# Powerware

## Automatic Transfer Switches T2235 Series





## Enclosure Power Distribution Units (ePDU™)

*Switches out of Phase Power sources. Optional power Filtering and Circuit Breaker*

T2235-AB Front

A2 - Version Back

AB - Version Back

*AB - Version ONLY*

## PHYSICAL

- Height 1.72" (1U) x Depth 7.0" Depth 9.5" - Versions C2, F3, F4
- Powder coated black steel
- Detachable mounting brackets allow for several mounting options

## DUAL POWER INPUT

- Power cables with plugs are attached to unit through the rear panel cable grip
- -AB version has C20 inlets
  - Cables must be ordered separately

## OVERLOAD CIRCUIT PROTECTION

- (Optional) Electromagnetic circuit breakers with long time delay curve
- Circuit breaker trip guards are provided
- C1, C2, F3, F4 require circuit breakers for branch circuit protection to meet NEC and UL requirements

## INDICATOR LIGHTS

- (5) LED Indicator lights:
- Main Power, Primary Available, Secondary Available, Primary Output, Secondary Output

## POWER OUTLETS

- North American versions have NEMA style receptacles, (8) on the rear
- International versions have IEC style receptacles, (6-12) on the rear
- Optional cable restraint system with cable management.

## POWER FILTERING (Optional)

- High performance EMI/RFI filtering provides protection from both electromagnetic and radio frequency interference
- Filtering is both Common Mode (Line to Ground) and Differential Mode (Line to Line)

## SPIKE/SURGE SUPPRESSION (TVSS)

- Transient voltage surge suppression prevents damage due to voltage fluctuations
- Metal Oxide Varistors (MOVs) are utilized Line to Line (or neutral)

## AUTO TRANSFER SWITCH

- Firm drop out points allow a transfer before an under-voltage will affect equipment operation
- Transfer ranges (Voltage):

| Nominal | Drop Out | Pull In |
|---|---|---|
| 120V | 90V | 103V |
| 208V | 182V | 195V |
| 240V | 197V | 210V |

- Sources do NOT need to be phase synchronized
- Source transfer time of less than 30ms (clean sine wave to clean sine wave)
- Front panel LED's indicate which sources are available and selected at the output

## VOLTAGE RANGE SELECTION

- The "AB" International (IEC) version allows for all three voltage ranges 120V, 208V, or 240V
- Front panel switch to set the drop out and pull in range to the desired voltages see chart above
- This allows this one version to be specified for worldwide usage

## T2235 "Design Your Own" part number guide

**T2235-□□-□□B□□□**

**Option 1**
**A1** = 120V/15A input, 12A output
Receptacles: (8) NEMA 5-15R
**A2** = 120V/20A input, 16A output
Receptacles: (8) NEMA 5-20R
**AB** = 100-240V/20A input, 16A output
Output: (8) IEC C13 (1) IEC C19
**C1** = 120V/30A input, 24A output
Receptacles: (8) NEMA 5-15R
**C2** = 120V/30A input, 24A output
Receptacles: (8) NEMA 5-20R
**F3** = 200-240V/30A input, 24A output
Output: (12) IEC C13
**F4** = 200-240V/30A input, 24A output
Output: (4) IEC C13 (2) IEC C19

**Option 5**
**09S** = 9' cable with straight blade plug
**09L** = 9' cable with locking plug
**15S** = 15' cable with straight blade plug
**15L** = 15' cable with locking plug
**C20** = IEC C20 power inlet, cables ordered separately, AB version only

**Option 4**
**B** = Color Black - Adjustable Mounting

**Option 3**
**F** = Filtering
**N** = No Filtering

**Option 2**
**C** = Circuit Breaker
**N** = No Circuit Breaker



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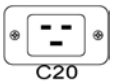
**Option 1: Voltage and Current Configuration**
**The following chart shows the available input/output voltage and current configurations. Most options have a choice of straight blade or twist lock connectors. This selection is made in options 3 and 4.**

| T2235 Series Version | Voltage/Current Input/Output Rating | Input Connectors | | Output Connectors |
|---|---|---|---|---|
| | | Straight Blade | Twist Lock | Straight Blade |
| **A1** | **120V, 12A** |  5–15P |  L5–15P |  5–15R |
| **A2** | **120V, 16A** |  5–20P |  L5–20P |  5–20R |
| **AB** | **100-240V, 16A** |  C20 | NA |  C13  C19 |
| **C1** | **120V, 24A (1) 2 Pole 15A UL listed CB is required for branch protection** | NA |  L5–30P |  5–15R |
| **C2** | **120V, 24A (1) 2 Pole 20A UL listed CB is required for branch protection** | NA |  L5–30P |  5–20R |
| **F3** | **200-240V, 24A (2) 2 Pole 15A UL Listed CB is required for branch protection** | NA |  L6–30P |  C13 |
| **F4** | **200-240V, 24A (2) 2 Pole 15A UL Listed CB is required for branch protection** | NA |  L6–30P |  C13  C19 |

**Option 2: Circuit Breaker**
This unit is available with or without a circuit breaker. The circuit breaker provides supplementary overload protection to the devices connected to the T2235. For mission critical applications, the T2235 can be ordered without a circuit breaker, preventing a single point of failure. Select "C" in this option to include the circuit breaker or "N" to not include it. (Circuit breakers are mandatory in C1, C2, F3, F4 versions.)

**Option 3: EMI/RFI Filtering**
Select "F" for filtering and "N" for no filtering.

**Option 4: Color and Mounting**
Powder Coat Black finish with adjustable mounting options.

**Option 5: Power Cable and Plug Type**
Choose either straight blade or twist lock style plug. See the table in Option 1 for a view of the available plug styles. Verify you have the correct type of mating receptacle available at your facility. Plug types sometimes limit the available voltage and current options. The AB version is available only with the C20 power inlet. The power cables for this version must be ordered separately.



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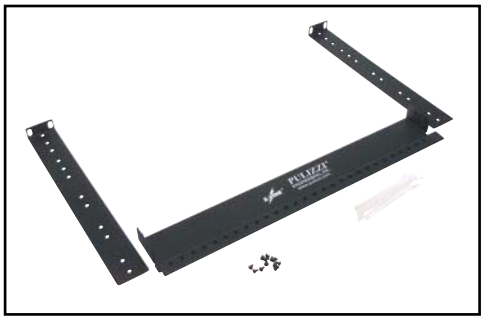
# Accessories

## Optional Cable Restraint and Management



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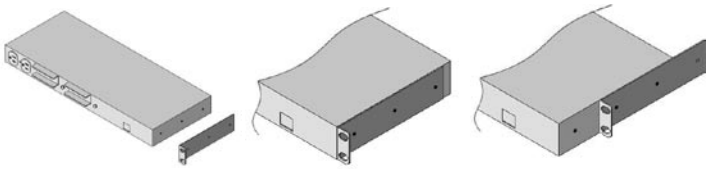
TRANSVERSE MOUNTING

- Prevent downtime and accidental disconnection
- Secure cables/plugs to Power Distribution Unit
- Cable ties provide highest level of retention

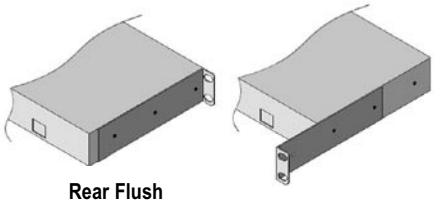
## Adjustable Mounting Options



Mounting Brackets Are Detachable With Several Mounting Options Shown

Front Flush

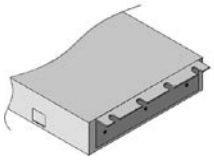
Center Mount



Rear Flush

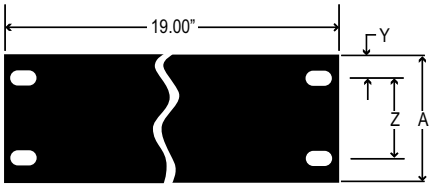


Front Recessed



Optional Zero-U Bracket (001-1928-1)

### Rack Mounting Hole Specification Table




### HOLE SPECIFICATION TABLE

| A | Y | Z |
|---|---|---|
| 1.75 | .25 | 1.25 |

010-9334:
C19 to NEMA 5-15P
125V, 15A Straight Blade
8 foot, 14AWG/3wire

010-9335:
C19 to NEMA 5-20P
125V, 20A Straight Blade
8 foot, 12AWG/3wire

010-9339:
C19 to NEMA L5-20P
125V, 20A Twist-Lock
8 foot, 12AWG/3wire

010-9341:
C19 to NEMA L6-20P
250V, 20A Twist-Lock
8 foot, 12AWG/3wire

010-9343:
CEE7-7 to C19
250V, 16A EUROPE (Schuko)
2.5M, 1.5mm/3wire Harmonized

010-0025: 8 foot
C13 to C14 Harmonized, 1mm/3wire
100-240V rated



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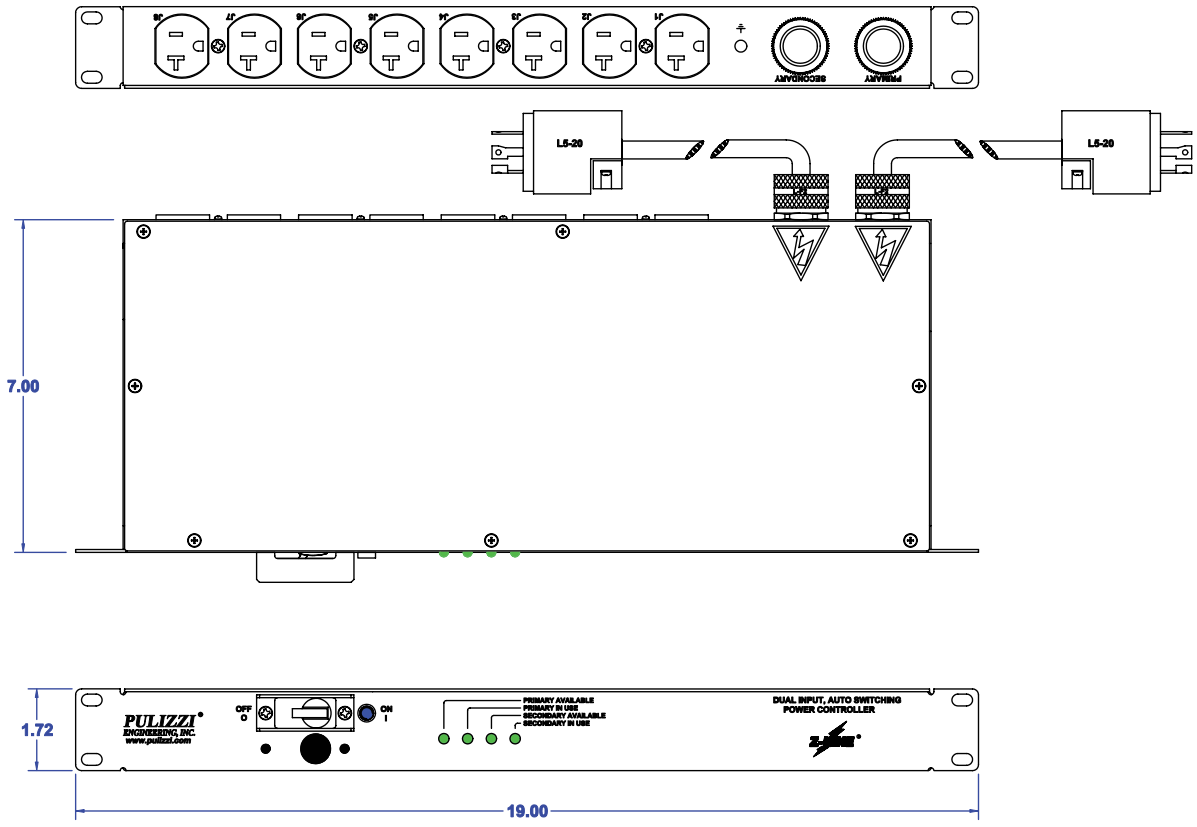
| TVSS (Transient Voltage Surge Suppression) MOV SPECIFICATIONS | | | |
|---|---|---|---|
| Continuous AC Voltage | 150VAC | 270VAC | 320VAC |
| Continuous DC Voltage | 200VDC | 360VDC | 420VDC |
| Max. DC Leakage | 200µA | 200µA | 200µA |
| Low Varistor Voltage Limit | 212VDC | 389VDC | 462VDC |
| High Varistor Voltage Limit | 243VDC | 453VDC | 540VDC |
| Nominal Varistor Voltage | 236VDC | 424VDC | 503VDC |
| Current For Varistor Voltage | 1mA | 1mA | 1mA |
| Max. Clamp Voltage 8x20µs | 360V | 680V | 810V |
| Max. Clamp Voltage Test Current | 100A | 100A | 100A |
| Peak Current Rating (1 Pulse) | 12000A | 10000A | 10000A |
| Peak Current Rating (2 Pulse) | 9000A | 6500A | 6500A |
| Energy Rating (10x1000µs) | 170J | 325J | 385J |
| Energy Rating (8x20µs) | 170J | 325J | 385J |
| Capacitance | 1700pF | 970pF | 820pF |
| Impulse Response Time | 50ns | 50ns | 50ns |

| EMI/RFI FILTERING COMMON MODE INSERTION LOSS | | | | |
|---|---|---|---|---|
| Mhz. | .2 | 1.0 | 2.0 | 10.0 |
| dB. | 15 | 25 | 45 | 50 |

| DIFFERENTIAL INSERTION LOSS | | | | |
|---|---|---|---|---|
| Mhz. | .2 | 1.0 | 2.0 | 10.0 |
| dB. | 10 | 22 | 32 | 50 |

### Environmental

Operating Temperature is 0 to 50 C
Storage Temperature is -40 to 70 C
Altitude Maximum 10,000 ft.
Relative Humidity is 95% Max Non-Condensing




Drawings are not shown to scale
Dimensions are in inches



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