

# Eaton Innovative Technology Protector™



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## Product application

Eaton's Innovative Technology Protector surge protective device (SPD) protects electronic equipment from damaging transients. The Protector is suitable for high, medium and low exposure levels, and sensitive, mission-critical load applications including:

- Switchboards/main panels
- Distribution panels
- Branch panels
- Critical loadcenters
- Dedicated load protection
- Variable frequency drives (VFDs)
- Motor protection

## General description

Since 1980, Eaton has been designing and producing SPDs that provide field-proven power quality solutions worldwide. The Protector is a rugged device that is easy to install adjacent or even internal to electrical equipment. Based on extensive proven field performance, Eaton was the first to offer a 20-year full replacement warranty for the Protector. Electrical engineers around the world recognize Eaton as a leader in the SPD industry. A leading research company in a survey of over 10,000 users rated Eaton No. 1 in both product quality and service. Protector products are listed to UL® 1449 4th Edition and have a complementary UL 1283 7th Edition listing. All of Eaton's Innovative Technology products are manufactured in an ISO® 9001:2000 and ISO 14001 certified facility.



Protector models

## Features, functions, and benefits

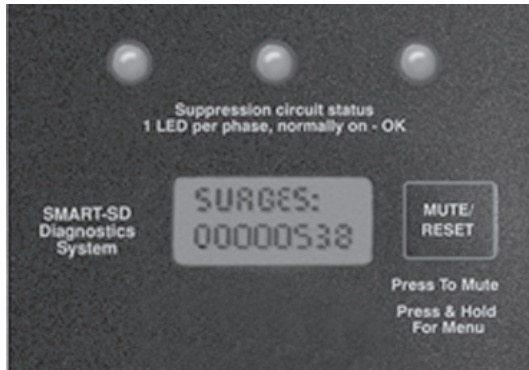
- Advanced surge path technology for high fault current capacity, low impedance, high frequency design
- Encapsulation technology provides a high dielectric and ultimate protection from adverse environmental conditions
- Industry best nominal discharge current ( $I_n$ ) of 20 kA
- Rugged NEMA® Type 4 (IP66) powder-coated steel enclosure
- Large diameter metal oxide varistors provide long life under high stress transient environments
- Dry Form C contacts for remote status monitoring
- LED monitoring on each phase
- Wide range of voltage applications from 120 to 4160 Vac
- 20-year free replacement warranty

## Optional features

- NEMA Type 4X stainless steel enclosure provides unparalleled corrosion protection and environmental strength for the most adverse installation conditions
- Enhanced filtering, Active Tracking Network® (ATN) provides the best in transient protection against the continuous barrage of everyday transients; this filter is also UL 1283 7th Edition listed as an EMI/RFI filter
- Available integral circuit breaker and disconnect switch for convenient installation and maintenance
- Available integral circuit breaker for installations requiring no external overcurrent protection
- S.M.A.R.T. diagnostics provide state-of-the-art diagnostics in the form of a digital surge event counter and audible alarm in conjunction with the standard status indicator lamps
- Available flush-mount for recessed installations



Reliable circuit design



S.M.A.R.T. diagnostics panel

## S.M.A.R.T. diagnostics

- Comprehensive monitoring of critical system functions
- Real-time audible and visual reporting of unit status, phase loss/protection loss, and transient events (alarm with reset and mute)
- Records low, medium, and high surge events in approximate accordance with ANSI C62.41-1991, Type A, B, and C surge levels
- Dual-function surge counter provides non-volatile event history recording

## Standards and certifications

- Listed to UL 1449 4th Edition and UL 1283 7th Edition listed surge protective devices (SPD)
- CE marked (PTX/E048, PTX/E065 PTX/E080, PTX160).
- All Eaton's Innovative Technology Protector units have been tested as per NEMA LS-1 and ANSI/IEEE C62.45
- Can be used for UL 96A compliance
- Can be used for NFPA 780 compliance
- Can be used for RoHS compliance

## Product specification

**Table 1. Protector series specifications**

| Description                         | Specification                                                                                         |
|-------------------------------------|-------------------------------------------------------------------------------------------------------|
| kA per phase                        | 48, 65, 80, 120, 160, 240, 300, 400                                                                   |
| kA per mode                         | 24 to 200                                                                                             |
| Nominal discharge current ( $I_n$ ) | 20 kA (Models 120, 160, 240, 300 and 400 kA per phase)<br>10 kA (Models 48, 65 and 80 kA per phase)   |
| Protection modes                    | Wye system: L-L, L-N, L-G & N-G / delta system: L-L, L-G<br>Split-phase system: L-L, L-N, L-G and N-G |
| Wye system voltages                 | 100/175, 110/190, 120/208, 127/220, 220/380, 230/400, 240/415, 277/480, 305/525, 347/600              |
| Delta system voltages               | 200, 208, 220, 230, 240, 380, 400, 415, 440, 480, 525, 600                                            |
| Split-phase voltages                | 100/200, 110/220, 120/240, 127/254                                                                    |
| Single-phase voltages               | 100, 110, 120, 127, 200, 208, 220, 230, 240, 277                                                      |
| Medium-voltage                      | 1000, 1500, 2000, 2500, 3000, 3500, 4160                                                              |

**Note:** U.S. voltages in bold.

**Table 2. Protector let-through voltage ratings**

| Ratings                                        | L-L  | L-G  | L-N  | N-G  | Delta system |      |
|------------------------------------------------|------|------|------|------|--------------|------|
|                                                |      |      |      |      | L-L          | L-G  |
| ANSI IEEE Cat A1                               |      |      |      |      |              |      |
| 120/240 V; 120/208 V wye; 240 V delta          | 90   | 100  | 60   | 60   | 70           | 590  |
| 277/480 V wye; 480 V delta                     | 100  | 120  | 70   | 70   | 60           | 1100 |
| 347/600 V wye; 600 V delta                     | 90   | 120  | 70   | 70   | 40           | 1100 |
| ANSI IEEE Cat C3                               |      |      |      |      |              |      |
| 120/240 V; 120/208 V wye; 240 V delta          | 1240 | 1000 | 830  | 890  | 1260         | 1420 |
| 277/480 V wye; 480 V delta                     | 2060 | 1580 | 1370 | 1370 | 2120         | 2130 |
| 347/600 V wye; 600 V delta                     | 2570 | 1880 | 1680 | 1700 | 2670         | 2640 |
| ANSI IEEE Cat B3/C1                            |      |      |      |      |              |      |
| 120/240 V; 120/208 V wye; 240 V delta          | 900  | 550  | 520  | 520  | 860          | 850  |
| 277/480 V wye; 480 V delta                     | 1640 | 1050 | 980  | 940  | 1990         | 1840 |
| 347/600 V wye; 600 V delta                     | 2110 | 1320 | 1250 | 1210 | 2090         | 2040 |
| UL 1449, 4th Edition voltage protection rating |      |      |      |      |              |      |
| 120/240 V, 120/208 V wye; 240 V delta          | 900  | 6700 | 600  | 600  | 1000         | 1000 |
| 277/480 V wye, 480 V delta                     | 1800 | 1000 | 1000 | 1000 | 1500         | 1800 |
| 347/600 V wye, 600 V delta                     | 2000 | 1200 | 1200 | 1200 | 2000         | 2000 |

**Note:** All tests performed with 6-inch lead length, positive polarity. Voltages are peak  $\pm 10\%$ . All measurements are taken from the zero reference per NEMA LS-1.

**Note:** Let-through voltage figures shown are for selected models and vary per Protector model. See individual submittal specification sheets for specific let-through voltage measurements.

## Standard dimensions—inches (mm)

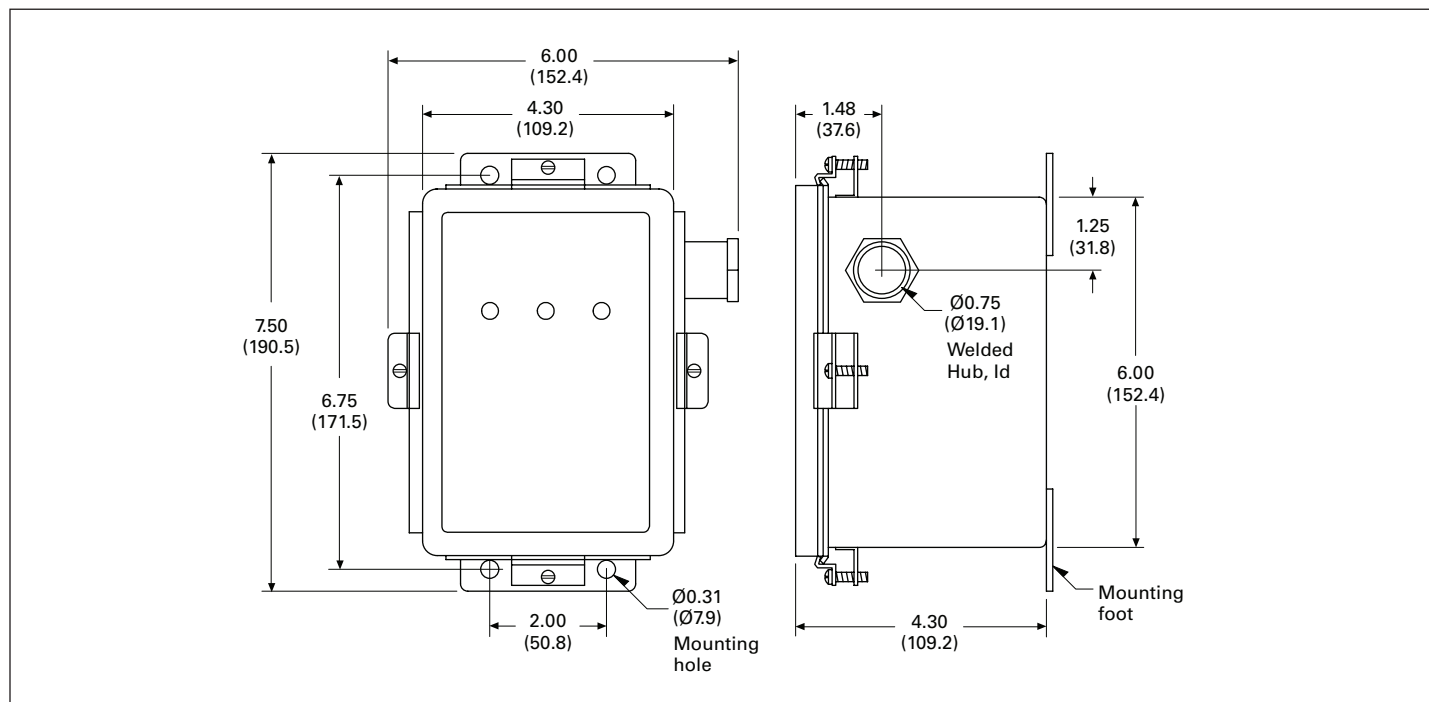


Figure 1. Protector series for PTE048, 065, 080 Models 1P101, 1S101, 3Y101, 3D101 and PTX048, 065, 080 all models

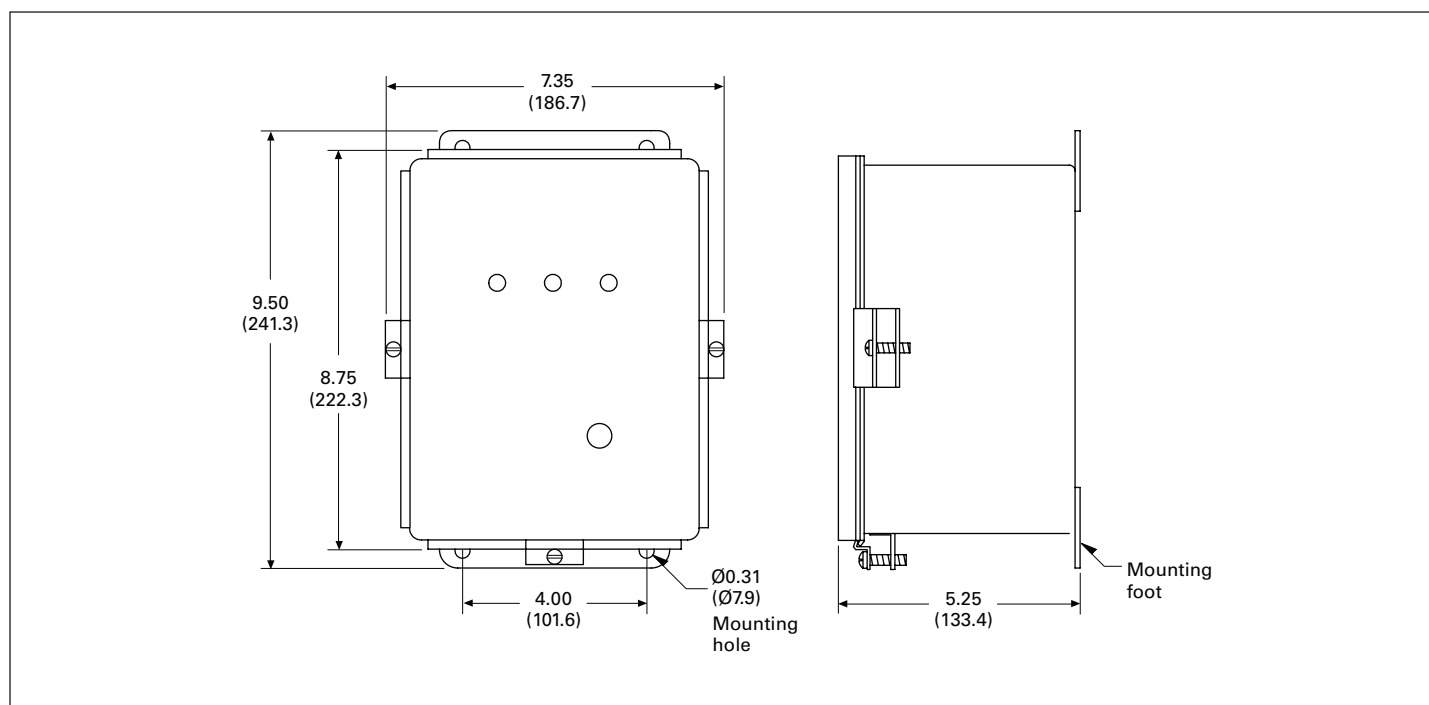


Figure 2. Protector series for PTE048, 065, 080 models 1P201, 3Y201, 3Y300, NN201, NN400, NN501, PTE/PTX 120 low-voltage models, and PTE/PTX 160 all models

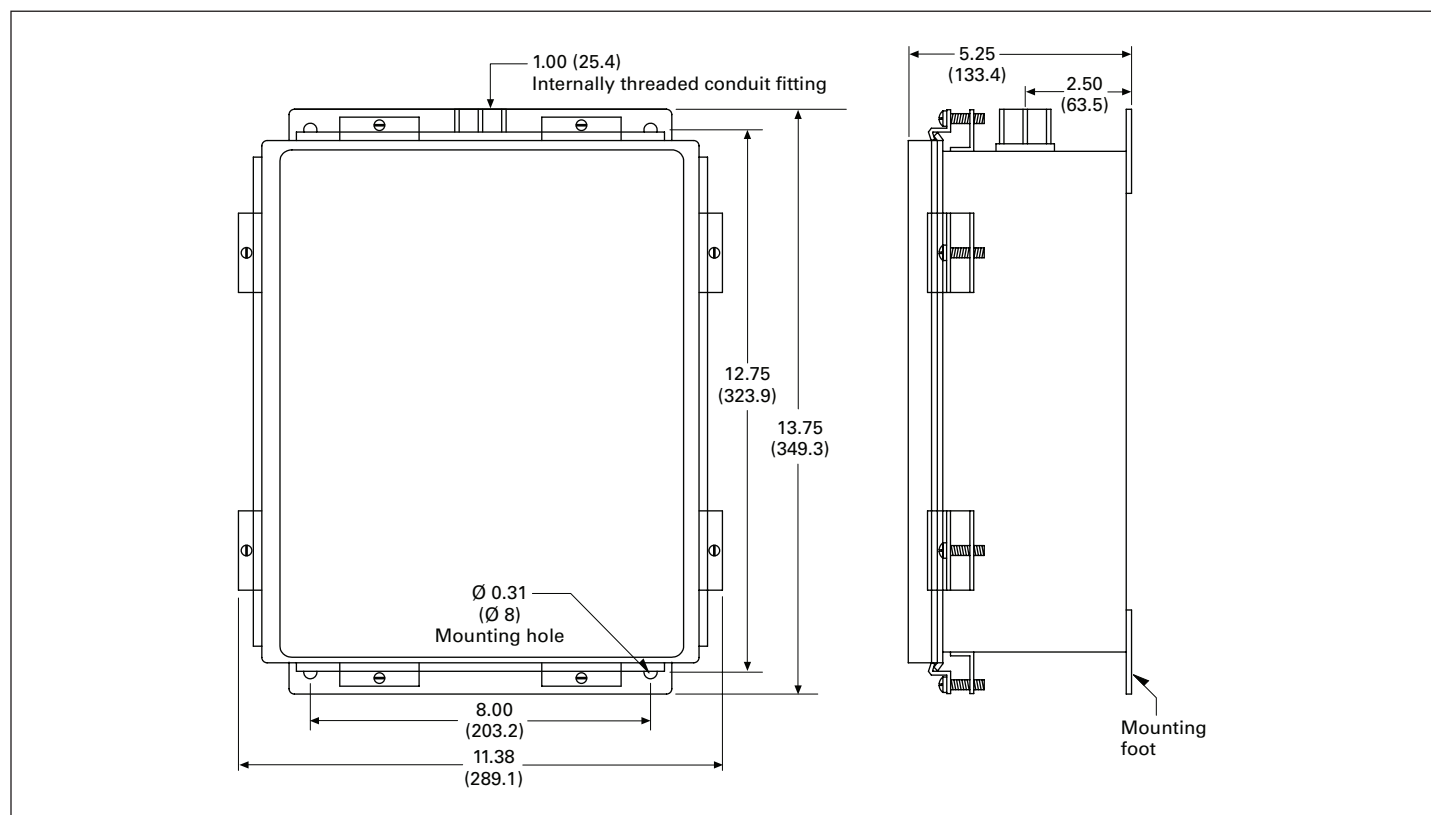


Figure 3. Protector series for PTX120 medium-voltage models only

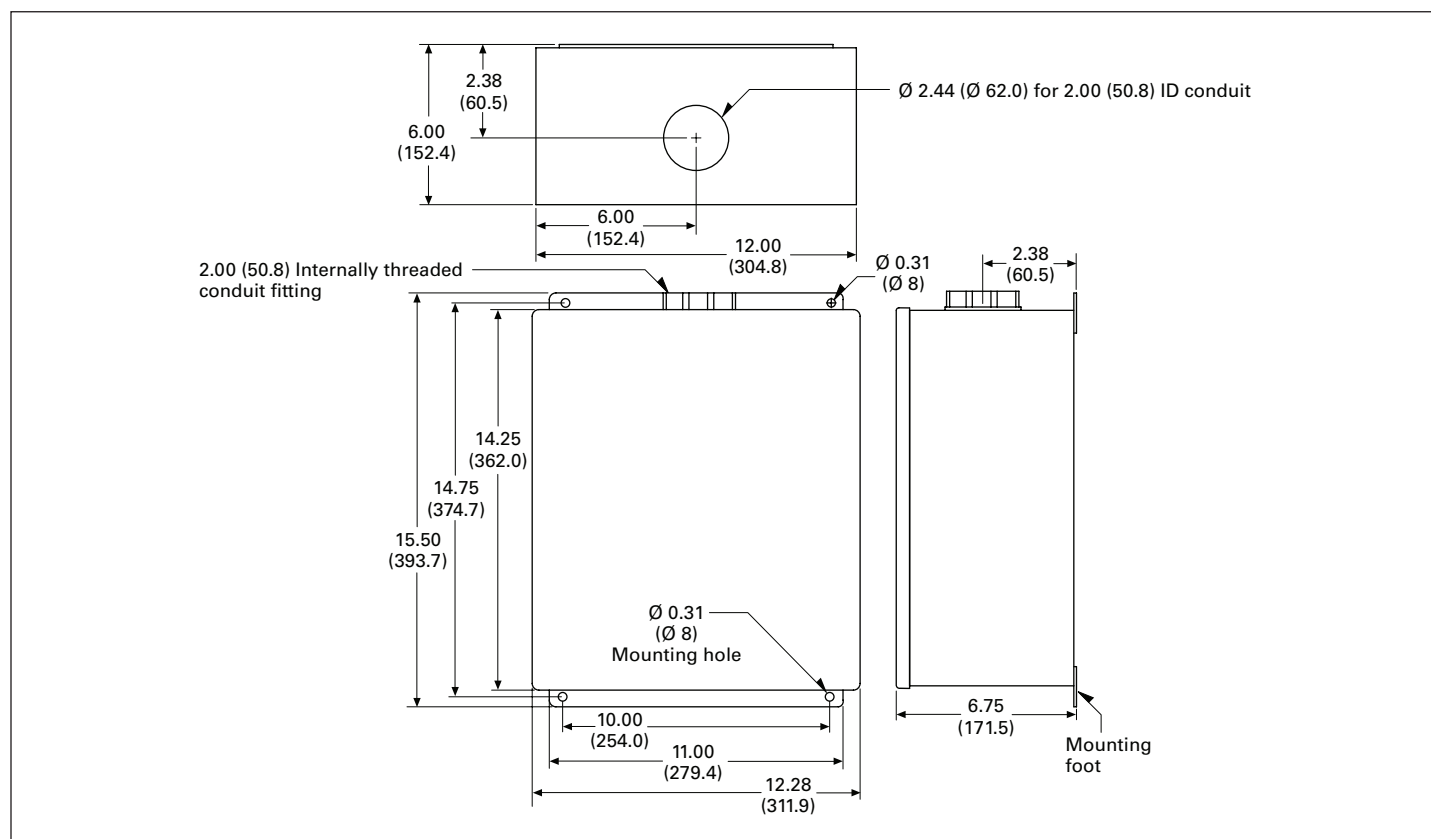


Figure 4. Protector series for PTX240 medium-voltage models only

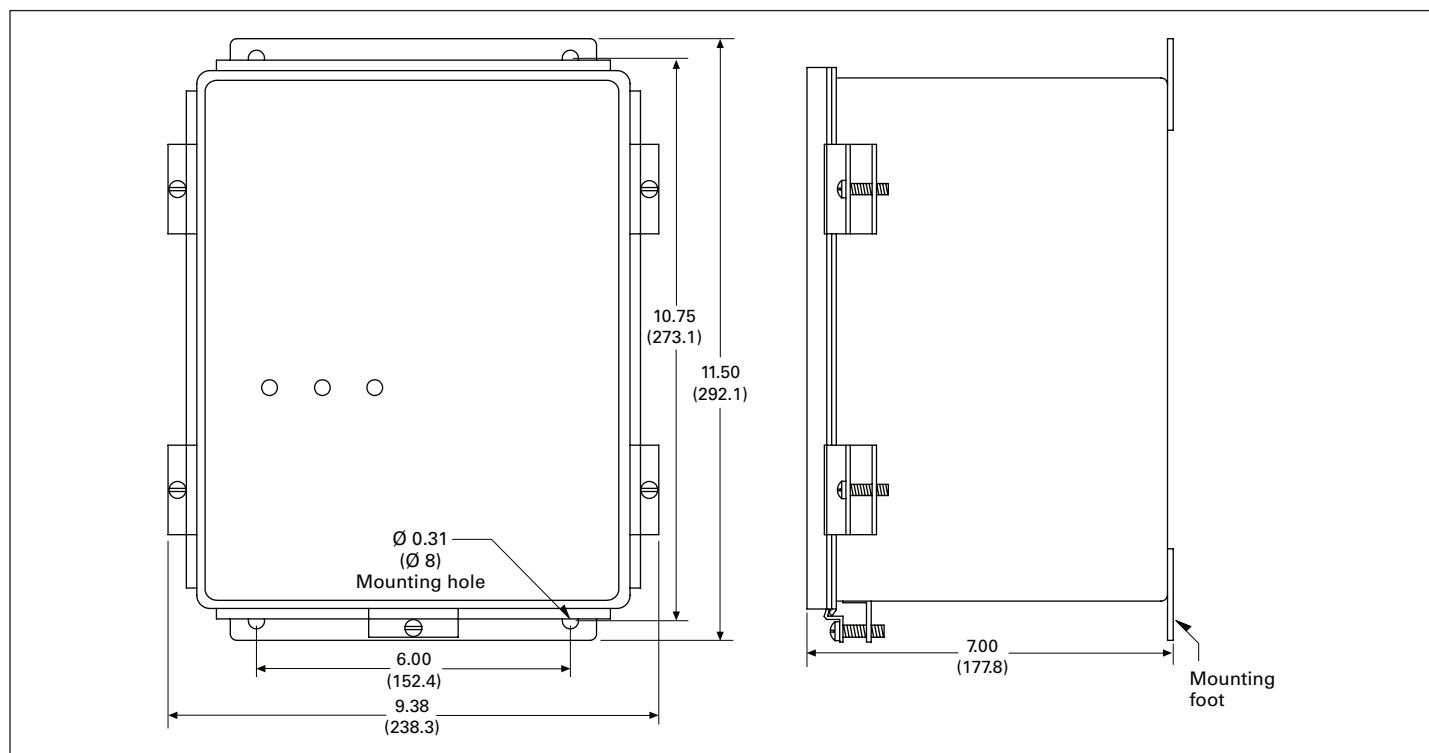


Figure 5. Protector series for PTE/PTX240 low-voltage models, PTE/PTX300 all models and PTE/PTX 400, all models

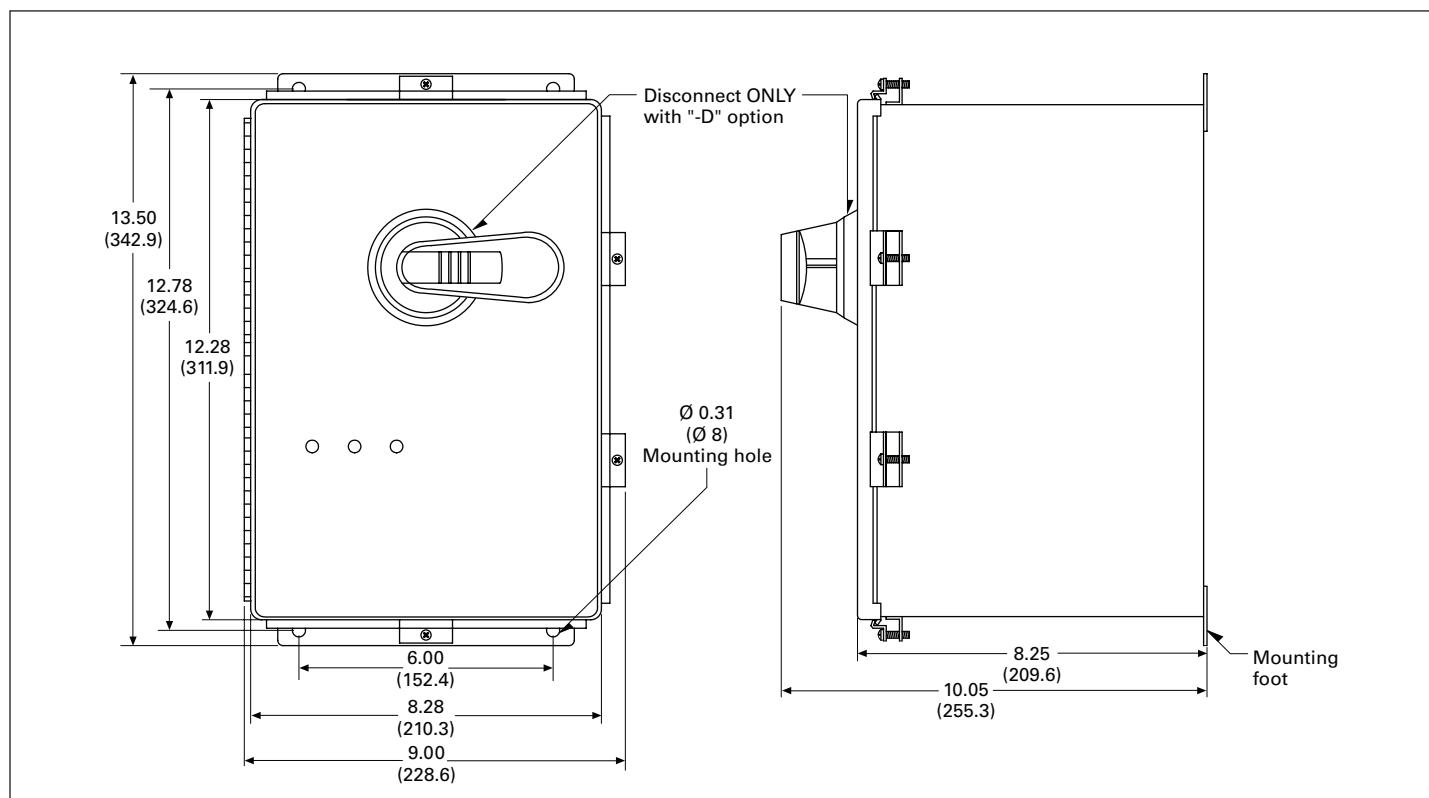
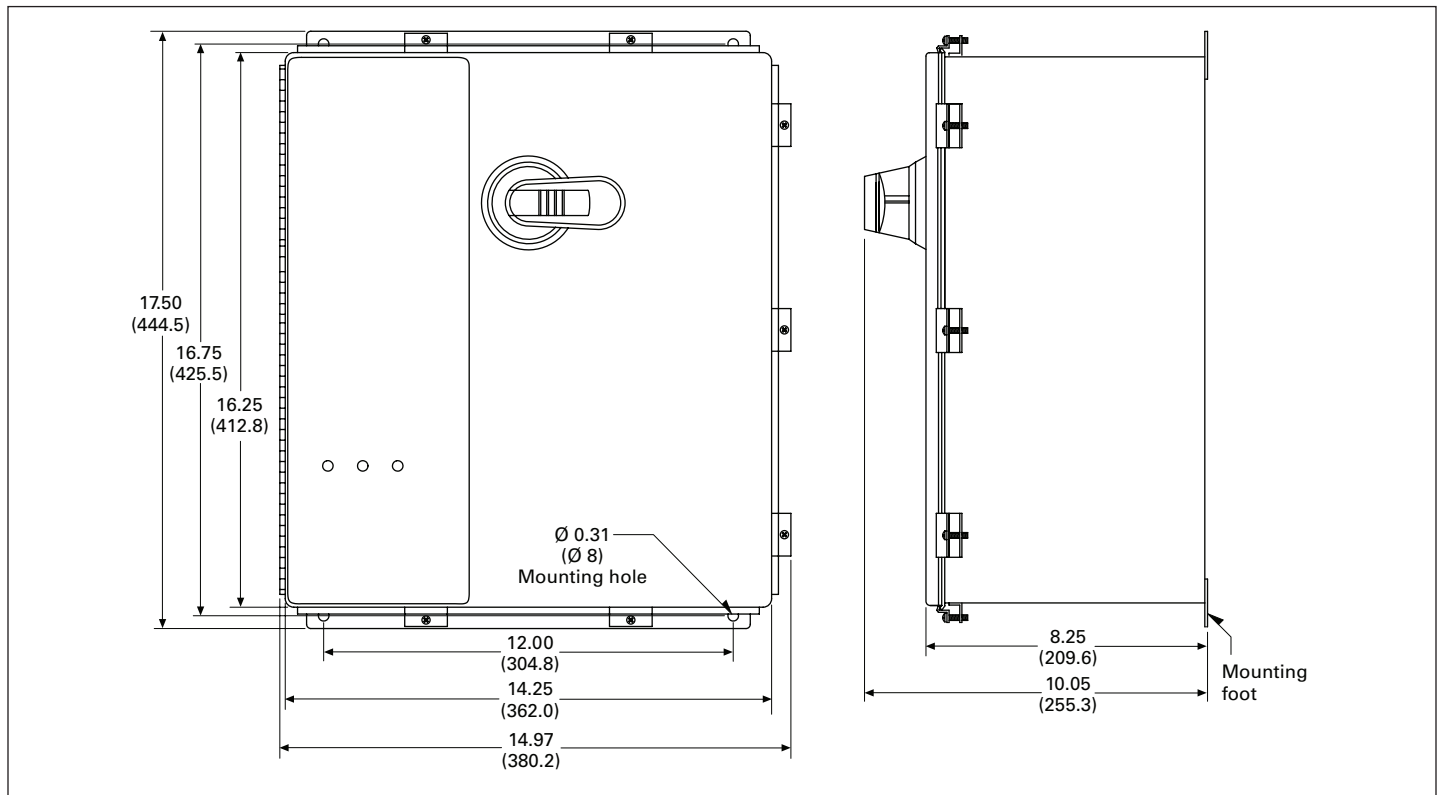
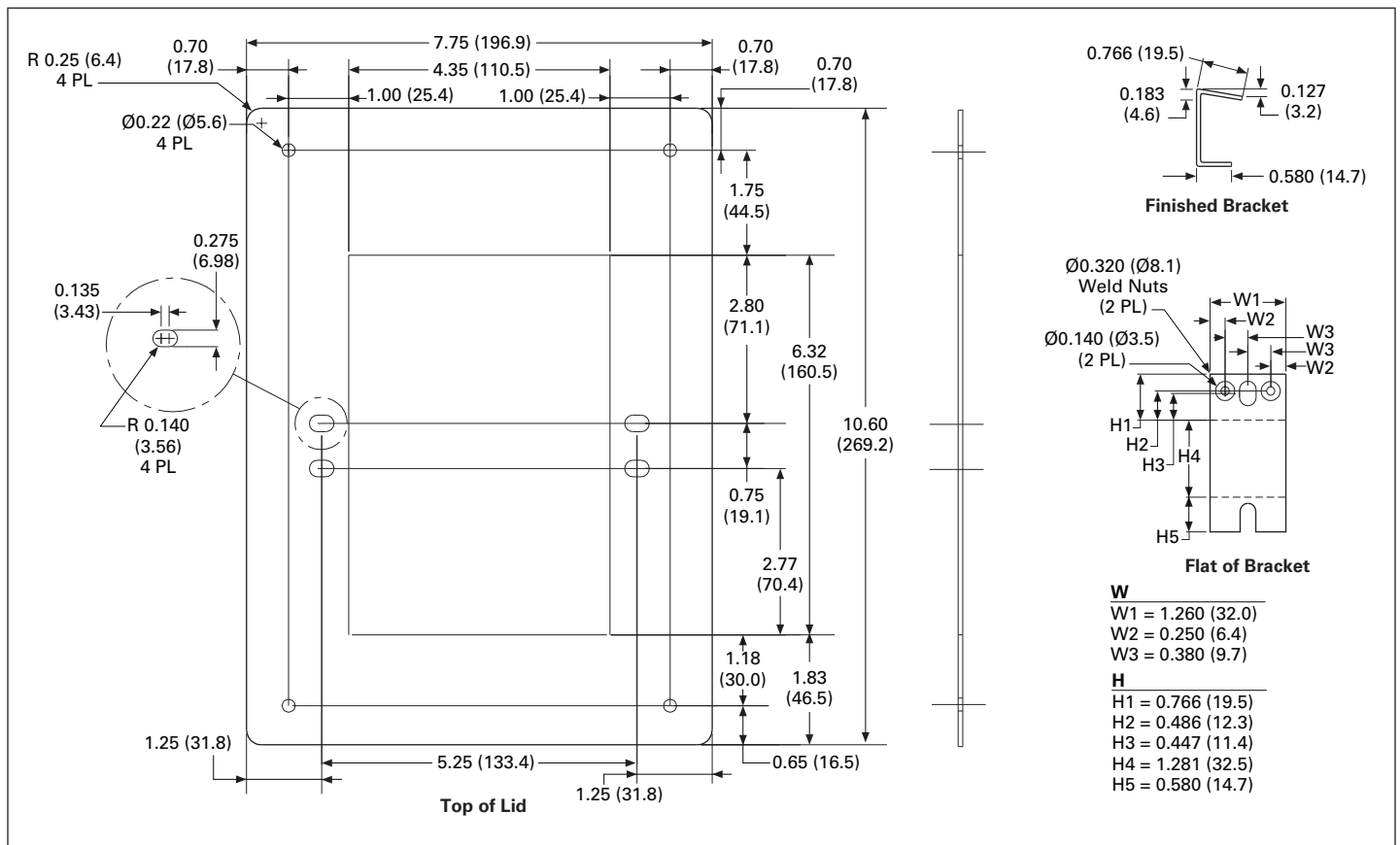


Figure 6. Protector series for the integral circuit breaker (-C) and circuit breaker and external disconnects (-CD) 80, 120 <sup>①</sup>, 160, 240 <sup>①</sup> and 300 kA models

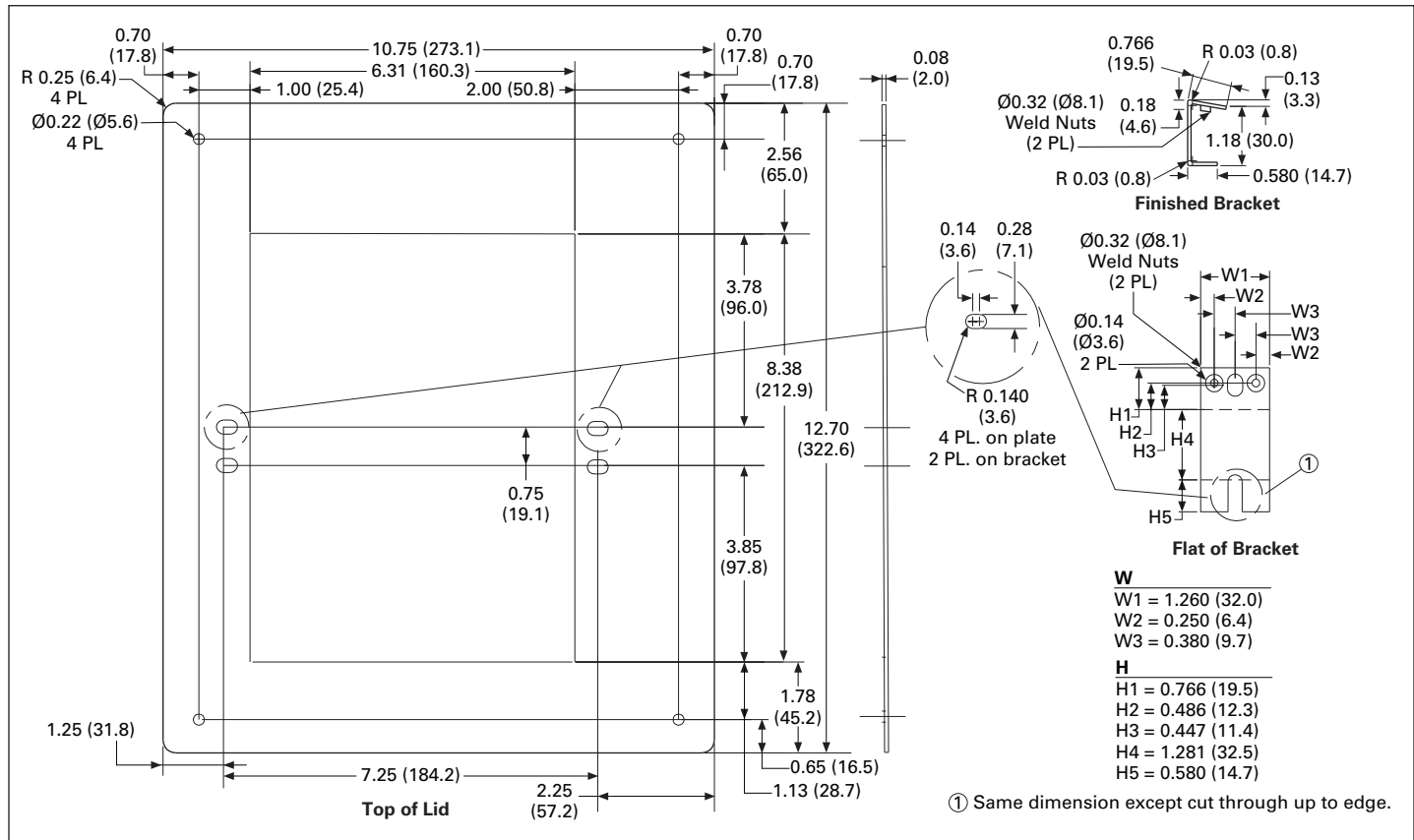
<sup>①</sup> Available only in low-voltage units



**Figure 7. Protector series for integral circuit breaker (-C) and circuit breaker and external disconnect (-CD) 400 kA models**



**Figure 8. FLUSHMNTPLATE3A PTE/X units 40, 65, 80 kA**



**Figure 9. FLUSHMNTPLATE8 PTE/X units 120 and 160 kA**

## Catalog numbering system

### Table 3. Protector ordering guidelines

**Model**  
PT = Protector

**Circuit design**  
X = Standard suppression  
E = Active Tracking Network (ATN) sine wave tracking, UL 1283

**Per phase peak surge current (kA)**

|          |     |
|----------|-----|
| 048 = 48 | 120 |
| 065 = 65 | 160 |
| 080 = 80 | 240 |
|          | 300 |
|          | 400 |

**Optional upgrades**  
C = Integrated circuit breaker  
CD = Integrated circuit breaker with external disconnect  
SD = S.M.A.R.T. surge counter  
**Note:** Omit for Standard, add as needed.

**Configuration and voltage ranges (Vac)**

- 1P101 = Single-phase—100, 110, 120, 127
- 1P201 = Single-phase—200, 208, 220, 230, 240, 277
- 1S101 = Split-phase—100/200, 110/220, 120/240, 127/254
- 3Y101 = Three-phase wye (star)—100/175, 110/190, 120/208, 127/220
- 3Y201 = Three-phase wye (star)—220/380, 230/400, 240/415, 277/480
- 3Y300 = Three-phase wye (star)—305/525, 347/600
- 3D101 = Three-phase high leg delta—120/240
- NN201 = Three-phase delta—200, 208, 220, 230, 240
- NN400 = Three-phase delta—380, 400, 415, 440, 480
- NN501 = Three-phase delta—525, 600

## Notes

Contact local Innovative Technology master distributor for available product configurations.

PTE/X units 40, 65, 80 kA: FLUSHMNTPLATE3A  
PTE/X units 120 and 160 kA: FLUSHMNTPLATE8

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