



SmartGuard is an equipment ground fault protection device that combines hydraulic/magnetic circuit breaker and overload and short circuit protection and ground fault protection. This breaker senses and guards against faults to ground using a state of the art integrated circuit. This technology detects faults and when a fault occurs, the breaker trips and an LED illuminates. The LED gives a clear indication that the trip occurred as a result of leakage. This protection helps prevent serious equipment damage and fire.

### Agency Certifications

#### UL Recognized

UL Standard 1077



Component Recognition Program as Equipment Leakage Circuit Interrupter and, Protectors, Supplementary (FTTJ2, File E177510).

UL Standard 943

Tested as Ground Fault Circuit Interrupters for Equipment Protection.



CSA Certified

Component Equipment Leakage Current Interrupter with Supplementary Protector, under Class C22.2, No. 144-M91, File LR47848-50



TUV Certified

IEC 947-2 and appendix B: Circuit Breakers incorporating Residual Current Protection. Complies with waveform requirements of IEC 1008-1, Type A.

### Electrical

Table A: Lists UL Recognized & CSA Certified configurations and performance capabilities as a Component Supplementary Protector.

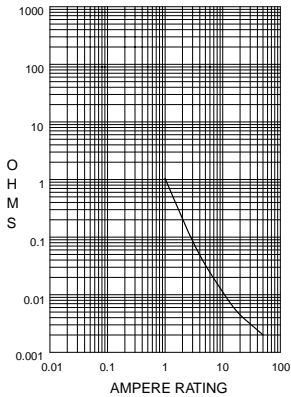
CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING		INTERRUPTING CAPACITY (AMPS)	LEAKAGE CURRENT
	MAX RATING	FREQUENCY	PHASE	FULL LOAD AMPS	GENERAL PURPOSE AMPS	UL / CSA	MUST - TRIP RATING
						WITHOUT BACKUP FUSE	(MILLIAMPS)
SERIES	120/208	50/60	1	1-50	---	5000	7-100
	120/208	50/60	1	1-50	---	5000	7-100
	208-240	50/60	3	1-50	---	2000	7-100
	480Y	50/60	3	1-30	30.1-50	2000	7-100

Table B: Lists TUV Certified configurations and performance capabilities as a Circuit breaker incorporating residual current protection.

CIRCUIT CONFIGURATION	VOLTAGE			CURRENT RATING	LEAKAGE CURRENT	INTERRUPTING CAPACITY (AMPS)		
	MAX RATING	FREQUENCY	PHASE	FULL LOAD AMPS	MUST - TRIP RATING (MILLIAMPS)	ULTIMATE S/C BREAKING CAPACITY (Icu)	SERVICE S/C BREAKING CAPACITY (Ics)	RESIDUAL S/C MAKE/BREAK CURRENT (IΔm)
SERIES	120-240	50/60	1	1-50	7-100mA	5000	3750	1250
	200-240	50/60	3	1-50	7-100mA	2667	2000	1000
	380-415	50/60	3-Y	1-50	7-100mA	2000	2000	1000
	380-415	50/60	1	1-50	7-100mA	2000	2000	1000

## Electrical

Maximum Voltage AC, 480 WYE/277 VAC, 50/60 Hz  
 Standard Current Ratings 1.00, 2.50, 5.00, 7.50, 10.0, 15.0, 20.0, 25.0, 30.0, 35.0, 40.0 & 50.0 amps. For other ratings, consult factory.  
 Insulation Resistance Minimum of 100 Megohms @ 500 VDC.  
 Dielectric Strength 1960 VAC, 60 Hz for one minute between all electrically isolated terminals.  
 Resistance, Impedance from Line to Load Terminal  
 (Values Based on Series Trip Circuit



CURRENT (AMPS)	TOLERANCE (%)
0.10 - 5.0	± 15%
5.1 - 20.0	± 25%
20.1 - 50.0	± 35%

## Mechanical

Endurance 10,000 ON-OFF operations @ 6 per minute; with rated current and voltage.  
 Trip Free All SmartGuard equipment leakage circuit breakers will trip on overload or leakage to ground, even when actuator is forcibly held in the ON

## Physical

Number of Poles 2, 3 & 4  
 Length (included switched or unswitched neutral) 4.2 inches ( 106.7 mm)  
 Width 2-pole: 3.0 inches (76.2 mm)  
 3-pole: 3.75 inches (95.3 mm)  
 4-pole: 4.5 inches (114.3 mm)  
 Depth 2.5inches (63.5mm).  
 Weight: 2-pole 16.0 oz. (453.6 gm)  
 3-pole: 21.4 oz. (606.7 gm)  
 4-pole: 26.9 oz. (762.6 gm)  
 Standard Colors Housing - gray;  
 Actuator - black, red, or white  
 Mounting Front Panel or Standard 35mm Symmetrical DIN Rail (35 x 7.5 or 35 x 15mm per DIN EN5002).  
 Termination Box Lug

## Leakage To Ground

Standard Must Trip  
 Leakage Current Ratings 7, 10, 15, 30, 50 & 100 milliamps. For other ratings, consult factory.  
 Trip Time 300 ms Max. @ 100%, 40ms Max. @ 500% of must trip leakage current.  
 Test Button On breaker face above actuator.  
 Leakage Trip Indicator Red LED on breaker face above

## Environmental

Operating Temperature +10°C to +50°C


**1 SERIES**  
**PD**
**2 SYSTEM VOLTAGE/POLES<sup>1</sup>**

System Voltage	Poles
A 120VAC 1Ø	One plus unswitched neutral
B 120/240 VAC 1Ø	Two
C 120/208 VAC 1Ø, 120/240 VAC 1Ø	Two plus unswitched neutral
D 120/208 VAC 1Ø, 120/240 VAC 1Ø	Two plus switched neutral
E 208/240 VAC 3Ø	Three
F 208/240 VAC 3Ø	Three plus unswitched neutral
G 208/240 VAC 3Ø	Three plus switched neutral
P 480Y VAC 3Ø	Three
Q 480Y VAC 3Ø	Three plus unswitched neutral
R 480Y VAC 3Ø	Three plus switched neutral

**3 CIRCUIT**  
**B** Series Trip (Current)

**4 FREQUENCY & DELAY**

<b>20</b> 50/60Hz Instantaneous	<b>24</b> 50/60Hz Medium
<b>22</b> 50/60Hz Short	<b>26</b> 50/60Hz Long

**5 CURRENT RATING (AMPERES)**

<b>410</b> 1.000	<b>445</b> 4.500	<b>610</b> 10.000	<b>717</b> 17.500
<b>512</b> 1.250	<b>450</b> 5.000	<b>710</b> 10.500	<b>618</b> 18.000
<b>415</b> 1.500	<b>455</b> 5.500	<b>611</b> 11.000	<b>619</b> 19.000
<b>517</b> 1.750	<b>460</b> 6.000	<b>711</b> 11.500	<b>620</b> 20.000
<b>420</b> 2.000	<b>465</b> 6.500	<b>612</b> 12.000	<b>622</b> 22.000
<b>522</b> 2.250	<b>470</b> 7.000	<b>712</b> 12.500	<b>624</b> 24.000
<b>425</b> 2.500	<b>475</b> 7.500	<b>613</b> 13.000	<b>625</b> 25.000
<b>527</b> 2.750	<b>480</b> 8.000	<b>614</b> 14.000	<b>630</b> 30.000
<b>430</b> 3.000	<b>485</b> 8.500	<b>615</b> 15.000	<b>635</b> 35.000
<b>435</b> 3.500	<b>490</b> 9.000	<b>616</b> 16.000	<b>640</b> 40.000
<b>440</b> 4.000	<b>495</b> 9.500	<b>617</b> 17.000	<b>650</b> 50.000

**6 EQUIPMENT LEAKAGE - TRIP CURRENT (milliamps)<sup>2</sup>**

<b>B</b> 7	<b>D</b> 15	<b>F</b> 50
<b>C</b> 10	<b>E</b> 30	<b>G</b> 100

**7 TERMINAL**  
**1** Obsolete    **2** Front Connected Box Lug

**8 ACTUATOR**  
**A** Handle  
**B** Handle, with handguard

**9 ACTUATOR COLOR & LEGEND<sup>4</sup>**

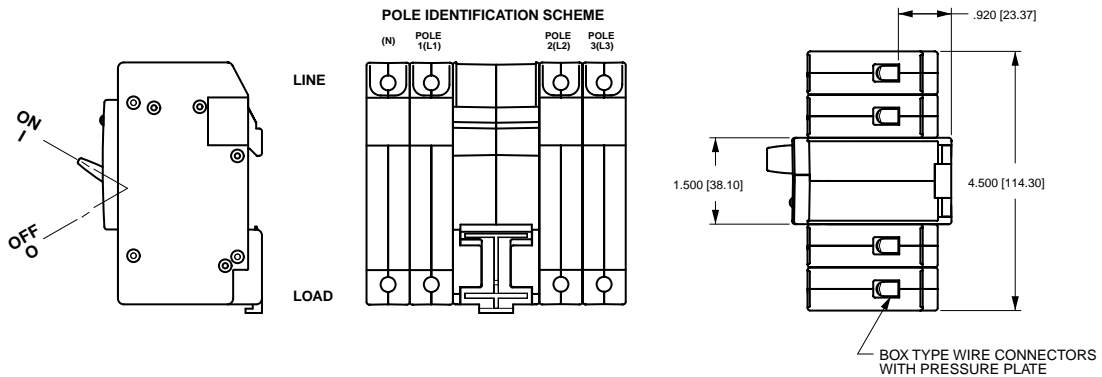
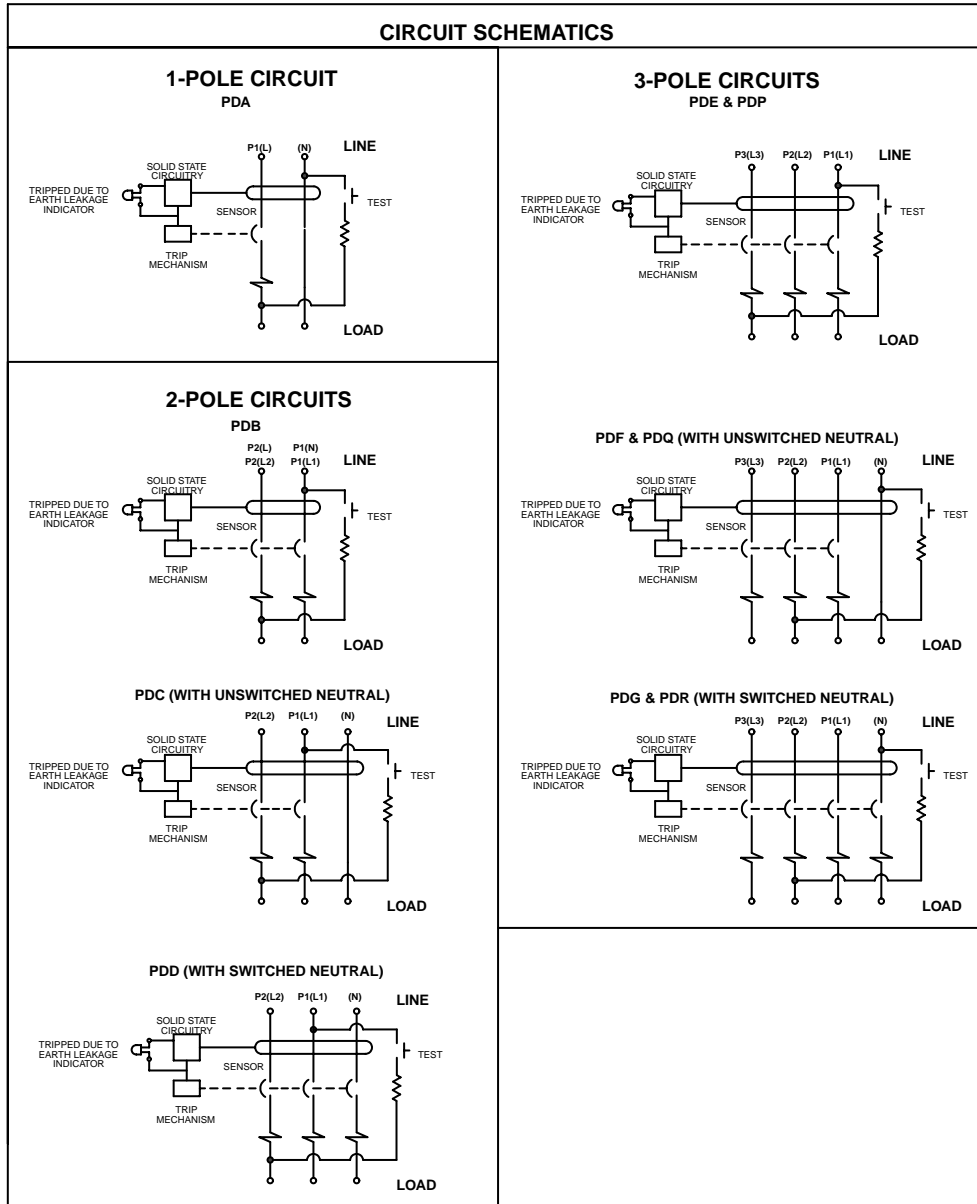
Actuator Color	Marking:		Marking Color:
	I-O	ON-OFF	Dual
White	<b>A</b>	<b>B</b>	<b>1</b> Black
Black	<b>C</b>	<b>D</b>	<b>2</b> White
Red	<b>E</b>	<b>F</b>	<b>3</b> White

**10 MOUNTING<sup>3</sup>**  
**1** Threaded Insert 6-32 x 0.195 inches  
**2** Threaded Insert ISO M3 x 6.5 mm

**11 AGENCY APPROVAL**  
**C** UL Recognized & CSA Certified  
**U** TUV Certified

**Notes:**

- 1 Units with a switched or unswitched neutral connection are the same size as a unit with an additional breaker pole (e.g. a 2-pole unit with a switched or unswitched neutral is the same physical size as a 3-pole unit).  
Switched neutral poles contain the same overcurrent protection as the other poles.
- 2 The leakage currents shown will cause the breaker to trip (must-trip current). The must-hold current is 67% of the must-trip current.
- 3 All breakers are front panel mountable using screw size shown. Breakers may also be mounted on either 35mm x 7.5mm or 35mm x 15mm symmetrical DIN rail.
- 4 TUV certified units must have I-O or Dual legends.



Notes:  
 1 All dimensions are in inches [millimeters].  
 2 Tolerance  $\pm 0.015$  [.38] unless otherwise specified.

