCOA: -

9.3 2002/95/EC Restriction of Hazardous Substances (RoHS)

Hazardous Materials Compliance for Europe
Agency: Self Certified



Marking:

RoHS
COMPLIANT

9.3.1 Substance Thresholds

By weight in homogenous materials:

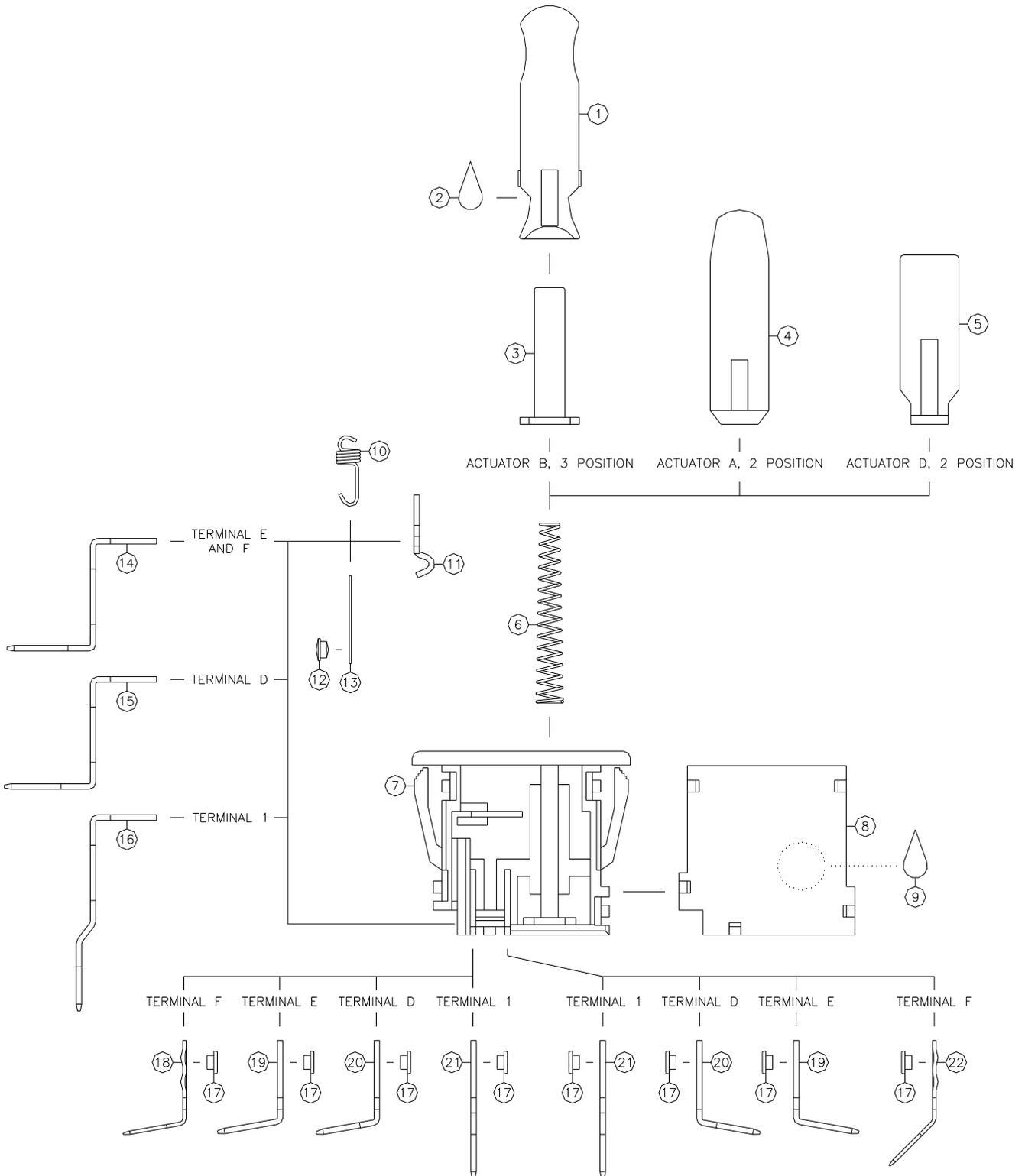
Lead	0.1%
Mercury	0.1%
Hexavalent Chromium	0.1%
Polybrominated Biphenyls	0.1%
Polybrominated Diphenyl Ethers	0.1%
Cadmium	0.01%

9.3.2 Exemptions Claimed

None



10.0 MATERIALS





- 10.1 ACTUATOR B, FOR 3 POSITION**
Type: Polyamide 6/6 (PA66)
RoHS Compliant
- 10.2 GREASE**
Grease
RoHS Compliant
- 10.3 SPRING POST**
Type: Polyamide 6/6 (PA66)
RoHS Compliant
- 10.4 ACTUATOR A, FOR 2 POSITION**
Type: Polyamide 6/6 (PA66)
RoHS Compliant
- 10.5 ACTUATOR D, FOR 2 POSITION**
Type: Polyamide 6/6 (PA66)
RoHS Compliant
- 10.6 ACTUATOR SPRING**
Type: Steel (65Mn)
RoHS Compliant
- 10.7 BODY, BACK SIDE**
Type: Polyamide 6/6 (PA66)
RoHS Compliant
- 10.8 BODY, FRONT SIDE**
Type: Polyamide 6/6 (PA66)
RoHS Compliant
- 10.9 MARKING INK**
Ink
RoHS Compliant
- 10.10 HOOK SPRING**
Type: Stainless Steel (1Cr13)
RoHS Compliant
- 10.11 ACTUATION LEVER**
Type: Brass (H62)
RoHS Compliant
- 10.12 MOBILE CONTACT PAD**
Type: Silver/Nickel (AgNi(10))
RoHS Compliant
- 10.13 MOBILE CONTACT BAR**
Type: Copper / Silver Plated
RoHS Compliant
- 10.14 COMMON TERMINAL E AND F**
Type: Brass (H62) / Silver Plated
RoHS Compliant
- 10.15 COMMON TERMINAL D**
Type: Brass (H62) / Silver Plated
RoHS Compliant



10.16 COMMON TERMINAL 1

Type: Brass (H62) / Silver Plated
RoHS Compliant

10.17 STATIONARY CONTACT PADS

Type: Silver/Nickel Clad Copper (AgNi(10)/Cu)
RoHS Compliant

10.18 NORMALLY CLOSED TERMINAL F

Type: Brass (H62) / Silver Plated
RoHS Compliant

10.19 NORMALLY CLOSED / NORMALLY OPEN TERMINAL E

Type: Brass (H62) / Silver Plated
RoHS Compliant

10.20 NORMALLY CLOSED / NORMALLY OPEN TERMINAL D

Type: Brass (H62) / Silver Plated
RoHS Compliant

10.21 NORMALLY CLOSED / NORMALLY OPEN TERMINAL 1

Type: Brass (H62) / Silver Plated
RoHS Compliant

10.22 NORMALLY OPEN TERMINAL F

Type: Brass (H62) / Silver Plated
RoHS Compliant



11.0 PART NUMBERING

Switch Series PP1 = Pushbutton Switch Push/Pull Capabilities, 1 Pole

Terminal Type

	PP1	
1 = 4.8mm Tabs, Vertical	X	For T Function Only
D = 4.8mm Tabs, Horizontal	X	For T Function Only
E = 6.3mm Tabs, Horizontal	X	
F = 1x6.3x0.8mm Tab on Common, 2x4.8x0.5mm Tabs, Angled	X	For B Function and D Actuator Only

Function

	PP1	
B = On-(On)	X	For A and D Actuator Only
T = On[2]-On[1]-(On[2])	X	For B Actuator Only

Rating

	PP1
7 = 16A 125VAC, 12A 250VAC, 1HP 125/250V	X

Body Color

	PP1
1 = Black	X
2 = White	X

Actuator Height

	PP1	
A = 21.7mm, Straight	X	For B Function and E Terminals Only
B = 17.8mm, With Finger Ridge	X	For T Function and 1, D, or E Terminals Only
D = 11.4mm, Short Cylinder	X	For B Function and E or F Terminals Only

Actuator Color

	PP1
2 = White	X

Example: PP1-1T7-2B2



12.0 REVISION HISTORY

REV.	DATE	DESCRIPTION	PCR
A	Dec. 9, 2009	New Release	PCR00243
B	Apr. 6, 2010	Replaced B actuator with A actuator for 2 position versions and associated references. Changed panel cutout to 28.2+0.3/-0.0mm from 28.0+0.5/-0.0mm. Added cURus rating exceptions.	19001



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RoHS Declaration of Conformity

March 24, 2010

E-Switch - Lamb certifies, to the best of our knowledge, the following product(s) as fully compliant with the European Union Directive 2002/95/EC "Restriction of Hazardous Substances", also known as the RoHS Directive. The maximum concentrations of the restricted substances (by weight in homogenous materials) are below RoHS thresholds unless otherwise noted by valid RoHS exemptions as listed in the Annex of the RoHS Directive.

For these purposes, the maximum concentration values of the restricted substances by weight in homogenous materials are:

Lead	0.1%
Mercury	0.1%
Hexavalent Chromium	0.1%
Polybrominated Biphenyls	0.1%
Polybrominated Diphenyl Ethers	0.1%
Cadmium	0.01%

Exemptions Claimed None

Carl Buchheit
Product Engineer
E-Switch/Lamb Industries

List of Compliant Products

PP1 Series, Including All Suffixes.