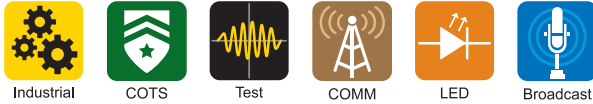


TDK-Lambda PFE-SA, PFE500-F & PFE1000-FA Series

300-1008W AC-DC Power Modules

<http://product.tdk.com/en/power/pfe>
www.emea.lambda.tdk.com/pfe



The high efficiency PFE series of AC-DC 300W to 1008W power modules are for use in environments where convection or forced air cooling is not viable. Suitable for use in outdoor enclosures or liquid cooled applications, these pcb mounted power modules accept a wide range AC input and deliver an adjustable, regulated output. High ambient temperatures can be tolerated as the conduction cooled baseplate can withstand -40 up to 100°C temperatures. The fully featured PFE500F and PFE1000FA modules offer a parallel connection for increased power, a 12V auxiliary supply and remote on/off. The semi-regulated 48V output PFE700SA provides a very high power density and up to 92% efficiency.

| Features | Benefits |
|---|--|
| • Compact Low Profile Package Sizes | • Space Saving in End Equipment |
| • High Efficiency | • Less Waste Heat to Manage and Reduced AC Power Consumption |
| • Up to 100°C Rated Baseplate Temperature | • Suitable for Rugged Environments |
| • Conduction Cooled Via Baseplate | • For Use in Convection Cooled or Sealed Enclosures |

| Model Selector | | | | | | | |
|----------------|-------------|----------------------|-----------------|----------------------|---------------------|------------------------------|-------------------------------|
| Model | Voltage (V) | Adjustable Range (V) | Max Current (A) | Max Output Power (W) | Ripple / Noise (mV) | Input Current (A) 115/230Vac | Efficiency (typ) % 115/230Vac |
| PFE300SA-12 | 12 | 9.6 - 14.4 | 25 | 300 | 120 | 3.3 / 1.6 | 84 / 86 |
| PFE500SA-12 | 12 | 9.6 - 14.4 | 33 | 396 | 120 | 4.2 / 2.1 | 84 / 86 |
| PFE500F-12 | 12 | 9.6 - 14.4 | 42 | 504 | 120 | 6.8 / 3.4(1) | 81 / 83 |
| PFE1000FA-12 | 12 | 9.6 - 14.4 | 60 | 720 | 120 | 8.0 / 3.9 | 84.5 / 89.5 |
| PFE300SA-28 | 28 | 22.4 - 33.6 | 10.8 | 302 | 280 | 3.2 / 1.6 | 87.5 / 89.5 |
| PFE500SA-28 | 28 | 22.4 - 33.6 | 18 | 504 | 280 | 5.2 / 2.5 | 88 / 90 |
| PFE500F-28 | 28 | 22.4 - 33.6 | 18 | 504 | 280 | 6.4 / 3.2(1) | 84 / 86 |
| PFE1000FA-28 | 28 | 22.4 - 33.6 | 36 | 1008 | 280 | 10.8 / 5.3 | 87 / 89.5 |
| PFE300SA-48 | 48 | 38.4 - 57.6 | 6.3 | 302 | 480 | 3.1 / 1.6 | 88 / 90.5 |
| PFE500SA-48 | 48 | 38.4 - 57.6 | 10.5 | 504 | 480 | 5.1 / 2.5 | 90 / 91 |
| PFE500F-48 | 48 | 38.4 - 57.6 | 10.5 | 504 | 480 | 6.4 / 3.2(1) | 84 / 86 |
| PFE1000FA-48 | 48 | 38.4 - 57.6 | 21 | 1008 | 480 | 10.6 / 5.2 | 88 / 90.5 |
| PFE700SA-48 | 48 | None | 14 | 714 | 4000 | 7.0 / 3.4 | 90 / 92 |

| | | | |
|------------------|---------------------------|----------|---|
| PFE500SA- | 12 | / | T |
| | Output voltage 12, 28, 48 | | blank / T Threaded mounting hole / non threaded mounting hole |

| Related Products | | |
|---------------------------|--------------------------------|-------------------------------|
| Type | Part Number(s) | Size (mm) / Description |
| Heatsink for PFE300/500SA | HAF-10L | 116.8 x 25.4 x 61 |
| Heatsink for PFE300/500SA | HAF-15L | 116.8 x 38.1 x 61 |
| Heatsink for PFE300/500SA | HAF-15T | 116.8 x 38.1 x 61 |
| Heatsink for PFE500F | HAL-F12T | 122 x 35 x 69.9 |
| Heatsink for PFE1000F | HAM-F10T | 160 x 33.4 x 100 |
| 504W AC-DC Power Module | PFH500F series | Next generation Power Modules |

| Specifications | | | | | |
|---|-----|---|----------|---------|-----------|
| Model | | PFE300SA PFE500SA | PFE700SA | PFE500F | PFE1000FA |
| Input | | | | | |
| Input Voltage Range | Vac | 85 - 265 | | | |
| Input Frequency | Hz | 47 - 63 (Contact factory for 400Hz operation) | | | |
| Input Current | A | See model selector table | | | |
| Inrush Current at 230Vac (typ) (Cold Start) | A | 46 (with recommended inrush resistor) | | | |
| Leakage Current | mA | less than 0.75 | | | |
| Power Factor (100/200Vac) | - | >0.95 | | | |
| Hold Up Time (typ) at 110/220Vac Input | ms | 20 | | | |
| Efficiency | - | See model selector table | | | |
| Conducted & Radiated EMI | - | EN55011/EN55032-A, FCC Class A, VCCI-A (External components are required, consult Evaluation Data) | | | |
| Immunity | - | IEC61000-4-2, -3, -4, -5, -6, -8, -11 (External component are required, consult Immunity Data) | | | |
| Safety Certifications and Markings | - | IEC/UL/CSA/EN62368-1, 60950-1, CE Mark and UKCA Mark | | | |

| Immunity | | | | |
|---------------------------------|--------------|--|----------|--|
| Test | Standard | Test Level | Criteria | Notes |
| ESD | EN61000-4-2 | Air ± 8kV and contact ± 4kV | B | 6kV with the external surge suppressor |
| Radiated Susceptibility | EN61000-4-3 | 80M -1GHz: 10V/m 1.4 - 2.0GHz: 3V/m 2.0 - 2.7GHz: 1V/m | A | |
| Electrical Fast Transient Burst | EN61000-4-4 | ± 2kV | B | |
| Surge | EN61000-4-5 | Normal ± 2kV Common ± 4kV | B | |
| Conducted Susceptibility | EN61000-4-6 | 10Vrms | A | |
| Magnetic Fields | EN61000-4-8 | 30A/m | A | |
| Voltage Dips | EN61000-4-11 | 30% 500ms | B | |
| | | 60% 10ms | B | |
| | | 100% 20ms | A | |
| | | 100% 5000ms | B | |

| Specifications | | | | | |
|---|---------|---|-------------------|-----------------------|-------------------|
| Model | | PFE300SA PFE500SA | PFE700SA | PFE500F | PFE1000FA |
| Output | | | | | |
| Output Voltage Adjustment | % | See model selector table | | | |
| Switching Frequency (Main converter) | kHz | 12V & 28V: 230, 48V: 180 | 180 | 230 | 230 |
| Line Regulation | mV | 12V: 48, 28V: 56, 48V: 96. The semi regulated PFE700SA output changes from 50 - 57V output ⁽²⁾ | | | |
| Load Regulation | mV | 12V: 48, 28V: 56, 48V: 96. The semi regulated PFE700SA output changes from 50 - 57V output ⁽²⁾ | | | |
| Ripple & Noise | mV | See model selector table | | | |
| Temperature Coefficient | %/°C | 0.02 | | | |
| Minimum Load | - | No minimum load required | | | |
| Overcurrent Protection | % | 105 - 140. Auto recovery on all models except PFE1000FA (Cycle AC to reset) | | | |
| Overvoltage Protection | - | 125 - 145% | 60 - 69.6V | 125 - 145% | 125 - 145% |
| Overtemperature Protection | % / V | Yes | | | |
| Remote Sense | - | No | No | Yes | Yes |
| Remote On/Off | - | No | | Yes: High = Output On | |
| Parallel Operation | - | No | Yes (Droop mode) | Yes (Active Mode) | Yes (Active Mode) |
| Environmental | | | | | |
| Operating Temperature (Maximum) | °C | -40 to +100 (Baseplate) ⁽³⁾ | | | |
| Operating Humidity (non condensing) | %RH | 20 - 95 | | | |
| Storage Temperature | °C | -40 to +100 | | | |
| Humidity (non condensing) | %RH | 10 - 95 | | | |
| Cooling | - | Conduction Cooled | | | |
| Altitude | m | 3048 | 3048 | 3000 | 3048 |
| Withstand Voltage (For 1 minute) ⁽⁴⁾ | Vac/Vdc | Input to Baseplate 2,500Vac, Input to Output 3,000Vac, Output to Baseplate 1,500Vdc for 1 minute | | | |
| Vibration (Non operating) | - | 10-55Hz (Sweep for 1min.) Amplitude 0.825mm constant (Max 49.0m/s ²) X,Y,Z 1 hour each | | | |
| Shock (Non operating) | - | Less than 196m/s ² , 11ms, ±X, ±Y, ±Z 3 times each | | | |
| Other | | | | | |
| Weight (Typ) | g | 200 | 200 | 300 | 420 |
| Size (LxWxH) | mm | 116.8 x 61 x 12.7 | 116.8 x 61 x 12.7 | 122 x 70 x 12.7 | 160 x 100 x 13.4 |
| Size (LxWxH) | Inches | 4.6 x 2.4 x 0.5 | 4.6 x 2.4 x 0.5 | 4.8 x 2.76 x 0.5 | 6.3 x 3.94 x 0.53 |
| MTBF - Telcordia SR-332 issue 3(5) | Hours | 1,641,918 | 1,662,809 | 774,640 | 1,512,925 |
| Warranty | yrs | 5 | 5 | 2 | 5 |

Notes

See website for detailed specifications, test methods and installation manual

Important: External components are required for operation. See instruction manual

(1) 100 / 200Vac input

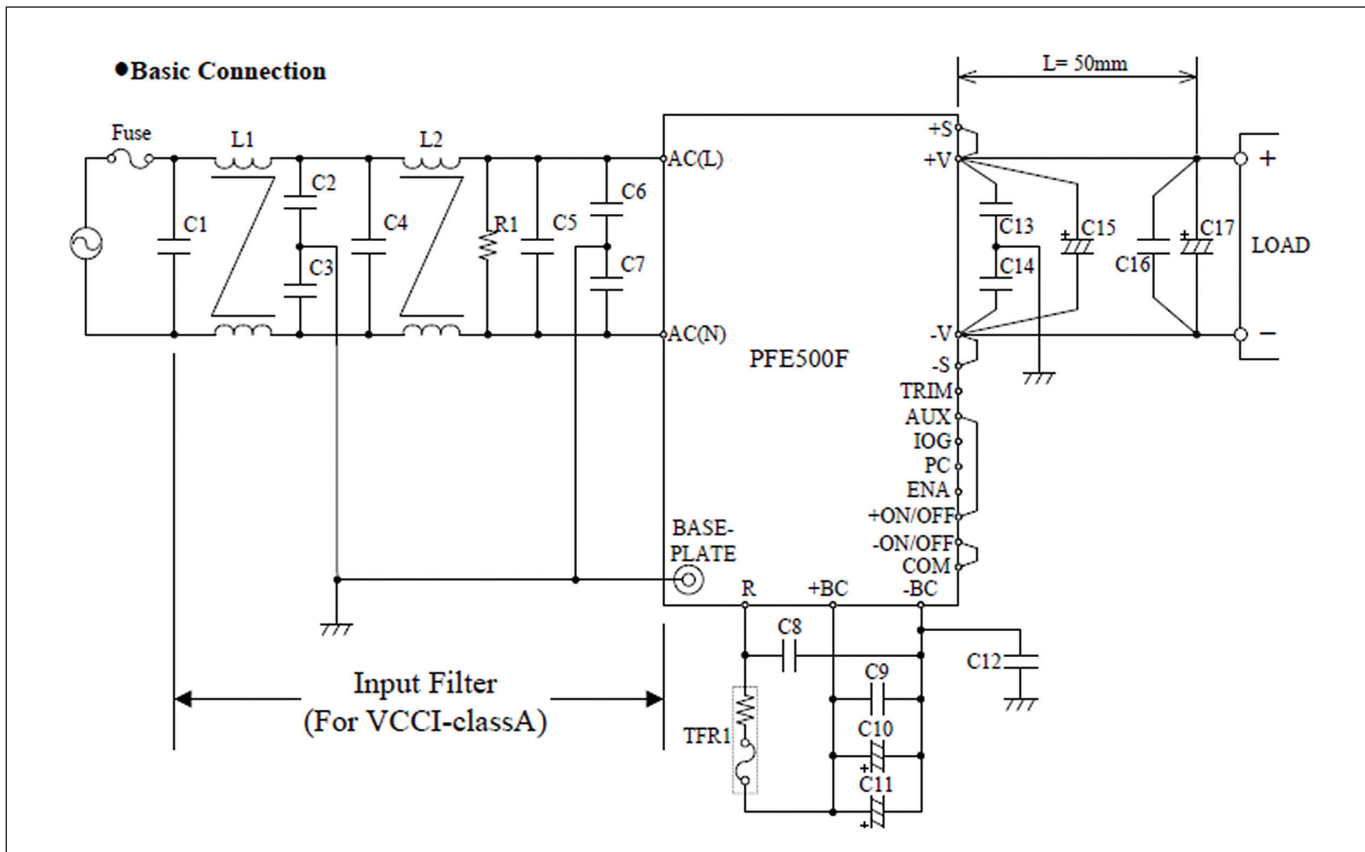
(2) Total regulation range (Line and Load)

(3) PFE500SA-12, PFE500F-12: -40 to 85°C. PFE1000FA, PFE1000FA-48: -40 to 85°C below 170Vac input. See instruction manuals for derating curves

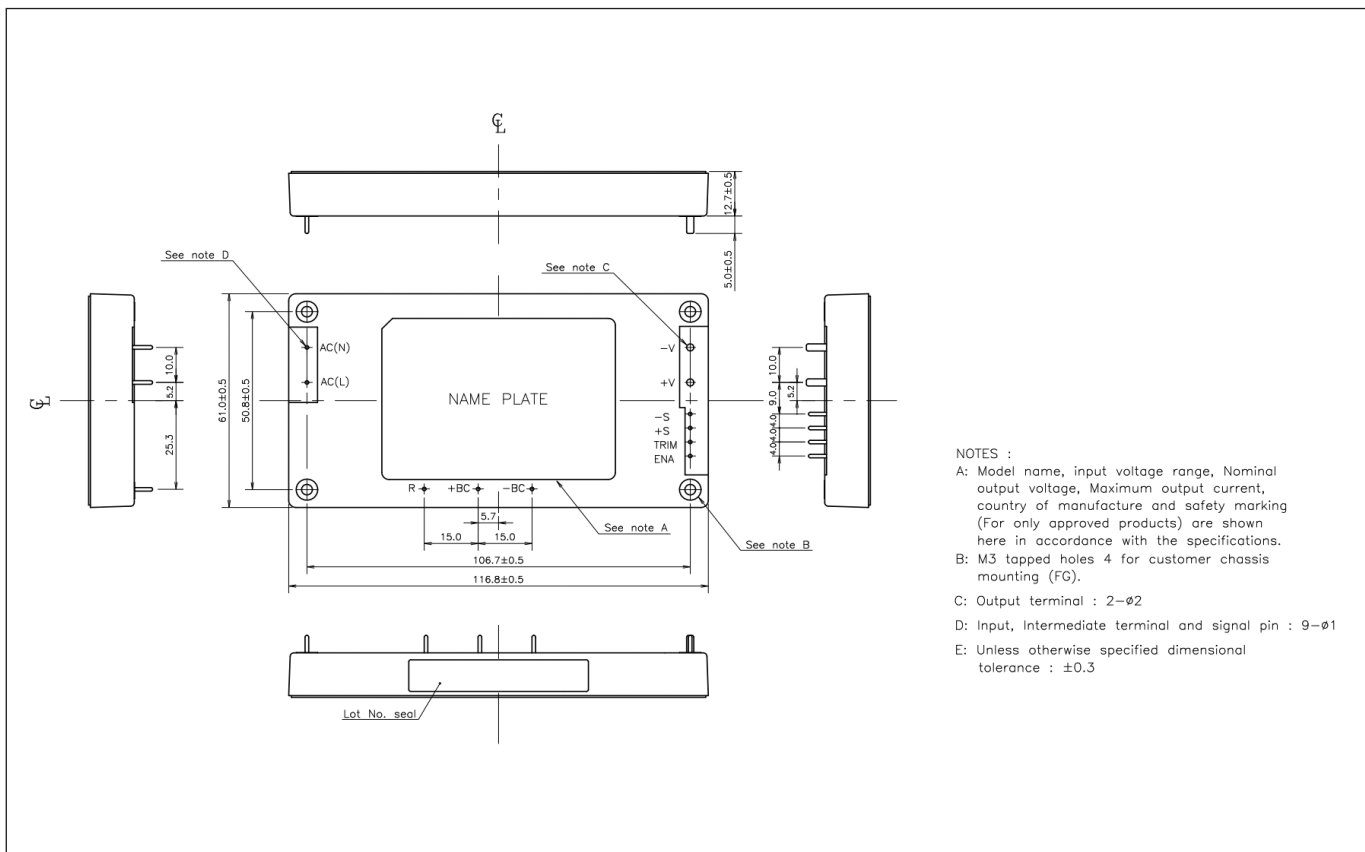
(4) PFE500F, PFE1000FA: 500Vdc Output to baseplate

(5) 40°C baseplate, Ground Benign. 100Vac input

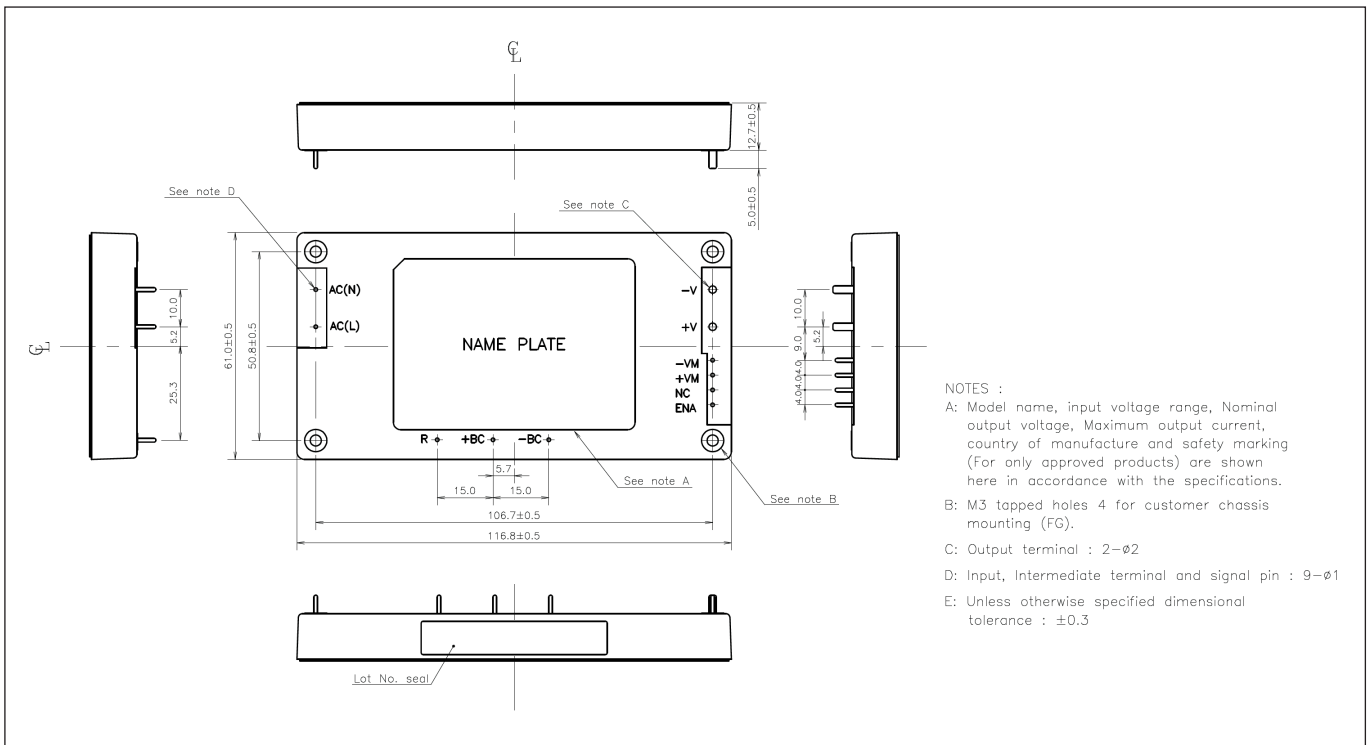
PFE500F Basic connection



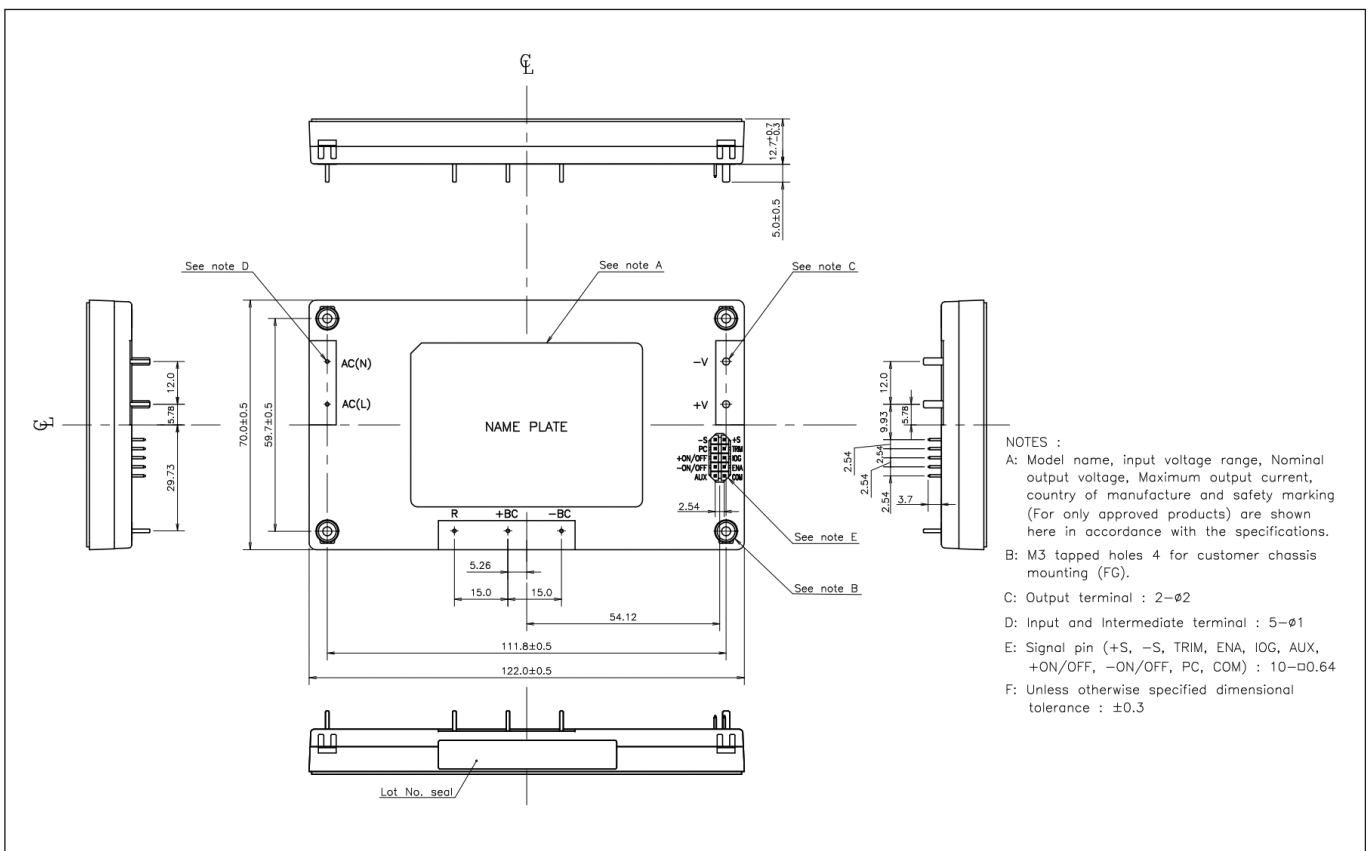
PFE300/500SA Outline Drawing



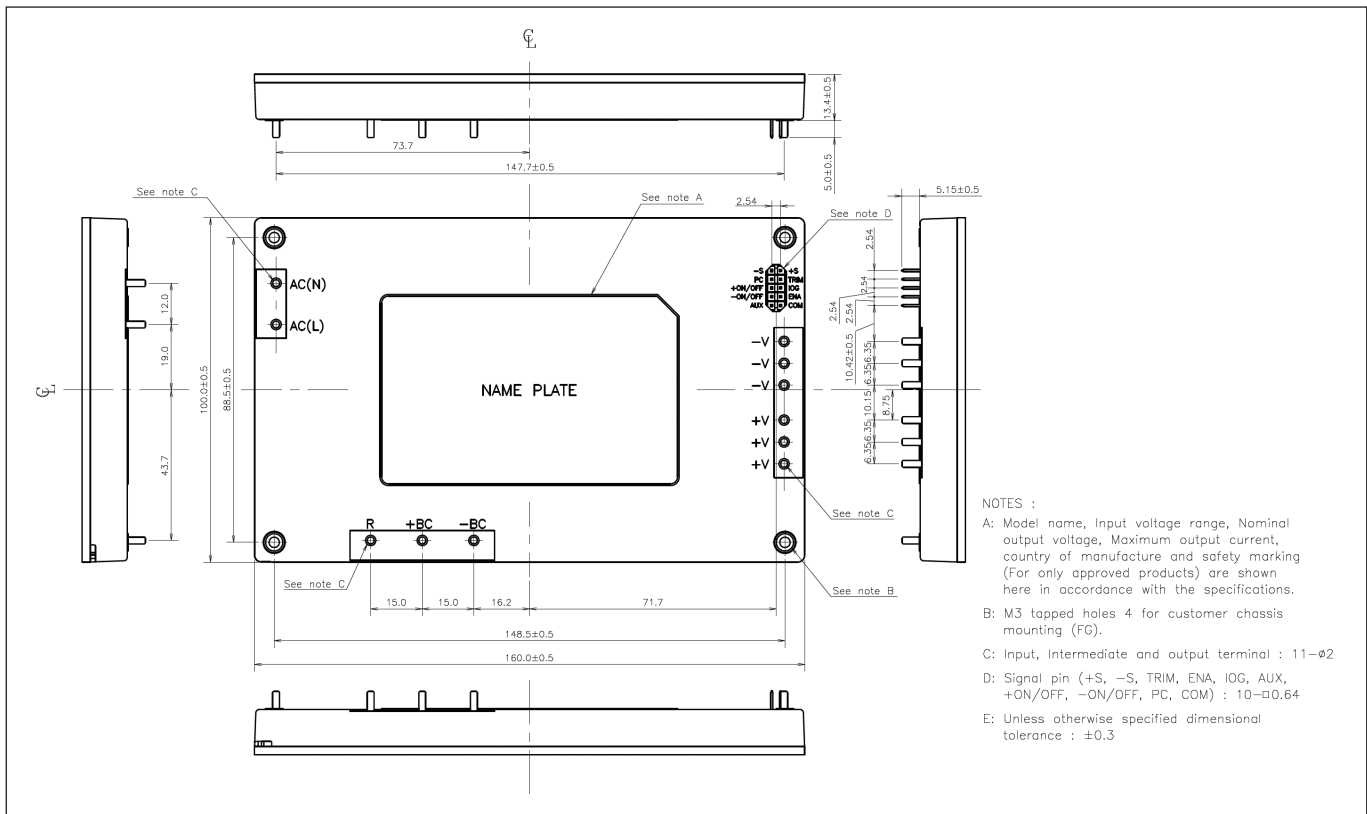
PFE700SA Outline Drawing



PFE500F Outline Drawing



PFE1000FA Outline Drawing





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