Uninterruptible Power Supplies

Contents

Eaton's Uninterruptible Power Supplies

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Product Overview

Eaton's power quality portfolio encompasses a comprehensive offering of power management solutions from a single-source provider. This includes UPSs, surge protective devices, power distribution units (PDUs), remote monitoring, meters, software, connectivity, enclosures and services. Our power quality portfolio was designed to fulfill specific customer requirements, to complement a new or pre-existing solution, and to deliver a comprehensive solution. With all our products, Eaton strives for continued success in leveraging technical innovation to develop next-generation solutions. The products and services listed below are just a sampling of our comprehensive solution set. To view the complete offering or to request a product catalog, please visit www.eaton.com/powerquality.

PC/Workstation and Home A/V UPS

Power Range: 500–1500 VA

These Eaton UPSs provide the perfect level of protection for small office/home office (SOHO) applications. These essential, cost-effective products prevent damage such as data loss, file corruption, flickering lights, hardware damage and equipment shutoff, and they are most commonly used to protect single workstations, telephone systems and point-of-sale (POS) equipment.

Eaton 5110, 500–1500 VA

Eaton 5110, 500–1500 VA

Eaton's 5110 UPS provides cost-effective, line-interactive backup power and voltage regulation. With its compact form factor, the 5110 can be used as a standalone tower or under a computer monitor. This UPS is also equipped with eight outlets—four with surge suppression and battery backup and four with surge suppression only.

Network and Server UPS

Power Range: 500–18,000 VA

Eaton offers an extensive and innovative line of network and server UPS solutions to protect rack servers, data storage, storage systems, VoIP equipment, network equipment and other critical devices. Get industry-leading power protection with the highest efficiency for increased energy savings in optimized rack, tower and rack/tower form factors.

Eaton 9130, 700–3000 VA, Rack and Tower

Eaton 9130, 700–3000 VA, Rack and Tower

The 9130 delivers more real power with a 0.9 power factor and offers a high efficiency mode, performing at a remarkable 95% efficiency or higher. This UPS delivers superior power protection for IT and networking environments, medical and manufacturing systems.

Eaton EX RT, 5–11 kVA, Rackmount/Tower

Eaton EX RT, 5–11 kVA, Rackmount/Tower

Ideal for high-density server environments and harsh industrial applications, the Eaton EX RT UPS is specifically engineered to meet the high-availability demands of customers with switches, IT systems, measuring instruments, PLCs, industrial PCs and other sensitive electronic equipment.

Data Center and Facility UPS

Power Range: 10–1100 kVA

Featuring an array of inventive features, Eaton's data center and facility UPS solutions incorporate the design elements essential to protecting the most critical of applications. These groundbreaking solutions address current and future power protection requirements, featuring scalable architecture that grows with you to manage changing needs with the highest levels of efficiency and reliability. And, with Eaton's Energy Saver System technology, an Eaton UPS can run at 99% efficiency, the energy savings from which usually recover the total cost of the UPS in 3–5 years.

Eaton 9390, 20–160 kVA

Eaton 9390, 20–160 kVA

The 9390 UPS provides a high-end power-quality solution for data centers, banks and other critical computing applications.

Eaton BladeUPS, 12–60 kW

Eaton BladeUPS, 12–60 kW

The scalable and modular BladeUPS expands power protection up to 60 kW in a single 19-inch rack while reducing energy and cooling costs with its energy-efficient UPS design. The BladeUPS packs 12 kW of power into only 6U of rack space.

Power Distribution

Eaton's power distribution solutions are designed to help you save money, prevent downtime and use energy more efficiently. Our comprehensive portfolio includes enclosures, rack-mount UPSs, ePDUs (rackmount power distribution units) and a host of other power-quality equipment.

ePDU

ePDU

Eaton's line ePDU products distribute 1.4 to 15 kW of power and offer five levels of functionality. From basic, economical power distribution to automatic transfer switch capabilities, Eaton ePDU products satisfy demands of every data center.

Eaton Enclosures

Eaton Enclosures

Designed specifically for IT applications, this 42U modern enclosure offers strength, stability and a vendor-neutral environment to house any IT equipment.

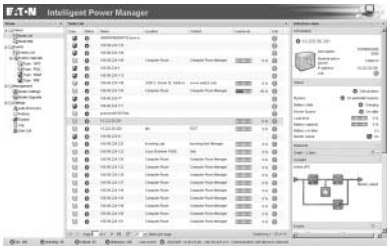
The enclosure is complemented with a range of cable management, cooling and power distribution accessories to enable you to tailor your enclosures to your specific application.

Surge Suppressors

Surge Suppressors

Eaton's Eclipse surge suppressors offer the best price/performance ratio for home office and small office users looking for a convenient way to combine multiple receptacles and excellent surge suppression capabilities.General Introduction

Software and Connectivity



Software and Connectivity

Eaton's software products deliver the ability to manage all your power devices over your network or the Web, from one or more PCs. With both supervisory and protection capability, our software allows you to monitor your power devices and even gracefully shut them down in the event of an extended power outage.

Eaton's connectivity products are accessory hardware options that link Eaton UPS, PDU and RPP products with external power and communication devices. Our connectivity products provide communication compatibility with a variety of external devices through the Web, serial, relays or SNMP.

Eaton Services

Eaton Services

Eaton's comprehensive, world-class service solutions for our AC, DC, software and connectivity products are designed to improve costs, uptime, reliability, power quality and safety. We are consistently ranked No. 1 in quality and demonstrate our commitment to strong customer relationships through our technical expertise and expansive support services. With 240 customer field technicians in North America and 1200 international authorized service providers, we have more service personnel than any other UPS manufacturer. Eaton also provides extended warranties.

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Eaton 9355 Uninterruptible Power System

10–15 kVA *20–30 kVA*

General Description

9355 10–15 kVA

Eaton's 9355 10–15 kVA UPS provides full-featured, efficient power protection in a compact tower about half the size of most competitor units on the market today—and is exceptionally easy to install and manage.

9355 20–30 kVA

Eaton's 9355 20–30 kVA UPS provides full-featured, efficient power protection in a compact tower. The product is exceptionally easy to install and manage, and the paralleling capability is unmatched in the industry.

Features and Benefits

- Protects connected equipment from all nine of the most common power anomalies
- Provides more real wattage in less space with a 0.9 power factor—protecting more equipment and leaving more room for expansion
- System efficiency up to 91%—minimizes cost of ownership
- Supports Eaton Hot Sync paralleling of multiple modules for redundancy or extra capacity
- Increases battery life through proven ABM®, a microprocessor-controlled advanced battery management technology
- Provides 0.99 power factor and generator friendly <5% total harmonic distortion using an active IGBT rectifier to control the input power factor
- Ensures data and system integrity with complete power management software for remote monitoring, management and shutdown—over the network and the Internet

With advances in miniaturization and processing power, a single rack of equipment demands more power than ever—and more equipment will be served by dual cord power supplies. It's a challenge to provide power protection for expanding loads in shrinking spaces.

Fortunately, technology advancements have also raised the density per square foot of power protection systems. The Eaton 9155 and Eaton 9355 uninterruptible power systems (UPSs) deliver premium levels of efficiency, reliability and flexibility—all in a sleek tower half the size of most competitor units on the market today.

This double-conversion, online UPSs resolve all nine common utility power problems and supply clean, continuous power to all connected equipment. Even when presented with the most severe power problems, power output remains stable. And if the utility power goes out altogether, there is no delay transferring to backup power.

These capabilities make the Eaton 9155 and Eaton 9355 ideal for protecting essential data center, communications and electrical engineering infrastructures in corporate, telecom, healthcare, banking, public sector and industrial applications—even marine environments, with special engineering.

Premium power protection is now easier than ever.

With raised-floor real estate at a premium, you will appreciate that these UPSs are only 12 inches (304.8 mm) wide and 33 inches (838.2 mm) deep, including internal batteries. With such a small footprint, you have more location options, and more space is available for future expansion. Equipment installation is easy, essentially plug-and-play. You can order either UPS with your choice of output receptacles with more than 17 types. To change or move data center equipment, you simply unplug from the old receptacle, plug into a new one, and go. No need for an electrician to run new conduit and wiring.

kVA UPS, for example, can grow to support loads of up to 45 kVA. There's no dependence on communications wiring among those UPS modules.

Battery innovations optimize battery performance and service life.

Standard internal batteries provide power until auxiliary power takes over or systems are gracefully shut down. Battery run time can be extended to hours by adding matching Extended Battery Modules.

Eaton 9155 and Eaton 9355 UPSs also use sophisticated technologies that maximize the health and service life of batteries:

- ABM technology uses a unique three-stage charging technique that significantly extends battery service life and optimizes recharge time, compared to traditional trickle charging
- Temperature-compensated charging monitors battery temperature and adjusts the charge rate accordingly, which properly charges the battery and greatly extends battery life
- An integrated battery management system tests and monitors battery health and remaining lifetime, and provides advance notification to guide preventive maintenance

Unlike heavy, old-style batteries, Eaton's are easily field-replaceable. One person, working alone, can replace a battery without disrupting data center operations or power to protected equipment.

Advanced design delivers unequaled power performance.

The innovative design of these UPSs deliver the industry's best performance combination of efficiency, input current distortion, input power factor and output power factor.

Lower costs, lower temperatures.

High efficiency (greater than 90% across all load ranges) reduces utility costs, extends battery run times and produces cooler operating conditions.

Generator-friendly design.

Total input harmonic distortion (THD) remains below 5% without compromising overall efficiency. The result is maximum transfer of power between source and protected load, and exceptional compatibility with auxiliary generators.

Table 33.2-1. Eaton 9355 Backup Times (In Minutes)

VA	Watt	UPS +Internal 32 Battery	(1) EBM 64	(2) EBM 64	(3) EBM 64	(4) EBM 64	UPS +Internal 64 Battery	(1) EBM 96	(2) EBM 96	(3) EBM 96
15,000	13,500	4.6	23.0	43.0	65.1	88.6	13.3	43.0	76.7	113.0
14,500	13,050	4.9	24.1	45.2	68.3	93.0	14.1	45.2	80.5	119.0
14,000	12,600	5.2	25.2	47.3	71.5	97.4	14.9	47.3	84.2	125.0
13,500	12,150	5.5	26.4	49.4	74.7	102.0	15.8	49.4	88.1	130.0
13,000	11,700	5.8	27.6	51.6	78.1	106.0	16.7	51.6	92.0	136.0
12,500	11,250	6.1	28.8	54.0	81.6	111.0	17.6	54.0	96.2	142.0
12,000	10,800	6.5	30.2	56.5	85.5	116.0	18.6	56.5	101.0	149.0
11,500	10,350	6.9	31.6	59.3	89.7	122.0	19.2	59.3	106.0	156.0
11,000	9900	7.3	33.3	62.4	94.4	129.0	20.2	62.4	111.0	164.0
10,500	9450	7.8	35.1	65.9	99.6	136.0	21.4	65.9	117.0	174.0
10,000	9000	8.4	37.2	69.8	106.0	144.0	22.6	69.8	124.0	184.0
9500	8550	9.1	39.6	74.2	112.0	153.0	24.1	74.2	132.0	196.0
9000	8100	9.9	42.3	79.4	120.0	163.0	25.7	79.4	141.0	209.0
8500	7650	10.8	45.5	85.2	129.0	175.0	27.6	79.4	152.0	225.0
8000	7200	11.9	49.1	91.9	139.0	189.0	29.8	91.9	164.0	242.0
7500	6750	13.1	53.2	99.7	151.0	205.0	32.3	99.7	178.0	263.0
7000	6300	14.6	58.0	109.0	164.0	224.0	35.2	109.0	194.0	286.0
6500	5850	16.3	63.5	119.0	180.0	245.0	38.6	119.0	212.0	314.0
6000	5400	18.4	70.0	131.0	198.0	270.0	42.5	131.0	234.0	346.0
5500	4950	20.1	77.6	145.0	220.0	300.0	47.2	145.0	259.0	383.0
5000	4500	22.4	86.6	162.0	245.0	334.0	52.6	162.0	289.0	428.0
4500	4050	25.2	97.4	182.0	276.0	376.0	59.2	182.0	325.0	—
4000	3600	28.6	110.0	207.0	313.0	426.0	67.1	207.0	369.0	—
3500	3150	32.8	127.0	238.0	359.0	—	77.0	238.0	423.0	—
3000	2700	38.3	148.0	277.0	418.0	—	89.7	277.0	—	—
2500	2250	45.6	176.0	329.0	—	—	107.0	329.0	—	—

While protecting critical systems, the UPS itself is protected in several ways:

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Self-Diagnosis

- The UPS constantly monitors its own operation, such as voltage, temperature or function of internal elements—and sends alarms or takes action if it detects a potential problem. You'll know your UPS is always performing up to specifications to protect your equipment

Self-Correction

- If the UPS senses an issue—planned or unplanned—it instantly transfers the power path to a bypass source, with zero interruption in power. When the alarm condition passes, the UPS automatically reverts from bypass to normal operation

Remote Monitoring

- You can have Eaton specialists securely monitor your Eaton 9155 and Eaton 9355 UPSs around the clock with eNotify service, or you can monitor your own UPSs over your LAN or the Internet. Either way, you'll always be informed about conditions in your power protection infrastructure

Redundancy

- Using Eaton Hot Sync technology, you can configure up to N+3 redundancy. Any module can serve as backup for any other, with no interruption or downtime. For instance, you could perform full maintenance on any UPS without having to remove any loads from conditioned power
- Most other paralleling systems on the market use a top-down configuration; if the master fails, the subsidiary units fail. With Eaton's approach, each UPS module is independent yet synchronized with the others. There is no single point of failure

The following options for the Eaton 9355 are available:

Remote Monitor Panel (RMP)

- The optional RMP provides monitoring of the operational status and alarm condition of the UPS from virtually any location within the facility. You can install multiple RMPs at remote locations to increase your monitoring capabilities

Power Distribution Module (PDM—Available on 10–15 kVA models only)

- The optional PDM comes equipped with several different types of output receptacles

Parallel Tie Cabinet

- A parallel system with up to four UPSs can be installed to provide a parallel capacity and/or redundant system. This load sharing system provides more capacity than a single UPS and can provide backup, depending on the load and configuration. In addition, when one UPS is taken out of service for maintenance or is not operating properly, a redundant UPS continues to supply uninterrupted power to the critical load. A parallel Eaton Hot Sync Computer Area Network (CAN) Bridge Card provides connectivity for system metering and operational mode control. The parallel system consists of two to four UPSs, each with a parallel CAN Bridge Card and a parallel tie cabinet

Wall-Mounted Bypass Switch

- The optional wall-mounted bypass switch is used to bypass the UPS during maintenance or servicing providing wrap-around bypass for UPS service without shutting down the load

Input Isolation Transformer

- The optional input isolation transformer allows operation from a 480V or 600V 60 Hz source

Seismic Kit (Available on 20–30 kVA UPS and Auxiliary Cabinets Only)

- The seismic kit secures the UPS and optional EBMs for seismic installations

Table 33.2-2. Dimensions and Weights

Description	Dimensions in Inches (mm)			Weight Lbs (kg)
	Height	Width	Depth	
2-high UPS 3-high UPS-32 3-high UPS-64	32.20 (817.9) 47.80 (1214.1) 47.80 (1214.1)	12.00 (304.8) 12.00 (304.8) 12.00 (304.8)	33.50 (850.9) 33.50 (850.9) 33.50 (850.9)	381 (173) 587 (266) 619 (281)
2-high EBM 3-high EBM	32.20 (817.9) 47.80 (1214.1)	12.00 (304.8) 12.00 (304.8)	30.30 (769.6) 30.30 (769.6)	480 (218) 710 (322)

Table 33.2-3. Accessories

Description	Dimensions in Inches (mm)			Weight Lbs (kg)	Order Number
	Height	Width	Depth		
Extended Battery Modules					
Eaton 9155 EBM 64 (2-high) Eaton 9155 EBM 96 (3-high)	32.20 (817.9) 47.80 (1214.1)	12.00 (304.8) 12.00 (304.8)	30.20 (767.1) 30.20 (767.1)	484 (220) 720 (327)	**103004192** ① **103004193** ①
Maintenance Bypass Module					
Rear UPS-mount, maintenance bypass module	16.50 (419.1)	12.00 (304.8)	7.00 (177.8)	15 (7)	**103004184**
Spare Parts					
Eaton 9355 spare parts kit "A"	—	—	—	—	**106711169**
Connectivity Options					
ConnectUPS-X Web/SNMP/xHub card ConnectUPS-MX SNMP/modem card Modbus card Power Xpert Gateway UPS card	—	—	—	—	**103002974-5501** **05146288-5501** **103002510-5501** **PXGXUPS**
Relay interface card (IBM eServer iSeries compatible)	—	—	—	—	**1018460**
Industrial relay card Environmental monitoring probe (requires connectUPS Web/SNMP device)	—	—	—	—	**103003055** **103003637-5501**

① Up to four EBM 64 cabinets or three EBM 96 cabinets can be added to each UPS for extended run time.

Table 33.2-4. Power Distribution Module (PDM) with Mechanical Bypass Switch

Optional Receptacle Panels ②	Breaker Ampere Rating	Voltage	Phase
(2) 5-15R (2) 5-20R UL (2) 5-20R CSA	15 20 20	120 120 120	Single Single Single
(2) 6-15R (2) 6-20R (2) L5-15R	15 20 15	208 208 120	Dual Dual Single
(1) L5-20R ③ (1) L5-30R ③ (2) L6-15R	20 30 15	120 120 208	Single Single Dual
(1) L6-20R ③ (1) L6-30R ③ (1) L14-20R ③	20 30 20	208 208 120/208	Dual Dual Dual
(1) L14-30R ③ Blank plate	30 —	120/208 —	Dual —

② Maximum of eight panels per PDM.
③ The combined quantities of single-locking receptacle panels must not exceed five per PDM.

Table 33.2-5. 9355 Options

Description	Part Number
Remote emergency Power off (REPO)	**103002939**
Remote monitor	**103002687-001 + 103003055**
Wallmount MBS	**124100020-001**
Parallel tie cabinet	**124100020-001**
External battery (2-high)	**103004192-5501**
External battery (3-high)	**103004193-5501**
kVA upgrade 10 to 15	**103004657**
Parallel upgrade kit	**103004656**
Seismic kit	**103004194-5501**

Table 33.2-6. X-Slot Communication Options (Order Separate, Field Install)

Description	Part Number
Parallel (CAN bridge)	**103004336**
Connect UPS-X Web/ SNMP	**103002974-5501**
Modbus® card	**103002510-5501**
Relay card	**1018460**
Industrial relay card	**103003055**
Modem card	**109017**

Floor Loading

When planning the installation, consider the UPS weight for floor loading. The strength of the installation surface must be adequate for point and distributed loadings. The approximate weights are shown in the following table.

Table 33.2-7. Standard Model Floor Loadings (2-High/3-High Cabinets)

Eaton 9355	Maximum Weight in Lbs (kg)	Point Loading lb/in^2 (kg/mm^2)
2-high UPS	381 (173)	95 (43)
3-high UPS-32	587 (266)	147 (67)
3-high UPS-64	619 (281)	155 (70)
2-high EBM	480 (218)	120 (54)
3-high EBM	710 (322)	178 (81)

Clearances

Table 33.2-8. Clearances Recommended for the Eaton 9355 UPS

Location	Dimensions in Inches (mm)
From front of cabinet	36.00 (914.4) Working space
From back of cabinet	6.00 (152.4) Without MBM/PDM installed; with PDM installed, clearance determined by consumer-supplied mating plug

Table 33.2-9. Model Specifications

Output Voltage (Line–Line)	Output Voltage (Line–Neutral)	Input Voltage	Input Current	Output Current	Output kVA	Output kW	Efficiency (Minimum)	Heat Rejection BTU/hr (kg-mm/hr)
Model 15 kVA								
208V	120V	208V	48A	41.6A	15	13.5	90%	5122 (1290)
208V	120V	480V (with input isolation transformer)	20.9A	41.6A	15	13.5	85%	8134 (2048)
208V	120V	600V (with input isolation transformer)	16.8A	41.6A	15	13.5	35%	8134 (2048)
220V	127V	220V	45.7A	33.5A	14	13.5	90%	5122 (1290)
Model 10 kVA								
208V	120V	208V	32.2A	27.8A	10	9	89%	3798 (956)
208V	120V	480V (with input isolation transformer)	14A	27.8A	10	9	83%	6294 (1585)
208V	120V	600V (with input isolation transformer)	11.2A	27.8A	10	9	83%	6294 (1585)
220V	127V	220	30.5A	26.2A	10	9	89%	3798 (956)

Table 33.2-10. Input/Output Specifications

Output Voltage (Line–Line)	Output Voltage (Line–Neutral)	Input Voltage	Input Current	Input Circuit Breaker (Customer Supplied)	Output Current
15 kVA					
208V	120V	208V	48A	60A	41.6A
208V	120V	480V with input isolation transformer	24A	40A	41.6A
208V	120V	600V with input isolation transformer	20A	40A	41.6A
220V	127V	220V	45.7A	60A	39.4A
10 kVA					
208V	120V	208V	32.2A	45A	27.8A
208V	120V	480V with input isolation transformer	16A	40A	27.8A
208V	120V	600V with input isolation transformer	13.3A	40A	27.8A
220V	127V	220V	30.5A	40A	26.2A

Wiring Specifications and Diagrams

Table 33.2-11. Terminal Block Wiring

Input Voltage	Wire Function	Input Circuit Breaker Size	L1, L2, L3, N Wire Size ①	Ground Wire Size ①	Tightening Torque	Conduit Size ②③ (Number of Conduits) in Inches (mm)
10 kVA						
208 220 480 (with transformer) 600 (with transformer)	Input	45A 45A 20A 20A	6 AWG 8 AWG 12 AWG 12 AWG	10 AWG 10 AWG 12 AWG 14 AWG	120 in-lb (13.5 Nm)	1.00 (25.4) conduit ①
208 220 480 (with transformer) 600 (with transformer)	Output		8 AWG 8 AWG 8 AWG 8 AWG	10 AWG 10 AWG 10 AWG 10 AWG	120 in-lb (13.5 Nm)	1.00 (25.4) conduit ①
15 kVA						
208 220 480 (with transformer) 600 (with transformer)	Input	60A 60A 30A 25A	4 AWG 4 AWG 10 AWG 10 AWG	10 AWG 10 AWG 10 AWG 10 AWG	120 in-lb (13.5 Nm)	1.25 (31.8) conduit ① 1.25 (31.8) conduit ① 1.00 (25.4) conduit ① 1.00 (25.4) conduit ①
208 220 480 (with transformer) 600 (with transformer)	Output		6 AWG 6 AWG 6 AWG 6 AWG	10 AWG 10 AWG 10 AWG 10 AWG	120 in-lb (13.5 Nm)	1.00 (25.4) conduit ①
20 kVA						
208 220 480 (with transformer) 600 (with transformer)	Input	100A 100A 45A 35A	1 AWG 1 AWG 8 AWG 8 AWG	6 AWG 6 AWG 10 AWG 10 AWG	120 in-lb (13.5 Nm)	2.00 (50.8) conduit ① 2.00 (50.8) conduit ① 1.00 (25.4) conduit ① 1.00 (25.4) conduit ①
208 220 480 (with transformer)	Output		1 AWG 1 AWG 1 AWG	6 AWG 6 AWG 6 AWG	120 in-lb (13.5 Nm)	2.00 (50.8) conduit ①
30 kVA						
208 220 480 (with transformer) 600 (with transformer)	Input	125A 125A 60A 50A	1/0 AWG 1/0 AWG 6 AWG 8 AWG	6 AWG 6 AWG 10 AWG 10 AWG	120 in-lb (13.5 Nm)	2.00 (50.8) conduit ① 2.00 (50.8) conduit ① 1.00 (25.4) conduit ① 1.00 (25.4) conduit ①
208 220 480 (with transformer)	Output		1/0 AWG 1/0 AWG 1/0 AWG	6 AWG 6 AWG 6 AWG	120 in-lb (13.5 Nm)	2.00 (50.8) conduit ①

① Use only 90°C-rated copper wire. Minimum wire size is based on 120/208 full load ratings applied to National Electrical Code (NEC) Table 310.16. Code may require a larger AWG size than shown in this table because of temperature, number of conductors in the conduit or long service runs. Follow local requirements.

② Per NEC Article 300.20(a), all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.

③ Conduit is sized to accommodate one neutral conductor the same size as the phase conductor and one #8 AWG ground conductor. If two neutral conductors or an oversized neutral conductor are to be installed, check the size of the conduit needed to accommodate the extra wire or size, and use that conduit size in place of the conduit size listed. Conduit sizes were chosen from NEC Table C1, type letters RHH, RHW, RHW-2, TW, THW, THHW, THW-2.

Note: Input neutral must be wired for proper operation or the UPS will not start. If you have an Options Cabinet with an input isolation transformer, the input neutral is supplied by the input isolation transformer. The Eaton 9355 UPS is shipped as a single-feed UPS and can be converted to a dual-feed UPS in the field. DO NOT overtighten the screws; be sure to use the specified tightening torque values shown in **Table 33.2-1**.

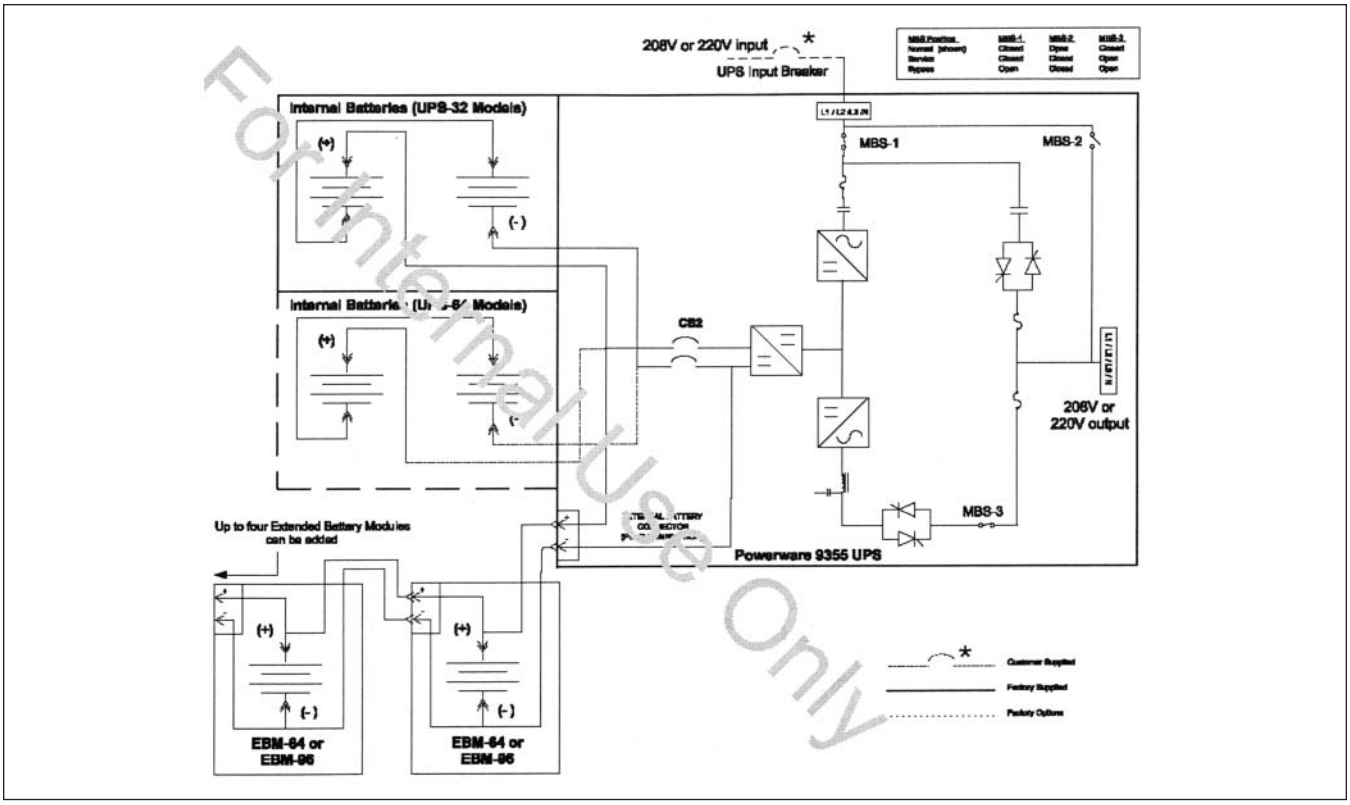

Figure 33.2-1. UPS with Extended Battery Modules Wiring Diagram

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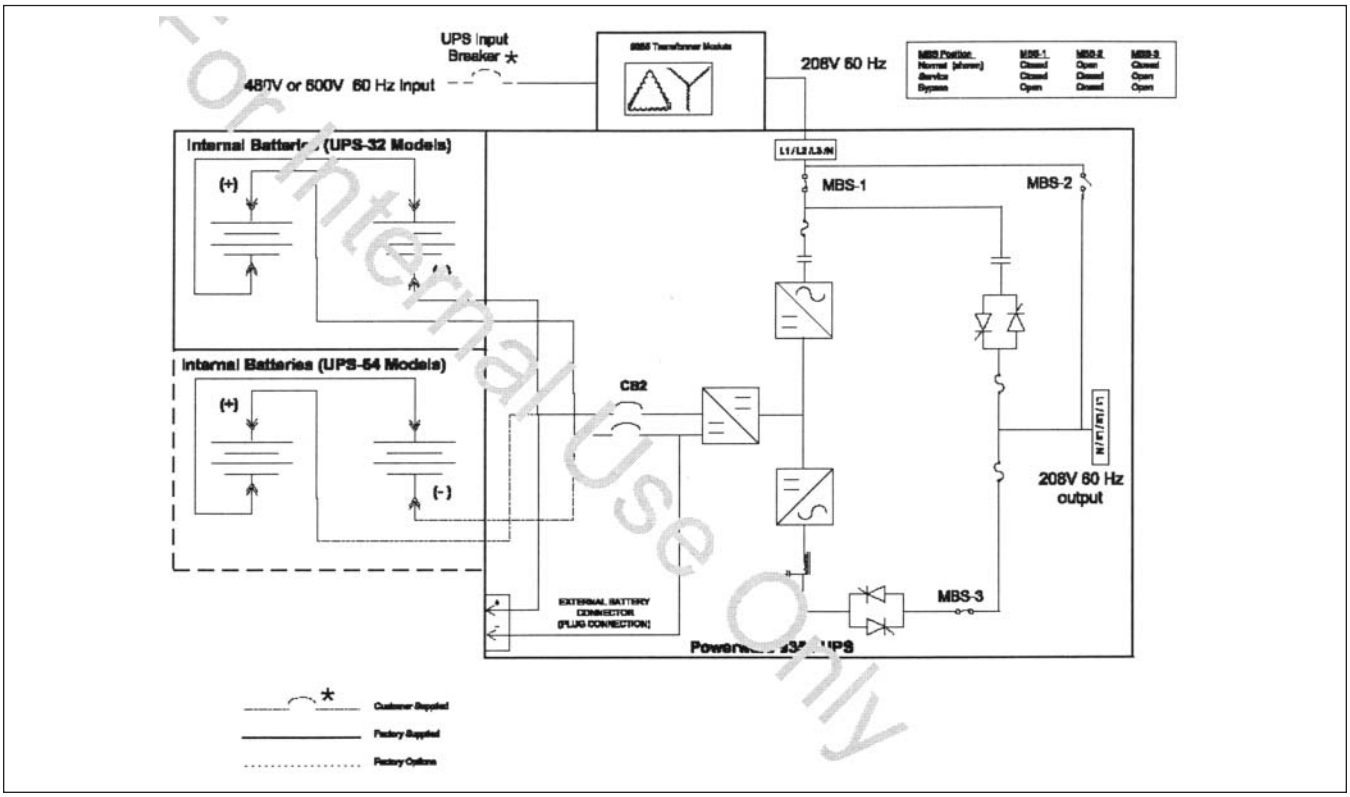


Figure 33.2-2. UPS with Input Isolation Transformer Wiring Diagram

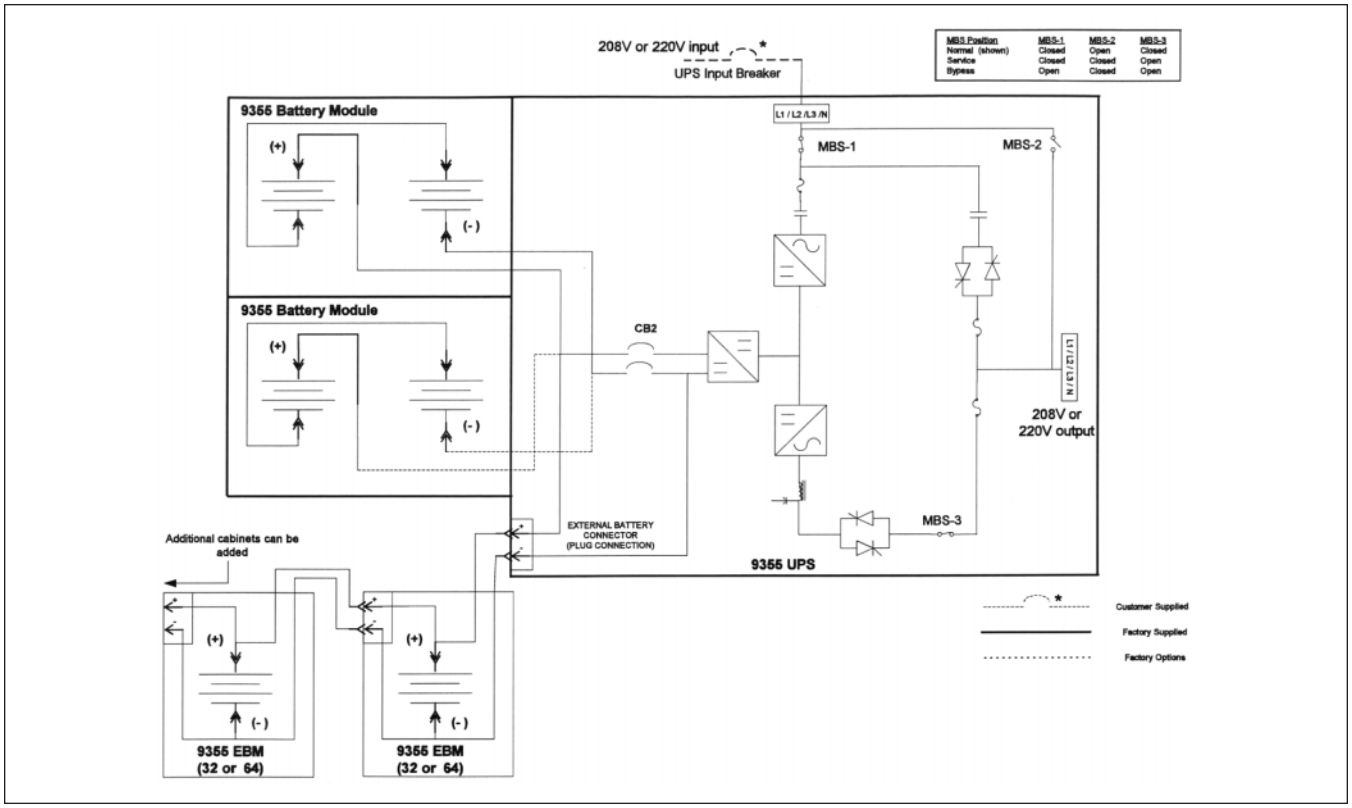


Figure 33.2-3. 208V or 220V Input 208V or 220V Output, Single-Feed UPS

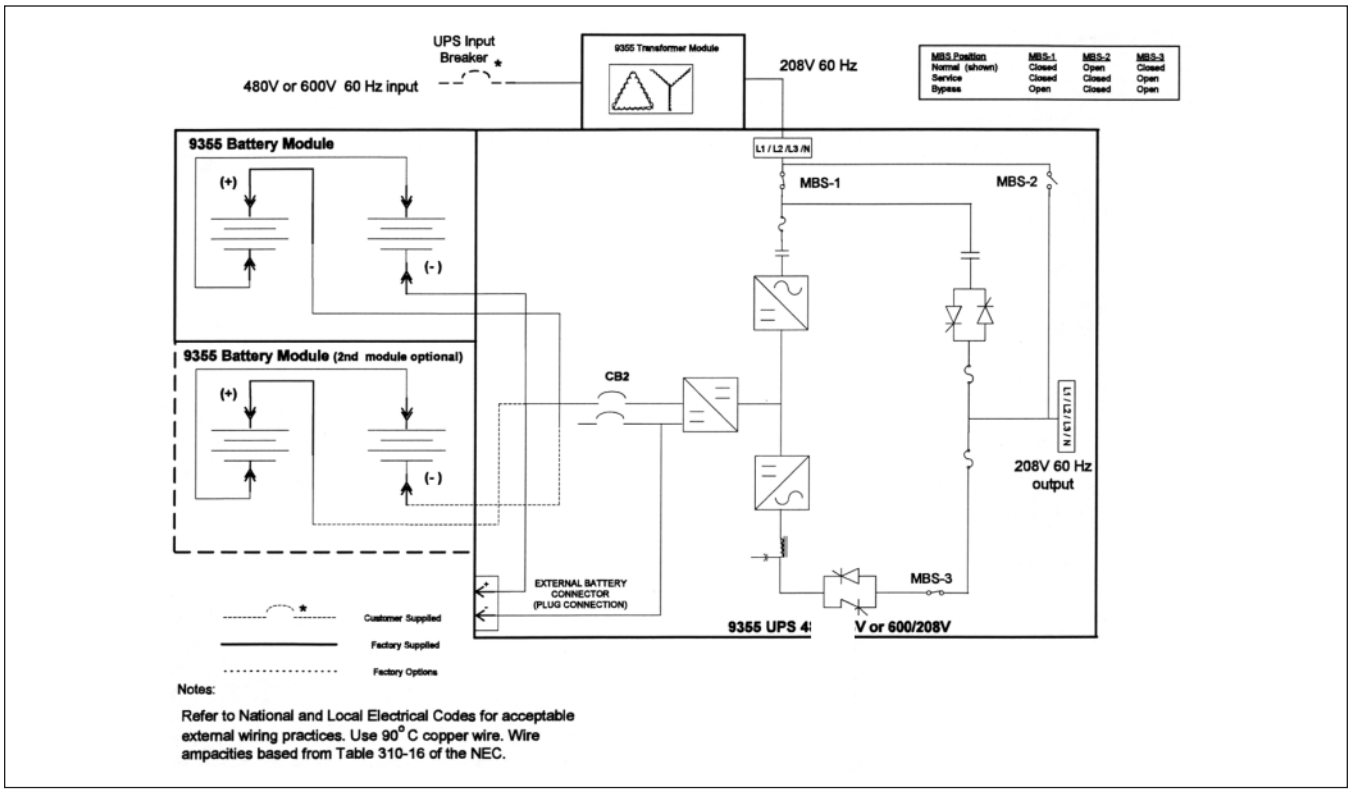


Figure 33.2-4. 480V or 600V Input 208V Output, Single-Feed UPS

33

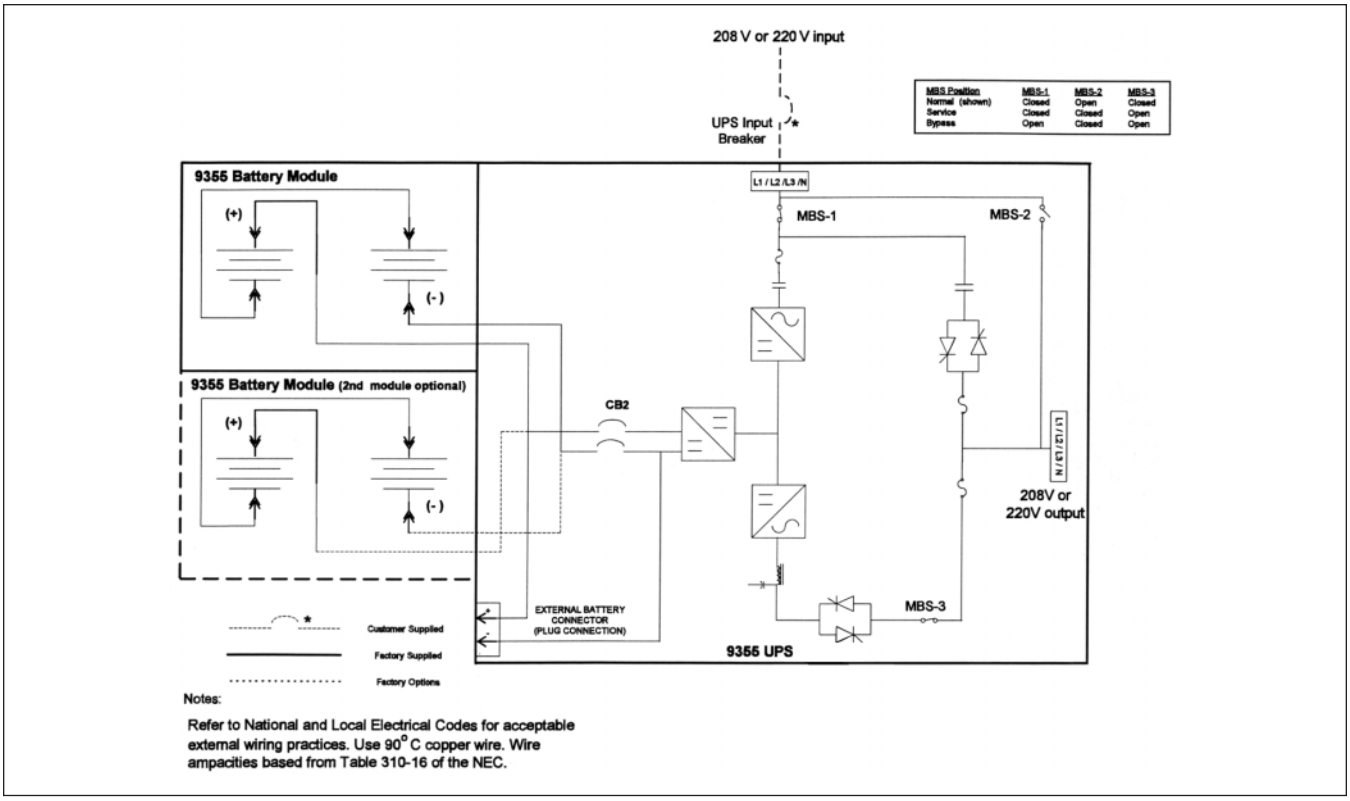


Figure 33.2-5. 208V or 220V Input or 220V Output, Single-Feed UPS

33

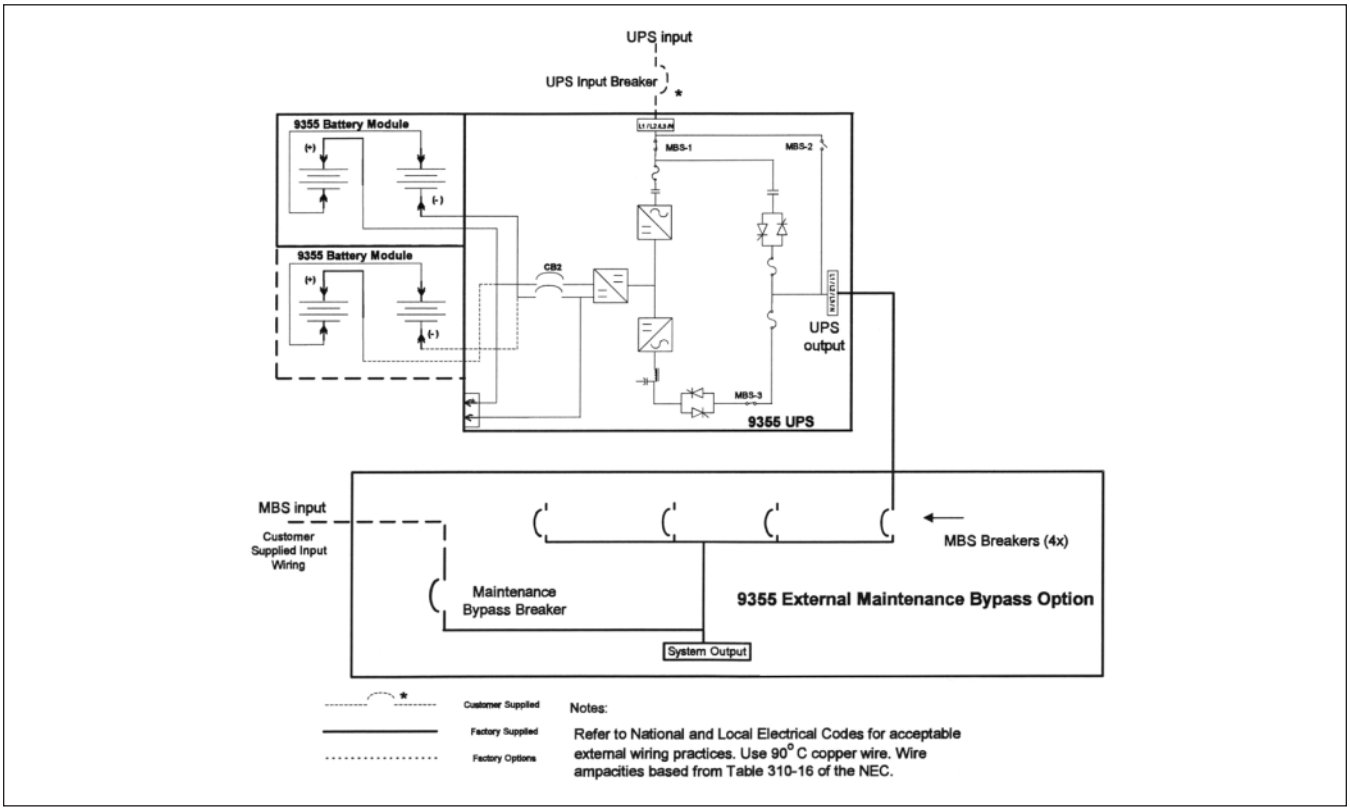


Figure 33.2-6. 208V or 220V Input or 220V Output, Single-Feed UPS

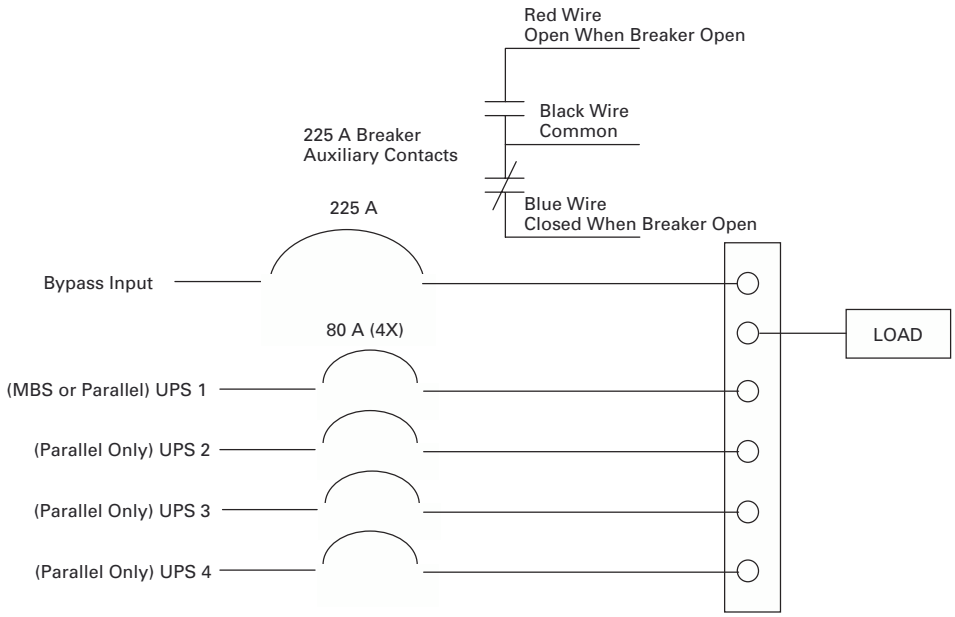


Figure 33.2-7. 9355 Parallel Tie Cabinet with Bypass Switch

Main Components:

4 – 80 A, 3 pole, circuit breaker (UPS)

ACCEPTS 14-1/0 AWG WIRE

AWG	TORQUE LB-IN
14-10	20
8	25
4-8	27
1/0-4	54

1 – 225 A, 3 pole, circuit breaker with aux contacts (Bypass)

ACCEPTS 14AWG -300MCM WIRE

AWG	TORQUE LB-IN
14-1/0	50
4-4/0	120
6-300MCM	275

NEUTRAL BUS/GROUND BUS

CONNECTING WIRE TORQUES							
SMALL OPENING				LARGE OPENING			
		NEUTRAL				NEUTRAL	
WIRE AWG	TORQUE LB-IN	NEUTRAL	GND	WIRE AWG	TORQUE LB-IN	NEUTRAL	GND
14-12	35	1	2	14-10	35**	1	3
10	35	1	1	8	45	1	1
8	45	1	1	4-6	45	1	1
6	45	1	1	3-1/0	50	1	1
**When Using Three #10 Cu Conductors per opening apply 50 Lb-In Torque							

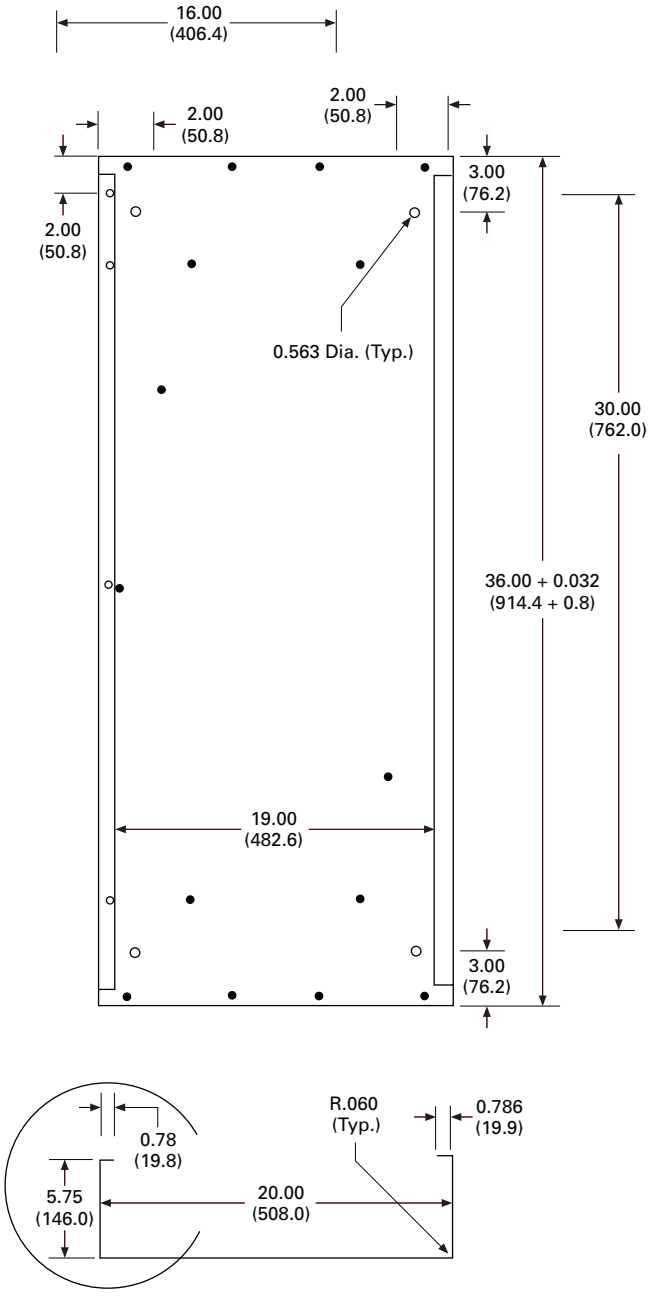
WIRE LUGS

ACCEPTS TO 300MCM WIRE

Connecting Wire Torques			
Screw Driver		Socket Head	
WIRE AWG	TORQUE LB-IN	ACROSS FLATS	TORQUE LB-IN
18-10	35	5/16"	275
8	40	3/8"	375
6-4	45	1/2"	500
2-2/0	50		

Figure 33.2-8. Wire Specifications

Dimensions in Inches (mm)



The Cabinet Must be UL/cUL Listed in Accordance with UL67 and UL50

Figure 33.2-9. 9355 Parallel Tie Cabinet with Bypass

Eaton 9390 Uninterruptible Power System

Eaton 9390

General Description

The Eaton 9390 uninterruptible power system (UPS) is a double-conversion UPS that resolves all utility power problems and supplies clean, continuous, uninterruptible power to connected equipment. Whether you're selecting a UPS for a branch office, manufacturing floor, medical facility or a large data center, there's an Eaton 9390 model that delivers just the right combination of performance and price for your needs.

Features and Benefits

- Achieves 99% efficiency with Eaton's Energy Saver System (ESS) option. ESS continues to provide complete protection to the load while maximizing efficiency at 99%, even down to load levels as low as 20%
- Scalable for capacity and redundancy to meet present and future power needs
- Provides peace-of-mind that your batteries will be ready when you need them with innovative three-stage charging, battery health-checks, optional temperature-compensated charging and remote monitoring
- Lowers installation time and costs with small footprint and the flexibility to install against walls, using top- or bottom-entry cabling
- Provides a one-year, limited factory warranty* on parts and labor, start-up service, one year of remote monitoring, on-site preventive maintenance and optional service plans

Advanced Design Delivers Unequaled Power Performance

The innovative design of the Eaton 9390 delivers the industry's best performance combination of efficiency, input current distortion and power factor.

The Eaton 9390 operates at up to 94% in double-conversion mode and at 99% when using ESS, reducing utility costs and extending battery run times. Higher system efficiency produces cooler operating conditions, which reduces facility air conditioning cost, extends the life of UPS components, and increases overall reliability, availability and performance.

A new input circuit design keeps input current THD low and input power factor near unity without compromising overall efficiency. As a result, the Eaton 9390 allows maximum transfer of power between power source and protected load and is exceptionally compatible with multiple power sources, especially auxiliary generators.

On the output side, the ultra high speed switching pulse width modulation (PWM) inverter enables the Eaton 9390 to provide its full rated power capability to the load whether the load power factor is 0.9 lagging, unity or 0.9 leading.

Double-Conversion Design Offers the Highest Protection Possible

Unlike some other commercially available UPS technologies, the double-conversion design completely isolates output power from all input power anomalies and delivers 100% conditioned, perfect sine-wave output—regulating both voltage and frequency.

Eaton 9390 View Panel

Even when presented with the most severe power problems, power output remains stable. Output voltage THD is held within 2% of nominal specification for linear loads, within 5% for nonlinear loads—making the Eaton 9390 ideal for supporting equipment that is sensitive to a distorted voltage input as a result of harmonic loads. In the event of a utility power failure, there is no delay transferring to backup power.

UPS Control Innovations Optimize Battery Performance and Service Life

Eaton's ABM (advanced battery management) technology uses a unique three-stage charging technique that significantly extends battery service life and optimizes recharge time, compared to traditional trickle charging. An integrated battery management system tests and monitors battery health and remaining lifetime, and provides advance notification to guide preventive maintenance. The temperature-compensated charger monitors temperature changes and adjusts the charge rate accordingly to properly charge the battery and greatly extend battery life.

A variable battery bus accommodates 384–480V configurations, so the battery capacity can be matched to your exact run time requirements—either a specific run time, an extension to existing battery run time, or legacy battery installations.

With remote monitoring of the UPS and battery system, Eaton is there with you—able to respond to alarms and real-time battery data to avert potential battery problems.

Scalable Architecture Meets Your Current and Future Load Requirements

The Eaton 9390 UPS supports loads from 40–160 kVA to deliver power protection for small branch offices to large corporate data centers and communication networks.

Up to four equivalent UPS modules can be paralleled for additional capacity or redundancy, without having to use a central paralleling cabinet. Up to eight UPS modules can be paralleled by using a module tie cabinet. In all paralleling configurations, each UPS module operates independently yet is completely synchronized with the others. Parallel UPS modules can provide N+1, N+2 or greater redundancy.

Flexible Installation Options Expedite Deployment and Save Valuable Space

Cabling can enter the UPS from either the top or bottom of the cabinet to provide easier and flexible installation. The Eaton 9390 provides front panel access for all services and operation, increasing serviceability and reducing mean time to repair (MTTR). And because the compact Eaton 9390 cabinet can be installed against back and side walls, you have more location options, installation is fast and easy, deployment cost is lower, and you save valuable data center space for future expansion.

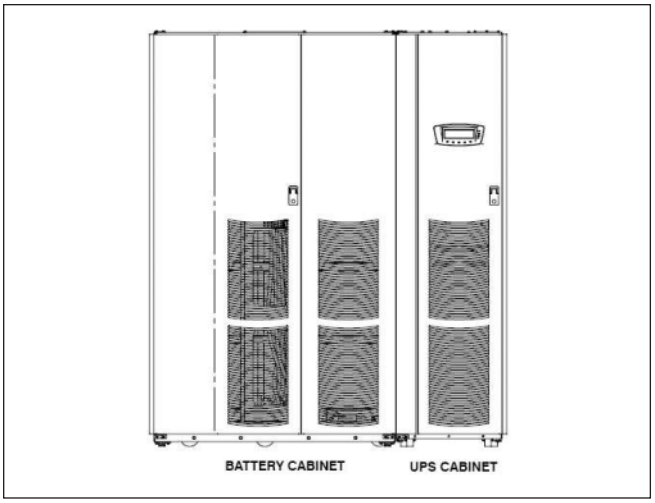


Figure 33.2-10. Eaton 9390 40/50/60/80 kVA UPS with Battery

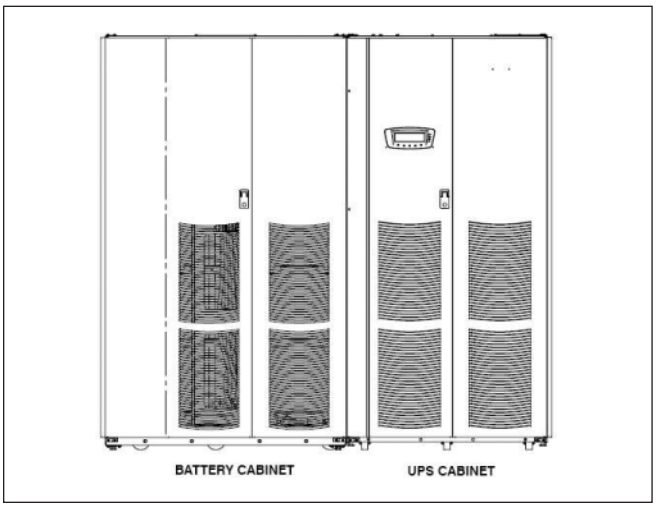


Figure 33.2-11. Eaton 9390 40/50/60/80 kVA UPS with Battery Cabinet

Table 33.2-12. Eaton 9390 (40–80 kVA) UPS Weights

Voltage		Weight—kg (Lbs)		
Input	Output	Shipping	Installed	Point Loading
40/40				
208/220 480	208/220 480	263 (580) 231 (508)	241 (530) 208 (458)	4 at 60.3 (133) 4 at 52.2 (115)
80/40				
208/220 480	208/220 480	313 (690) 271 (618)	290 (640) 258 (568)	4 at 72.5 (160) 4 at 64.5 (142)
80/50				
208/220 480	208/220 480	313 (690) 271 (618)	290 (640) 258 (568)	4 at 72.5 (160) 4 at 64.5 (142)
80/60				
208/220 480	208/220 480	313 (690) 271 (618)	290 (640) 258 (568)	4 at 72.5 (160) 4 at 64.5 (142)
80/80				
208/220 480	208/220 480	313 (690) 271 (618)	290 (640) 258 (568)	4 at 72.5 (160) 4 at 64.5 (142)

Table 33.2-13. Eaton 9390 (100–160 kVA) UPS Cabinet Weights

Voltage		Weight—kg (Lbs)		
Input	Output	Shipping	Installed	Point Loading
120/100				
208/220 480	208/220 480	531 (1170) 467 (1030)	504 (1110) 440 (970)	6 at 84 (185) 6 at 73 (162)
120/120				
208/220 480	208/220 480	531 (1170) 467 (1030)	504 (1110) 440 (970)	6 at 84 (185) 6 at 73 (162)
160/100				
208/220 480	208/220 480	581 (1280) 517 (1140)	553 (1220) 490 (1080)	6 at 92 (204) 6 at 82 (180)
160/120				
208/220 480	208/220 480	581 (1280) 517 (1140)	553 (1220) 490 (1080)	6 at 92 (204) 6 at 82 (180)
160/160				
208/220 480	208/220 480	581 (1280) 517 (1140)	553 (1220) 490 (1080)	6 at 92 (204) 6 at 82 (180)

Table 33.2-14. Eaton 9390 Air Conditioning or Ventilation Requirements During Full Load Operation

Ratings	Voltage		Heat Rejection BTU/hr x 1000/hr (kg–cal/hr)
	Input	Output	
40–80 kVA ①			
40 kVA	208/220 480	208/220 480	11.8 (2.98) 10.9 (2.76)
50 kVA	208/220 480	208/220 480	14.8 (3.73) 13.7 (3.45)
60 kVA	208/220 480	208/220 480	17.7 (4.47) 16.4 (4.14)
80 kVA	208/220 480	208/220 480	23.6 (5.96) 21.9 (5.52)
100–160 kVA ②			
100 kVA	208/220 480	208/220 480	29.6 (7.45) 27.4 (6.90)
120 kVA	208/220 480	208/220 480	35.5 (8.94) 32.8 (8.28)
160 kVA	208/220 480	208/220 480	47.3 (11.9) 43.8 (11.0)

① Ventilation required for cooling air exhaust: approximately 4.72 liter/sec (1000 cfm).

② Ventilation required for cooling air exhaust: approximately 9.44 liter/sec (2000 cfm).

Wiring Diagrams and Specifications

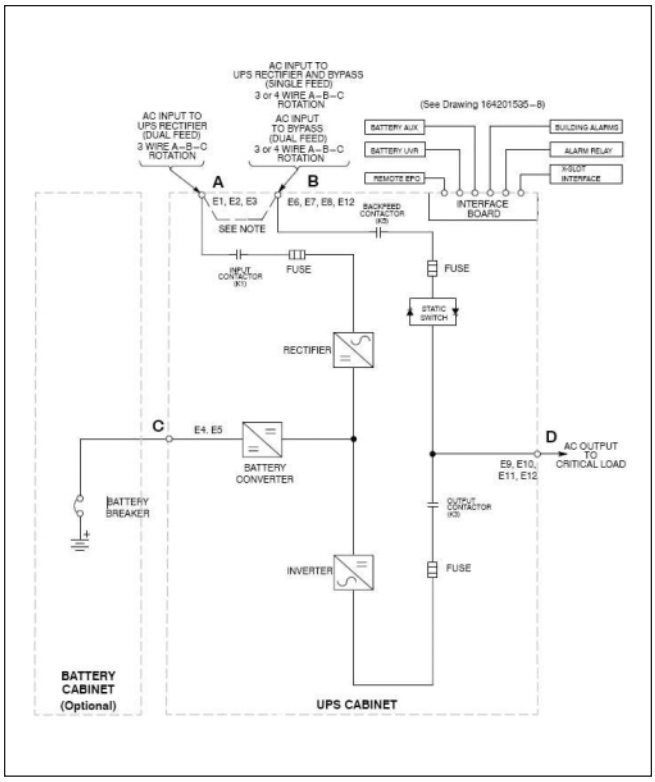


Figure 33.2-12. 9390 UPS with Battery—Single or Dual Feed

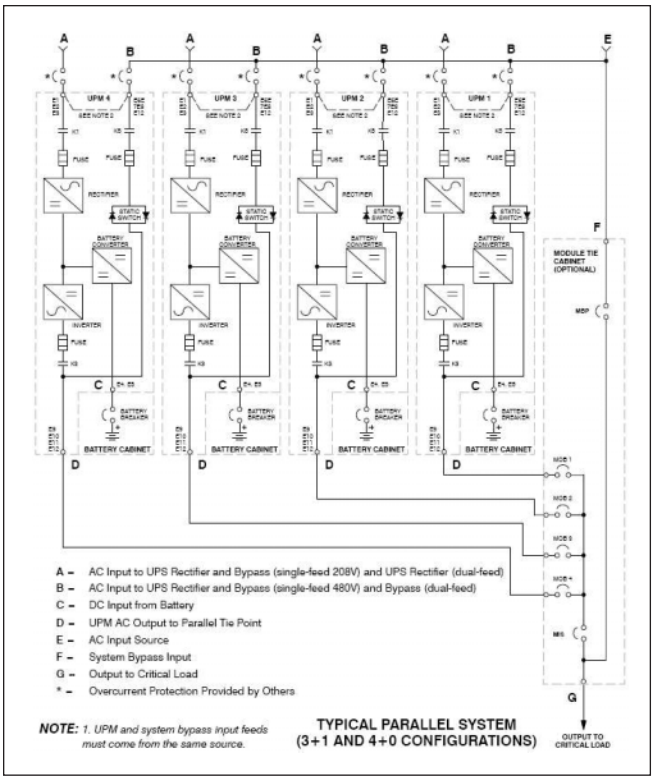


Figure 33.2-14. 9390 UPS Four-Module Parallel System with Remote Tie Cabinet

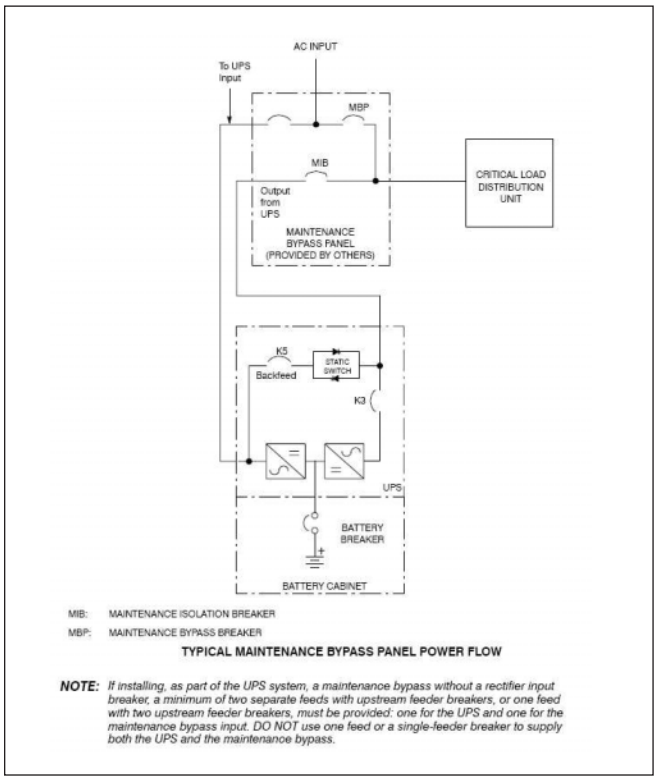


Figure 33.2-13. 9390 UPS with External Maintenance Bypass

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Read and understand the following notes while planning and performing the installation:

1. Refer to national and local electrical codes for acceptable external wiring practices.
2. Material and labor for external wiring requirements are to be provided by designated personnel.
3. For external wiring, use 90°C copper wire. See the appropriate information in the tables. Wire sizes are based on using the specified breakers.
4. Wire ampacities are chosen from Table 310.16 of the NEC. Wire is 90°C specification.
5. If installing, as part of the UPS system, a maintenance bypass without a rectifier input breaker, a minimum of two separate feeds with upstream feeder breakers, or one feed with two upstream feeder breakers, must be provided: one for the UPS and one for the maintenance bypass input. DO NOT use one feed or a single feeder breaker to supply both the UPS and the maintenance bypass.
6. The bypass feed into this equipment uses three or four wires. The rectifier feed into this equipment uses three wires. The phases must be symmetrical about ground (from a wye source) for proper equipment operation.
7. If the load requires a neutral, a bypass source neutral must be provided. If the load does not require a neutral and there is no neutral conductor connected at the bypass input, a neutral to ground bonding jumper must be installed. DO NOT install both a source neutral and a bonding jumper. See tables for neutral bonding jumper wire sizes. Bonding jumper must be copper wire.
8. The UPS cabinet is shipped with a debris shield covering the ventilation grill on top of the unit. Do not remove the debris shield until installation is complete. However, remove the shield before operating the UPS. Once the debris shield is removed, do not place objects on the ventilation grill.
9. Refer to the UPS manual for installation instructions.
10. Terminals are UL and CSA rated at 90°C. Refer to the tables for power cable terminations and conduit requirements.

Note: Callout letters A, B, C and D map to (9390-7).

Table 33.2-15. Input/Output Ratings and External Wiring Requirements for the Eaton 9390-40/40 and 9390-80/40

Description	Units	Rating 50/60 Hz	
Basic unit rating at 0.9 lagging pF load	kVA kW	40 36	40 36
Input and bypass input Output	Volts Volts	208/220 208/220	480 480
A—AC Input to UPS Rectifier (0.98 min. pF)			
Full load current plus battery recharge current (3) phases, (1) ground	Amps	125	55
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (1)	4 (1)
B—AC Input to UPS Bypass			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	111/105	48
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (1)	4 (1)
C—DC Input from Battery to UPS			
(1) positive, (1) negative	Vdc Amps at (2.0V/cell)	384–480 101	432–480 101
Minimum conductor size number per pole	AWG or kcmil (each)	1/0 (1)	1/0 (1)
D—AC Output to Critical Load			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	111/105	48
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (1)	4 (1)
Neutral Bonding Jumper			
Minimum conductor size number per phase	AWG or kcmil (each)	4 (1)	6 (1)

Table 33.2-16. Input/Output Ratings and External Wiring Requirements for the Eaton 9390-80/50

Description	Units	Rating 50/60 Hz	
Basic unit rating at 0.9 lagging pF load	kVA kW	50 45	50 45
Input and bypass input Output	Volts Volts	208/220 208/220	480 480
A—AC Input to UPS Rectifier (0.98 min. pF)			
Full load current plus battery recharge current (3) phases, (1) ground	Amps	155	67
Minimum conductor size number per phase	AWG or kcmil (each)	4/0 (1)	2 (1)
B—AC Input to UPS Bypass			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	139/131	60
Minimum conductor size number per phase	AWG or kcmil (each)	4/0 (1)	2 (1)
C—DC Input from Battery to UPS			
(1) positive, (1) negative	Vdc Amps at (2.0V/cell)	384–480 126	432–480 126
Minimum conductor size number per pole	AWG or kcmil (each)	1/0 (1)	1/0 (1)
D—AC Output to Critical Load			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	139/131	60
Minimum conductor size number per phase	AWG or kcmil (each)	4/0 (1)	2 (1)
Neutral Bonding Jumper			
Minimum conductor size number per phase	AWG or kcmil (each)	2 (1)	6 (1)

Table 33.2-17. Input/Output Ratings and External Wiring Requirements for the Eaton 9390-80/60

Description	Units	Rating 50/60 Hz	
Basic unit rating at 0.9 lagging pF load	kVA kW	60 54	60 54
Input and bypass input Output	Volts Volts	208/220 208/220	480 480
A—AC Input to UPS Rectifier (0.98 min. pF)			
Full load current plus battery recharge current (3) phases, (1) ground	Amps	185	80
Minimum conductor size number per phase	AWG or kcmil (each)	250 (1)	1 (1)
B—AC Input to UPS Bypass			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	167/158	72
Minimum conductor size number per phase	AWG or kcmil (each)	250 (1)	1 (1)
C—DC Input from Battery to UPS			
(1) positive, (1) negative	Vdc Amps at (2.0V/cell)	384–480 151	432–480 151
Minimum conductor size number per pole	AWG or kcmil (each)	2/0 (1)	2/0 (1)
D—AC Output to Critical Load			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	167/158	72
Minimum conductor size number per phase	AWG or kcmil (each)	250 (1)	1 (1)
Neutral Bonding Jumper			
Minimum conductor size number per phase	AWG or kcmil (each)	2 (1)	6 (1)

Table 33.2-18. Input/Output Ratings and External Wiring Requirements for the Eaton 9390-80/80

Description	Units	Rating 50/60 Hz	
Basic unit rating at 0.9 lagging pF load	kVA kW	80 72	80 72
Input and bypass input Output	Volts Volts	208/220 208/220	480 480
A—AC Input to UPS Rectifier (0.98 min. pF)			
Full load current plus battery recharge current (3) phases, (1) ground	Amps	240	105
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (1)	1/0 (1)
B—AC Input to UPS Bypass			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	222/210	96
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (2)	1/0 (1)
C—DC Input from Battery to UPS			
(1) positive, (1) negative	Vdc Amps at (2.0V/cell)	384–480 203	432–480 203
Minimum conductor size number per pole	AWG or kcmil (each)	3/0 (2)	3/0 (1)
D—AC Output to Critical Load			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	222/210	96
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (2)	1/0 (1)
Neutral Bonding Jumper			
Minimum conductor size number per phase	AWG or kcmil (each)	1/0 (1)	6 (1)

Table 33.2-19. Input/Output Ratings and External Wiring Requirements for the Eaton 9390-120/100 and 9390-160/100

Description	Units	Rating 50/60 Hz	
Basic unit rating at 0.9 lagging pF load	kVA kW	100 90	100 90
Input and bypass input Output	Volts Volts	208/220 208/220	480 480
A—AC Input to UPS Rectifier (0.98 min. pF)			
Full load current plus battery recharge current (3) phases, (1) ground	Amps	300	130
Minimum conductor size number per phase	AWG or kcmil (each)	3/0 (2)	4/0 (1)
B—AC Input to UPS Bypass			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	278/262	120
Minimum conductor size number per phase	AWG or kcmil (each)	3/0 (2)	4/0 (1)
C—DC Input from Battery to UPS			
(1) positive, (1) negative	Vdc Amps at (2.0V/cell)	384–480 252	432–480 252
Minimum conductor size number per pole	AWG or kcmil (each)	2/0 (2)	2/0 (2)
D—AC Output to Critical Load			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	278/262	120
Minimum conductor size number per phase	AWG or kcmil (each)	3/0 (2)	4/0 (1)
Neutral Bonding Jumper			
Minimum conductor size number per phase	AWG or kcmil (each)	1/0 (1)	2 (1)

Table 33.2-20. Input/Output Ratings and External Wiring Requirements for the Eaton 9390-120/120 and 9390-160/120

Description	Units	Rating 50/60 Hz	
Basic unit rating at 0.9 lagging pF load	kVA kW	120 108	120 108
Input and bypass input Output	Volts Volts	208/220 208/220	480 480
A—AC Input to UPS Rectifier (0.98 min. pF)			
Full load current plus battery recharge current (3) phases, (1) ground	Amps	360	160
Minimum conductor size number per phase	AWG or kcmil (each)	4/0 (2)	4/0 (1)
B—AC Input to UPS Bypass			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	333/315	120
Minimum conductor size number per phase	AWG or kcmil (each)	4/0 (2)	4/0 (1)
C—DC Input from Battery to UPS			
(1) positive, (1) negative	Vdc Amps at (2.0V/cell)	384–480 302	432–480 302
Minimum conductor size number per pole	AWG or kcmil (each)	3/0 (2)	3/0 (2)
D—AC Output to Critical Load			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	333/315	120
Minimum conductor size number per phase	AWG or kcmil (each)	4/0 (2)	4/0 (1)
Neutral Bonding Jumper			
Minimum conductor size number per phase	AWG or kcmil (each)	1/0 (1)	2 (1)

Table 33.2-21. Input/Output Ratings and External Wiring Requirements for the Eaton 9390-160/160

Description	Units	Rating 50/60 Hz	
Basic unit rating at 0.9 lagging pF load	kVA kW	160 144	160 144
Input and bypass input Output	Volts Volts	208/220 208/220	480 480
A—AC Input to UPS Rectifier (0.98 min. pF)			
Full load current plus battery recharge current (3) phases, (1) ground	Amps	480	210
Minimum conductor size number per phase	AWG or kcmil (each)	400 (2)	1/0 (2)
B—AC Input to UPS Bypass			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	444/420	192
Minimum conductor size number per phase	AWG or kcmil (each)	400 (2)	1/0 (2)
C—DC Input from Battery to UPS			
(1) positive, (1) negative	Vdc Amps at (2.0V/cell)	384–480 403	432–480 403
Minimum conductor size number per pole	AWG or kcmil (each)	250 (2)	250 (2)
D—AC Output to Critical Load			
Full load current—(3) phases, (1) neutral-if required, (1) ground	Amps	444/420	192
Minimum conductor size number per phase	AWG or kcmil (each)	400 (2)	1/0 (2)
Neutral Bonding Jumper			
Minimum conductor size number per phase	AWG or kcmil (each)	1/0 (2)	2 (2)

Table 33.2-22. UPS Cabinet Power Cable Terminations for the Eaton 9390-40/40, 9390-80/40, 9390-80/50, 9390-80/60 and 9390-80/80 (208V/220V Input and 208V/220V Output)

Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input to UPS Rectifier and Bypass (Single Input)				
E6 E7 E8	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)	5/16-inch hex 5/16-inch hex 5/16-inch hex
AC Input to UPS Rectifier (Dual Input)				
E1 E2 E3	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)	5/16-inch hex 5/16-inch hex 5/16-inch hex
AC Input to Bypass (Dual Input)				
E6 E7 E8	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)	5/16-inch hex 5/16-inch hex 5/16-inch hex
Single-Feed Jumper from Rectifier Input Terminals to Bypass Input Terminals				
— — —	Phase A Phase B Phase C	N/A N/A N/A	22.6 (200) 22.6 (200) 22.6 (200)	M10 hex bolt M10 hex bolt M10 hex bolt
AC Output to Critical Load				
E9 E10 E11	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)	5/16-inch hex 5/16-inch hex 5/16-inch hex
DC Input from Battery to UPS				
E4 E5	Positive Negative	1–#6-350 kcmil 1–#6-350 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 5/16-inch hex
Input and Output Neutral				
E12	Neutral	8–#6-250 kcmil	42.4 (375)	5/16-inch hex
Customer Ground				
Ground	Ground	8–#14-1/0	5.6 (50)	Slotted

Table 33.2-23. UPS Cabinet Power Cable Terminations for the Eaton 9390-120/100, 9390-120/120, 9390-160/100, 9390-160/120 and 9390-160/160 (208V/220V Input and 208V/220V Output)

Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input to UPS Rectifier and Bypass (Single Input)				
E1	Phase A	2–2/0-500 kcmil	31.1 (275)	4 mm hex
E2	Phase B	2–2/0-500 kcmil	31.1 (275)	4 mm hex
E3	Phase C	2–2/0-500 kcmil	31.1 (275)	4 mm hex
AC Input to UPS Rectifier (Dual Input)				
E1	Phase A	2–2/0-500 kcmil	31.1 (275)	4 mm hex
E2	Phase B	2–2/0-500 kcmil	31.1 (275)	4 mm hex
E3	Phase C	2–2/0-500 kcmil	31.1 (275)	4 mm hex
AC Input to Bypass (Dual Input)				
E6	Phase A	2–#2-600 kcmil	56.5 (500)	1/2-inch hex
E7	Phase B	2–#2-600 kcmil	56.5 (500)	1/2-inch hex
E8	Phase C	2–#2-600 kcmil	56.5 (500)	1/2-inch hex
Single-Feed to Dual-Feed Wire Transfer from Rectifier Input Terminals to Bypass Input Terminals				
Rectifier	Phase A	N/A	12.5 (110)	M8 hex bolt
Bypass	Phase A	N/A	12.5 (110)	M8 hex bolt
Rectifier	Phase B	N/A	12.5 (110)	M8 hex bolt
Bypass	Phase B	N/A	12.5 (110)	M8 hex bolt
Rectifier	Phase C	N/A	12.5 (110)	M8 hex bolt
Bypass	Phase C	N/A	12.5 (110)	M8 hex bolt
AC Output to Critical Load				
E9	Phase A	2–2/0-500 kcmil	31.1 (275)	4 mm hex
E10	Phase B	2–2/0-500 kcmil	31.1 (275)	4 mm hex
E11	Phase C	2–2/0-500 kcmil	31.1 (275)	4 mm hex
DC Input from Battery to UPS				
E4	Positive	2–#2-600 kcmil	56.5 (500)	1/2-inch hex
E5	Negative	2–#2-600 kcmil	56.5 (500)	1/2-inch hex
Input and Output Neutral				
E12	Neutral	8–#2-600 kcmil	56.5 (500)	1/2-inch hex
Customer Ground				
Ground	Ground	8–#14-1/0	5.6 (50)	Slotted

Table 33.2-24. UPS Cabinet Power Cable Terminations for the Eaton 9390-40/40, 9390-80/40, 9390-80/50, 9390-80/60 and 9390-80/80 (480V Input and 480V Output)

Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input to UPS Rectifier and Bypass (Single Input)				
E6	Phase A	1–#14-2/0	13.5 (120)	3/16-inch hex
E7	Phase B	1–#14-2/0	13.5 (120)	3/16-inch hex
E8	Phase C	1–#14-2/0	13.5 (120)	3/16-inch hex
AC Input to UPS Rectifier (Dual Input)				
E1	Phase A	1–#14-2/0	13.5 (120)	3/16-inch hex
E2	Phase B	1–#14-2/0	13.5 (120)	3/16-inch hex
E3	Phase C	1–#14-2/0	13.5 (120)	3/16-inch hex
AC Input to Bypass (Dual Input)				
E6	Phase A	1–#14-2/0	13.5 (120)	3/16-inch hex
E7	Phase B	1–#14-2/0	13.5 (120)	3/16-inch hex
E8	Phase C	1–#14-2/0	13.5 (120)	3/16-inch hex
Single-Feed to Dual-Feed Wire Transfer from Rectifier Input Terminals to Bypass Input Terminals				
—	Phase A	N/A	5.6 (50)	1/4–20 hex nut
—	Phase B	N/A	5.6 (50)	1/4–20 hex nut
—	Phase C	N/A	5.6 (50)	1/4–20 hex nut
AC Output to Critical Load				
E9	Phase A	1–#14-2/0	13.5 (120)	3/16-inch hex
E10	Phase B	1–#14-2/0	13.5 (120)	3/16-inch hex
E11	Phase C	1–#14-2/0	13.5 (120)	3/16-inch hex
DC Input from Battery to UPS				
E4	Positive	1–#6-350 kcmil	31.1 (275)	5/16-inch hex
E5	Negative	1–#6-350 kcmil	31.1 (275)	5/16-inch hex
Input and Output Neutral				
E12	Neutral	4–#14-1/0	5.6 (50)	Slotted
Customer Ground				
Ground	Ground	8–#14-1/0	5.6 (50)	Slotted

Table 33.2-25. UPS Cabinet Power Cable Terminations for the Eaton 9390-120/100, 9390-120/120, 9390-160/100, 9390-160/120 and 9390-160/160 (480V Input and 480V Output)

Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input to UPS Rectifier and Bypass (Single Input)				
E6	Phase A	2–#6-250	42.4 (375)	5/16-inch hex
E7	Phase B	2–#6-250	42.4 (375)	5/16-inch hex
E8	Phase C	2–#6-250	42.4 (375)	5/16-inch hex
AC Input to UPS Rectifier (Dual Input)				
E1	Phase A	2–#6-250	42.4 (375)	5/16-inch hex
E2	Phase B	2–#6-250	42.4 (375)	5/16-inch hex
E3	Phase C	2–#6-250	42.4 (375)	5/16-inch hex
AC Input to Bypass (Dual Input)				
E6	Phase A	2–#6-250	42.4 (375)	5/16-inch hex
E7	Phase B	2–#6-250	42.4 (375)	5/16-inch hex
E8	Phase C	2–#6-250	42.4 (375)	5/16-inch hex
Single-Feed to Jumper Bus from Rectifier Input Terminals to Bypass Input Terminals				
Rectifier	Phase A	N/A	12.5 (110)	M8 hex bolt
Bypass	Phase A	N/A	22.6 (200)	M10 hex bolt
Rectifier	Phase B	N/A	12.5 (110)	M8 hex bolt
Bypass	Phase B	N/A	22.6 (200)	M10 hex bolt
Rectifier	Phase C	N/A	12.5 (110)	M8 hex bolt
Bypass	Phase C	N/A	22.6 (200)	M10 hex bolt
AC Output to Critical Load				
E9	Phase A	2–#6-250	42.4 (375)	5/16-inch hex
E10	Phase B	2–#6-250	42.4 (375)	5/16-inch hex
E11	Phase C	2–#6-250	42.4 (375)	5/16-inch hex
DC Input from Battery to UPS				
E4	Positive	2–#2-600 kcmil	56.5 (500)	1/2-inch hex
E5	Negative	2–#2-600 kcmil	56.5 (500)	1/2-inch hex
Input and Output Neutral				
E12	Neutral	8–#6-250 kcmil	42.4 (375)	1/2-inch hex
Customer Ground				
Ground	Ground	8–#14-1/0	5.6 (50)	Slotted

Dimensions in mm (Inches)

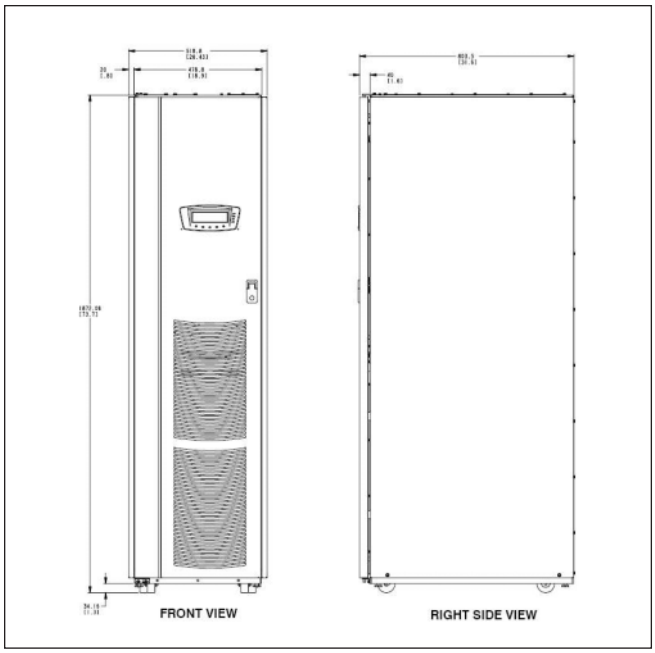

Figure 33.2-15. 9390 (40–80 kVA) UPS

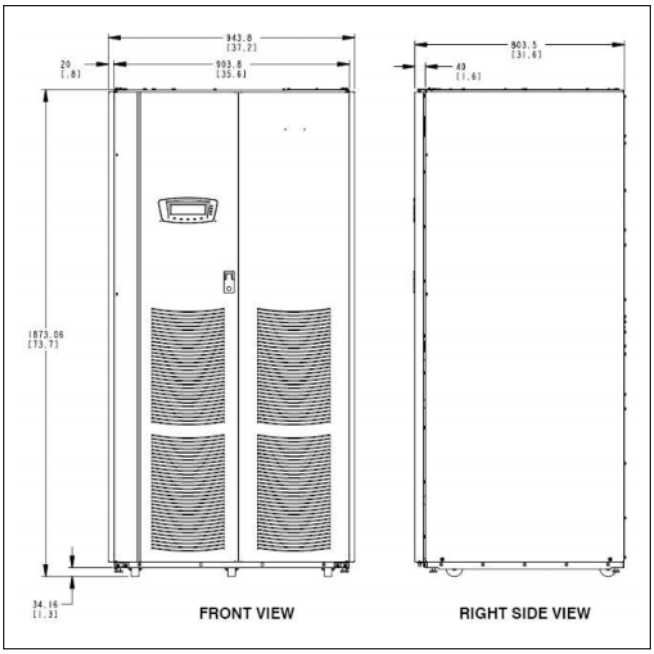

Figure 33.2-17. 9390 (100–160 kVA) UPS

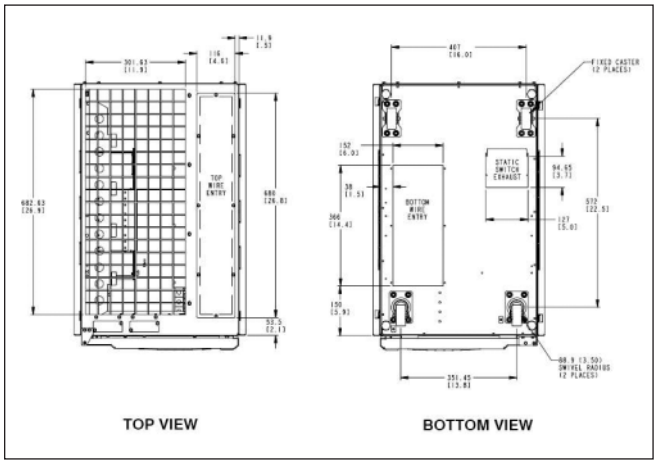

Figure 33.2-16. 9390 (40–80 kVA) UPS

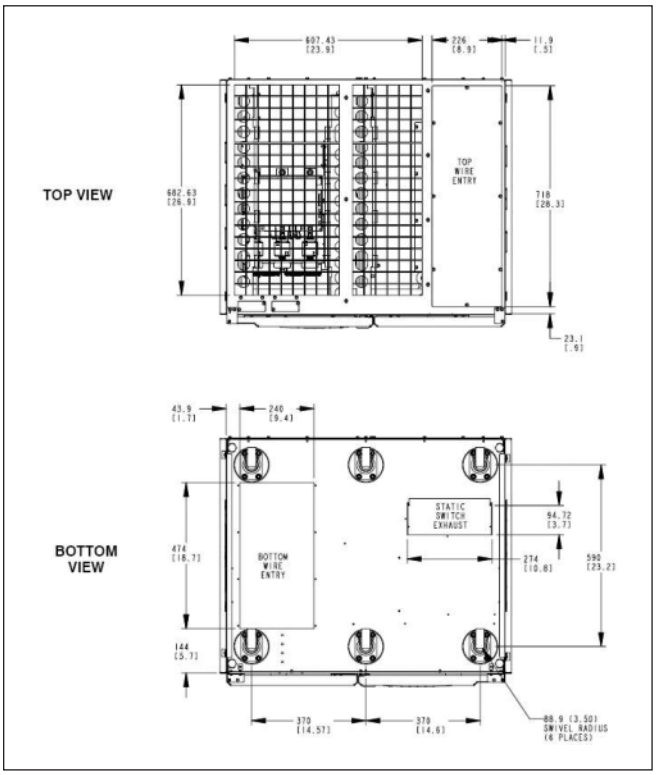

Figure 33.2-18. 9390 (100–160 kVA) UPS

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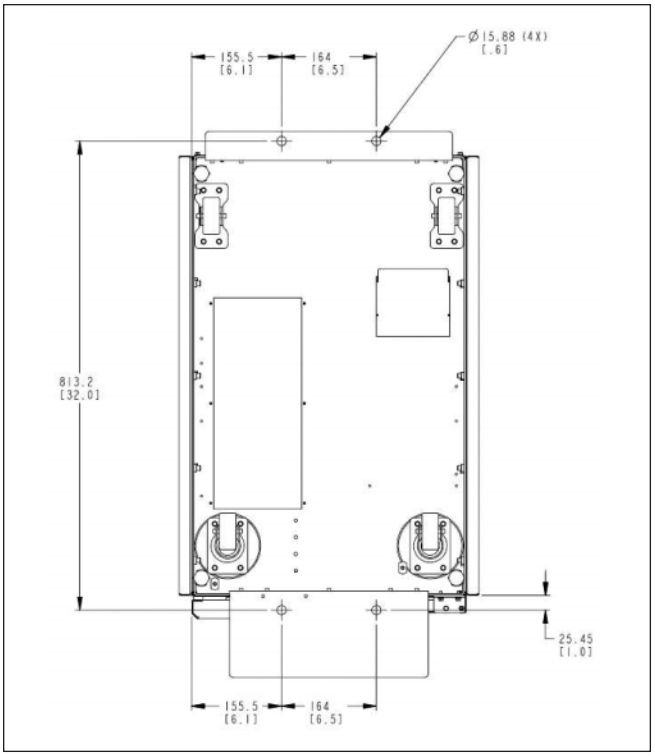

Figure 33.2-19. 9390 (40–80 kVA) UPS Floor-Mounted

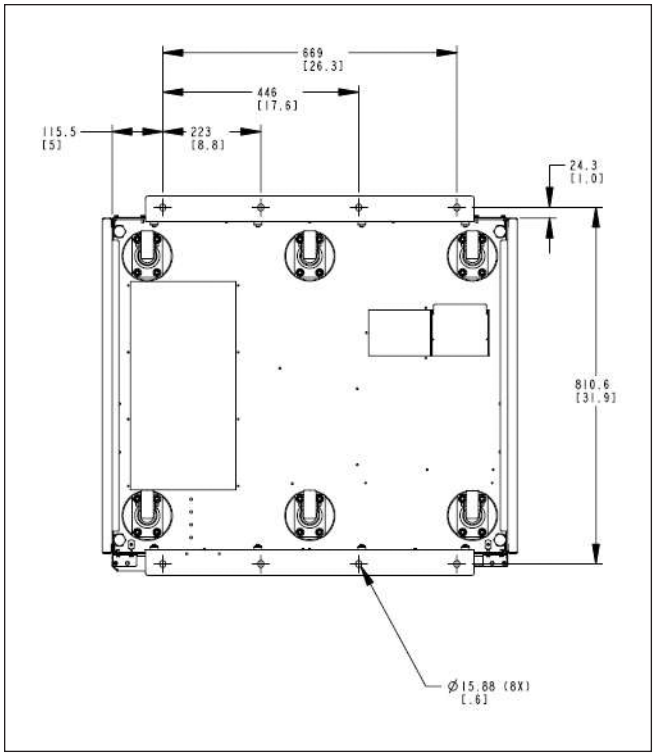

Figure 33.2-20. 9390 (100–160 kVA) UPS Floor-Mounted

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Eaton 9390 UPS Integrated Battery Cabinets

IBC-L and IBC-S

General Description

Eaton offers two models of battery cabinets, the IBC-S and IBC-L, for its Eaton 9390 UPS series. These cabinets line up and match with the 9390 UPS and offer a wide range of run times.

Features and Benefits

- ABM (advanced battery management) technology extends battery life and optimizes recharge time
- Top and bottom cabling entry provides installation flexibility
- CD-rated circuit breaker within each cabinet provides protection and servicing isolation
- Each circuit breaker includes:
  - Auxiliary switch for UPS sensing of circuit breaker closure
  - 48 Vdc UVR to interface with UPS for remote EPO function
- Variable battery bus enables battery capacity to be matched to exact run time requirements
- Optional remote configurations available
- Casters provided to enhance portability
- Quick disconnects between battery tray assemblies reduce battery maintenance time
- Manufacturer-supplied wiring provides plug and play capability for line-up-and-match configurations
- Removable battery tray assemblies reduce battery maintenance time
- DC-rated circuit breaker in each battery cabinet allows multiple battery strings to be serviced independently of each other, ensuring backup power is always available to the UPS
- Circuit breaker features UVR trip auxiliaries for system EPO and UPS sensing of battery breaker
- Located adjacent to the internal wireway, mechanical lugs reduce installation time for remote configurations

Flexibility

- A variable battery bus accommodates 384–480V configurations, so that the battery capacity can be matched to your exact run time requirements—either a specific run time, an extension to an existing battery run time or legacy battery installations
- Daisy chain up to four cabinets together for extended battery run times
- Integral, line-up-and-match configurations are standard
- Remote configurations available

Serviceability

- Front access only design enhances servicing and installation
- Modular battery tray design optimizes periodic servicing

Dimensions in Inches (mm)

- IBC-S: 22.40 W x 31.60 D x 74.40 H (569.0 W x 802.6 D x 1889.8 H)
- IBC-L: 42.70 W x 31.60 D x 74.40 H (1084.6 W x 802.6 D x 1889.8 H)

Reliability

- Battery cabinets are UL 1778 listed
- Flame-retardant batteries meet UL94V2 for computer room installations

IBC-S with Door Opened—IBC-S is Compatible with Battery Types B12, B17 and E20

IBC-L with Doors Opened—IBC-L is Compatible with Battery Types E28, E33, E39, E50, B27, B31, B37 and B47

Table 33.2-26. Eaton 9390 40–80 kVA Run Times: 480 Vac Systems, 60 Hz

kVA			40	50	60	80	Weight Lbs (kg) ②	40	50	60	80	Weight Lbs (kg) ②
kW			36	45	54	72		36	45	54	72	
Nominal DC Link Voltage			480	480	480	480		432	432	432	432	
Battery Type	Width Inches (mm) ①	No. of Strings	Minutes					Minutes				
B12	22.40 (569.0)	1	9	5	—	—	1665 (756)	—	—	—	—	1560 (708)
B17	22.40 (569.0)	1	16	10	7	—	2445 (1110)	8	5	—	—	2270 (1031)
B27	42.70 (1084.6)	1	33	25	19	13	3150 (1430)	24	17	12	6	2897 (1315)
E28	42.70 (1084.6)	1	35	27	22	15	3250 (1476)	24	18	13	5	2987 (1356)
B31	42.70 (1084.6)	1	39	30	24	16	3495 (1587)	28	21	16	8	3202 (1454)
E33	42.70 (1084.6)	1	42	33	27	19	3595 (1632)	30	23	18	11	3292 (1495)
B37	42.70 (1084.6)	1	48	36	29	20	3765 (1709)	34	26	21	13	3444 (1564)
E39	42.70 (1084.6)	1	48	38	31	23	3925 (1782)	36	27	22	16	3588 (1629)
B47	42.70 (1084.6)	1	66	51	40	26	4800 (2179)	53	38	29	18	4375 (1986)
E50	42.70 (1084.6)	1	65	51	41	30	4840 (2197)	54	41	34	25	4411 (2003)
B12	44.80 (2169.2)	2	26	19	16	10	3330 (1512)	19	14	11	5	3120 (1416)
B17	44.80 (2169.2)	2	43	31	25	17	4890 (2220)	32	24	17	9	4540 (2061)
B27	85.40 (1137.9)	2	78	60	50	34	6300 (2860)	61	47	36	25	5804 (2635)
E28	85.40 (1137.9)	2	79	61	49	35	6500 (2951)	57	43	34	24	5984 (2717)
B31	85.40 (2169.2)	2	90	68	57	40	6990 (3173)	71	54	43	29	6414 (2912)
E33	85.40 (2169.2)	2	92	72	58	42	7190 (3264)	69	52	42	30	6594 (2994)
B37	85.40 (2169.2)	2	100	80	65	50	7530 (3418)	82	62	51	35	6898 (3132)
E39	85.40 (2169.2)	2	105	82	67	49	7850 (3564)	80	61	50	36	7186 (3262)
B47	85.40 (2169.2)	2	149	114	92	67	9600 (4358)	125	94	76	54	8760 (3977)
E50	85.40 (2169.2)	2	144	111	91	66	9680 (4395)	121	93	76	54	8832 (4010)
B12	67.20 (1706.9)	3	45	32	26	18	4995 (2268)	36	26	20	13	4680 (2125)
B17	67.20 (1706.9)	3	72	55	43	29	7335 (3330)	58	44	33	22	6810 (3092)
B27	128.10 (3253.7)	3	125	95	78	57	9450 (4290)	102	77	61	44	8706 (3953)
E28	128.10 (3253.7)	3	125	96	78	56	9750 (4427)	96	72	58	40	8976 (4075)
B31	128.10 (3253.7)	3	141	110	91	65	10.485 (4760)	118	90	71	51	9621 (4368)
E33	128.10 (3253.7)	3	147	113	92	66	10.785 (4896)	113	86	69	49	9891 (4491)
B37	128.10 (3253.7)	3	157	122	100	75	11,295 (5128)	130	100	83	58	10,347 (4698)
E39	128.10 (3253.7)	3	164	128	105	76	11,775 (5346)	130	99	80	58	10,779 (4894)
B47	128.10 (3253.7)	3	251	188	150	107	14,400 (6538)	210	153	127	89	13,140 (5966)
E50	128.10 (3253.7)	3	230	177	144	104	14,520 (6592)	196	150	121	86	13,248 (6015)
B12	89.60 (2275.8)	4	63	50	39	27	6660 (3024)	54	40	30	20	6240 (2833)
B17	89.60 (2275.8)	4	104	79	63	44	9780 (4440)	86	63	52	33	9080 (4122)
B27	170.80 (4338.3)	4	175	135	110	80	12,600 (5720)	144	113	89	62	11,608 (5270)
E28	170.80 (4338.3)	4	176	135	110	78	13,000 (5902)	138	104	83	58	11,968 (5433)
B31	170.80 (4338.3)	4	200	153	125	92	13,980 (6347)	162	128	104	73	12,828 (5824)
E33	170.80 (4338.3)	4	206	158	128	92	14,380 (6529)	163	123	98	69	13,188 (5987)
B37	170.80 (4338.3)	4	222	170	140	101	15,060 (6837)	187	140	115	84	13,796 (6263)
E39	170.80 (4338.3)	4	228	178	145	105	15,700 (7128)	184	141	113	81	14,372 (6525)
B47	170.80 (4338.3)	4	360	280	212	152	19,200 (8717)	309	230	185	128	17,520 (7954)
E50	170.80 (4338.3)	4	322	248	201	144	19,360 (8789)	278	209	172	123	17,664 (8019)

① All battery cabinets are 74.40 inches (1889.8 mm) height x 31.60 inches (802.6 mm) depth.
② Maximum installed weight with largest breaker.

Table 33.2-27. Eaton 9390 100–160 kVA Run Times: 480 Vac Systems, 60 Hz

kVA			100	120	160	Weight Lbs (kg) ②	100	120	160	Weight Lbs (kg) ②
kW			90	108	144		90	108	144	
Nominal DC Link Voltage			480	480	480		432	432	432	
Battery Type	Width Inches (mm) ①	No. of Strings	Minutes				Minutes			
B27	42.70 (1084.6)	1	9	7	—	3150 (1430)	—	—	—	2897 (1315)
E28	42.70 (1084.6)	1	10	6	—	3250 (1476)	—	—	—	2987 (1356)
B31	42.70 (1084.6)	1	11	8	—	3495 (1587)	—	—	—	3202 (1454)
E33	42.70 (1084.6)	1	14	10	—	3595 (1632)	—	—	—	3292 (1495)
B37	42.70 (1084.6)	1	15	11	7	3765 (1709)	—	—	—	3444 (1564)
E39	42.70 (1084.6)	1	11	13	7	3925 (1782)	—	—	—	3588 (1629)
B47	42.70 (1084.6)	1	18	13	8	4800 (2179)	—	—	—	4375 (1986)
E50	42.70 (1084.6)	1	22	17	10	4840 (2197)	—	—	—	4411 (2003)
B27	85.40 (2169.2)	2	25	19	13	6300 (2860)	17	12	6	5804 (2635)
E28	85.40 (2169.2)	2	27	22	15	6500 (2951)	18	13	5	5984 (2717)
B31	85.40 (2169.2)	2	30	24	16	6990 (3173)	21	16	8	6414 (2912)
E33	85.40 (2169.2)	2	33	27	19	7190 (3264)	23	18	11	6594 (2994)
B37	85.40 (2169.2)	2	36	29	20	7530 (3418)	27	21	13	6898 (3132)
E39	85.40 (2169.2)	2	38	31	23	7850 (3564)	28	22	16	7186 (3262)
B47	85.40 (2169.2)	2	51	40	27	9600 (4358)	38	29	18	8760 (3977)
E50	85.40 (2169.2)	2	51	41	30	9680 (4395)	42	34	25	8832 (4010)
B27	128.10 (3253.7)	3	43	34	23	9450 (4290)	32	25	16	8706 (3953)
E28	128.10 (3253.7)	3	43	35	26	9750 (4427)	30	24	16	8976 (4075)
B31	128.10 (3253.7)	3	52	40	28	10,485 (4760)	36	29	19	9621 (4368)
E33	128.10 (3253.7)	3	51	42	31	10,785 (4896)	37	30	21	9891 (4491)
B37	128.10 (3253.7)	3	59	49	34	11,295 (5128)	45	35	25	10,347 (4698)
E39	128.10 (3253.7)	3	59	48	35	11,775 (5346)	44	36	26	10,779 (4894)
B47	128.10 (3253.7)	3	83	67	48	14,400 (6538)	66	54	35	13,140 (5966)
E50	128.10 (3253.7)	3	80	65	47	14,520 (6592)	67	54	39	13,248 (6015)
B27	170.80 (4338.3)	4	60	50	34	12,600 (5720)	47	36	25	11,608 (5270)
E28	170.80 (4338.3)	4	60	49	35	13,000 (5902)	43	34	24	11,968 (5433)
B31	170.80 (4338.3)	4	69	58	40	13,980 (6347)	54	43	29	12,828 (5824)
E33	170.80 (4338.3)	4	71	57	42	14,380 (6529)	52	42	30	13,188 (5987)
B37	170.80 (4338.3)	4	80	65	50	15,060 (6837)	62	52	35	13,796 (6263)
E39	170.80 (4338.3)	4	81	66	49	15,700 (7128)	62	50	36	14,372 (6525)
B47	170.80 (4338.3)	4	115	92	66	19,200 (8717)	94	77	54	17,520 (7954)
E50	170.80 (4338.3)	4	110	90	65	19,360 (8789)	94	76	54	17,664 (8019)

① All battery cabinets are 74.40 inches (1889.8 mm) height x 31.60 inches (802.6 mm) depth.
② Maximum installed weight with largest breaker.

Table 33.2-28. Eaton 9390 40–80 kVA Run Times: 208 Vac Systems, 60 Hz

kVA			40	50	60	80	Weight Lbs (kg)	40	50	60	80	Weight Lbs (kg) ②	40	50	60	80	Weight Lbs (kg) ②
kW			36	45	54	72		36	45	54	72		36	45	54	72	
Nominal DC Link Voltage			480	480	480	480		432	432	432	432		384	384	384	384	
Battery Type	Width Inches (mm) ①	No. of Strings	Minutes					Minutes					Minutes				
B12	22.40 (569.0)	1	9	5	—	—	1665 (756)	7	—	—	—	1560 (708)	5.5	—	—	—	1455 (661)
B17	22.40 (569.0)	1	16	10	7	—	2445 (1110)	13	8	5	—	2270 (1031)	10	5	—	—	2095 (951)
B27	42.70 (1084.6)	1	33	25	19	13	3150 (1430)	30	22	17	11	2897 (1315)	25	18	14	9	2649 (1203)
E28	42.70 (1084.6)	1	35	27	22	15	3250 (1476)	31	24	20	13	2987 (1356)	27	21	17	10	2729 (1239)
B31	42.70 (1084.6)	1	39	30	24	16	3495 (1587)	35	26	21	14	3202 (1454)	30	23	17	11	2914 (1323)
E33	42.70 (1084.6)	1	42	33	27	19	3595 (1632)	37	29	24	17	3292 (1495)	32	25	21	14	2994 (1359)
B37	42.70 (1084.6)	1	48	36	29	20	3765 (1709)	42	32	26	17	3444 (1564)	36	28	22	15	3128 (1420)
E39	42.70 (1084.6)	1	48	38	31	23	3925 (1782)	43	33	28	20	3588 (1629)	38	29	24	18	3256 (1478)
B47	42.70 (1084.6)	1	66	51	40	26	4800 (2179)	59	45	34	23	4375 (1986)	51	37	29	19	3955 (1796)
E50	42.70 (1084.6)	1	65	51	41	30	4840 (2197)	57	45	37	27	4411 (2003)	50	39	32	24	3987 (1810)
B12	44.80 (1137.9)	2	26	19	16	10	3330 (1512)	23	17	14	7	3120 (1416)	20	15	11	5	2910 (1321)
B17	44.80 (1137.9)	2	43	31	25	17	4890 (2220)	37	28	22	13	4540 (2061)	32	23	18	10	4190 (1902)
B27	85.40 (2169.2)	2	78	60	50	34	6300 (2860)	69	54	43	30	5794 (2630)	60	47	37	26	5308 (2410)
E28	85.40 (2169.2)	2	79	61	49	35	6500 (2951)	69	53	42	31	5974 (2712)	60	47	38	27	5468 (2482)
B31	85.40 (2169.2)	2	90	68	57	40	6990 (3173)	81	61	52	35	6404 (2907)	69	56	44	30	5838 (2650)
E33	85.40 (2169.2)	2	92	72	58	42	7190 (3264)	81	62	51	37	6584 (2989)	70	55	45	33	5998 (2723)
B37	85.40 (2169.2)	2	100	80	65	50	7530 (3418)	91	71	59	42	6888 (3127)	80	62	53	36	6266 (2845)
E39	85.40 (2169.2)	2	105	82	67	49	7850 (3564)	91	72	59	43	7176 (3258)	81	63	52	38	6522 (2961)
B47	85.40 (2169.2)	2	149	114	92	67	9600 (4358)	134	100	84	60	8750 (3973)	117	89	71	52	7920 (3596)
E50	85.40 (2169.2)	2	144	111	91	66	9680 (4395)	126	96	80	58	8822 (4005)	110	86	70	51	7984 (3625)
B12	67.20 (1706.9)	3	45	32	26	18	4995 (2268)	40	29	23	16	4680 (2125)	33	25	20	14	4365 (1982)
B17	67.20 (1706.9)	3	72	55	43	29	7335 (3330)	65	48	37	26	6810 (3092)	56	41	32	22	6285 (2853)
B27	128.10 (3253.7)	3	125	95	78	57	9450 (4290)	113	87	69	51	8691 (3946)	97	75	60	44	7962 (3615)
E28	128.10 (3253.7)	3	125	96	78	56	9750 (4427)	109	85	69	50	8961 (4068)	97	74	61	44	8202 (3724)
B31	128.10 (3253.7)	3	141	110	91	65	10,485 (4760)	130	98	80	59	9606 (4361)	113	87	69	53	8757 (3976)
E33	128.10 (3253.7)	3	147	113	92	66	10,785 (4896)	128	99	81	59	9876 (4484)	112	87	71	52	8997 (4085)
B37	128.10 (3253.7)	3	157	122	100	75	11,295 (5128)	143	111	90	66	10,332 (4691)	126	97	81	59	9399 (4267)
E39	128.10 (3253.7)	3	164	128	105	76	11,775 (5346)	145	113	91	68	10,764 (4887)	126	100	81	60	9783 (4441)
B47	128.10 (3253.7)	3	251	188	150	107	14,400 (6538)	220	164	132	95	13,125 (5959)	193	144	117	84	11,880 (5394)
E50	128.10 (3253.7)	3	230	177	144	104	14,520 (6992)	200	155	126	91	13,233 (6008)	174	137	110	81	11,976 (5437)
B12	89.60 (2275.8)	4	63	50	39	27	6660 (3024)	58	43	33	23	6240 (2833)	50	35	28	20	5820 (2642)
B17	89.60 (2275.8)	4	104	79	63	44	9780 (4440)	92	69	56	37	9080 (4122)	80	60	48	32	8380 (3805)
B27	170.80 (4338.3)	4	175	135	110	80	12,600 (5720)	156	121	95	69	11,588 (5261)	137	105	86	61	10,616 (4820)
E28	170.80 (4338.3)	4	176	135	110	78	13,000 (5902)	154	119	96	70	11,948 (5424)	135	103	85	61	10,936 (4965)
B31	170.80 (4338.3)	4	200	153	125	92	13,980 (6347)	181	139	111	81	12,808 (5815)	155	122	98	70	11,676 (5301)
E33	170.80 (4338.3)	4	206	158	128	92	14,380 (6527)	180	136	113	82	13,168 (5978)	157	121	98	71	11,996 (5446)
B37	170.80 (4338.3)	4	222	170	140	101	15,060 (6837)	200	151	125	92	13,776 (6254)	174	134	110	81	12,532 (5690)
E39	170.80 (4338.3)	4	228	178	145	105	15,700 (7128)	202	157	128	93	14,352 (6516)	175	137	112	82	13,044 (5922)
B47	170.80 (4338.3)	4	360	280	212	152	19,200 (8717)	328	238	191	134	17,500 (7945)	284	206	166	118	15,840 (7191)
E50	170.80 (4338.3)	4	322	248	201	144	19,360 (8789)	280	217	177	127	17,644 (8019)	243	190	153	111	15,968 (7249)

① All battery cabinets are 74.40 inches (1889.8 mm) height x 31.60 inches (802.6 mm) depth.
② Maximum installed weight with largest breaker.

Table 33.2-29. Eaton 9390 100–160 kVA Run Times: 208 Vac Systems, 60 Hz

kVA			100	120	160	Weight Lbs (kg) ②	100	120	160	Weight Lbs (kg) ②	100	120	160	Weight Lbs (kg) ②
kW			90	108	144		90	108	144		90	108	144	
Nominal DC Link Voltage			480	480	480		432	432	432		384	384	384	
Battery Type	Width Inches (mm) ①	No. of Strings	Minutes				Minutes				Minutes			
B27	42.70 (1084.6)	1	9	7	—	3150 (1430)	—	—	—	2897 (1315)	—	—	—	2649 (1203)
E28	42.70 (1084.6)	1	10	6	—	3250 (1476)	—	—	—	2987 (1356)	—	—	—	2729 (1239)
B31	42.70 (1084.6)	1	11	8	—	3495 (1587)	—	—	—	3202 (1454)	—	—	—	2914 (1323)
E33	42.70 (1084.6)	1	14	10	—	3595 (1632)	—	—	—	3292 (1495)	—	—	—	2994 (1359)
B37	42.70 (1084.6)	1	15	11	7	3765 (1709)	—	—	—	3444 (1564)	—	—	—	3128 (1420)
E39	42.70 (1084.6)	1	11	13	7	3925 (1782)	—	—	—	3588 (1629)	—	—	—	3256 (1478)
B47	42.70 (1084.6)	1	18	13	8	4800 (2179)	—	—	—	4375 (1986)	—	—	—	3955 (1796)
E50	42.70 (1084.6)	1	22	17	10	4840 (2197)	—	—	—	4411 (2003)	—	—	—	3987 (1810)
B27	85.40 (2169.2)	2	25	19	13	6300 (2860)	22	17	11	5794 (2630)	18	14	9	5308 (2410)
E28	85.40 (2169.2)	2	27	22	15	6500 (2951)	24	20	13	5974 (2712)	21	17	10	5468 (2482)
B31	85.40 (2169.2)	2	30	24	16	6990 (3173)	27	21	13	6404 (2907)	23	17	11	5838 (2650)
E33	85.40 (2169.2)	2	33	27	19	7190 (3264)	29	24	17	6584 (2989)	25	21	14	5998 (2723)
B37	85.40 (2169.2)	2	36	29	20	7530 (3418)	32	26	17	6888 (3127)	28	22	15	6266 (2845)
E39	85.40 (2169.2)	2	38	31	23	7850 (3564)	34	28	20	7176 (3258)	29	24	18	6522 (2961)
B47	85.40 (2169.2)	2	51	40	27	9600 (4358)	46	34	22	8750 (3973)	37	29	18	7920 (3596)
E50	85.40 (2169.2)	2	51	41	30	9680 (4395)	45	37	27	8822 (4005)	39	32	24	7984 (3625)
B27	128.10 (3253.7)	3	43	34	23	9450 (4290)	37	30	20	8691 (3946)	32	25	17	7962 (3615)
E28	128.10 (3253.7)	3	43	35	26	9750 (4427)	38	31	23	8961 (4068)	33	27	20	8202 (3724)
B31	128.10 (3253.7)	3	52	40	28	10,485 (4760)	45	35	24	9606 (4361)	38	30	21	8757 (3976)
E33	128.10 (3253.7)	3	51	42	31	10,785 (4896)	46	37	27	9876 (4484)	40	33	24	8997 (4085)
B37	128.10 (3253.7)	3	59	49	34	11,295 (5128)	54	42	29	10,332 (4691)	47	36	25	9399 (4267)
E39	128.10 (3253.7)	3	59	48	35	11,775 (5346)	53	43	31	10,764 (4887)	46	38	28	9783 (4441)
B47	128.10 (3253.7)	3	83	67	48	14,400 (6538)	74	60	41	13,125 (5959)	64	51	34	11,880 (5394)
E50	128.10 (3253.7)	3	80	65	47	14,520 (6592)	71	58	42	13,233 (6008)	62	51	37	11,976 (5437)
B27	170.80 (4338.3)	4	60	50	34	12,600 (5720)	55	43	30	11,588 (5261)	47	37	25	10,616 (4820)
E28	170.80 (4338.3)	4	60	49	35	13,000 (5902)	52	43	31	11,948 (5424)	47	38	27	10,936 (4965)
B31	170.80 (4338.3)	4	69	58	40	13,980 (6347)	61	52	35	12,808 (5815)	55	44	30	11,676 (5301)
E33	170.80 (4338.3)	4	71	57	42	14,380 (6529)	63	51	37	13,168 (5978)	55	45	33	11,996 (5446)
B37	170.80 (4338.3)	4	80	65	50	15,060 (6837)	71	59	41	13,776 (6254)	62	53	36	12,532 (5690)
E39	170.80 (4338.3)	4	81	66	49	15,700 (7128)	72	59	43	14,352 (6516)	63	52	38	13,044 (5922)
B47	170.80 (4338.3)	4	115	92	66	19,200 (8717)	100	84	59	17,500 (7945)	90	72	51	15,840 (7191)
E50	170.80 (4338.3)	4	110	90	65	19,360 (8789)	98	80	58	17,644 (8019)	86	70	51	15,968 (7249)

① All battery cabinets are 74.40 inches (1889.8 mm) height x 31.60 inches (802.6 mm) depth.
② Maximum installed weight with largest breaker.

Wiring Diagrams and Specifications

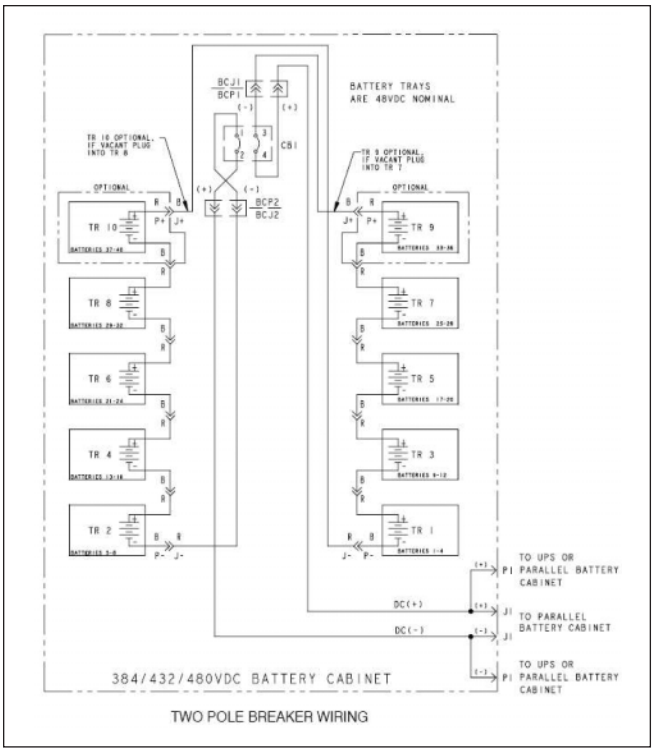

Figure 33.2-21. 9390 Battery Cabinet Internal Wiring (Two-Pole)

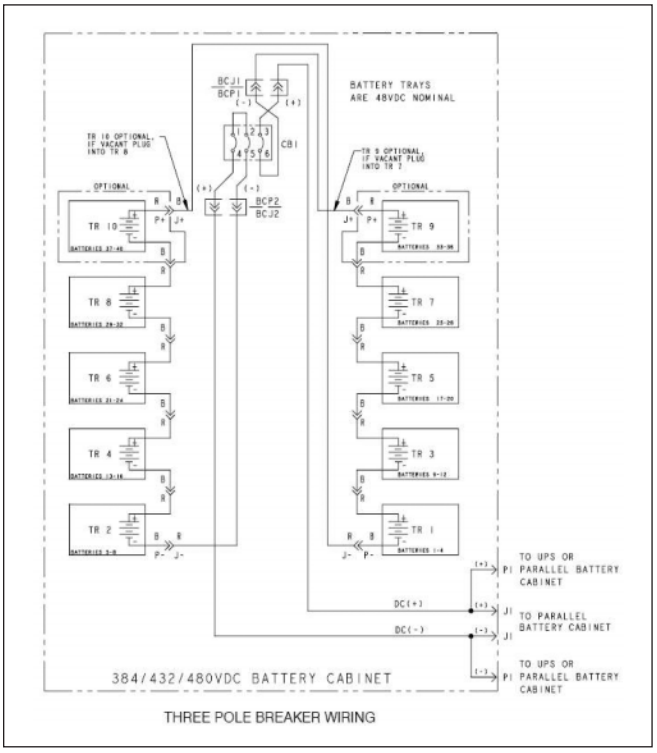

Figure 33.2-22. 9390 Battery Cabinet Internal Wiring (Three-Pole)

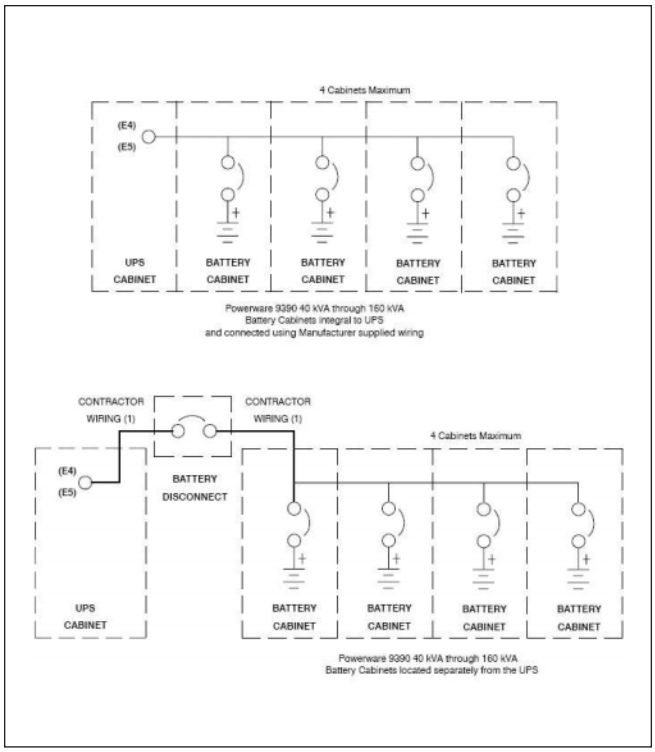

Figure 33.2-23. 9390 Multiple Battery Cabinet Interconnect Wiring

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Table 33.2-30. Battery Cabinet External Wiring and Termination Requirements (UPS-to-Battery, Battery-to-Battery, or Remote Disconnect to Battery)

UPS Model kVA	Battery Type	No. of Cabinets	Cabinet Position	Wire Size		Terminations	Torque Nm (in-lb)	Screw Size and Type
				UPS to Battery	Battery to Battery			
Eaton 9390 Model IBC-S								
40 and 50	B12, B17, B20	1, 2, 3 or 4	Line-up-and-match	Supplied 1 per pole	Supplied 1 per pole	1–#6-500 kcmil 2–1 bolt mounting	56.5 (500) 22.6 (200)	1/2-inch Allen 3/8-inch hex nut
	B12, B17, B20	1, 2, 3 or 4	Stand-alone	1/0 1 per pole	1/0 1 per pole	1–#6-500 kcmil 2–1 bolt mounting	56.5 (500) 22.6 (200)	1/2-inch Allen 3/8-inch hex nut
60	B12, B17, B20	1, 2, 3 or 4	Line-up-and-match	Supplied 1 per pole	Supplied 1 per pole	1–#6-500 kcmil 2–1 bolt mounting	56.5 (500) 22.6 (200)	1/2-inch Allen 3/8-inch hex nut
	B12, B17, B20	1, 2, 3 or 4	Stand-alone	2/0 1 per pole	2/0 1 per pole	1–#6-500 kcmil 2–1 bolt mounting	56.5 (500) 22.6 (200)	1/2-inch Allen 3/8-inch hex nut
80	B12, B17, B20	1, 2, 3 or 4	Line-up-and-match	Supplied 1 per pole	Supplied 1 per pole	1–#6-500 kcmil 2–1 bolt mounting	56.5 (500) 22.6 (200)	1/2-inch Allen 3/8-inch hex nut
	B12, B17, B20	1, 2, 3 or 4	Stand-alone	3/0 1 per pole	3/0 1 per pole	1–#6-500 kcmil 2–1 bolt mounting	56.5 (500) 22.6 (200)	1/2-inch Allen 3/8-inch hex nut
Eaton 9390 Model IBC-L								
40 and 50	B27, B31, B37, B47	1, 2, 3 or 4	Line-up-and-match	Supplied 1 per pole	Supplied 1 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
	B27, B31, B37, B47	1, 2, 3 or 4	Stand-alone	1/0 1 per pole	1/0 1 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
60	B27, B31, B37, B47	1, 2, 3 or 4	Line-up-and-match	Supplied 1 per pole	Supplied 1 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
	B27, B31, B37, B47	1, 2, 3 or 4	Stand-alone	2/0 1 per pole	2/0 1 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
80	B27, B31, B37, B47	1, 2, 3 or 4	Line-up-and-match	Supplied 1 per pole	Supplied 1 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
	B27, B31, B37, B47	1, 2, 3 or 4	Stand-alone	3/0 1 per pole	3/0 1 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
100	B27, B31, B37, B47	1, 2, 3 or 4	Line-up-and-match	Supplied 2 per pole	Supplied 2 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
	B27, B31, B37, B47	1, 2, 3 or 4	Stand-alone	2/0 2 per pole	2/0 2 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
120	B27, B31, B37, B47	1, 2, 3 or 4	Line-up-and-match	Supplied 2 per pole	Supplied 2 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
	B27, B31, B37, B47	1, 2, 3 or 4	Stand-alone	2/0 2 per pole	3/0 2 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
160	B27, B31, B37, B47	1, 2, 3 or 4	Line-up-and-match	Supplied 2 per pole	Supplied 2 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex
	B27, B31, B37, B47	1, 2, 3 or 4	Stand-alone	250 kcmil 2 per pole	250 kcmil 2 per pole	2–#2-600 kcmil 2–1 bolt mounting	42.4 (375) 22.6 (200)	3/8-inch hex M10 hex

Note: All specified wire sizes are 90°C rated copper minimum.

Dimensions in mm (Inches)

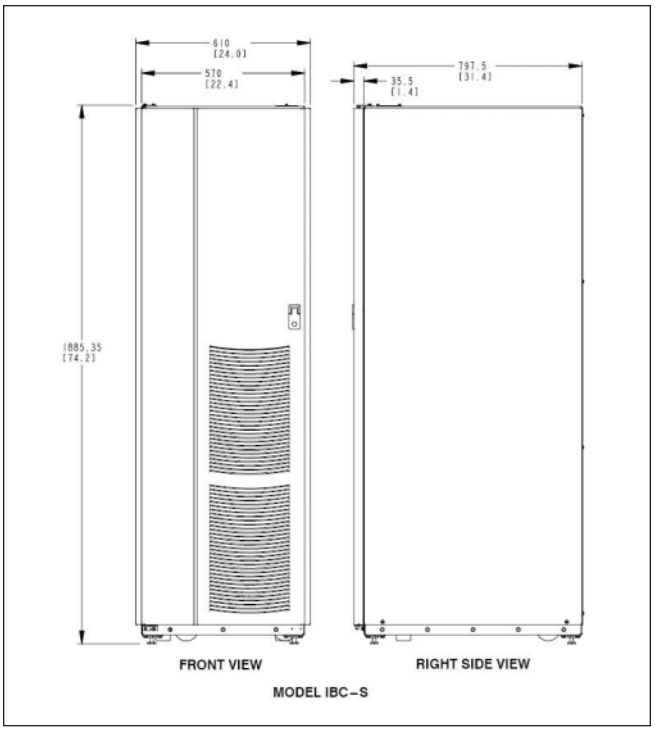

Figure 33.2-24. 9390 IBC-S Battery Cabinet Dimensions

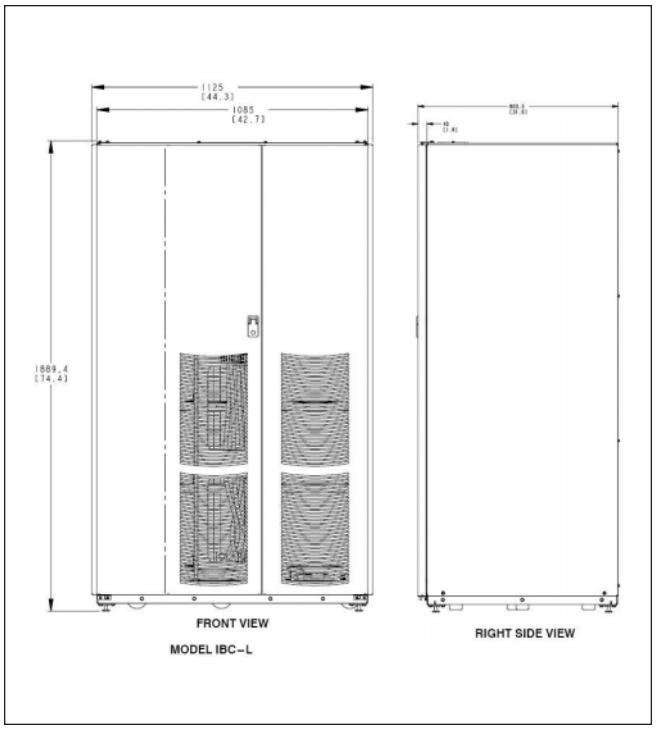

Figure 33.2-26. 9390 Multiple Battery Cabinet Interconnect Wiring

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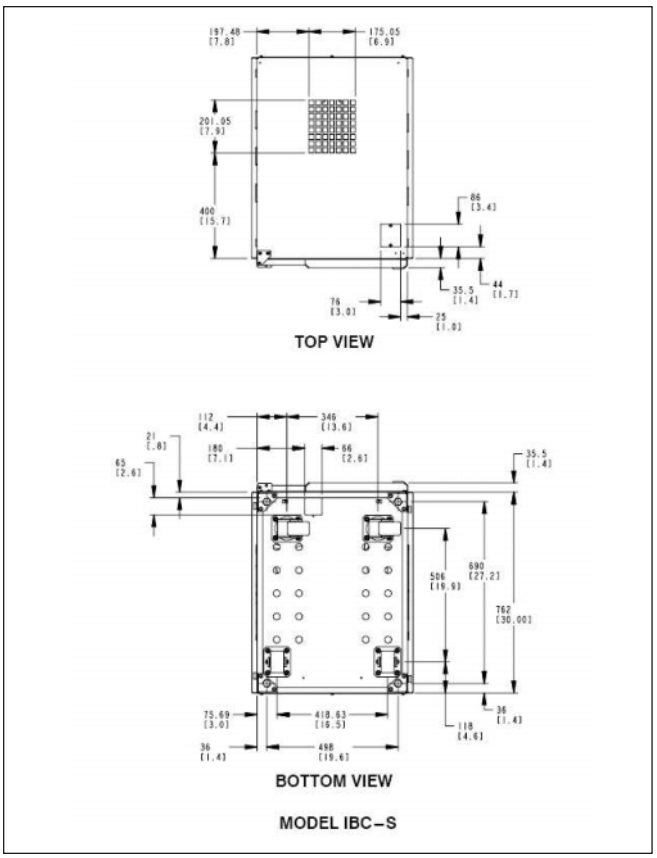

Figure 33.2-25. 9390 IBC-S Battery Cabinet Top and Bottom View

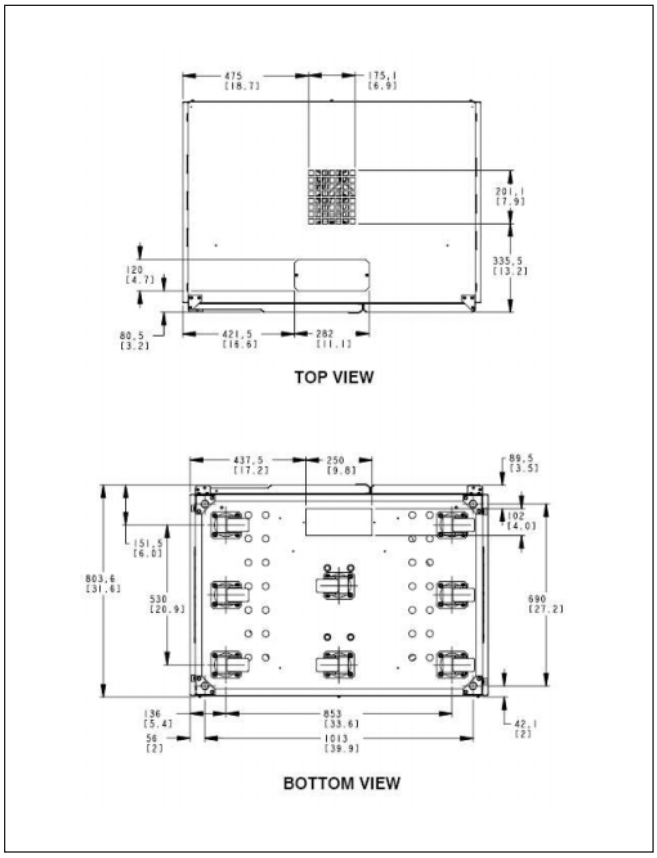

Figure 33.2-27. 9390 IBC-S Battery Cabinet Top and Bottom View

Integrated Distribution Cabinet™ for the Eaton 9390 UPS

Power Protection and Distribution for Data Centers

Eaton's Integrated Distribution Cabinet is specifically designed to complement the Eaton 9390 family of three-phase uninterruptible power systems (UPSs). This cabinet integrates with the 9390 UPS models and is designed for the specific power rating of the 9390 UPS models from 40–160 kVA.

With this optional cabinet, Eaton offers a complete, one-stop shop for power protection and distribution solutions that is easy to design, install, customize and manage, while delivering "pay-as-you-grow" scalability for future expansion.

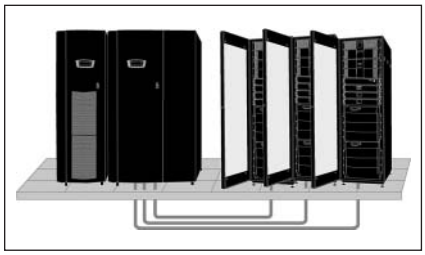

Figure 33.2-28. Typical Application of Eaton 9390 Integrated Distribution Cabinet Distributing Power to IT Racks

Preconfigured for Ease-of-Use, Mix-and-Match for Flexibility

The Integrated Distribution Cabinet is preconfigured with the most popular power distribution options for ease of design and installation.

In addition, it offers the flexibility to mix and match power distribution, voltage transformation and maintenance bypass options to select the right combination of functions for your data center requirements.

Power Distribution

- Options enable you to distribute power to servers or racks via distribution panelboards, or to distribute power to larger loads via distribution circuit breakers

Voltage Transformation

- Allows you to change output voltage levels. For instance, you could convert 480 Vac output from the UPS into 208/120 Vac output to serve single-phase loads. You can also add an isolation transformer if required

Maintenance Bypass

- Enables power to completely bypass the UPS power module. You can then service or replace the UPS module in complete safety, without interrupting power to critical systems

Customized for Today's Needs, Scalable for Tomorrow's Growth

In today's economy, "pay as you grow" is more than a catch phrase; it's a way of life. So is the need to balance the often-conflicting requirements of budgets, operational demands and future growth.

Eaton addresses these realities with a flexible architecture that lets you configure just the right combination of functions to complement your UPS. You save money by only specifying what your system currently needs—while keeping your options open for future expansion.

Simplified Installation and Clean Appearance

The Integrated Distribution Cabinet has the same look and finish as the Eaton 9390 UPS system it complements.

The cabinet is shipped with interconnecting cables for fast and easy installation with the Eaton 9390 UPS. The result is a clean look that enhances the appearance of your data center.

Integrated Management and Support for Enhanced Confidence

The 9390 UPS models can be monitored and managed by Eaton software such as LanSafe™, PowerVision® and Foreseer®. This close integration provides greater visibility to your complete power protection infrastructure.

Eaton also backs up the Integrated Distribution Cabinet with the standard one-year limited factory warranty we offer on the 9390 UPS models. You can have the confidence that both your power protection and distribution are supported by Eaton's best-in-class Global Services organization and strong customer service commitments.

To find out more about the Integrated Distribution Cabinet option or the Eaton 9390 UPS, visit Eaton's Web site at www.eaton.com/9390, or call 1-800-356-5794.

Table 33.2-31. 9390 40–80 kVA Integrated Distribution Cabinet Technical Specifications

Description	Specification
General Characteristics	
Installation	Line up and match to UPS
	Front access only
Color	Same as UPS
Construction	NEMA® 1 ventilated
Input voltage	208, 480
Output voltage Isolation Distribution	 208, 208/120V 208/120V
Dimensions inches (mm) 40–80 kVA	35.60 W x 31.60 D x 74.40 H (904.2 W x 802.6 D x 1890.0 H)
Weight	1200 lbs (545 kg) (maximum)
Certification	
Safety	UL 1778
Markings	UL, cUL
User Interface	
Cable entry	Top or bottom
EPO switch	Optional
Transformer Option	
Electrostatic shield	Standard
Insulation	150°C rise, Class H
Impedance	5% (maximum)
K-factor	K1; K13; K20
Compensation taps	2-FCAN, 4-FCBN standard
Overload protection	Input breaker standard
Power Distribution Option	
Panelboard distribution Quantity Voltage Main breaker Circuits	 2 (maximum) 208/120V 225A, 65 kAIC 84 (maximum)
Distribution breakers (in lieu of panelboards) Quantity Voltage Size	 6 (maximum) ① 208/120V 225A, 65 kAIC
Maintenance Bypass Option	
Maintenance bypass	Optional

① Three in combination with one panelboard.

33

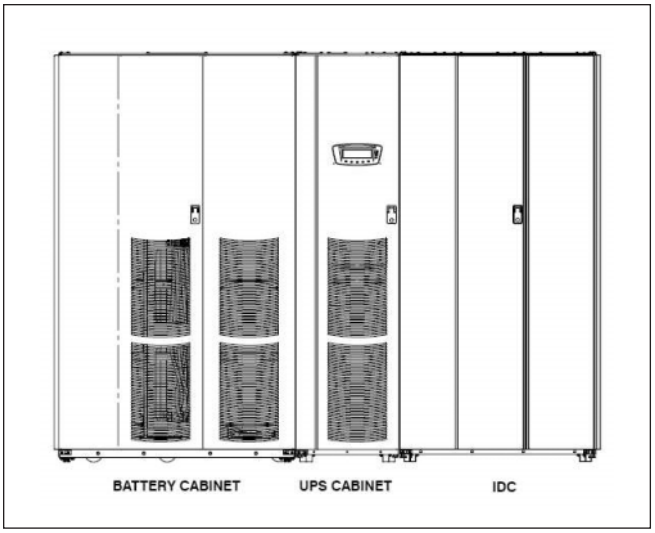

Figure 33.2-29. 9390 UPS, IBC-L and IDC Lineup

Table 33.2-32. Eaton 9390 40–80 kVA IDC Equipment Weight

Component/Model	Weight kg (Lbs)		
	Shipping	Installed	Point Loading
Eaton 9390 80 kVA IDC with maintenance bypass switch and input breaker	236 (520)	213 (470)	6 at 35.5 (78.3)

Note: For IDC with transformer, add 331 kg (730 lbs).
For IDC with distribution panels, add 11.3 kg (25 lbs) for each panel.
For IDC with distribution breakers, add 6.8 kg (15 lbs) for each breaker.
For IDC with output lugs, add 2.3 kg (5 lbs).

Table 33.2-33. Eaton 9390 40–80 kVA IDC Air Conditioning or Ventilation Requirements During Full Load Operation

Component/Model	Input/Output Voltage	Heat Rejection BTU/hr x 1000/hr (kg-cal/hr)
IDC-80 without transformer	N/A	N/A
IDC-80 with transformer	208/208	7.4 (1.8)
IDC-80 with transformer	480/208	7.4 (1.8)

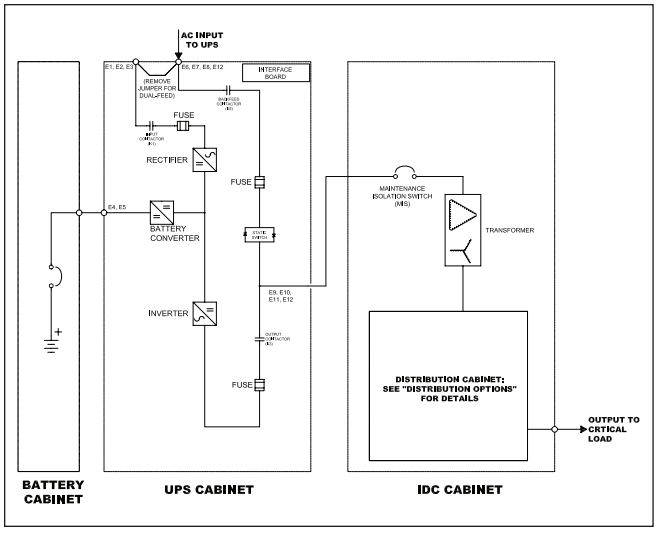

Figure 33.2-30. 9390 (40–80 kVA) UPS, IBC-L and IDC One-line

Table 33.2-34. Input/Output Ratings and External Wiring Requirements for Eaton 9390 80 kVA IDC

Description	Units	Rating 60 Hz	
Basic unit rating	UPS kVA	40/50/6080	40/50/60/80
IDC input and bypass input IDC output	Volts Volts	208 208	480 208
A—AC Input from UPS—Stand-alone Installation			
(3) phases, (1) neutral- if required, (1) ground	Amps	111/155/185/222	48/67/80/96
Minimum conductor size number per phase	AWG or kcmil (each)	①	①
B—AC Input to Maintenance Bypass—Stand-alone Installation			
(3) Phases, (1) neutral- if required, (1) ground	Amps	111/155/185/222	48/67/80/96
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (2)	1/0 (1)
C—AC Output from 225A Distribution Breaker to Critical Load			
(3) phases, (1) neutral, (1) ground	Wire branch circuits according to the branch circuit breaker manufacturer's ratings, and national and local electrical codes.		
C—AC Output from Output Terminal Block to Critical Load			
(3) phases, (1) neutral, (1) ground	Wire output according to national and local electrical codes. Refer to the Eaton 9390 UPS (40–80 kVA) Installation and Operation Manual for output current rating and wire size.		
C—AC Output from Distribution Panel Breakers to Critical Load			
Wire branch circuits according to the branch circuit breaker manufacturer's ratings and instructions, and national and local electrical codes (output is prewired to the panelboard).			

① For contractor-supplied wiring, refer to the Eaton 9390 UPS (40–80 kVA) Installation and Operation Manual for wire size. Wiring for Line-up-and-Match cabinet installation is factory supplied.

Table 33.2-35. IDC-80 Power Cable Terminations 208V/208V

Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)		Screw Type
AC Input from UPS (with Maintenance Bypass)					
S1–3 S1–7 S1–11	Phase A Phase B Phase C	2–#14-2/0 2–#14-2/0 2–#14-2/0	2/0-#3: #4-#6: #8: #10-#14:	5.6 (50) 5.0 (45) 4.5 (40) 4.0 (35)	Slotted Slotted Slotted
AC Input to Maintenance Bypass (with Maintenance Bypass)					
S1–1 S1–5 S1–9	Phase A Phase B Phase C	2–#14-2/0 2–#14-2/0 2–#14-2/0	2/0-#3: #4-#6: #8: #10-#14:	5.6 (50) 5.0 (45) 4.5 (40) 4.0 (35)	Slotted Slotted Slotted
AC Input from UPS (without Maintenance Bypass)					
CB1–2 CB1–4 CB1–6	Phase A Phase B Phase C	2–#14-2/0 2–#14-2/0 2–#14-2/0	2/0-#3: #4-#6: #8: #10-#14:	5.6 (50) 5.0 (45) 4.5 (40) 4.0 (35)	1/4-inch hex 1/4-inch hex 1/4-inch hex
Input Neutral from UPS (Models without a Transformer)—if Required					
E4	Neutral	4–#4-300 kcmil	31 (275)		5/16-inch hex
Input Neutral from Bypass (Models without a Transformer)—if Required					
E4	Neutral	4–#4-300 kcmil	31 (275)		5/16-inch hex
Input Ground					
E9	Ground	2–#14-1/0	5.6 (50)		Slotted
AC Output from 225A Distribution Breaker to Critical Load					
CBxx–1 CBxx–3 CBxx–5	Phase A Phase B Phase C	1–#4-300 kcmil 1–#4-300 kcmil 1–#4-300 kcmil	22.6 (200) 22.6 (200) 22.6 (200)		1/4-inch hex 1/4-inch hex 1/4-inch hex
E10, E20 E18, E19, E28, E29	Neutral Ground	4 ea.–#4-300 kcmil 2 ea.–#14-1/0	31 (275) 5.6 (50)		5/16-inch hex Slotted
AC Output from Output Terminal Block to Critical Load					
E11 E12 E13	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)		5/16-inch hex 5/16-inch hex 5/16-inch hex
E10 E19	Neutral Ground	4–#4-300 kcmil 2–#14-1/0	31 (275) 5.6 (50)		5/16-inch hex Slotted
AC Output from Distribution Panel Breakers to Critical Load ①					
PB1–N PB2–N	Neutral	45–#4-#14	#4-#6: #8: #10-#14:	4.0 (35) 2.8 (25) 2.3 (20)	Slotted
E18, E19, E28, E29	Ground	46–#4-#14 or 2 each #12–#14	#4-#6: #8: #10-#14: #12-#14:	4.0 (35) 2.8 (25) 2.3 (20) 2.8 (25)	Slotted

① Wire branch circuits according to the branch circuit breaker manufacturer's ratings and instructions (output is prewired to the panelboard).

Table 33.2-36. IDC-80 Power Cable Terminations 480V/208V

Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)		Screw Type
AC Input from UPS (with Maintenance Bypass)					
S1–3 S1–7 S1–11	Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	2/0-#3: #4-#6: #8: #10-#14:	5.6 (50) 5.0 (45) 4.5 (40) 4.0 (35)	Slotted Slotted Slotted
AC Input to Maintenance Bypass (with Maintenance Bypass)					
S1–1 S1–5 S1–9	Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	2/0-#3: #4-#6: #8: #10-#14:	5.6 (50) 5.0 (45) 4.5 (40) 4.0 (35)	Slotted Slotted Slotted
AC Input from UPS (without Maintenance Bypass)					
CB1–2 CB1–4 CB1–6	Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	2/0-#3: #4-#6: #8: #10-#14:	5.6 (50) 5.0 (45) 4.5 (40) 4.0 (35)	1/4-inch hex 1/4-inch hex 1/4-inch hex
Input Neutral from UPS (Models without a Transformer)—if Required					
E4	Neutral	4–#4-300 kcmil	31 (275)		5/16-inch hex
Input Neutral from Bypass (Models without a Transformer)—if Required					
E4	Neutral	4–#4-300 kcmil	31 (275)		5/16-inch hex
Input Ground					
E9	Ground	2–#14-1/0	5.6 (50)		Slotted
AC Output from 225A Distribution Breaker to Critical Load					
CBxx–1 CBxx–3 CBxx–5	Phase A Phase B Phase C	1–#4-300 kcmil 1–#4-300 kcmil 1–#4-300 kcmil	22.6 (200) 22.6 (200) 22.6 (200)		1/4-inch hex 1/4-inch hex 1/4-inch hex
E10, E20 E18, E19, E28, E29	Neutral Ground	4 ea.–#4-300 kcmil 2 ea.–#14-1/0	31 (275) 5.6 (50)		5/16-inch hex Slotted
AC Output from Output Terminal Block to Critical Load					
E11 E12 E13	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)		5/16-inch hex 5/16-inch hex 5/16-inch hex
E10 E19	Neutral Ground	4–#4-300 kcmil 2–#14-1/0	31 (275) 5.6 (50)		5/16-inch hex Slotted
AC Output from Distribution Panel Breakers to Critical Load ①					
PB1–N PB2–N	Neutral	45–#4-#14	#4-#6: #8: #10-#14:	4.0 (35) 2.8 (25) 2.3 (20)	Slotted
E18, E19, E28, E29	Ground	46–#4-#14 or 2 each #12–#14	#4-#6: #8: #10-#14: #12-#14:	4.0 (35) 2.8 (25) 2.3 (20) 2.8 (25)	Slotted

① Wire branch circuits according to the branch circuit breaker manufacturer's ratings and instructions (output is prewired to the panelboard).

Dimensions in mm (Inches)

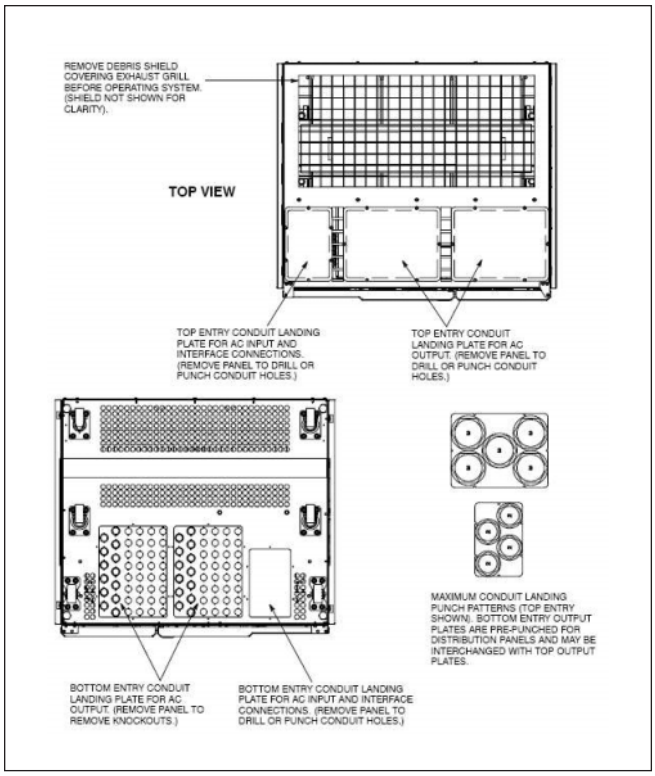

Figure 33.2-31. 9390 (40–80 kVA) IDC Top and Bottom View

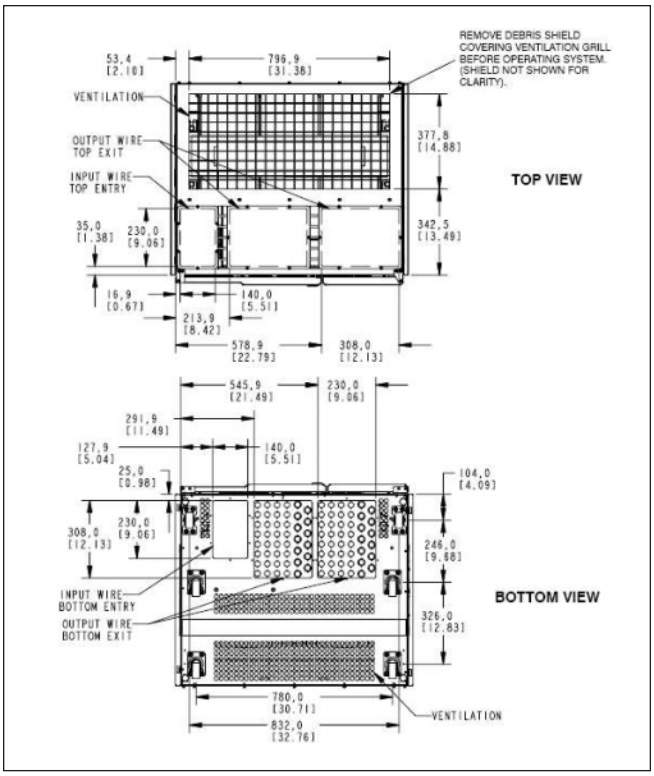

Figure 33.2-33. 9390 (40–80 kVA) IDC Top and Bottom View

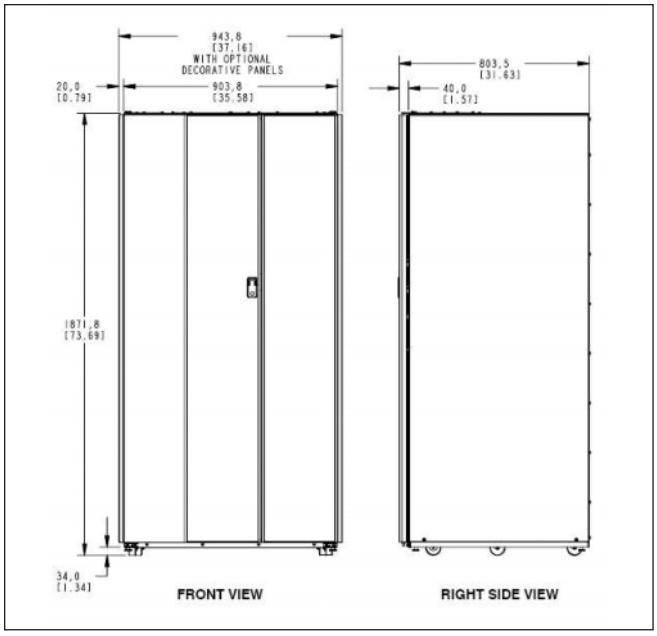

Figure 33.2-32. 9390 (40–80 kVA) IDC Front and Side View

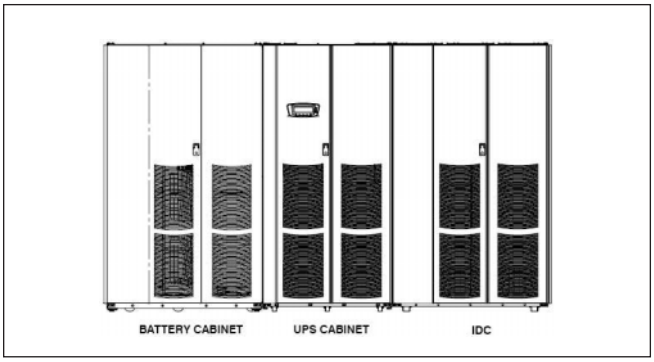

Figure 33.2-34. 9390 (100 to 160 kVA) IDC-L and IDC Lineup

Table 33.2-37. Eaton 9390 40–80 kVA IDC Equipment Weight

Component/Model	Weight Lbs (kg)		
	Shipping	Installed	Point Loading
Eaton 9390 160 kVA IDC Cabinet with transformer and maintenance bypass breakers	2250 (1021)	2185 (991)	4 at 546.3 (247.8)

Note: For IDC with distribution panels, add 25 lbs (11.3 kg) for each panel. For IDC with distribution breakers, add 15 lbs (6.8 kg) for each breaker. For IDC with output lugs, add 5 lbs (2.3 kg). For IDC with a BIB, add 15 lbs (6.8 kg). For IDC with a BIB and RIB, add 30 lbs (13.6 kg).

Table 33.2-38. Eaton 9390 40–80 kVA IDC Air Conditioning or Ventilation Requirements During Full Load Operation

Component/Model	Input/Output Voltage	Heat Rejection BTU/hr x 1000/hr (kg-cal/hr)
IDC-160 with transformer	480/208	14.8 (3.6)

Wiring Diagrams and Specifications

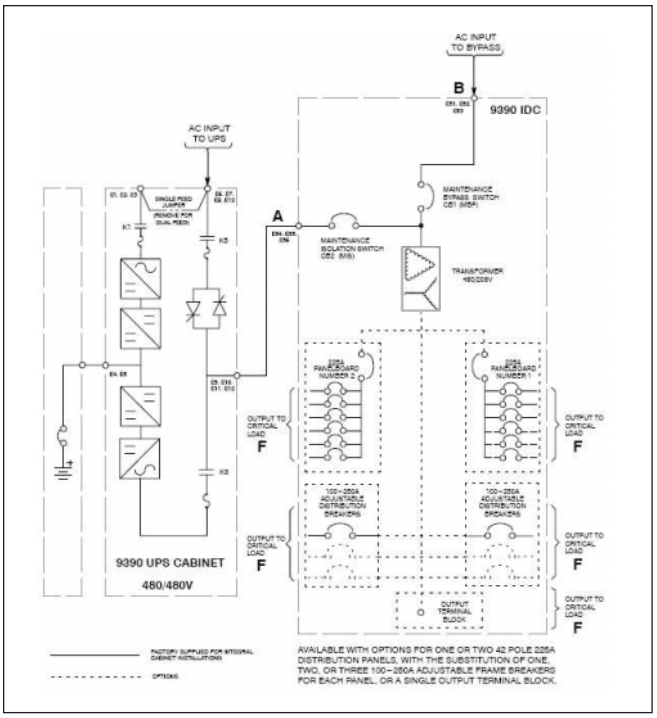

Figure 33.2-35. 9390 (100–160 kVA) IDC with Two Breaker Bypass

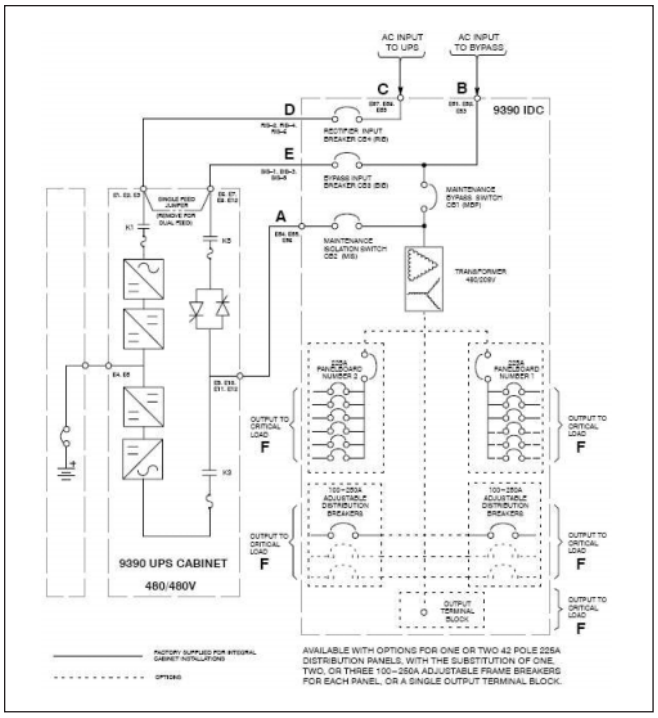

Figure 33.2-37. 9390 (100–60 kVA) IDC with Four Breaker Bypass

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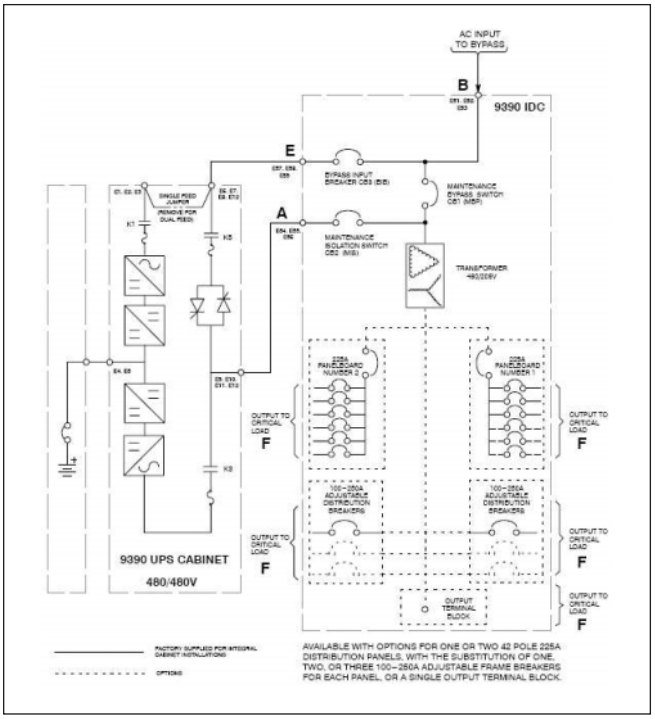

Figure 33.2-36. 9390 (100–160 kVA) IDC with Three Breaker Bypass

Table 33.2-39. Input/Output Ratings and External Wiring Requirements for Eaton 9390 80 kVA IDC

Description	Units	Rating 60 Hz
Basic unit rating	UPS kVA	100/120/160
IDC input and IDC bypass input IDC output	Volts Volts	480 208
A—AC Input from UPS—Stand-alone Installation		
(3) phases, (1) ground	Amps	120/144/192
Minimum conductor size Number per phase	AWG or kcmil (each)	①
B—AC Input to Maintenance Bypass (Line-up-and-Match or Stand-alone Installation)		
(3) phases, (1) ground	Amps	120/144/192
Minimum conductor size number per phase	AWG or kcmil (each)	1/0 (2)
C—AC Input to Optional RIB (Line-up-and-Match or Stand-alone Installation)		
(3) phases, (1) ground	Amps	130/160/210
Minimum conductor size number per phase	AWG or kcmil (each)	1/0 (2)
D—AC Output from Optional RIB to UPS (Stand-alone Installation)		
(3) phases, (1) ground	Amps	130/160/210
Minimum conductor size number per phase	AWG or kcmil (each)	①
E—AC Output from Optional BIB to UPS (Stand-alone Installation)		
(3) phases, (1) ground	Amps	120/144/192
Minimum conductor size number per phase	AWG or kcmil (each)	①
F—AC Output from Distribution Breaker to Critical Load		
(3) phases, (1) neutral, (1) ground	Wire branch circuits in accordance with branch circuit breaker manufacturers ratings, and national and local electrical codes.	
F—AC Output from Output Terminal Block to Critical Load		
(3) phases, (1) neutral, (1) ground	Wire output in accordance with national and local electrical codes. Refer to Eaton 9390 UPS manual for output current rating and wire size.	
F—AC Output from Distribution Panel Breakers to Critical Load		
Wire branch circuits in accordance with branch circuit breaker manufacturers ratings and instructions, and national and local electrical codes (output is prewired to the panelboard).		

① For contractor-supplied wiring, refer to Eaton 9390 UPS manual for wire size. Wiring for Line-up-and-Match installation is factory-supplied.

Read and understand the following notes while planning and performing the installation:

1. Refer to national and local electrical codes for acceptable external wiring practices.
2. Material and labor for external wiring requirements are to be provided by designated personnel.
3. For external input wiring, use 90°C copper wire. Wire sizes are based on using the specified breakers.
4. Wire ampacities are chosen from Table 310.16 of the NEC. Input wire is 90°C specification.
5. If a BIB is not installed, a minimum of two separate feeds with upstream feeder breakers must be provided. One for the for the UPS and one for the IDC bypass input. Do not use one feed for both UPS and IDC.
6. The IDC cabinet is shipped with a debris shield covering the ventilation grill on top of the unit. Do not remove the debris shield until installation is complete. However, remove the shield before operating the IDC. Once the debris shield is removed, do not place objects on the ventilation grill.
7. Optional 225A distribution panel uses Eaton type CH breakers to be provided by the customer.
8. Refer to Section I of the manual for installation instructions.
9. Refer to the Eaton 9390 UPS (100–160 kVA) *Installation and Operation Manual* for UPS cabinet conduit and terminal locations.
10. Terminals are UL and CSA rated at 90°C. Refer to the table for power cable terminations.
11. Per NEC Article 300.20(a), all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.

Table 33.2-40. IDC-160 Power Cable Terminations 480V/208V

Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)		Screw Type
AC Input from UPS					
E54 E55 E56	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)		5/16-inch hex 5/16-inch hex 5/16-inch hex
AC Input to Maintenance Bypass					
E51 E52 E53	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)		5/16-inch hex 5/16-inch hex 5/16-inch hex
AC Input to Optional RIB					
E57 E58 E59	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)		5/16-inch hex 5/16-inch hex 5/16-inch hex
AC Output from Optional RIB (CB4) to UPS					
RIB–2 RIB–4 RIB–6	Phase A Phase B Phase C	1–#4-350 kcmil 1–#4-350 kcmil 1–#4-350 kcmil	20.3 (180) 20.3 (180) 20.3 (180)		3/16-inch hex 3/16-inch hex 3/16-inch hex
AC Output from Optional BIB to UPS (without RIB)					
E57 E58 E59	Phase A Phase B Phase C	2–#6-250 kcmil 2–#6-250 kcmil 2–#6-250 kcmil	42.4 (375) 42.4 (375) 42.4 (375)		5/16-inch hex 5/16-inch hex 5/16-inch hex
AC Output from Optional BIB (CB3) to UPS (without RIB)					
BIB–1 BIB–3 BIB–5	Phase A Phase B Phase C	1–#4-350 kcmil 1–#4-350 kcmil 1–#4-350 kcmil	20.3 (180) 20.3 (180) 20.3 (180)		3/16-inch hex 3/16-inch hex 3/16-inch hex
Ground					
E8 E9	Ground Ground	2–#14-1/0 2–#14-1/0	5.6 (50) 5.6 (50)		Slotted Slotted
AC Output from Distribution Breaker to Critical Load					
CBxx–2 CBxx–4 CBxx–6	Phase A Phase B Phase C	1–#4-350 kcmil 1–#4-350 kcmil 1–#4-350 kcmil	20.3 (180) 20.3 (180) 20.3 (180)		3/16-inch hex 3/16-inch hex 3/16-inch hex
E10, E20 E18, E19, E28, E29	Neutral Ground	4 ea.–#4-300 kcmil 2 ea.–#14-1/0	31 (275) 5.6 (50)		5/16-inch hex Slotted
AC Output from Output Terminal Block to Critical Load					
E11 E12 E13	Phase A Phase B Phase C	2–#6-500 kcmil 2–#6-500 kcmil 2–#6-500 kcmil	56.5 (500) 56.5 (500) 56.5 (500)		1/2-inch hex 1/2-inch hex 1/2-inch hex
E10 E19	Neutral Ground	4–#6-500 kcmil 2–#14-1/0	56.5 (500) 5.6 (50)		1/2-inch hex Slotted
AC Output from Distribution Panel Breakers to Critical Load ①					
PB1–N PB2–N	Neutral	42–#4-#14	#4-#6: #8: #10-#14:	4.0 (35) 2.8 (25) 2.3 (20)	Slotted
E18, E19, E28, E29	Ground	42–#4-#14	#4-#6: #8: #10-#14:	4.0 (35) 2.8 (25) 2.3 (20)	Slotted

① Wire branch circuits according to the branch circuit breaker manufacturer's ratings and instructions (output is prewired to the panelboard).

Dimensions in mm (Inches)

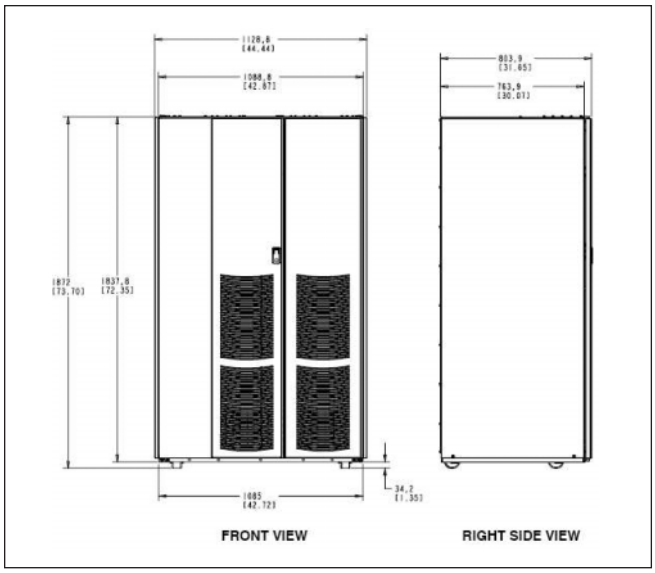

Figure 33.2-38. 9390 (100–160 kVA) IDC Front and Side View Without Top Cable Entry Option

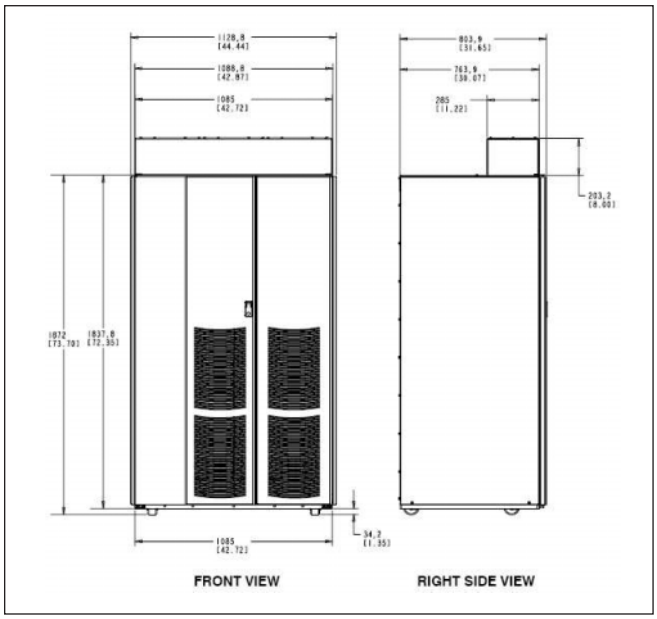

Figure 33.2-39. 9390 (100–160 kVA) IDC with Two Breaker Bypass

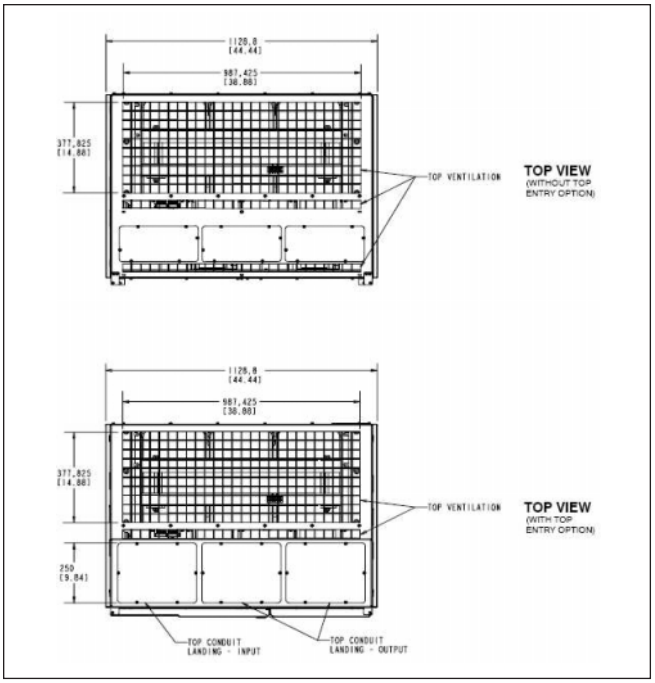

Figure 33.2-40. 9390 (100–160 kVA) IDC with Three Breaker Bypass

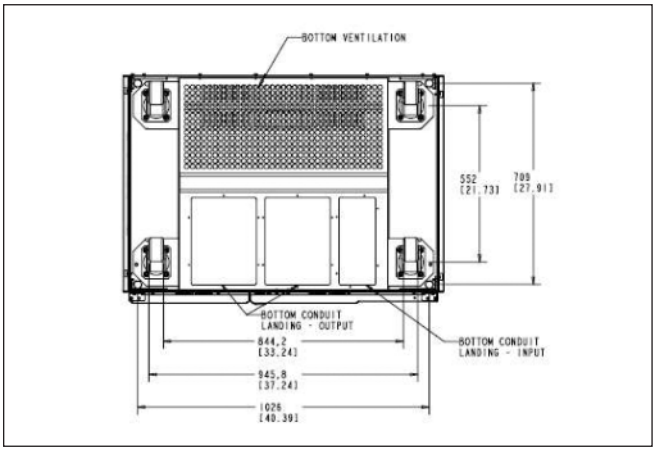

Figure 33.2-41. 9390 (100–160 kVA) IDC with Four Breaker Bypass

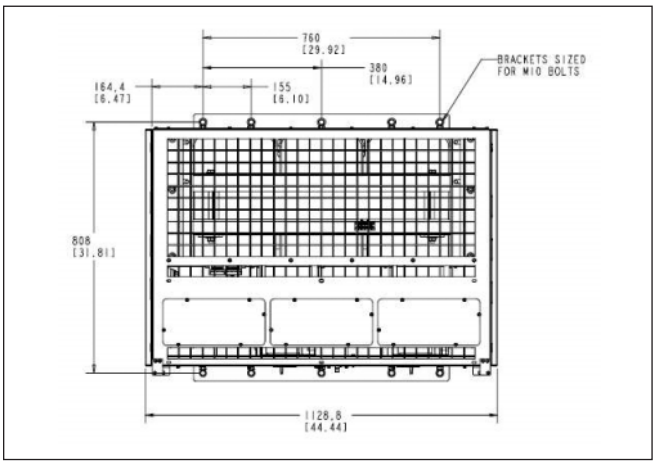

Figure 33.2-42. 9390 (100–160 kVA) IDC with Four Breaker Bypass

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The Eaton 9390 Integrated Accessory Cabinets

The IAC is designed for use with the Eaton 9390 40 kVA to 160 kVA three-phase uninterruptible power systems. The IAC provides maintenance bypass, parallel tie cabinet, or parallel tie cabinet with maintenance bypass functions with the following custom-configurable features, enabling adaptation and expansion without costly electrical rework.

The IAC comes in two physical sizes, a small cabinet mounted on the side of the UPS and a larger freestanding cabinet. The cabinet function UPS sized voltage determines which size cabinet is used. The IAC-SB and IAC-ST are slim-line cabinets that are shipped attached to the side of the UPS system. These cabinets give the UPS system the smallest footprint possible.

Maintenance Bypass Configuration

- Maintenance bypass (MBP) and maintenance isolation (MIS) breakers enable power to completely bypass the UPS power module. The UPS module can then be safely serviced or replaced, without interrupting power to critical systems. An optional bypass input breaker (BIB) and rectifier input breaker (RIB) provide a single wiring point input to the UPS and a convenient method for removing power from the UPS, when using the maintenance bypass to supply the load

Parallel Redundant Configuration

- Module output breakers (MOB) 1 and 2 enable two UPS modules to be paralleled together for redundancy. An optional system load breaker (SLB) provides output control to the critical load for the whole system

Parallel Redundant Configuration with Maintenance Bypass

- Module output breakers (MOB) 1 and 2 enable two UPS modules to be paralleled together for redundancy. Optional maintenance bypass (MBP) and maintenance isolation (MIS) breakers enable power to completely bypass the UPS power module

The IAC-B and IAC-T are housed in a single, freestanding cabinet, with safety shields behind the doors for hazardous voltage protection. The cabinet matches the UPS cabinet in style and color, and can be installed in line-up-and-match or stand-alone configurations.

IAC Standard Features

The IAC has many standard features that provide a cost-effective and reliable power system. The descriptions provide a brief overview of the IAC controls, and standard and optional features.

Maintenance Bypass Configuration

- A maintenance bypass switch (MBP), in combination with the maintenance isolation switch (MIS), can be used to completely isolate the UPS during service. The UPS can be serviced or replaced without interrupting power to critical systems

Parallel Redundant Configuration

- Module output breakers (MOBs) 1 and 2 enable two UPS modules to be paralleled together for redundancy. An optional system level breaker provides output control to the critical load for the whole system

Parallel Redundant Configuration with Maintenance Bypass

- MOBs 1 and 2 enable two UPS modules to be paralleled together for redundancy. The MBP, in combination with the MIS, can be used to completely isolate the UPS during service without interrupting power to critical systems

Control Interface

- The IAC uses one UPS building alarm input for maintenance bypass switch monitoring. This alarm input will detect when the maintenance bypass switch is closed and the system is on bypass

Installation Features

- The IAC-B and IAC-T can be installed in line-up-and-match or stand-alone configurations. The cabinet can be permanently bolted to the floor or left standing on leveling feet. Power and control wiring can be routed through the top or bottom of the cabinet with connections made to easily accessible terminals. Line-up-and-match cabinets are wired through knockouts in the side panels of the units

Expansion

- The IAC supports custom configurations and scalability to adapt to changing and future power and distribution needs

Options

Contact your sales representative for information about any of these available options:

Bypass Input Breaker

- Maintenance bypass configurations have an optional bypass input breaker for single-feed and dual-feed systems. The BIB provides a single point of input power control to the UPS and easily removes power from the UPS for servicing

Rectifier Input Breaker

- Maintenance bypass configurations have an optional rectifier input breaker for dual-feed systems. The RIB provides a single point of rectifier input power control to the UPS and easily removes power from the UPS for servicing

System Load Breaker

- A parallel redundant configuration with an optional system load breaker is available to control the output to the critical load for the whole system

The Eaton 9390 Integrated Accessory Cabinet-Distribution (IAC-D)

The IAC-D is designed for use with the Eaton 9390 three-phase uninterruptible power systems. The IAC-D provides power distribution options for servers, racks and other equipment via distribution panelboards, or distributes power to larger loads via distribution circuit breakers. The distribution options are custom configurable, enabling adaptation and expansion without costly electrical rework.

The IAC-D is housed in a single, free-standing cabinet, with safety shields behind the doors for hazardous voltage protection. The cabinet matches the UPS cabinet in style and color, and can be installed in line-up-and-match or stand-alone configurations. **Figure 33.2-43** shows the Eaton 9390 IAC-D.

Configurations

The following IAC-D configurations are possible:

- One or two 225A distribution panels (208V only)
- One to six 40–100A adjustable distribution breakers (208V or 480V)
- One to six 100–250A adjustable distribution breakers (208V or 480V)
- One 225A distribution panel and one to three 100–250A adjustable distribution breakers (208V only)
- One 225A distribution panel and one to three 40–100A adjustable distribution breakers (208V only)

1. The IAC-D equipment operating environment must meet the weight requirements shown in Table A and size requirements shown in **Figure 33.2-43**.
2. The IAC-D cabinet is palleted separately for shipping.
3. Do not tilt cabinets more than ±10° during handling.
4. Dimensions are in millimeters (inches).

Table 33.2-41. Equipment Weight

Component/Model	Weight Lbs (kg) ①②③		
	Shipping	Installed	Point Loading
Eaton 9390 IAC–D (cabinet only)	465 (210.9)	415 (188.2)	103.8 (4 at 47.1)

① For IAC–D with distribution panels, add 25 lbs (11.3 kg) for each panel.
② For IAC–D with distribution breakers, add 15 lbs (6.8 kg) for each breaker.
③ For IAC–D with cosmetic covers, add 60 lbs (27.2 kg).

5. The clearances required around the IAC-D cabinet are shown in **Table 33.2-43**

Table 33.2-42. IAC-D Cabinet Clearances

Area	Dimensions in Inches (mm)
From top of cabinet	Minimum clearance over the IAC–D cabinet is 18 inches (457.2 mm) for ventilation
From front of cabinet	36 inches (914.4 mm) working space
From back of cabinet	None required
From right side of cabinet	None required
From left side of cabinet	None required

6. The basic environmental requirements for operation of the IAC-D are:
   c. Ambient temperature range: 0–40°C (32–104°F).
   d. Recommended operating range: 20–25°C (68–77°F).
   e. Maximum relative humidity: 95%, noncondensing.
7. The IAC-D ventilation requirements are shown in **Table 33.2-43**.

Table 33.2-43. Air Conditioning or Ventilation Requirements During Full Load Operation

Component/Model	Input/Output Voltage	Heat Rejection BTU/hr x 1000/hr (kg–cal/hr)
Eaton 9390 IAC-D	N/A	N/A

Table 33.2-44. Input/Output Ratings and External Wiring Requirements for Eaton 9390 IAC-D

Description	Units	Rating 50/60 Hz
AC input from UPS (standalone installation) (3) phases, (1) ground	Amps	Maximum input ratings are to be in accordance with the rating label on the IAC-D and not to exceed 500A. The total combined load is not to exceed the UPS output ratings.
Minimum conductor size number per phase	AWG or kcmil (each)	For contractor-supplied wiring, refer to the applicable Eaton 9390 UPS Installation and Operation manual, listed in paragraph 1.5. Wiring should be sized in accordance with the rating label on the IAC-D. Factory supplied wiring for line-up-and-match installation is available as an option.
AC output from distribution breaker to critical load (3) phases, (1) neutral, (1) ground	Wire branch circuits in accordance with branch circuit breaker manufacturer's ratings, and national and local electrical codes. Maximum output ratings are to be in accordance with the rating label on the IAC-D and not to exceed 500A. The total combined load is not o exceed the UPS output rating.	
AC output from distribution panel breakers	Wire branch circuits in accordance with branch circuit breaker manufacturer's ratings and instructions, and national and local electrical codes (output is prewired to the panelboard). Maximum output ratings are to be in accordance with the rating label on the IAC-D and not to exceed 500A. The total combined load is not to exceed the UPS output rating.	

Read and understand the following notes while planning and performing the installation:

1. Refer to national and local electrical codes for acceptable external wiring practices.
2. Material and labor for external wiring requirements are to be provided by designated personnel.
3. For external input wiring, use 90°C copper wire. See the appropriate column in **Table 33.2-44**. Wire sizes are based on using the specified breakers.
4. Wire ampacities are chosen from Table 310.16 of the NEC. Input wire is 90°C specification.
5. Optional 225A distribution panels use Eaton bolt-on type BAB or QBHW breakers for bolt-on panels, or plug-on type HQP or QPHW breakers for plug-on panels. Breakers to be provided by the customer.
6. Refer to Section I of this manual for installation instructions.
7. Refer to the applicable Eaton 9390 UPS installation and operation manual, listed in paragraph 1.5, for UPS cabinet wiring requirements, and conduit and terminal locations.
8. When distribution panelboards or a combination of panelboard and distribution breakers are installed, input and output to the IAC–D must be 208V. If only distribution breakers are installed, input and output to the IAC–D can be either 208V or 480V.
9. Per NEC Article 300.20(a), all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.
10. Conduit is to be sized to accommodate one neutral conductor the same size as the phase conductor and one ground conductor. If two neutral conductors or an oversized neutral conductor are to be installed, size the conduit to accommodate the extra wire or size. All Eaton 9390 products can accommodate a double-sized neutral.
11. Terminals are UL and CSA rated at 90°C. Refer to **Table 33.2-45** for power cable terminations.

Table 33.2-45. IAC-D Power Cable Terminations

Terminal Function	Terminal	Function	Size of Pressure Termination	Tightening Torque Nm (in-lb) (mm)	Screw Type
AC input from UPS	E54 E55 E56 E4 E9	Phase A Phase B Phase C Neutral Ground	2–#2–600 kcmil 2–#2–600 kcmil 2–#2–600 kcmil 4–#2–600 kcmil 2–#14–1/0	56.5 (500) 56.5 (500) 56.5 (500) 56.5 (500) 5.6 (50)	1/2-inch hex 1/2-inch hex 1/2-inch hex 1/2-inch hex Slotted
AC output from distribution breaker to critical load	CBxx–2 CBxx–4 CBxx–6 E10, E20 E18, E19, E28, E29	Phase A Phase B Phase C Neutral Ground	1–#4–350 kcmil 1–#4–350 kcmil 1–#4–350 kcmil 6 ea–#4–300 kcmil 2 ea–#14–1/0	20.3 (180) 20.3 (180) 20.3 (180) 31 (275) 5.6 (50)	3/16-inch hex 3/16-inch hex 3/16-inch hex 5/16-inch hex Slotted
AC output from distribution panel breakers to critical load	Wire branch circuits in accordance with branch circuit breaker manufacturers ratings and instructions (output is prewired to the panelboard)				
	PB1–N, PB2–N	Neutral	42–#4–#14 or 3 x #10–#14	#4–#6: 4.0 (35) #8: 2.8 (25) #10–#14: 2.3 (20)	Slotted
	E18, E19, E28, E29	Ground	42–#4–#14 or 2 x #12–#14	#4–#6: 4.0 (35) #8: 2.8 (25) #10–#14: 2.3 (20)	Slotted

12. The continuous current (I_r) values for the corresponding lettered adjustment setting marked on the distribution panel Input breakers (CB10 and CB20) are listed in Table G. The continuous current (I_r) values for the corresponding lettered adjustment setting marked on the distribution breakers (CB11, CB12, CB13, CB21, CB22 and CB23), are listed in **Table 33.2-46** and **Table 33.2-47**.

Table 33.2-46. Breaker Continuous Current (Ir) Settings (Low Current Breaker)

Breaker Setting	Continuous Current (I_r)	Breaker Setting	Continuous Current (I_r) 40 E 70
A	40	E	70
B	45	F	80
C	50	G	90
D	63	H	100

Table 33.2-47. Breaker Continuous Current (I_r) Settings (High Current Breaker)

Breaker Setting	Continuous Current (I_r)	Breaker Setting	Continuous Current (I_r)
A	100	E	175
B	125	F	200
C	150	G	225
D	160	H	250

13. If installed, verify that the distribution panel input breakers (CB10 and CB20) are set to 225A (letter G on the breakers). Use the dial on each breaker to adjust as necessary.
14. If installed, use the dial on each breaker to adjust distribution breaker (CB11, CB12, CB13, CB21, CB22 and CB23) current ratings as required to protect the wiring to the load. See **Table 33.2-47** for the correct breaker continuous current adjustment letter.

Dimensions in mm (Inches)

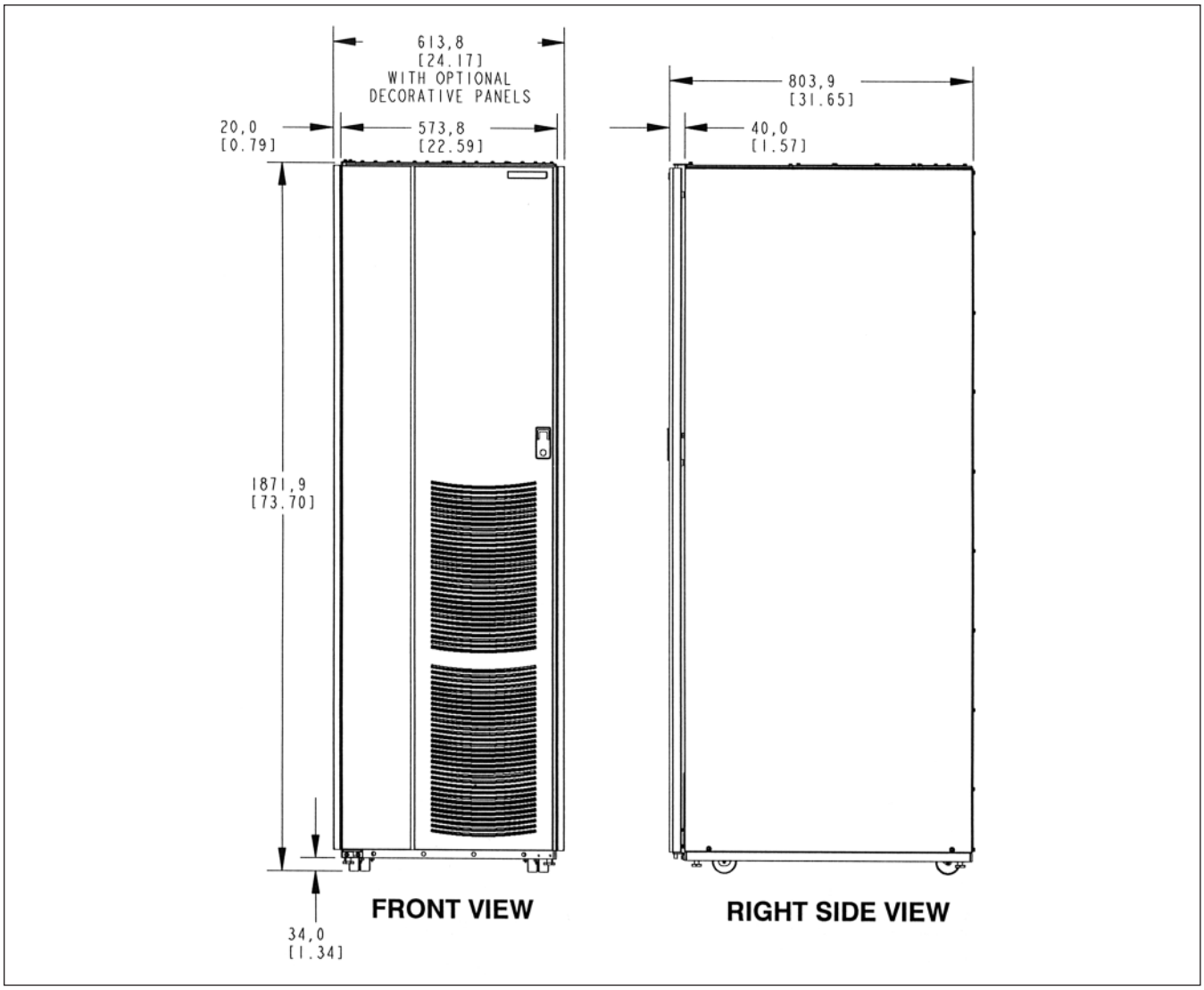

Figure 33.2-43. IAC-D Front and Right Side Views

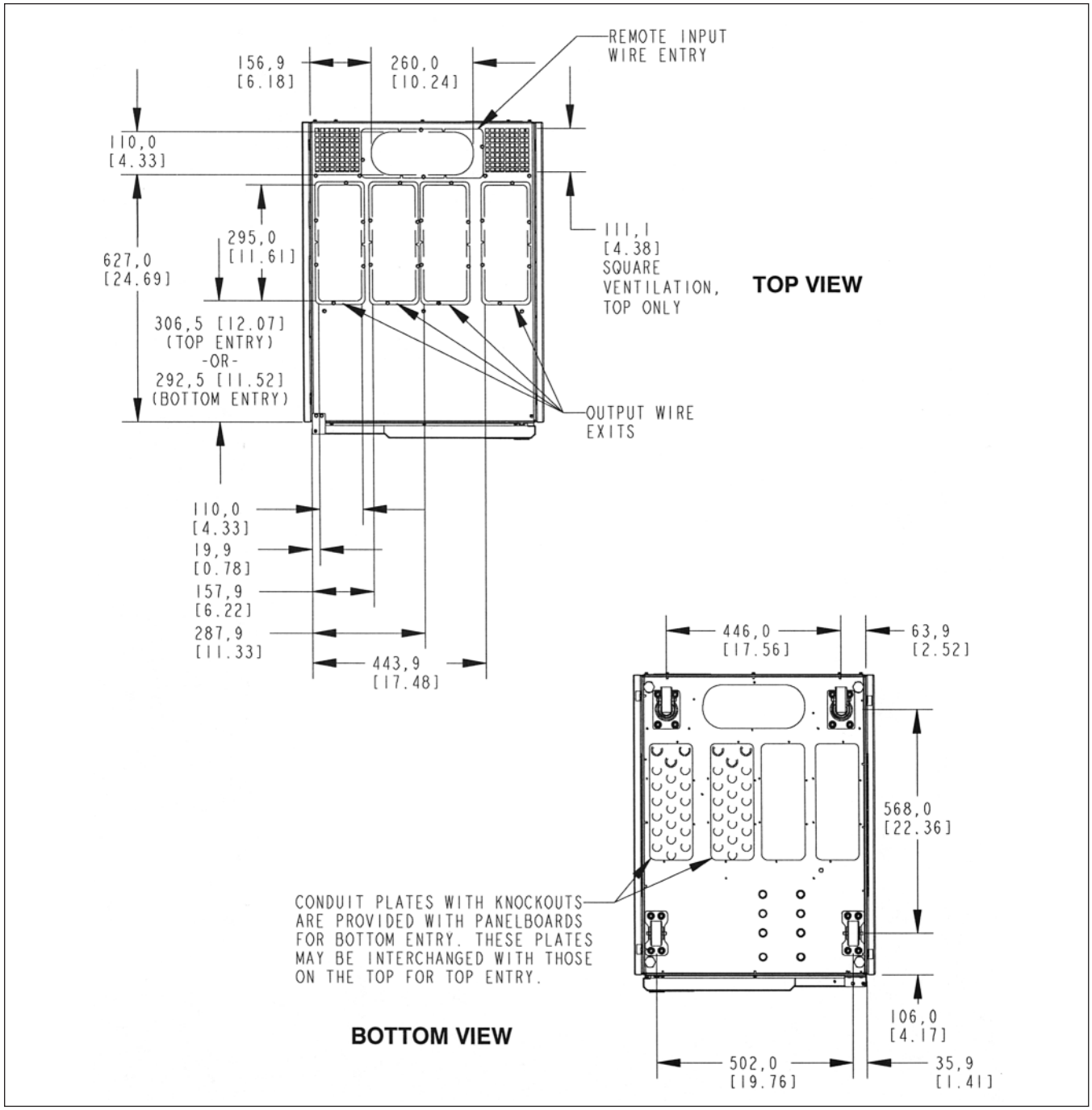

Figure 33.2-44. IAC-D Top and Bottom Views

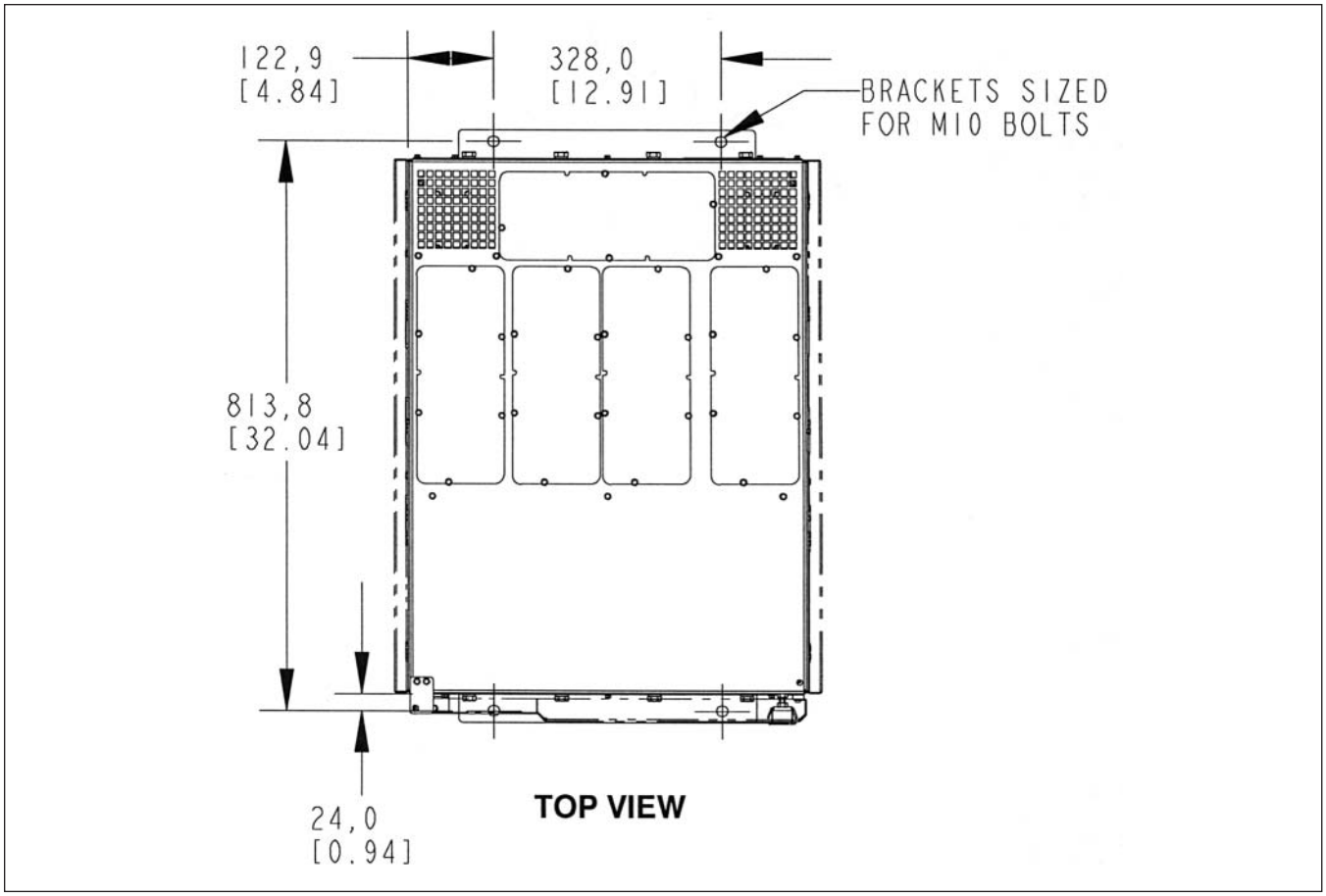

Figure 33.2-45. IAC-D Top View (Optional Floor Mounting)

Eaton 9390 Integrated Accessory Cabinet (IAC-B and IAC-T)

The Eaton 9390 integrated accessory cabinet is designed for use with the Eaton 9390 40–160 kVA three-phase uninterruptible power systems. The IAC provides maintenance bypass, parallel tie cabinet, or parallel tie cabinet with maintenance bypass functions with the following custom configurable features, enabling adaptation and expansion without costly electrical rework.

Maintenance Bypass Configuration

- Maintenance bypass (MBP) and maintenance isolation (MIS) breakers enable power to completely bypass the UPS power module. The UPS module can then be safely serviced or replaced, without interrupting power to critical systems. An optional bypass input breaker (BIB) and rectifier input breaker (RIB) provide a single wiring point input to the UPS and a convenient method for removing power from the UPS, when using the maintenance bypass to supply the load

Parallel Redundant Configuration—Module Output Breakers (MOB) 1 and 2 Enable Two

- UPS modules to be paralleled together for redundancy. An optional system load breaker (SLB) provides output control to the critical load for the whole system

Parallel Redundant Configuration with Maintenance Bypass—Module Output Breakers

- (MOB) 1 and 2 enable two UPS modules to be paralleled together for redundancy. Optional maintenance bypass (MBP) and maintenance isolation (MIS) breakers enable power to completely bypass the UPS power module

The IAC is housed in a single, free-standing cabinet, with safety shields behind the doors for hazardous voltage protection. The cabinet matches the UPS cabinet in style and color, and can be installed in line-up-and-match or stand-alone configurations.

Eaton 9390 IAC-SB or IAC-ST

The Eaton 9390 IAC-SB or IAC-ST is designed for use with the Eaton 9390 80 kVA 208/208V and 480/480V and 160 kVA 480/480V three-phase uninterruptible power systems. The IAC provides maintenance bypass or tie cabinet functions with the following custom configurable features, enabling adaptation and expansion without costly electrical rework:

Maintenance Bypass Configuration

- Maintenance bypass (MBP) and maintenance isolation (MIS) breakers enable power to completely bypass the UPS power module. The UPS module can then be serviced or replaced in complete safety, without interrupting power to critical systems. An optional bypass input breaker (BIB) and rectifier input breaker (RIB) provide a single wiring point input to the UPS and a convenient method for removing power from the UPS, when using the maintenance bypass to supply the load

Parallel Redundant Configuration

- Module output breakers (MOB) 1 and 2 enable two UPS modules to be paralleled together for redundancy. An optional system level breaker (SLB) provides output control to the critical load for the whole system

The IAC is attached to and directly integrated with the UPS cabinet, with safety shields behind the removable panel for hazardous voltage protection. The UPS Sidecar matches the UPS cabinet in style and color. **Figure 33.2-46** shows the Eaton 9390 UPS (40–80 kVA) Cabinet with the UPS Sidecar and **Figure 33.2-47** shows the Eaton 9390 UPS (100–160 kVA) Cabinet with the UPS Sidecar.

Configurations

The following UPS IAC-SB or IAC-ST configurations are possible:

- UPS sidecar with MBP and MIS
- UPS sidecar with MBP, MIS and BIB
- UPS sidecar with MBP, MIS, BIB and RIB
- UPS sidecar with MOB1 and MOB2
- UPS sidecar with MOB1, MOB2 and SLB

Figure 33.2-46. Eaton 9390 UPS (40–80 kVA) Cabinet with IAC-SB or IAC-ST

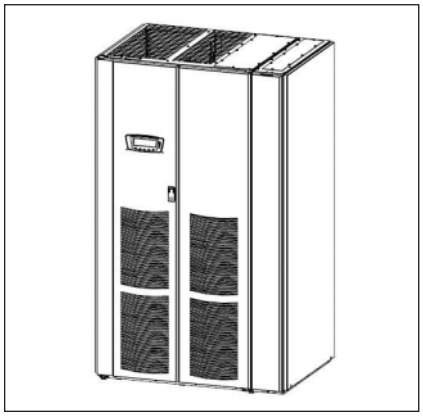

Figure 33.2-47. Eaton 9390 UPS (100–160 kVA) Cabinet with IAC-SB or IAC-ST

Options IAC-SB or IAC-ST

Contact your Eaton sales representative for information about any of these available options:

Bypass Input Breaker

- Maintenance bypass configurations have an optional bypass input breaker for single-feed and dual-feed systems. The BIB provides a single point of input power control to the UPS and easily removes power from the UPS for servicing

Rectifier Input Breaker

- Maintenance bypass configurations have an optional rectifier input breaker for dual-feed systems. The RIB provides a single point of rectifier input power control to the UPS and easily removes power from the UPS for servicing

System Load Breaker

- A parallel redundant configuration with an optional system load breaker is available to control the output to the critical load for the whole system

Table 33.2-48. Input/Output Ratings and External Wiring Requirements for Eaton 9390 IAC-SB or IAC-ST (Maintenance Bypass)

Description	Units	Rating 50/60 Hz		
Basic unit rating	UPS kVA	80	80	160
Input and bypass input output	Volts Volts	208 208	480 480	480 480
AC input to maintenance bypass (without BIB or RIB, or dual feed with BIB and RIB) (3) phases, (1) neutral–if required, (1) ground minimum conductor size number per phase	Amps	222	96	192
	AWG or kcmil (Each)	2/0 (2)	1/0 (1)	1/0 (2)
AC input to maintenance bypass (single feed with BIB, or single feed with BIB and RIB) (3) phases, (1) neutral–if required, (1) ground minimum conductor size number per phase	Amps	240	105	210
	AWG or kcmil (Each)	2/0 (2)	1/0 (1)	1/0 (2)
AC input to optional RIB)3) phases, (1) ground minimum conductor size number per phase	Amps	240	105	210
	AWG or kcmil (Each)	2/0 (2)	1/0 (1)	1/0 (2)
AC output to critical load full load current (3) phases, (1) neutral–if required, (1) ground minimum conductor size number per phase	Amps	222	96	192
	AWG or kcmil (Each)	2/0 (2)	1/0 (1)	1/0 (2)

Table 33.2-49. Input/Output Ratings and External Wiring Requirements for Eaton 9390 IAC-SB or IAC-ST (1 + 1 Parallel Redundant)

Description	Units	Rating 50/60 Hz		
Basic unit rating	UPS kVA	80	80	160
Input and bypass input output	Volts Volts	208 208	480 480	480 480
AC input from UPM full load current for each module (3) phases, (1) neutral–if required, (1) ground Minimum conductor size for each module number per phase for each module	Amps	222	96	192
	For contractor-supplied wiring in a stand-alone installation, refer to the applicable Eaton 9390 UPS Installation and Operation manual, listed in paragraph 1.5, for wire size. Wiring for line-up-and-match installation is factory supplied.			
AC output to critical load full load current (3) phases, (1) neutral–if required, (1) ground minimum conductor size number per phase	Amps	222	96	192
	AWG or kcmil (Each)	2/0 (2)	1/0 (1)	1/0 (2)

Read and understand the following notes while planning and performing the installation:

1. Refer to national and local electrical codes for acceptable external wiring practices.
2. Material and labor for external wiring requirements are to be provided by designated personnel.
3. For external input wiring, use 90°C copper wire. See the appropriate column in **Table 33.2-48**. Wire sizes are based on using the specified breakers.
4. Wire ampacities are chosen from Table 310.16 of the NEC. Input wire is 90°C specification.
5. If a BIB is not installed, a minimum of two separate feeds with upstream feeder breakers, or one feed with two upstream feeder breakers, must be provided. One for the UPS and one for the UPS Sidecar bypass input. DO NOT use one feed or a single feeder breaker to supply both the UPS and Sidecar.
6. Refer to Section 1 of this manual for installation instruction.
7. Refer to the applicable Eaton 9390 UPS installation and operation manual, listed in Paragraph 1.5, for UPS cabinet wiring requirements, and conduit and terminal locations.
8. Refer to the applicable Eaton 9390 UPS installation and operation manual, listed in Paragraph 1.5, for parallel system power and control wiring requirements.
9. Terminals are UL and CSA rated at 90°C. Refer to **Table 33.2-50** for power cable termination.
10. Per NEC Article 300.2.(a), all three-phase conductors must be run in the same conduit. Neutral and ground must be run in the same conduit as the phase conductors.
11. Conduit is to be sized to accommodate one neutral conductor the same size as the phase conductor and one #8 AWG ground conductor. If two neutral conductors or an oversized neutral conductor are to be installed, size the conduit to accommodate the extra wire or size. All Eaton 9390 products can accommodate a double size neutral.

Table 33.2-50. IAC-SB or IAC-ST Maintenance Bypass Power Cable Terminations 80 kVA 480V/480V

Terminal Function	Function	Size of Pressure Termination	Tightening Torque Nm in-lb (mm)	Screw Type
AC input to maintenance bypass	Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	120 (13.5) 120 (13.5) 120 (13.5)	3/16-inch hex 3/16-inch hex 3/16-inch hex
AC input to optional RIB	Phase A Phase B Phase C	1–#4–350 kcmil 1–#4–350 kcmil 1–#4–350 kcmil	177 (20.0) 177 (20.0) 177 (20.0)	M4 hex M4 hex M4 hex
AC output to critical load	Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	120 (13.5) 120 (13.5) 120 (13.5)	3/16-inch hex 3/16-inch hex 3/16-inch hex

Table 33.2-51. IAC-SB or IAC-ST Maintenance Bypass Power Cable Terminations 80 kVA 208V/208V and kVA 480V/480V

Terminal Function	Function	Size of Pressure Termination	Tightening Torque Nm in-lb (mm)	Screw Type
AC input to maintenance bypass	Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
	Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
	Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
AC input to optional RIB	Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
	Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
	Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
AC output to critical load	Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
	Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex
	Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	275 (31.1) 275 (31.1)	5/16-inch hex 3/8-inch hex

Wiring Diagrams and Specifications

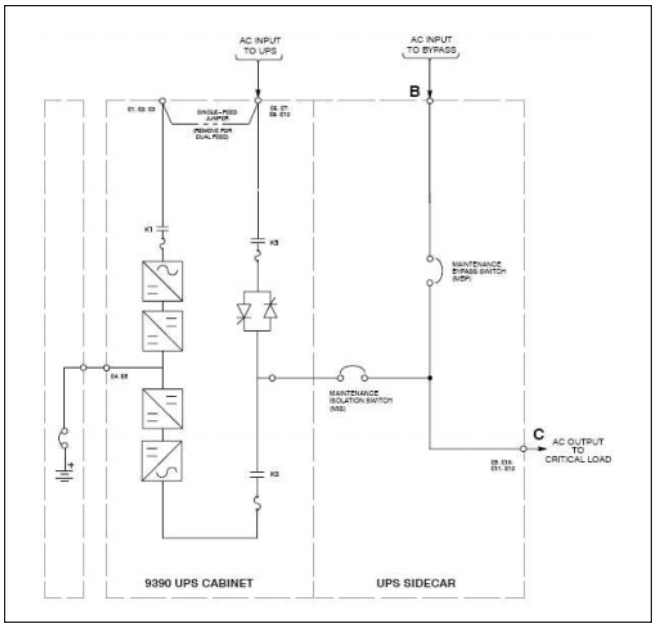

Figure 33.2-48. UPS with IAC-SB Sidecar Bypass

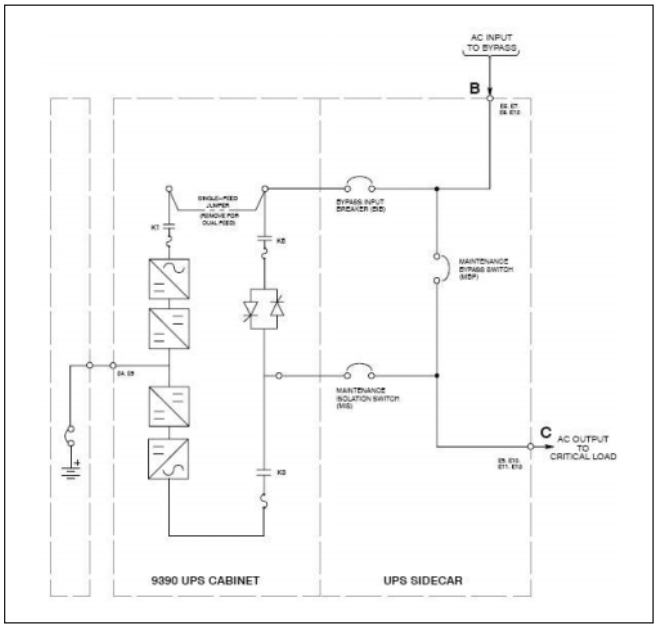

Figure 33.2-49. UPS with IAC-SB Sidecar Bypass with BIB

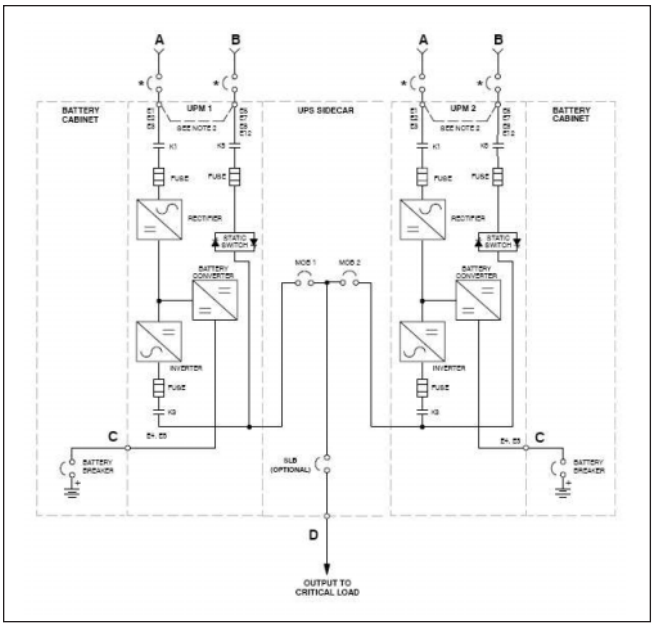

Figure 33.2-50. 9390 (100–160 kVA) IDC with 3 Breaker Bypass

Table 33.2-52. Input/Output Ratings and External Wiring Requirements for Eaton 9390 UPS Sidecar (Maintenance Bypass)

Description	Units	Rating 50/60 Hz		
Basic unit rating	UPS kVA	80	80	160
Input and bypass input output	Volts Volts	208 208	480 480	480 480
B—AC Input to Maintenance Bypass (without BIB or RIB, or Dual Feed with BIB and RIB)				
(3) phases, (1) neutral—if required, (1) ground	Amps	222	96	192
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (2)	1/0 (1)	1/0 (2)
B—AC Input to Maintenance Bypass (Single Feed with BIB, or Single Feed with BIB and RIB)				
(3) phases, (1) neutral—if required, (1) ground	Amps	240	105	210
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (2)	1/0 (1)	1/0 (2)
A—AC Input to Optional RIB				
(3) phases, (1) ground	Amps	240	105	210
Minimum conductor size number per pole	AWG or kcmil (each)	2/0 (2)	1/0 (1)	1/0 (2)
C—AC Output to Critical Load (Full Load Current)				
(3) phases, (1) neutral—if required, (1) ground	Amps	222	96	192
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (2)	1/0 (1)	1/0 (2)

Table 33.2-53. Input/Output Ratings and External Wiring Requirements for Eaton 9390 UPS Sidecar (1+1 Parallel Redundant)

Description	Units	Rating 50/60 Hz		
Basic unit rating	UPS kVA	80	80	160
Input and bypass input output	Volts Volts	208 208	480 480	480 480
B—AC Input from UPM				
Full load current for each module (3) phases, (1) neutral-if required, (1) ground	Amps	222	96	192
Minimum conductor size number per phase	For contractor-supplied wiring in a stand-alone installation, refer to the applicable Eaton 9390 UPS manual for wire size. Wiring for line-up-and-match installation is factory-supplied.			
D—AC Output to Critical Load				
Full load current for each module (3) phases, (1) neutral-if required, (1) ground	Amps	222	96	192
Minimum conductor size number per phase	AWG or kcmil (each)	2/0 (2)	1/0 (1)	1/0 (2)

Table 33.2-54. UPS Sidecar Maintenance Bypass Power Cable Terminations 80 kVA 480V/480V

Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input to Maintenance Bypass			
Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	13.5 (120) 13.5 (120) 13.5 (120)	3/16-inch hex 3/16-inch hex 3/16-inch hex
AC Input to Optional RIB			
Phase A Phase B Phase C	1–#4-350 kcmil 1–#4-350 kcmil 1–#4-350 kcmil	20.0 (177) 20.0 (177) 20.0 (177)	M4 hex M4 hex M4 hex
AC Output to Critical Load			
Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	13.5 (120) 13.5 (120) 13.5 (120)	3/16-inch hex 3/16-inch hex 3/16-inch hex

Table 33.2-55. UPS Sidecar Maintenance Bypass Power Cable Terminations 80 kVA 208V/208V and 160 kVA 480V/480V

Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input to Maintenance Bypass			
Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
AC Input to Optional RIB			
Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
AC Output to Critical Load			
Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex

Table 33.2-56. UPS Sidecar 1+1 Parallel Redundant Power Cable Terminations 80 kVA 480V/480V

Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input from UPM to MOB 2 (Stand-alone Installation)			
Phase A Phase B Phase C	1–#14-3/0 1–#14-3/0 1–#14-3/0	5.6 (50) 5.6 (50) 5.6 (50)	3/16-inch hex 3/16-inch hex 3/16-inch hex
AC Output to Critical Load (without SLB)			
Phase A Phase B Phase C	1–#14-2/0 1–#14-2/0 1–#14-2/0	13.5 (120) 13.5 (120) 13.5 (120)	3/16-inch hex 3/16-inch hex 3/16-inch hex
AC Output to Critical Load (with SLB)			
Phase A Phase B Phase C	1–#14-3/0 1–#14-3/0 1–#14-3/0	5.6 (50) 5.6 (50) 5.6 (50)	3/16-inch hex 3/16-inch hex 3/16-inch hex
Neutral			
Neutral	4–#14-1/0	5.6 (50)	Slotted
Ground			
Ground	2–#14-1/0	5.6 (50)	Slotted

Table 33.2-57. UPS Sidecar 1+1 Parallel Redundant Power Cable Terminations 80 kVA 208V/208V and 160 kVA 480V/480V

Function	Size of Pressure Termination	Tightening Torque Nm (in-lb)	Screw Type
AC Input from UPM to MOB 2 (Stand-alone Installation)			
Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
AC Output to Critical Load (with and without SLB)			
Phase A	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase B	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Phase C	1–2/0-250 kcmil 1–2/0-500 kcmil	31.1 (275) 31.1 (275)	5/16-inch hex 3/8-inch hex
Neutral			
Neutral	8–#6-250 kcmil	42.4 (375)	5/16-inch hex
Ground			
Ground	4–#14-1/0	5.6 (50)	Slotted

Dimensions in mm (Inches)

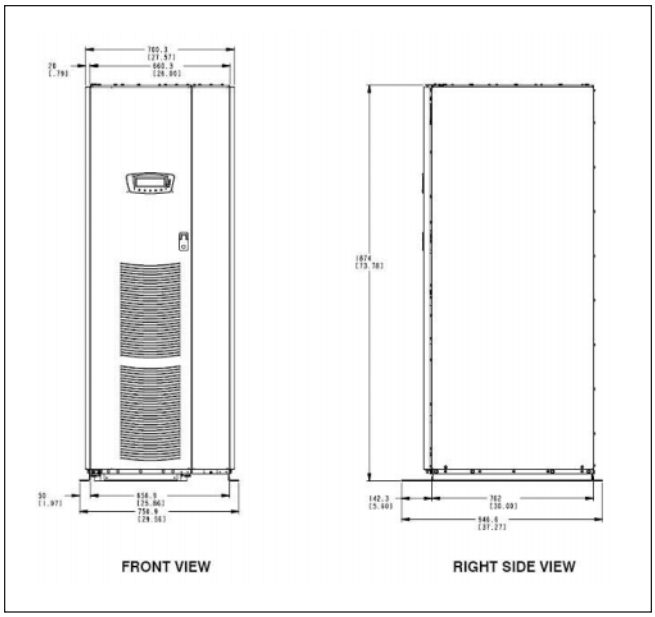

Figure 33.2-51. 9390 (40–80 kVA) UPS with IAC-SX Sidecar

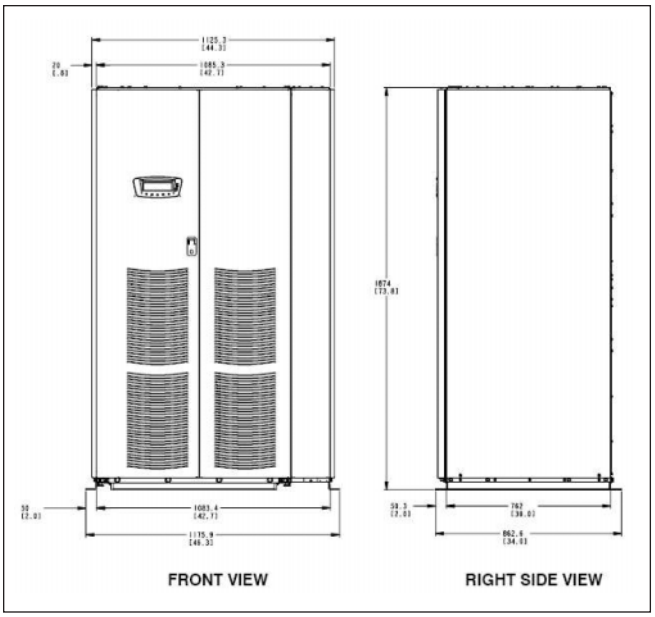

Figure 33.2-53. 9390 (100–160 kVA) UPS with IAC-SX Sidecar

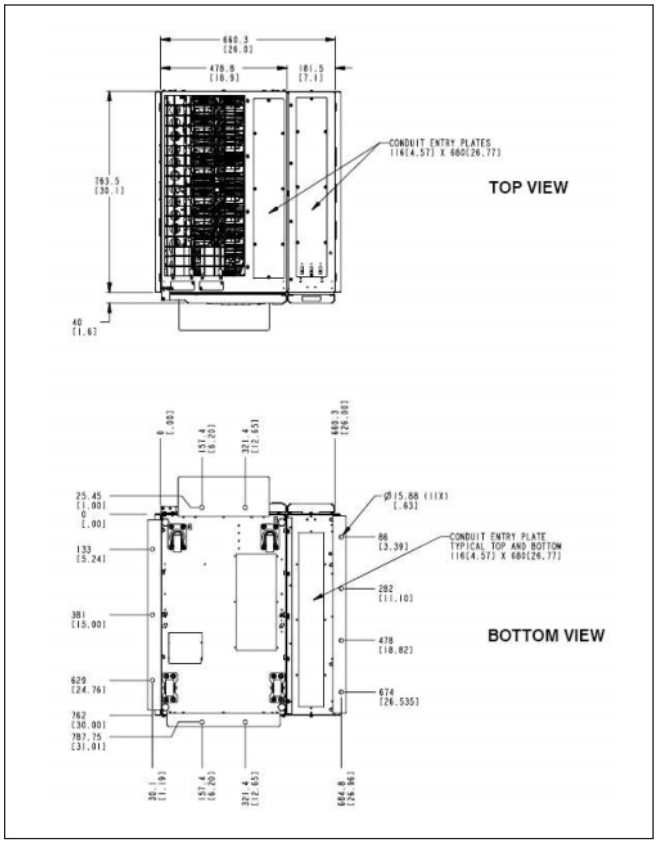

Figure 33.2-52. 9390 (40–80 kVA) UPS with IAC-SX Sidecar
Top and Bottom View

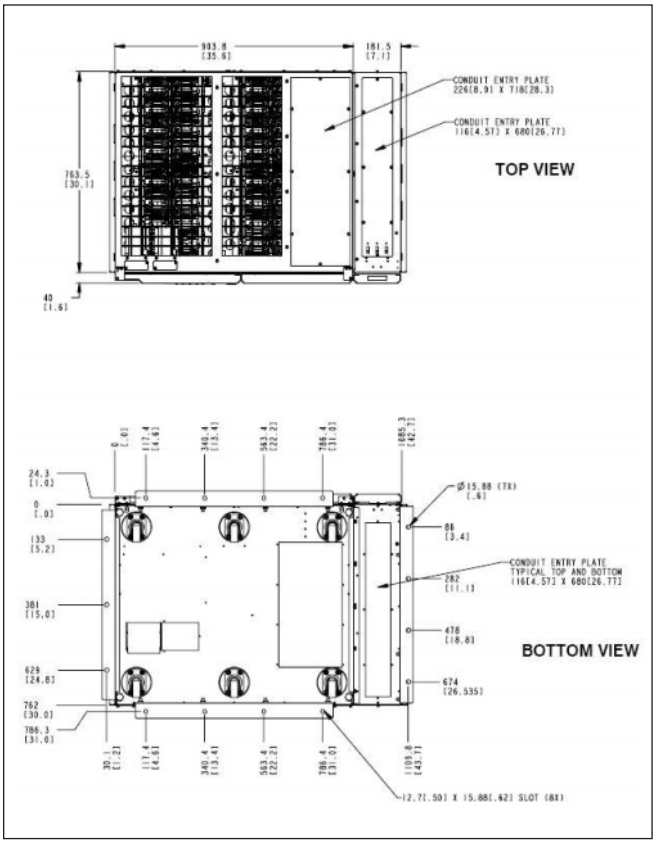

Figure 33.2-54. 9390 (100–160 kVA) UPS with IAC-SX Sidecar
Top and Bottom View

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Eaton 9395 (225–1100 kVA)

Eaton 9395

General Description

The Eaton 9395 is the industry's most reliable and flexible three-phase UPS. The advanced software and technology of Eaton's Energy Saver System (ESS) allow the 9395 to achieve 99% efficiency while still maintaining complete protection for the load. ESS and another energy-saving technology, Variable Module Management System (VMMS), are part of Eaton's Energy Advantage Architecture (EAA), which allows customers to maximize efficiency and to tailor the technology to their unique loads.

The Eaton 9395 UPS gives you maximum flexibility, reliability and system availability for your entire enterprise, whether it's a single building or multiple locations spread throughout the world. With the most reliable hardware, sophisticated power management software, and a multitude of accessories and options, combined with world-class service, the Eaton 9395 offers the power solution and system availability that let's you get down to the business of your business.

Typical Applications

- Data centers
- Facilities
- Security operations
- Enterprise networks
- Server farms
- Telecommunications installations
- Internet service providers
- Diagnostic imaging equipment
- Positron Emission Tomography (PET)
- Production lines water treatment facilities

Features and Benefits

- SMaRT® Gold Certified, the 9395 can help architects and consultants earn LEED® points toward certification
- Provides flexible run-time options for your application
- Delivers maximum uptime for mission-critical systems by including ProActive service plan for the first year following installation, including:
  - One year of 7 x 24 corrective maintenance
  - One year of 7 x 24 remote monitoring service (ProActive service plan is required to obtain "no charge" monitoring)
  - Annual performance check and power protection audit
  - 7 x 24 technical support
- Isolates connected equipment from all incoming power problems to provide the highest degree of protection with online, double-conversion technology
- Maintains and monitors battery health continuously, dynamically updating information on battery time remaining
- Increases system reliability by minimizing points-of-failure through innovative design and reduced component count
- Starts up with the push of a button and displays UPS status information on its monitor panel
- Incorporates connectivity products to fit various environments and applications
- Keeps you informed by sending notification for power and UPS events that you select

Monitor Panel

The monitor panel on the front of the UPS contains an LCD screen to display the current status of the UPS. You can view a statistical history and log of UPS events and display a real-time graphic representation of power flowing through the UPS components. Backlit status indicators show the operating mode of the UPS and alert you to system events.

Communication Bays

- X-Slot™ communication bay—allows internal, UPS powered communication with four optional X-Slot cards. The X-Slot cards support several protocols such as SNMP, HTTP and Modbus
- Computer interface—serial communication ports are standard on all units, and are electrically isolated from the UPS. You can use these ports to link the UPS to the features
- Summary alarm contacts—alarm contacts are provided for connection to equipment at your facility such as a light, an audible alarm, or a computer terminal. The equipment you connect to these contacts alerts you to a UPS alarm
- Building alarm monitoring—you can connect your facility's alarm system contacts to six inputs in the UPS. The UPS uses these inputs to monitor your building alarms in addition to the UPS status

Load Off

A LOAD OFF function is provided for situations where you must immediately remove all power to your critical load. The function is accessible on the front of the UPS for quick access.

Automatic Battery Charge Current Limit

A preset limit restricts battery charging current to protect batteries from damage due to high current charging. Charging at high currents can overheat and damage batteries.

Installation Features

Power wiring can be routed through the top or bottom of each UPS cabinet. External sensing and monitoring control wire must be installed in accordance with Class 2 wiring methods. Bottom entry is provided for Class 2 wiring.

An Eaton Green Solution

Options and Accessories

Battery

You can enhance the protection provided by your UPS with one or more backup battery supplies equipped with sealed lead-acid, maintenance-free batteries in a matching cabinet. Each battery cabinet contains individual modular battery trays and a battery circuit breaker. Several battery capacities are available.

The UPS battery cabinets can be paralleled; you can increase your battery backup time by adding battery cabinets to your UPS system. The Eaton 9395 can support multiple battery cabinets.

External Battery Disconnect

An optional DC circuit breaker, enclosed in a wall-mounted box adjacent to the UPS, provides a manual means of disconnecting a battery that is located remotely from the UPS.

Upgrade Capability

The UPS is available in various output power ratings in both 50 and 60 Hz models. If your power requirements increase, you can upgrade the UPS system to provide more output power with minimum impact on your facility.

Remote Monitor Panel

An optional remote monitor panel (RMP) contains backlit status indicators and a local horn, allowing you to monitor the operational status and alarm condition of the UPS from virtually any location within your facility. You can install multiple RMPs at remote locations to increase your monitoring capabilities.

Relay Interface Module

An optional relay interface module (RIM) uses relay contact closures to indicate the operating status and alarm condition of the UPS system. The module uses a serial interface line and may support up to eight critical loads.

eNotify

Optional eNotify service provides a monthly report detailing the ongoing health of the Eaton 9395 UPS as well as critical event alerts monitored by Eaton's Customer Reliability Center (CRC) available 7 days a week, 24 hours a day.

The Customer Monitoring Report delivers information on the unit's voltages, loads and external factors such as temperature and humidity, depending on the model. The report also provides information about the attached batteries and system availability.

Additionally, eNotify informs users when critical events are experienced. This service alerts our Customer Reliability Center (CRC) of any critical events and provides for proactive monitoring. Anomalies are checked for incoming parametric or event data logs, upon receipt of a status or event e-mail, respectively. If an anomaly is detected, a CRC analyst further analyzes the data for possible impending failures.

Hot-Tie

The Eaton 9395 hot-tie control system is designed to operate with two Eaton 9395 hot-sync capacity/redundant systems. Each system will include two or more Eaton 9395 UPM (modules) and a system bypass module (SBM). The primary function of the Eaton 9395 hot-tie control is to provide increased maintainability of the two Eaton hot-sync capacity/redundant systems by controlling a momentary, uninterrupted transfer of one system's load to the other system and isolating the off-line system. After completion of the transfer, preventive maintenance can be performed on the complete off-line system (SBM, modules, cabling, and so on) without disturbing the critical power paths to the load. A scheduled shutdown of the off-line system's critical load is never required or is a transfer to bypass power needed. After preventive maintenance is finished, the Eaton hot-tie control can be used to return the loads to the individual systems and reconfigure the two systems to dual path operation.

The Eaton 9395 hot-tie control performs the following actions:

- Monitoring UPS system status
- Monitoring switchboard breaker status
- Synchronization of the two critical load buses
- Control of SIS-A, SIS-B, and the TIE breaker
- Control of MBP-A, MBP-B, MIS-A, and MIS-B breakers (with optional MBP only)

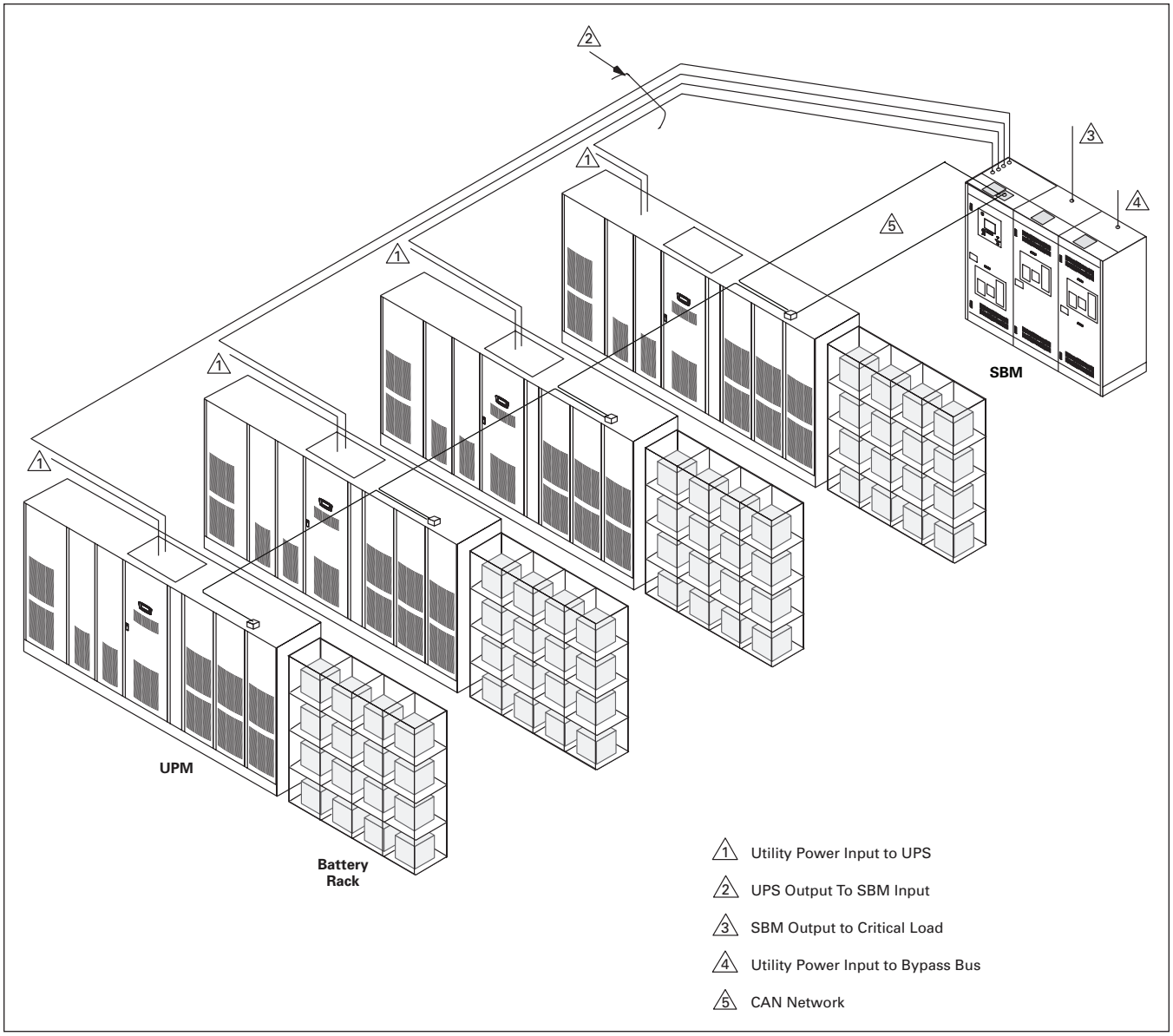

Figure 33.3-1. Typical Parallel Capacity/Redundant System Layout

Note: Accommodates one to eight UPSs (restricted by SBM breaker rating). Four UPS system shown.

Static Auto-Tie System

With this industry first static auto-tie system, Eaton does not limit the availability of dual power paths to scheduled maintenance. Instead, this incredible level of reliability is continuously available. The static auto-tie consists of a conventional three-breaker hot-tie system with a static switch paralleling the actual tie-breaker. When system level monitoring detects a reason why the protected load in a dual power path system should be transferred to one UPS or the other, the static switch is fired. The tie-breaker is signaled to close in much the same way a UPS transfers the load to its internal bypass. The two systems are tied together momentarily until the appropriate isolation breaker opens, leaving one UPS isolated with no load and the other UPS supporting both power paths. Because both power paths to the load remain active, no transfer devices are activated, and dual power supply loads are not challenged by shutting down one power supply. In fact, in the Eaton automatic hot-tie system, distribution transfer devices can be eliminated. A sample static auto-tie system is shown in **Figure 33.3-2**.

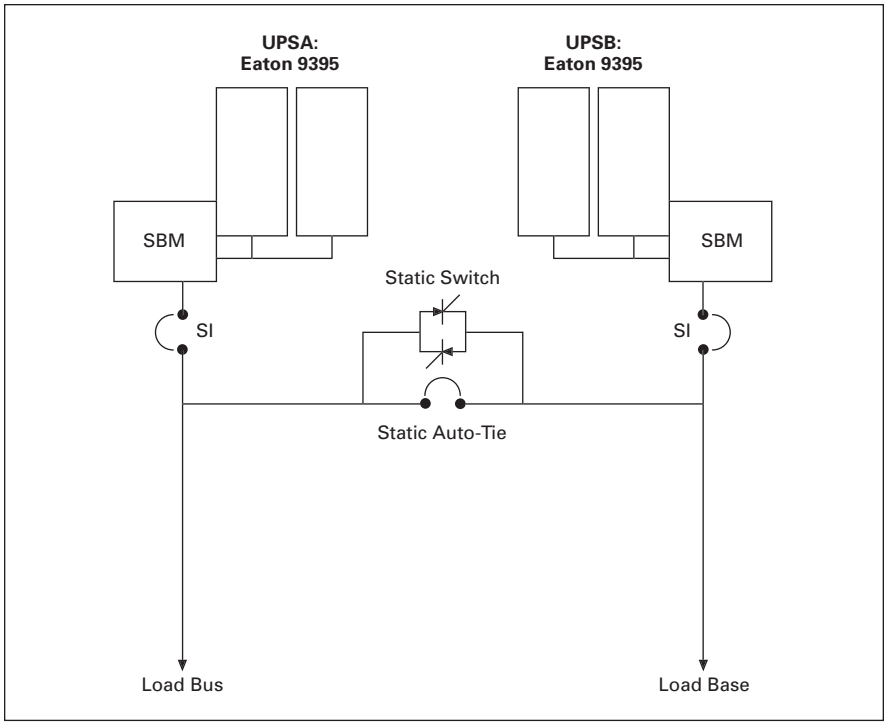

Figure 33.3-2. Static Auto-Tie System

Note: This system eliminates downstream static switches and is designed for automatic operation and concurrent maintenance.

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Battery Cabinets—9395 225–550 kVA, 60 Hz Applications

Table 33.3-1. 1085 Cabinet Series, 480 Vdc Link

Cabinet Quantity	Installed Weight Lbs (kg)	Width Inches (mm)	225 kVA		275 kVA	
			Runtime (min.)		Runtime (min.)	
			Eaton Part Number	0.9 pf	Eaton Part Number	0.9 pf
2	6300 (2858)	86 (2169)	**TL2253B27221200**	7	—	—
2	6500 (2942)	86 (2169)	**TL2253E28221200**	7	**TL2753E28221200**	5
2	6990 (3171)	86 (2169)	**TL2253B31221200**	9	**TL2753B31221200**	6
2	7190 (3255)	86 (2169)	**TL2253E33221200**	10	**TL2753E33221200**	7
2	7530 (3416)	86 (2169)	**TL2253B37221200**	12	**TL2753B37221200**	9
2	7850 (3554)	86 (2169)	**TL2253E39221200**	12	**TL2753E39221200**	9
2	9600 (4354)	86 (2169)	**TL2253B47221200**	16	**TL2753B47221200**	11
2	9680 (4384)	86 (2169)	**TL2253E50221200**	18	**TL2753E50221200**	13
3	9450 (4286)	129 (3254)	**TL2253B27321200**	14	**TL2753B27321200**	10
3	9750 (4409)	129 (3254)	**TL2253E28321200**	16	**TL2753E28321200**	10
3	10,485 (4756)	129 (3254)	**TL2253B31321200**	18	**TL2753B31321200**	13
3	10,785 (4878)	129 (3254)	**TL2253E33321200**	20	**TL2753E33321200**	14
3	11,295 (5123)	129 (3254)	**TL2253B37321200**	22	**TL2753B37321200**	17
3	11,775 (5328)	129 (3254)	**TL2253E39321200**	24	**TL2753E39321200**	17
3	14,400 (6532)	129 (3254)	**TL2253B47321200**	31	**TL2753B47321200**	23
3	14,520 (5673)	129 (3254)	**TL2253E50321200**	32	**TL2753E50321200**	25
4	12,600 (5715)	171 (4338)	**TL2253B27421200**	22	**TL2753B27421200**	16
4	13,000 (5876)	171 (4338)	**TL2253E28421200**	23	**TL2753E28421200**	16
4	13,980 (6341)	171 (4338)	**TL2253B31421200**	27	**TL2753B31421200**	20
4	14,380 (6502)	171 (4338)	**TL2253E33421200**	28	**TL2753E33421200**	22
4	15,060 (6831)	171 (4338)	**TL2253B37421200**	33	**TL2753B37421200**	25
4	15,700 (7101)	171 (4338)	**TL2253E39421200**	34	**TL2753E39421200**	26
4	19,200 (8709)	171 (4338)	**TL2253B47421200**	48	**TL2753B47421200**	34
4	19,360 (8761)	171 (4338)	**TL2253E50421200**	47	**TL2753E50421200**	36

Note: All cabinets at 480 Vdc. All cabinets are remote configuration. Eaton-branded ("E" series) batteries feature three year warranty.

Table 33.3-1. 1085 Cabinet Series, 480 Vdc Link (Continued)

Cabinet Quantity	Installed Weight Lbs (kg)	Width Inches (mm)	450 kVA		500 kVA		550 kVA	
			Runtime (min.)		Runtime (min.)		Runtime (min)	
			Eaton Part Number	0.9 pf	Eaton Part Number	0.9 pf	Eaton Part Number	0.9 pf
3	11,295 (5123)	129 (3254)	**TL4503B37321200**	6	**TL5003B37321200**	6	—	—
3	11,775 (5328)	129 (3254)	**TL4503E39321200**	6	**TL5003E39321200**	6	—	—
3	14,400 (6532)	129 (3254)	**TL4503B47321200**	8	**TL5003B47321200**	7	—	—
3	14,520 (5673)	129 (3254)	**TL4503E50321200**	9	**TL5003E50321200**	7	**TL5503E503 21200**	6
4	12,600 (5715)	171 (4338)	**TL4503B27421200**	6	**TL5003B27421200**	5	—	—
4	13,000 (5876)	171 (4338)	**TL4503E28421200**	6	**TL5003E28421200**	5	—	—
4	13,980 (6341)	171 (4338)	**TL4503B31421200**	8	**TL5003B31421200**	7	**TL5503B31421200**	6
4	14,380 (6502)	171 (4338)	**TL4503E33421200**	9	**TL5003E33421200**	7	**TL5503E33421200**	6
4	15,060 (6831)	171 (4338)	**TL4503B37421200**	12	**TL5003B37421200**	10	**TL5503B37421200**	9
4	15,700 (7101)	171 (4338)	**TL4503E39421200**	13	**TL5003E39421200**	11	**TL5503E39421200**	9
4	19,200 (8709)	171 (4338)	**TL4503B47421200**	16	**TL5003B47421200**	13	**TL5503B47421200**	11
4	19,360 (8761)	171 (4338)	**TL4503E50421200**	17	**TL5003E50421200**	14	**TL5503E50421200**	13

Note: All cabinets at 480 Vdc. All cabinets are remote configuration. Eaton-branded ("E" series) batteries feature three year warranty.

Table 33.3-2. ENERSYS

Number (kVA)	Installed Weight in Lbs (kg)	Dimensions W x D x H	kVA	kW	Runtime in Minutes	Cabinet Quantity	Enersys Part Number
650	5930 (2692)	196 x 31.5 x 84	650	585	5	3	**SA65550480B0800B**
650	21,240 (9643)	128 x 31.5 x 84	650	585	10	4	**SA65550480B0600B**
650	25,080 (11,386)	150 x 31.5 x 84	650	585	12	3	**SA65800480B0800B**
650	26,550 (12,054)	160 x 31.5 x 84	650	585	15	5	**SA65550480B0400B**
650	33,440 (15,182)	200 x 31.5 x 84	650	585	20	4	**SA65800480B0600B**
650	35,360 (16,053)	200 x 31.5 x 84	650	585	23	4	**SA65925480B0600B**
650	41,800 (18,977)	250 x 31.5 x 84	650	585	27	5	**SA65800480B0400B**
650	44,200 (20,069)	250 x 31.5 x 84	650	585	32	5	**SA65925480B0400B**
750	21,240 (9643)	128 x 31.5 x 84	750	675	8	4	**SA65550480B0600B**
750	25,080 (11,386)	150 x 31.5 x 84	750	675	8	3	**SA65800480B0800B**
750	26,550 (12,054)	160 x 31.5 x 84	750	675	11	5	**SA65550480B0600B**
750	26,520 (12,040)	150 x 31.5 x 84	750	675	12	3	**SA65925480B0800B**
750	33,440 (15,182)	200 x 31.5 x 84	750	675	15	4	**SA65800480B0600B**
750	35,360 (16,053)	200 x 31.5 x 84	750	675	19	4	**SA65925480B0600B**
750	41,800 (18,977)	250 x 31.5 x 84	750	675	23	5	**SA65800480B0600B**
750	44,200 (20,069)	250 x 31.5 x 84	750	675	26	5	**SA65925480B0600B**
825	21,240 (9643)	128 x 31.5 x 84	825	743	6	4	**SA65550480B0600B**
825	25,080 (11,386)	150 x 31.5 x 84	825	743	7	3	**SA65800480B0800B**
825	26,520 (12,040)	150 x 31.5 x 84	825	743	9	3	**SA65925480B0800B**
825	33,440 (15,182)	200 x 31.5 x 84	825	743	13	4	**SA65800480B0800B**
825	35,360 (16,053)	200 x 31.5 x 84	825	743	17	4	**SA65925480B0800B**
825	33,440 (15,182)	250 x 31.5 x 84	825	743	19	5	**SA65800480B0600B**
825	44,200 (20,069)	250 x 31.5 x 84	825	743	23	5	**SA65925480B0600B**
1000	26,550 (12,054)	160 x 31.5 x 84	1000	900	6	5	**SA65550480B0600B**
1000	33,440 (15,182)	200 x 31.5 x 84	1000	900	8	4	**SA65800480B0800B**
1000	35,360 (16,053)	200 x 31.5 x 84	1000	900	12	4	**SA65925480B0800B**
1000	41,800 (18,977)	250 x 31.5 x 84	1000	900	14	5	**SA65800480B0600B**
1000	44,200 (20,069)	250 x 31.5 x 84	1000	900	17	5	**SA65925480B0600B**
1100	33,440 (15,182)	200 x 31.5 x 84	1100	990	7	4	**SA65800480B0800B**
1100	35,360 (16,053)	200 x 31.5 x 84	1100	990	9	4	**SB65925480B0800B**
1100	41,800 (18,977)	250 x 31.5 x 84	1100	990	11	5	**SA65800480B0800B**
1100	44,200 (20,069)	250 x 31.5 x 84	1100	990	15	5	**SA65925480B0800B**

Note: All cabinets at 480 Vdc. All cabinets are remote configuration. All battery orders from this list are drop ship. All battery orders from this list require a T-8 form attached for order entry.

33

Key Factors that Affect Battery Life

Ambient Temperature

The rated output capacity of a battery is based on an ambient temperature of 25°C (77°F). It is important to realize that any variation from this operating temperature can alter the performance of the battery and shorten its expected life. A good rule of thumb when determining battery life in relation to temperature is that for every 8.3°C (15°F) average annual temperature about 25°C (77°F), the life of the battery is reduced by 50 percent.

Cycling

During a utility power failure (severe brownout or blackout conditions), the UPS operates on battery power. Once utility power is restored, the battery is recharged for future use. This entire "loop" is considered a discharge cycle. When installed, the battery is at 100 percent of rated capacity. Each discharge and subsequent recharge reduces the relative capacity of the battery by a small percentage. The length of the discharge cycle will determine the reduction in battery capacity.

The Basic Environmental Requirements for Operation of the UPS System are:

- Ambient temperature range: 0°–40°C (32°–104°F)
- Recommended operating range: 20°–25°C (68°–77°F)
- Maximum relative humidity: 95%

Table 33.3-3. Maintenance Bypass Modules

kVA Family	kVA	Voltage	Breaker Configuration	kAIC	Breaker Interlock	CTO Number
Line and Match						
275	225	480/480	4	100	Electrical	**MBM9A2216120000**
275	275	480/480	4	100	Electrical	**MBM9A2716120000**
550	450	480/480	4	65	Electrical	**MBM9B4515120000**
550	500	480/480	4	65	Electrical	**MBM9B5015120000**
550	550	480/480	4	65	Electrical	**MBM9B5515120000**
550	450	480/480	4	100	Electrical	**MBM9B4516120000**
550	550	480/480	4	100	Electrical	**MBM9B5516120000**
275	225	480/480	2	100	Kirk Key	**MBM9A2212220000**
275	275	480/480	2	100	Kirk Key	**MBM9A2712220000**
550	450	480/480	2	65	Kirk Key	**MBM9B4511220000**
550	500	480/480	2	65	Kirk Key	**MBM9B5011220000**
550	550	480/480	2	65	Kirk Key	**MBM9B5511220000**
550	450	480/480	2	100	Kirk Key	**MBM9B4512220000**
550	500	480/480	2	100	Kirk Key	**MBM9B5012220000**
550	550	480/480	2	100	Kirk Key	**MBM9B5512220000**
275	225	480/480	3	65	Kirk Key	**MBM9A2213220000**
275	275	480/480	3	65	Kirk Key	**MBM9A2713220000**
275	275	480/480	3	100	Kirk Key	**MBM9A2714220000**
550	450	480/480	3	65	Kirk Key	**MBM9B4513220000**
550	500	480/480	3	65	Kirk Key	**MBM9B5013220000**
550	550	480/480	3	65	Kirk Key	**MBM9B5513220000**
550	550	480/480	3	100	Kirk Key	**MBM9B5514220000**
275	225	480/480	4	65	Kirk Key	**MBM9A2215220000**
275	225	480/480	4	100	Kirk Key	**MBM9A2216220000**
275	275	480/480	4	100	Kirk Key	**MBM9A2716220000**
550	500	480/480	4	65	Kirk Key	**MBM9B5015220000**
550	550	480/480	4	65	Kirk Key	**MBM9B5515220000**
550	450	480/480	4	100	Kirk Key	**MBM9B4516220000**
550	550	480/480	4	100	Kirk Key	**MBM9B5516220000**
Remote						
275	225	480/480	2	100	Electrical	**MBM9A2212110000**
275	275	480/480	2	100	Electrical	**MBM9A2712110000**
550	450	480/480	2	65	Electrical	**MBM9B4511110000**
550	500	480/480	2	65	Electrical	**MBM9B5011110000**
550	550	480/480	2	65	Electrical	**MBM9B5511110000**
550	450	480/480	2	100	Electrical	**MBM9B4512110000**
550	550	480/480	2	100	Electrical	**MBM9B5512110000**
275	225	480/480	3	65	Electrical	**MBM9A2213110000**
275	275	480/480	3	65	Electrical	**MBM9A2713110000**
550	450	480/480	3	65	Electrical	**MBM9B4513110000**
550	500	480/480	3	65	Electrical	**MBM9B5013110000**
550	550	480/480	3	65	Electrical	**MBM9B5513110000**
275	225	480/480	4	100	Electrical	**MBM9A2216110000**
275	275	480/480	4	100	Electrical	**MBM9A2716110000**
550	450	480/480	4	65	Electrical	**MBM9B4515110000**
550	500	480/480	4	65	Electrical	**MBM9B5015110000**
550	550	480/480	4	65	Electrical	**MBM9B5515110000**
550	450	480/480	4	100	Electrical	**MBM9B4516110000**
550	550	480/480	4	100	Electrical	**MBM9B5516110000**
275	225	480/480	2	100	Kirk Key	**MBM9A2212210000**
275	275	480/480	2	100	Kirk Key	**MBM9A2712210000**
550	450	480/480	2	65	Kirk Key	**MBM9B4511210000**
550	500	480/480	2	65	Kirk Key	**MBM9B5011210000**
550	550	480/480	2	65	Kirk Key	**MBM9B5511210000**
550	450	480/480	2	100	Kirk Key	**MBM9B4512210000**
550	500	480/480	2	100	Kirk Key	**MBM9B5012210000**
550	550	480/480	2	100	Kirk Key	**MBM9B5512210000**
275	225	480/480	3	65	Kirk Key	**MBM9A2213210000**
275	275	480/480	3	65	Kirk Key	**MBM9A2713210000**
550	450	480/480	3	65	Kirk Key	**MBM9B4513210000**
550	500	480/480	3	65	Kirk Key	**MBM9B5013210000**
550	550	480/480	3	65	Kirk Key	**MBM9B5513210000**
275	225	480/480	4	100	Kirk Key	**MBM9A2216210000**
275	275	480/480	4	100	Kirk Key	**MBM9A2716210000**
550	450	480/480	4	65	Kirk Key	**MBM9B4515210000**
550	500	480/480	4	65	Kirk Key	**MBM9B5015210000**
550	550	480/480	4	65	Kirk Key	**MBM9B5515210000**
550	450	480/480	4	100	Kirk Key	**MBM9B4516210000**
550	550	480/480	4	100	Kirk Key	**MBM9B5516210000**

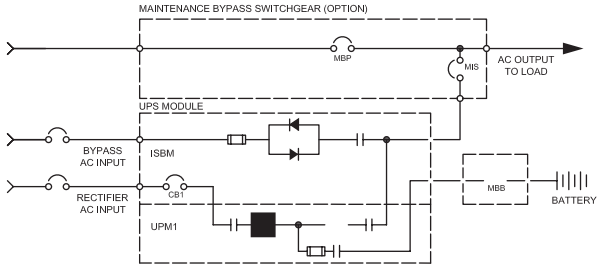
Note: For other configurations, please contact ISE group at LSGInsideSalesPQSORaleigh@eaton.com.

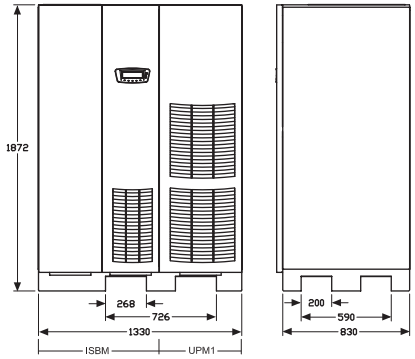
Table 33.3-4. Recommended Eaton Maintenance Bypass Panel

9395 System	MBP/MIS Rating	BIB Rating	MBP/MIS/BIB Terminal Size	RIB Rating	RIB Terminal Size	Dimensions in Inches (W x H x D)	65 kAIC Eaton Part Number	100 kAIC Eaton Part Number
Wall-Mounted ①								
9395 225 kVA	400	None	(2) 2/0–250 or (1) 2/0 500	None	N/A	24.00 x 57.00 x 11.30	**M1FI0X0X111XXXX**	**M1GI0X0X111XXXX**
9395 225 kVA	400	400	(2) 2/0–250 or (1) 2/0 500	None	N/A	24.00 x 73.50 x 11.30	**M1FIIX0X111XXXX**	**M1GIIX0X111XXXX**
9395 225 kVA	400	400	(2) 2/0–250 or (1) 2/0 500	400	(2) 2/0–250 or (1) 2/0 500	24.00 x 73.50 x 11.30	**M1FIIXIX111XXXX**	**M1GIIXIX111XXXX**
9395 275 kVA	500	None	(2) 3/0-350	None	N/A	36.00 x 73.50 x 11.30	**M1FK010X111XXXX**	**M1GK010X111XXXX**
9395 275 kVA	500	500	(2) 3/0–350	None	N/A	36.00 x 73.50 x 11.30	**M1FKK10X111XXXX**	**M1GKK10X111XXXX**
9395 275 kVA	500	500	(2) 3/0–350	500	(2) 3/0–350	36.00 x 73.50 x 11.30	**M1FKK1K1111XXXX**	**M1GKK1K1111XXXX**
9395 450 kVA	800	None	(3) 3/0–400	None	N/A	36.00 x 73.50 x 11.30	**M1FN0X0X111XXXX**	**M1GN0X0X111XXXX**
9395 450 kVA, 500 kVA	800	800	(3) 3/0–400	None	N/A	36.00 x 90.00 x 11.30	**M1FNNX0X111XXXX**	**M1GNNX0X111XXXX**
9395 450 kVA, 500 kVA	800	800	(3) 3/0–400	800	(3) 3/0–400	36.00 x 90.00 x 11.30	**M1FNNXNX111XXXX**	**M1GNNXNX111XXXX**
9395 500 kVA	800	800	(3) 3/0–400	1000	(4) 4/0–500	36.00 x 90.00 x 11.30	**M1FNNXPX111XXXX**	**M1FNNXPX111XXXX**
9395 550 kVA	1000	None	(4) 4/0–500	None	N/A	36.00 x 73.50 x 11.30	**M1FP0X0X111XXXX**	**M1GP0X0X111XXXX**
9395 550 kVA	1000	1000	(4) 4/0–500	None	N/A	36.00 x 90.00 x 11.30	**M1FPPX0X111XXXX**	**M1GPPX0X111XXXX**
9395 550 kVA	1000	1000	(4) 4/0–500	1000	(4) 4/0–500	36.00 x 90.00 x 11.30	**M1FPPXPX111XXXX**	**M1GPPXPX111XXXX**
9395 650 kVA	1000	None	(4) 4/0–500	None	N/A	36.00 x 73.50 x 11.30	**M1FP0X0X111XXXX**	**M1GP0X0X111XXXX**
9395 650 kVA	1000	1000	(4) 4/0–500	None	N/A	36.00 x 90.00 x 11.30	**M1FPPX0X111XXXX**	**M1GPPX0X111XXXX**
9395 650 kVA	1000	1000	(4) 4/0–500	1200	(4) 4/0–500	36.00 x 90.00 x 11.30	**M1FPPXQX111XXXX**	**M1GPPXQX111XXXX**
9395 750 kVA	1200	None	(4) 4/0–500	None	N/A	36.00 x 73.50 x 11.30	**M1FQ0X0X111XXXX**	**M1GQ0X0X111XXXX**
9395 750 kVA	1200	1200	(4) 4/0–500	None	N/A	36.00 x 90.00 x 11.30	**M1FQQX0X111XXXX**	**M1GQQX0X0111XXXX**
Floor-Mounted ②								
9395 225 kVA	400	None	(2) 2/0–250 or (1) 2/0 500	None	N/A	36.00 x 90.00 x 24.00	**M1FI0X0X211XXXX**	**M1GI0X0X211XXXX**
9395 225 kVA	400	400	(2) 2/0–250 or (1) 2/0 500	None	N/A	36.00 x 90.00 x 24.00	**M1FIIX0X211XXXX**	**M1GIIX0X211XXXX**
9395 225 kVA	400	400	(2) 2/0–250 or (1) 2/0 500	400	(2) 2/0–250 or (1) 2/0 500	36.00 x 90.00 x 24.00	**M1FIIXIX211XXXX**	**M1GIIXIX211XXXX**
9395 275 kVA	500	None	(2) 3/0–350	None	N/A	36.00 x 90.00 x 24.00	**M1FK010X211XXXX**	**M1GK010X211XXXX**
9395 275 kVA	500	500	(2) 3/0–350	None	N/A	36.00 x 90.00 x 24.00	**M1FKK10X211XXXX**	**M1GKK10X211XXXX**
9395 275 kVA	500	500	(2) 3/0–350	500	(2) 3/0–350	36.00 x 90.00 x 24.00	**M1FKK1K1211XXXX**	**M1GKK1K1211XXXX**
9395 450 kVA	800	None	(3) 3/0–400	None	N/A	36.00 x 90.00 x 24.00	**M1FN0X0X211XXXX**	**M1GN0X0X211XXXX**
9395 450 kVA, 500 kVA	800	800	(3) 3/0–400	None	N/A	36.00 x 90.00 x 24.00	**M1FNNX0X211XXXX**	**M1GNNX0X211XXXX**
9395 450 kVA, 500 kVA	800	800	(3) 3/0–400	800	(3) 3/0–400	36.00 x 90.00 x 24.00	**M1FNNXNX211XXXX**	**M1GNNXNX211XXXX**
9395 500 kVA	800	800	(3) 3/0–400	1000	(4) 4/0–500	36.00 x 90.00 x 24.00	**M1FNNXPX211XXXX**	**M1GNNXPX211XXXX**
9395 550 kVA	1000	None	(4) 4/0–500	None	N/A	36.00 x 90.00 x 24.00	**M1FP0X0X211XXXX**	**M1GP0X0X211XXXX**
9395 550 kVA	1000	1000	(4) 4/0–500	None	N/A	36.00 x 90.00 x 24.00	**M1FPPX0X211XXXX**	**M1GPPX0X211XXXX**
9395 550 kVA	1000	1000	(4) 4/0–500	1000	(4) 4/0–500	36.00 x 90.00 x 24.00	**M1FPPXPX211XXXX**	**M1GPPXPX211XXXX**
9395 650 kVA	1000	None	(4) 4/0–500	None	N/A	36.00 x 90.00 x 24.00	**M1FP0X0X211XXXX**	**M1GP0X0X211XXXX**
9395 650 kVA	1000	1000	(4) 4/0–500	None	N/A	36.00 x 90.00 x 24.00	**M1FPPX0X211XXXX**	**M1GPPX0X211XXXX**
9395 650 kVA	1000	1000	(4) 4/0–500	1200	(4) 4/0–500	36.00 x 90.00 x 24.00	**M1FPPXQX211XXXX**	**M1GPPXQX211XXXX**
9395 750 kVA	1200	None	(4) 4/0–500	None	N/A	36.00 x 90.00 x 24.00	**M1FQ0X0X211XXXX**	**M1GQ0X0X211XXXX**
9395 750 kVA	1200	1200	(4) 4/0–500	None	N/A	36.00 x 90.00 x 24.00	**M1FQQX0X211XXX**	**M1GQQX0X211XXXX**
9395 750 kVA	1200	1200	(4) 4/0–500	1600	(6) #4–500	(2) 36.00 x 90.00 x 30.00	**M1FQQXRX211XXXX**	**M1GQQXRX211XXXX**
9395 825 kVA, 1000 kVA	1600	None	(6) #4–500	None	N/A	45.00 x 90.00 x 30.00	**M1FR0X0X211XXXX**	**M1GR0X0X211XXXX**
9395 825 kVA, 1000 kVA	1600	1600	(6) #4–500	None	N/A	(3) 30.00 x 90.00 x 36.00	**M1FRRX0X211XXXX**	**M1GRRX0X211XXXX**
9395 825 kVA	1600	1600	(6) #4–500	1600	(6) #4–500	(1) 45.00 x 90.00 x 36.00 & (2) 30.00 x 90.00 x 36.00	**M1FRRXRX211XXXX**	**M1GRRXRX211XXXX**
9395 1000 kVA	1600	1600	(6) #4–500	2000	(6) #4–500	(1) 45.00 x 90.00 x 36.00 & (2) 30.00 x 90.00 x 36.00	**M1FRRXSX211XXXX**	**M1GRRXSX211XXXX**
9395 1100 kVA	2000	None	(6) #4–500	None	N/A	45.00 x 90.00 x 30.00	**M1FS0X0X211XXXX**	**M1GS0X0X211XXXX**
9395 1100 kVA	2000	2000	(6) #4–500	None	N/A	(3) 30.00 x 90.00 x 36.00	**M1FSSX0X211XXXX**	**M1GSSX0X211XXXX**
9395 1100 kVA	2000	2000	(6) #4–500	2000	(6) #4–500	(1) 45.00 x 90.00 x 36.00 & (2) 30.00 x 90.00 x 36.00	**M1FSSXSX211XXXX**	**M1GSSXSX211XXXX**

① NEMA 1 PRL4B panelboard construction, exposed deadfront, UL 67.
② NEMA 1 PRLC switchboard construction, front access, UL 891, top incoming.

Note: All MBPs include Kirk Key interlocks, solenoid key release unit, and "OK to bypass" indicator lamp. All breakers have 2A/2B auxiliary contacts. All systems 480V, 60 Hz. Breakers 800A and below are thermal-magnetic. Breakers above 800A are electronic trip (LS). Your Eaton ISE can configure many more custom MBP configurations.





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground. AC output to load: three phases, one neutral if required, one ground. DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
225	205	480	480	261	300	271	10.6 (36270)	1330 x 830 x 1872 (52.4 x 32.7 x 73.7)	811 (1786)	735 (150)	451	540

Figure 33.3-3. Site Planning Data, 9395, 225 kVA, Single Module System

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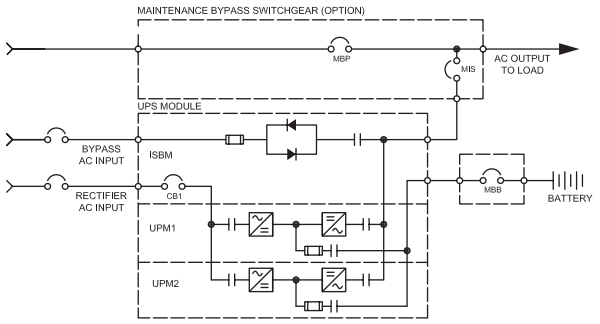
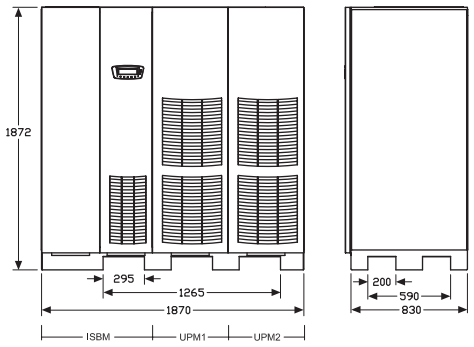
Layout Diagrams





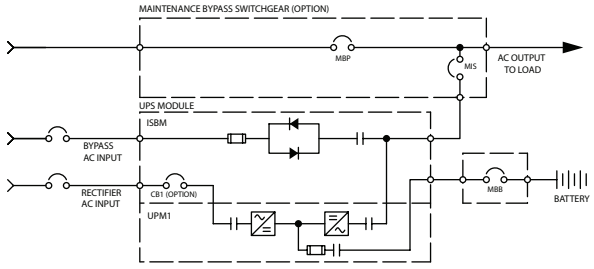
Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

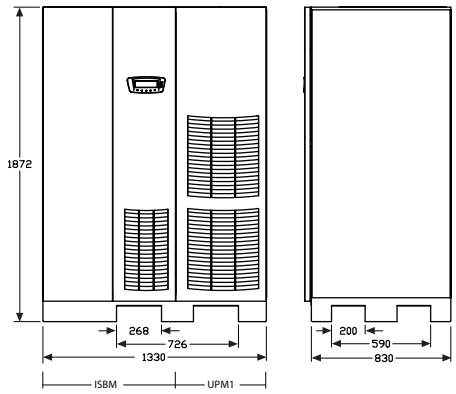
Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
225	205	480	480	261	300	271	10.6 (36270)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1305 (2875)	841 (172)	451	540

Figure 33.3-4. Site Planning Data, 9395, 225 kVA Plus 1, Single Module System

Layout Diagrams





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
225	205	480	480	264	300	271	12.8 (43863)	1330 x 830 x 1872 (52.4 x 32.7 x 73.7)	811 (1786)	735 (150)	451	540
275	250	480	480	323	370	331	15.7 (53661)	1330 x 830 x 1872 (52.4 x 32.7 x 73.7)	811 (1786)	735 (150)	551	660

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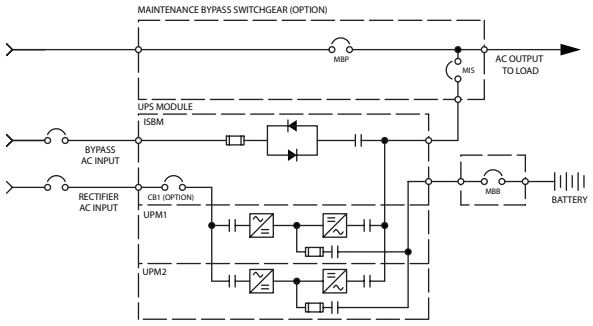
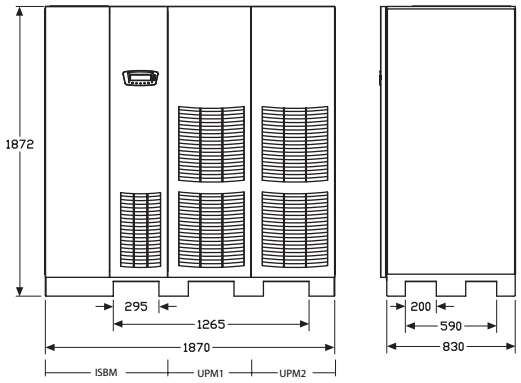
Figure 33.3-5. Site Planning Data, System 9395-275 ISBM, Models 225, 275 kVA, Single Module

Layout Diagrams





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at Full Load BTU/h	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
225	205	480	480	264	300	271	12.8 (43863)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1305 (2875)	841 (172)	451	540
275	250	480	480	323	370	331	15.7 (53661)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1305 (2875)	841 (172)	551	660

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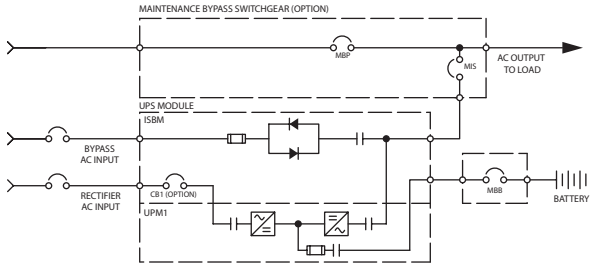
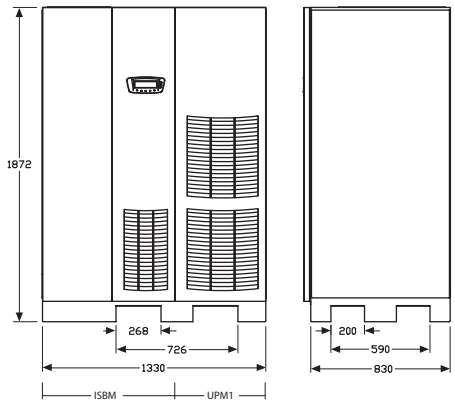
Figure 33.3-6. Site Planning Data, System 9395-275 Plus 1 ISBM, Models 225, 275 kVA, Single Module





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
300	240	480	480	310	360	361	15.1 (51466)	1330 x 830 x 1872 (52.4 x 32.7 x 73.7)	811 (1786)	735 (150)	529	633

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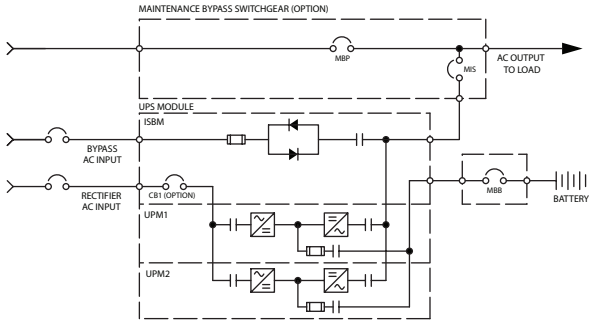
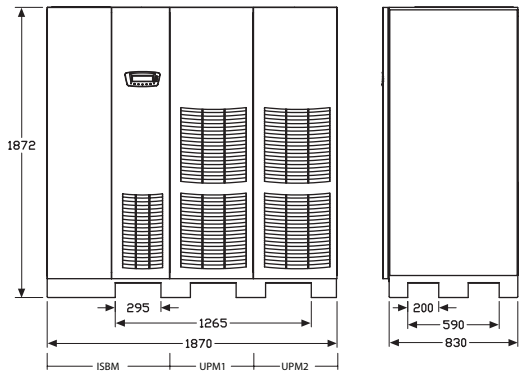
Figure 33.3-7. Site Planning Data, System 9395, 300 kVA, ISBM, Single Module

Layout Diagrams





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at Full Load BTU/h	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
300	240	480	480	310	360	361	15.1 (51466)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1305 (2875)	841 (172)	529	633

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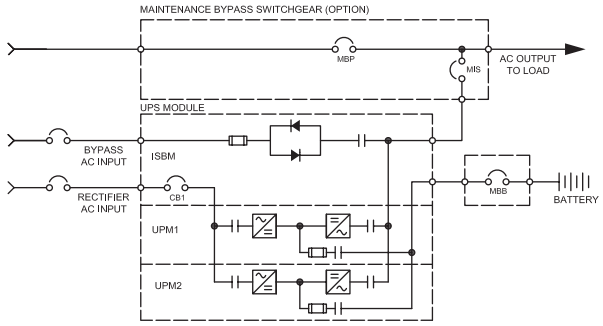
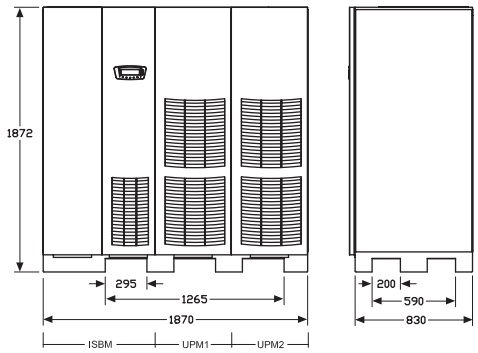
Figure 33.3-8. Planning Data, System 9395, 300 kVA, Plus 1 ISBM, Single Module





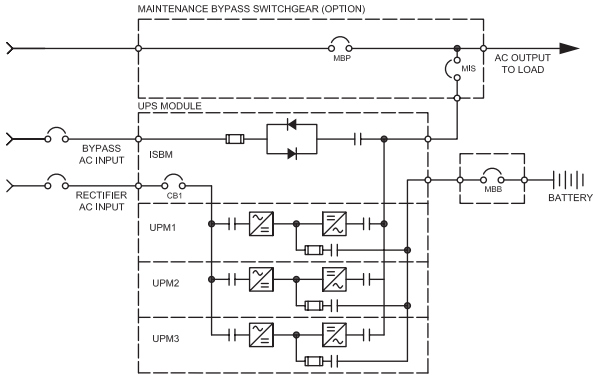
Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

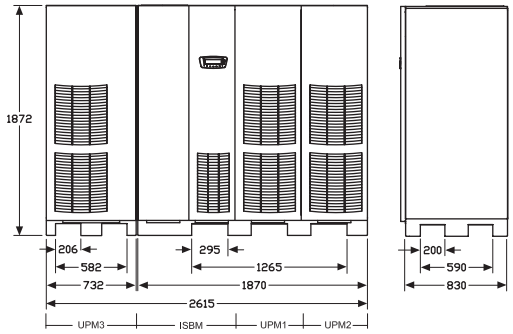
Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (In)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
450	409	480	480	523	600	541	21.2 (72541)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1352 (2977)	871 (178)	901	1079

Figure 33.3-9. Site Planning Data, 9395, 450 kVA, Single Module System

Layout Diagrams





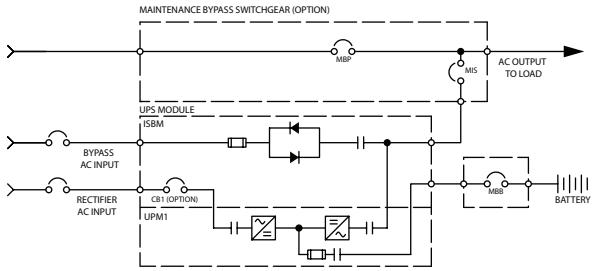
Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

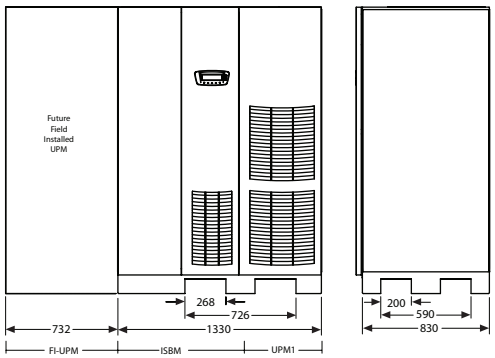
Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (In)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
450	409	480	480	523	600	541	21.2 (72541)	2615 x 830 x 1872 (103.0 x 32.7 x 73.7)	1958 (4317)	902 (185)	901	1079

Figure 33.3-10. Site Planning Data, 9395, 450 kVA, Plus 1, Single Module System

Layout Diagrams





* Space should be reserved on the left side of the unit, for a future capacity upgrade, as shown above
While this is a 275kVA UPS, a 550kVA ISBM section is included. UPS should be wired for future capacity.

Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications (Future Capacity in [ ])

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
225 [550]	205 [500]	480	480	264 [646]	300 [740]	271 [662]	12.8 (43863) [31.4 (107221)]	1330 x 830 x 1872 (52.4 x 32.7 x 73.7) [2062 x 830 x 1872 (81.2 x 32.7 x 73.7)]	811 (1786) [1417 (3124)]	735 (150) [828 (169)]	451 [1101]	540 [1319]
275 [550]	250 [500]	480	480	323 [646]	370 [740]	331 [662]	15.7 (53611) [31.4 (107221)]	1330 x 830 x 1872 (52.4 x 32.7 x 73.7) [2062 x 830 x 1872 (81.2 x 32.7 x 73.7)]	811 (1786) [1417 (3124)]	735 (150) [828 (169)]	551 [1101]	660 [1319]

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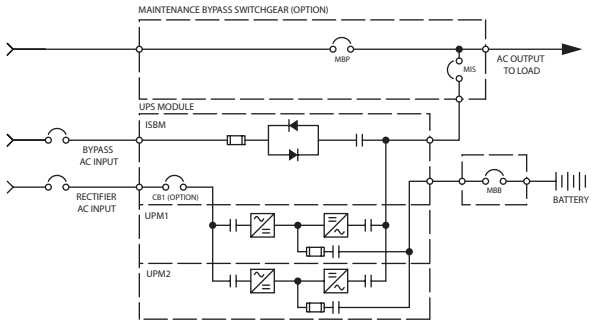
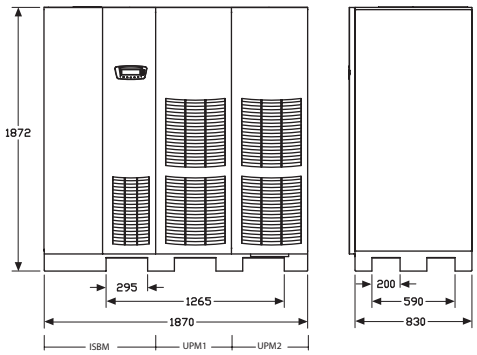
Figure 33.3-11. Site Planning Data, System 9395-550 ISBM, Models 550/275 kVA, 550//275 kVA, Single Module





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
450	409	480	480	528	600	541	25.7 (87727)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1352 (2977)	871 (178)	901	1079
500	455	480	480	587	660	601	28.6 (97474)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1352 (2977)	871 (178)	1001	1199
550	500	480	480	646	740	662	31.4 (107221)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1352 (2977)	871 (178)	1101	1319

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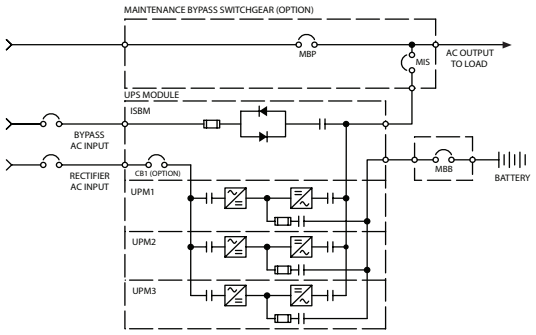
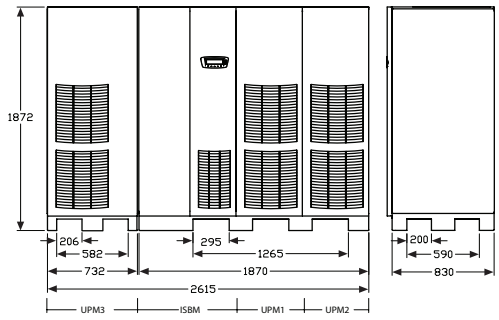
Figure 33.3-12. Site Planning Data, System 9395-550 ISBM, Models 450, 500, 275 kVA, Single Module





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
450	409	480	480	528	600	541	25.7 (87727)	2615 x 830 x 1872 (103.0 x 32.7 x 73.7)	1958 (4317)	902 (185)	901	1079
500	455	480	480	587	660	601	28.5 (97474)	2615 x 830 x 1872 (103.0 x 32.7 x 73.7)	1958 (4317)	902 (185)	1001	1199
550	500	480	480	646	740	662	31.4 (107221)	2615 x 830 x 1872 (103.0 x 32.7 x 73.7)	1958 (4317)	902 (185)	1101	1319

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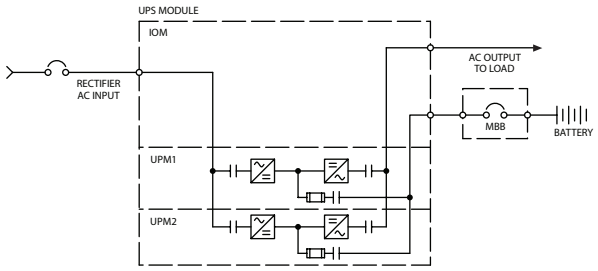
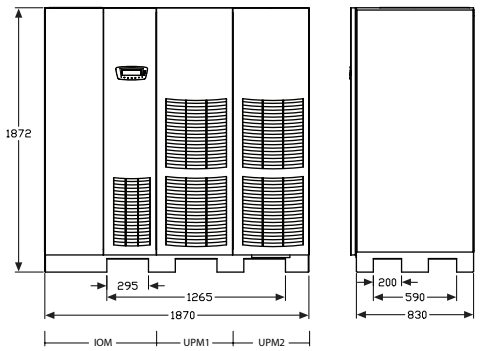
Figure 33.3-13. Site Planning Data, System 9395-550 Plus 1 ISBM, Models 450, 500, 500 kVA, Single Module





Notes:
1. IOM—I/O module requires external system bypass module.
2. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
3. Inverter AC output current calculation: Nameplate—100% rated output load.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current Per UPM		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
450	409	480	480	264	370	541	25.7 (87727)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1298 (2857)	837 (171)	901	1079
500	455	480	480	294	370	601	28.6 (97474)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1298 (2857)	837 (171)	1001	1199
550	500	480	480	323	370	662	31.4 (107221)	1870 x 830 x 1872 (73.6 x 32.7 x 73.7)	1298 (2857)	837 (171)	1101	1319

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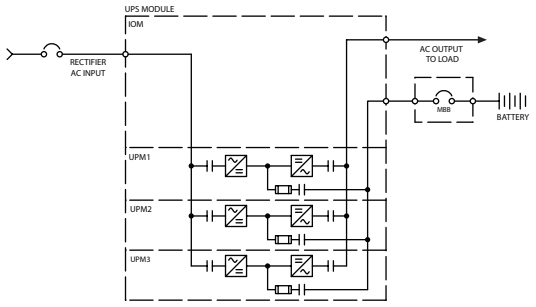
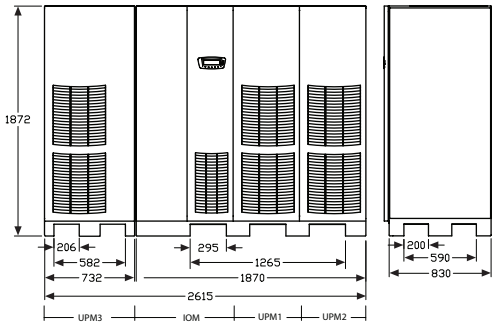
Figure 33.3-14. Site Planning Data, System 9395-550 IOM, Models 450, 500, 550 kVA, Single Module





Notes:
1. IOM—I/O module requires external system bypass module.
2. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
3. Inverter AC output current calculation: Nameplate—100% rated output load.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current Per UPM		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
450	409	480	480	264	370	541	25.7 (87727)	2615 x 830 x 1872 (103.0 x 32.7 x 73.7)	1908 (4197)	877 (180)	901	1079
500	455	480	480	294	370	601	28.5 (97474)	2615 x 830 x 1872 (103.0 x 32.7 x 73.7)	1908 (4197)	877 (180)	1001	1199
550	500	480	480	323	370	662	31.4 (107221)	2615 x 830 x 1872 (103.0 x 32.7 x 73.7)	1908 (4197)	877 (180)	1101	1319

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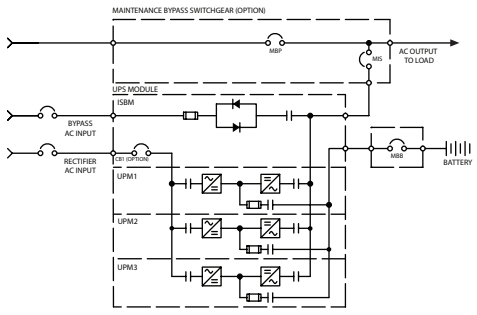
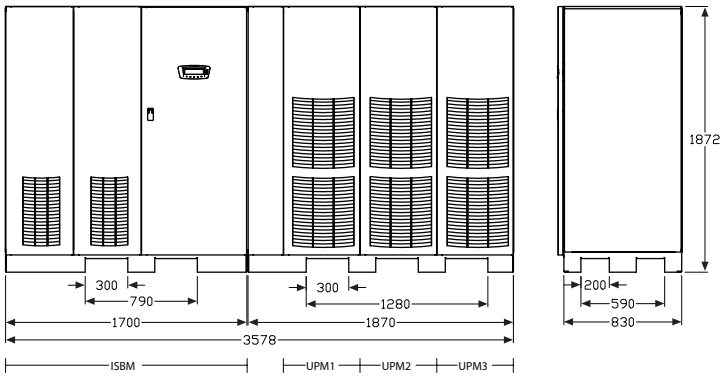
Figure 33.3-15. Site Planning Data, System 9395-550 Plus 1 IOM, Models 450, 500, 550 kVA, Single Module

Layout Diagrams





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions WxDxH	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
650	591	480	480	763	891	782	37.1 (126716)	3578 x 830 x 1872 (140.9 x 32.7 x 73.7)	2297 (5065)	774 (158)	1280	1559
750	682	480	480	880	1028	902	42.8 (146211)	3578 x 830 x 1872 (140.9 x 32.7 x 73.7)	2297 (5065)	774 (158)	1502	1799
825	750	480	480	969	1130	992	47.1 (160832)	3578 x 30 x 1872 (140.9 x 32.7 x 73.7)	2297 (5065)	774 (158)	1600	1979

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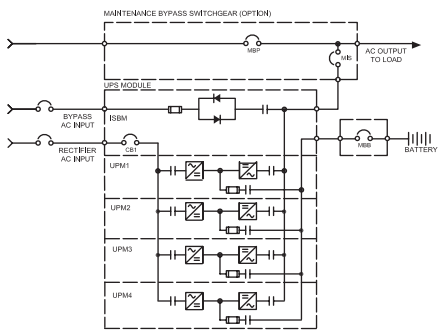
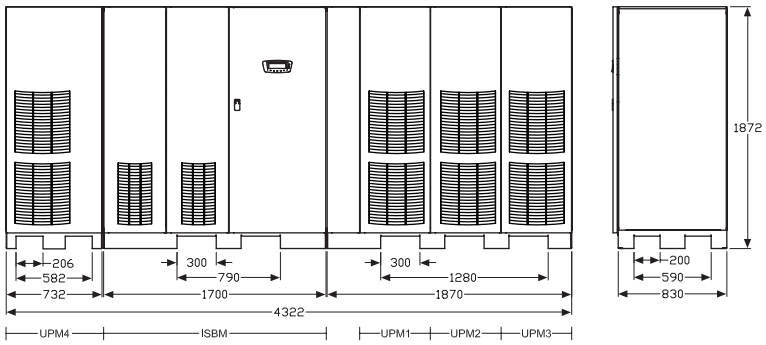
Figure 33.3-16. Site Planning Data, System 9395-825 ISBM, Models 650, 750, 285 kVA, Single Module





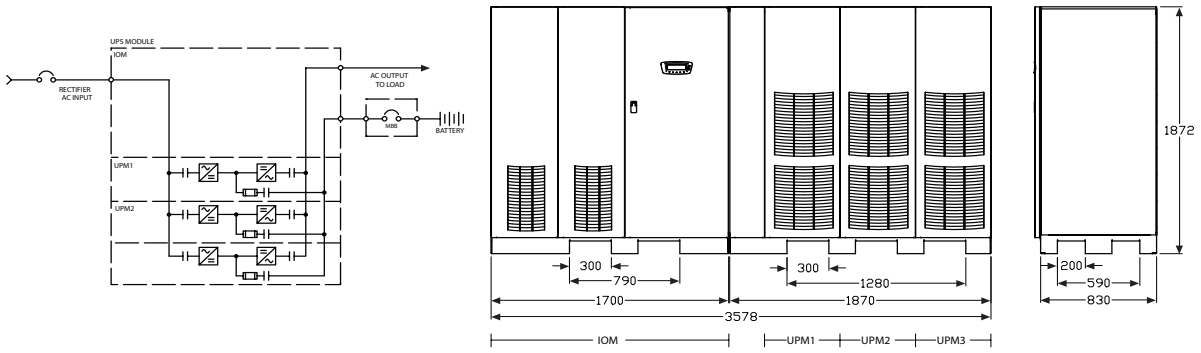
Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2(lb/ft2)	AMP	AMP
650	591	480	480	763	890	782	37.1 (126716)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2887 (6365)	805 (165)	1280	1559
750	682	480	480	880	960	902	42.8 (146211)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2887 (6365)	805 (165)	1502	1799
825	750	480	480	969	1100	992	47.1 (160832)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2887 (6365)	805 (165)	1600	1979

Figure 33.3-17. Site Planning Data, System 9395-825 Plus 1, Models 650, 750, 825 kVA, Single Module

Layout Diagrams



Notes:
1. IOM—I/O module requires external system bypass module.
2. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
3. Inverter AC output current calculation: Nameplate—100% rated output load.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current Per UPM		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm(in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
650	591	480	480	255	370	782	37.1 (126716)	3578 x 830 x 1872 (140.9 x 32.7 x 73.7)	2248 (4945)	756 (154)	1280	1559
750	682	480	480	294	370	902	42.8 (146211)	3578 x 830 x 1872 (140.9 x 32.7 x 73.7)	2248 (4945)	756 (154)	1502	1799
825	750	480	480	323	370	992	47.1 (160832)	3578 x 830 x 1872 (140.9 x 32.7 x 73.7)	2248 (4945)	756 (154)	1600	1979

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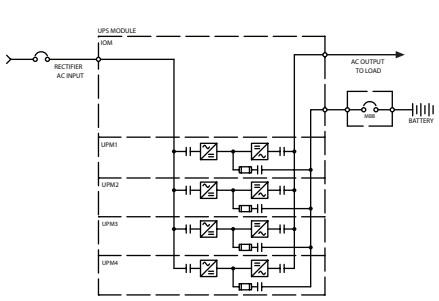
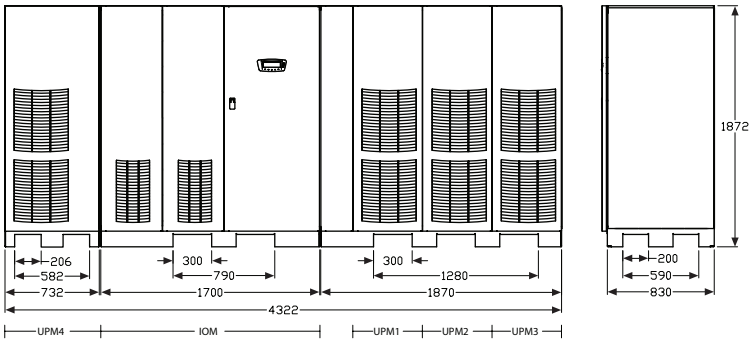
Figure 33.3-18. Site Planning Data, System 9395-825, Models 650, 750, 825 kVA, Single Module





Notes:
1. IOM—I/O module requires external system bypass module.
2. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
3. Inverter AC output current calculation: Nameplate—100% rated output load.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
AC output to load: three phases, one neutral if required, one ground.
DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current Per UPM		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
650	591	480	480	255	370	782	37.1 (126716)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2839 (6245)	790 (162)	1280	1559
750	682	480	480	294	370	902	42.8 (146211)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2839 (6245)	790 (162)	1502	1799
825	750	480	480	323	370	992	47.1 (160832)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2839 (6245)	790 (162)	1600	1979

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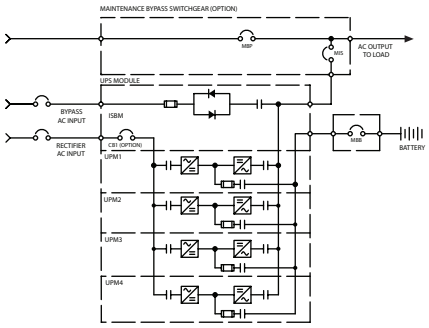
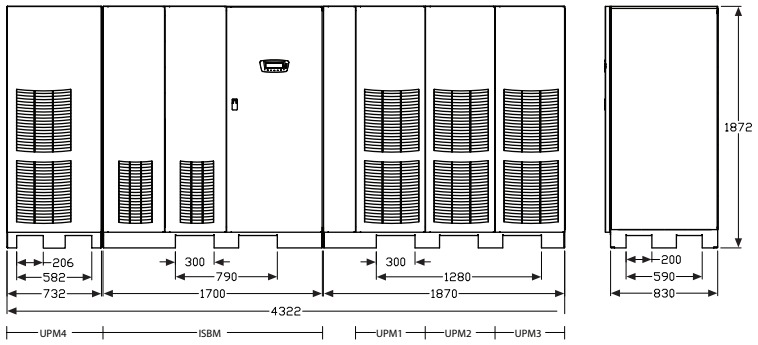
Figure 33.3-19. Site Planning Data, System 9395-825 Plus 1, Models 650, 750, 825 kVA, Single Module

Layout Diagrams





Notes:
1. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
2. Inverter AC output current calculation: Nameplate—100% rated output load.
3. Bypass AC input current calculation is based on 100% rated output.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions W x D x H	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
1000	909	480	480	1174	1370	1203	57.1 (194948)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2960 (6525)	825 (169)	2000	2398
1100	1000	480	480	1291	1507	1323	62.8 (214443)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2960 (6525)	825 (169)	2203	2638

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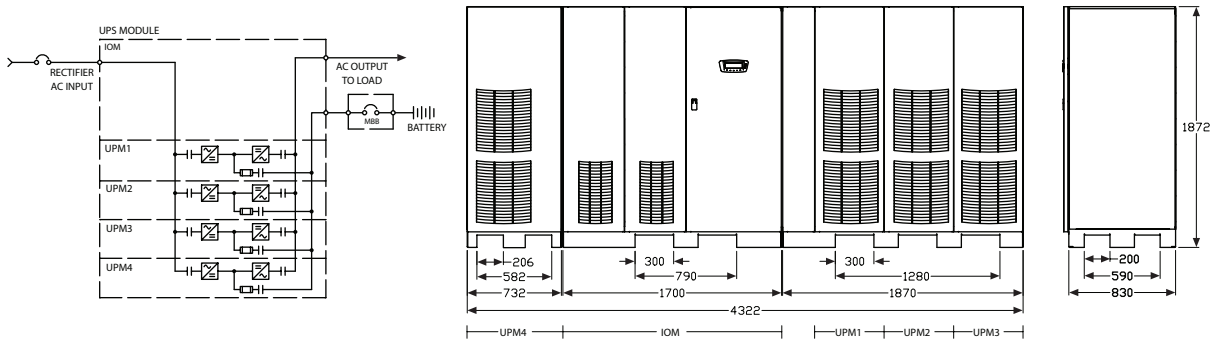
Figure 33.3-20. Site Planning Data, System 9395-1100 ISBM, Models 1000, 1100 kVA, Single Module



Notes:
1. IOM—I/O module requires external system bypass module.
2. Rectifier AC input current calculations: Continuous—100% load without charging; nameplate—100% load with maximum charging.
3. Inverter AC output current calculation: Nameplate—100% rated output load.
4. The system must be installed on a level floor suitable for computer or electronic equipment.
5. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
6. Ambient temperature range: 0º–40ºC (32º–104ºF); recommended operating range: 20º–25ºC (68º–77ºF); maximum relative humidity: 95% noncondensing.
7. Minimum overhead clearance for ventilation above the UPS cabinet is 457 mm (18 inches).
8. Minimum 915 mm (36 inches) clearance in front of the UPS cabinet is required for cooling air intake and servicing space.
9. The UPS cabinet can be installed in line-up-and-match or standalone configurations.
10. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
11. All wiring is to be in accordance with National and Local electric codes.
12. AC input to UPS rectifier (0.98 min. pF): three phases, one ground.
    AC output to load: three phases, one neutral if required, one ground.
    DC input from battery to UPS: one positive, one negative, one ground.
13. The front panels must be removed to meet the 830 mm (32.7 inches) depth to fit through doors.
14. If the UPS is to be installed with the right side near a wall, a minimum of 6.00 inches (152.4 mm) is required between the wall and the unit. If a battery cabinet is installed to the right of the UPS, the 6.00 inches (152.4 mm) are not required.
15. Specifications are subject to change.

Product Specifications

UPS Rating		AC Input Voltage	AC Output Voltage	Rectifier AC Input Current Per UPM		Inverter AC Output Current	Max. Heat Dissipation at 100% Load	Dimensions WxDxH	Approx. Weight Unpacked	Floor Loading	Battery Nameplate Current (240 Cell, 2.00 V/cell)	Max. Battery Current at End of Discharging (240 Cell, 1.67V/cell)
				Continuous	Nameplate	Nameplate						
kVA	kW	VAC	VAC	AMP	AMP	AMP	kW (BTU/hr)	mm (in)	kg (lbs)	kg/m2 (lb/ft2)	AMP	AMP
1000	909	480	480	294	370	1203	57.1 (194948)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2911 (6405)	810 (166)	2000	2398
1100	1000	480	480	323	370	1323	62.8 (214443)	4322 x 830 x 1872 (170.2 x 32.7 x 73.7)	2911 (6405)	810 (166)	2203	2638

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Figure 33.3-21. Site Planning Data, System 9395-1100 IOM, Models 1000, 1100 kVA, Single Module

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Power Xpert® Software

General Description

Power Xpert Software aggregates the information arriving from different types of device families via various communication methods. Its unique Web-based design, alarm bubble-up, and advanced trend and waveform analysis tools help you to quickly turn your attention to the most important events and to identify reliability issues and cost-saving opportunities. The standard custom graphic package, the Layout Manager, with an icon library and standard vertical templates, allows you to import and mimic your physical environment and gauges. Open protocol support makes Power Xpert Software compatible with most newer generation third-party equipment. Older legacy, proprietary protocols are supported by Power Xpert Gateways, and custom software drop-in drivers made available by Eaton. Power Xpert Software is the first power system software of this caliber to put all of these powerful features at your fingertips.

Power Xpert Software provides an easy upgrade path to allow existing PowerNet users to enjoy the benefits of power monitoring through a simple Web browser interface.

Power Xpert is a complete software solution to manage your power system. Critical components such as metering devices, protective relays, circuit breaker trip units, motor starters and uninterruptible power supplies communicate vital information about the health and status of critical infrastructure devices.

Product Selection Guide

Power Xpert Software Professional Edition

- Geared toward end users, with built-in support for Eaton power distribution products such as switchgear, UPSs, breakers, PDUs, RPPs, meters, relays, VFDs and MCCs, among others
- Eaton products connect with the software directly via an Ethernet connection, while legacy devices use a Power Xpert Gateway to Web-enable their communications
- A subset of third-party meters and devices are supported as standard via the gateway connection

Power Xpert Software Enterprise Edition

- Geared toward advanced power users, system integrators and enterprises with heterogeneous device spectrum and system developers who can take advantage of the included SNMP and Modbus integration development utilities
- Extensive support for third-party devices via standard SNMP and Modbus TCP protocols
- Large variety of ready made, optional third-party drop-in drivers available

Features

- Connects to your existing network
- Data trending and graphing for detailed information for trouble-shooting, problem prevention and costs savings
- Web-based views that allow access to critical information from any location via a Web browser
- A modular, scalable architecture that allows the addition of capabilities and devices as the power system expands
- Alarm conditions bubble up through the system to allow personnel to identify which device is in alarm and where it is located
- All the functionality of Eaton's PowerNet software suite
- Connectivity to a wide range of Eaton and third-party devices. For a full list of compatible devices, refer to the hardware compatibility list found at www.eaton.com/pxs

For full details on Power Xpert Software, refer to **Tab 2, Section 2.4**.

Foreseer® Services

Foreseer Software and Engineering Services (Foreseer Services) provide vendor independent, power and energy infrastructure integration solutions that help companies reduce energy consumption and unplanned downtime due to the failure of critical power, environmental, safety or security systems.

Turnkey software and connectivity solutions are coupled with state-of-the-art project management, systems design, third-party device integration, testing and custom application development to develop a comprehensive monitoring solution to meet your custom needs.

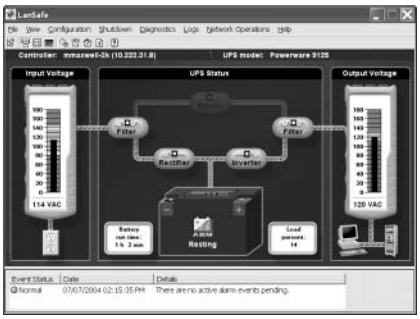
Foreseer Services is delivered in categories, offering a multitude of unique value-add services that you can discuss with your Eaton sales professional.

- Design services
- Installation services
- Commissioning services
- Follow-up services
- Hardware services
- Software services

Foreseer Services is fully distributable to allow different monitoring capabilities to be deployed at different sites, allowing you to purchase only what is needed. Many competitive systems offer a one-size-fits-all type approach where you end up paying for more capacity than is needed. With Foreseer Services, you pay only for what you need, when you need it.

For full details on Foreseer Services, refer to **Tab 2, Section 2.4**.

Eaton LanSafe



Eaton LanSafe

General Description

LanSafe Power management software provides automatic, unattended and graceful shutdown of computer systems throughout the network during an extended power outage. It continuously monitors the UPSs status and automatically notifies defined users locally and remotely about UPS events.

LanSafe can be setup to shutdown a large group of computers running multiple operating systems (e.g. Linux, UNIX, Windows, Novell). It's exclusive SafetyNet™ technology enables network administrators to establish a user-defined sequential shutdown so that the most critical equipment (such as database or file servers) is shut down last, after work in progress is saved from client workstations through hubs, switches, routers and communication servers.

With event notification, one can specify unique text messages associated with each alarm, and to which users the alarms are broadcasted over the network. For remote alarms, the software can initiate an e-mail message to immediately notify users about a power problem.

In addition, LanSafe provides as standard the ability to send SNMP traps to any SNMP compliant network management system (NMS) like HP-OpenView or CiscoWorks 2000. LanSafe also supports the 'GET' and 'SET' SNMP commands, which allows the NMS administrator to periodically enquire all metering information such as input voltage, output voltage, battery health and runtime among others.

LanSafe software is bundled free-of-charge with all Eaton UPSs on the software suite CD-ROM.

Application Focus

- Advanced computer shutdown capabilities
- Basic UPS monitoring and management
- Local and networked single- or three-phase Eaton UPSs
- Third-party UPS support via USB HID and SNMP (RFC1628) standards

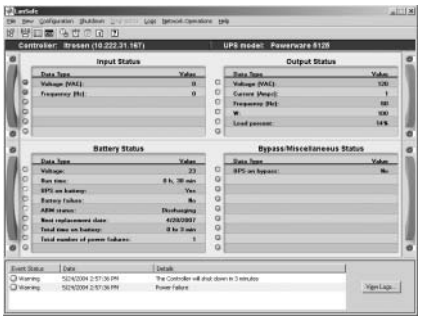
Key Product Features

- Automatically performs a graceful shutdown of the computer system and saves work-in-progress during an extended power outage
- Displays vital UPS information with an intuitive, graphic format for non-technical personnel
- Broad OS support:
  - Compiles a full year of UPS events with a graphical calendar view
- Communicates UPS status change messages via e-mail, pager or cell phone to keep you informed at all times
- Notifies you in advance that it is time to hot-swap your batteries so that your UPS is ready for the next power outage
- Saves electricity and adds security with automatic power-on and power-off scheduling capability
- Helps you determine how much money the UPS and LanSafe is saving you during every power failure due to prevented downtime with a cost savings calculator
- Runs invisibly with stealth mode operation, which is particularly useful when integrating LanSafe into a POS, ATM or other environment where discretion is necessary
- Remotely recycles power of hung-up hubs, routers and computer systems with UPS power on/off capability

Requirements

- Eaton UPS with contact closure, serial, USB or connect UPS network communications
- Third-party UPS support via USB HID and SNMP (RFC1628) standards
- Supported computer operating system, current list available at http://www.powerware.com/Software/Lansafe5.asp
- Configured SMTP server for e-mail notifications
- Computer system supporting minimum system requirements: 200 MHz CPU, 32MB RAM, 30MB HD, SVGA monitor

Monitoring



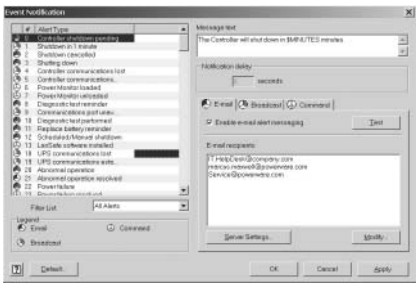
Monitoring

LanSafe can monitor a single UPS at a time via the ControlRoom (screenshot above) or PowerScope views. Other LanSafe installations on the network can be selected for monitoring and management via the file-open controller option.

Communication—Input/Output

- RS-232
- USB
- ConnectUPS Web/SNMP Ethernet network connection
- SNMP via RFC1628 standard

Notification



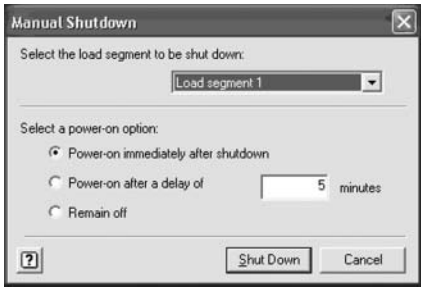
Notification

- Personalized UPS Alarm notifications
- Local event message notification
- Network broadcasts
- E-mail
- Command execution
- SNMP traps
- SNMP proxy agent (GET and SET capability)

Computer Shutdown

Sequential SafetyNet shutdown ensures that all network transactions are completed prior to shutdown. Workstations are shut down first, internet working equipment is shut down next and Servers are shut down last.

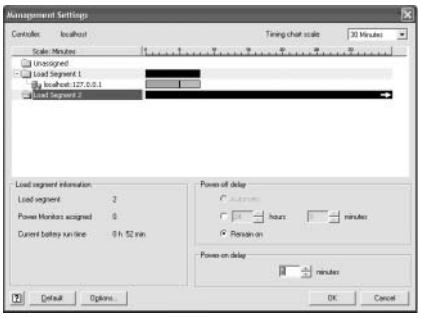
Load Segment Control



Load Segment Control

Doubles the run time for mission critical loads. Turns separate load segments (receptacle groups) on and off at predefined times, or automatically during power outage events. In addition load segments can be turned off and back on again manually over the network or locally.

Diagnostics

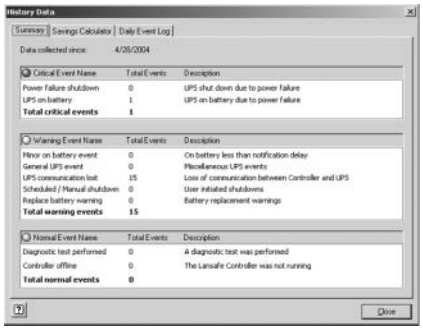


Diagnostics

LanSafe reminds the user ahead of time when the UPS batteries need to be replaced.

The Test Hardware option performs a diagnostic test to verify your UPS is functioning properly. The tests provide information about the UPS battery and internal circuitry and can be initiated either locally or remotely.

Data Archiving/Analysis

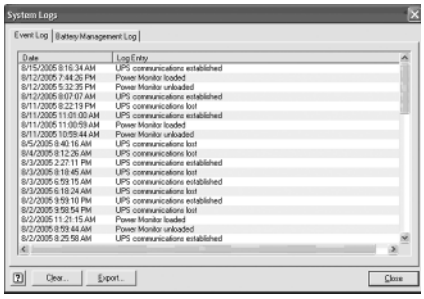


Data Archiving/Analysis

The history data summary displays a cumulative tally of system events that have occurred since LanSafe was installed.

View input, output voltage, output load and battery voltage measurement changes over a period of time in a crisp clear graphic diagram format.

Integration



Integration

- NMS (network management systems, e.g., HP-OpenView, IBM Tivoli, CA-Unicenter, Cisco 2000) via SNMP
- PowerVision network edition for viewing all LanSafe installations on the network
- Other systems via command execution

33

Eaton MultiView

Eaton MultiView

General Description

Windows-based Web browser for monitoring multiple Eaton UPSs via ConnectUPS Web cards and LanSafe v. 5 instances.

Application Focus

- Basic network device monitoring
- Multiple single- or three-phase Eaton UPSs

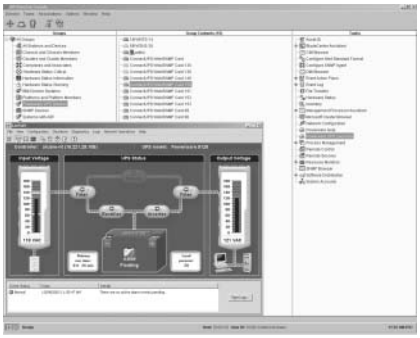
Key Product Features

- Simple monitoring for multiple UPSs connected via ConnectUPS Web/SNMP card and/or LanSafe v. 5
- Status@aGlance™ monitoring capability
- Drill down access to web page details (ConnectUPS Web/SNMP card only)
- Allows user to view multiple web sites simultaneously within a single browser window
- Searches for and automatically adds browser pages of connected ConnectUPS Web/SNMP cards as well as the Status@aGlance monitoring feature from the Eaton LanSafe v. 5 software

Requirements

- Eaton UPS
- Windows operating system
- Eaton connectivity device, e.g., serial card or ConnectUPS Web/SNMP

Eaton Extensions for IBM Director



Eaton Extensions for IBM Director

General Description

Plug-in software for IBM director network management system that allows network system administrators to monitor, diagnose, configure, set alarms, schedule self-tests, check battery, gather inventory information, and control Eaton UPSs network-wide from a single console within IBM director.

Application Focus

- Network management system integration
- Multiple single- or three-phase Eaton UPSs

Key Product Features

- Network monitoring and control software for all UPSs in the network
- UPS control and power management for IBM director system administrators
- Seamless integration of UPSs into the IBM director management console
- UPS Inventory management
- Central log for UPS events

Requirements

Primary computer running IBM director version 5.1.

Integration

Installing the Eaton extensions for IBM director enables the user to easily and automatically integrate Eaton UPSs into the IBM director environment.

Eaton NetWatch

General Description

NetWatch client UPS software enables users to shutdown a server or workstation and acts as a network-monitoring tool through the Eaton ConnectUPS-X, ConnectUPS-BD or BestLink SNMP/WEB Adapter connectivity devices. During an extended power outage, the SNMP/WEB adapter informs all registered NetWatch clients to shut down their respective operating systems, thus preparing them for the removal of AC power.

Application Focus

- Basic network device monitoring
- Multiple single- or three-phase Eaton UPSs

Key Product Features

- Shutdown up to 255 computers dependent upon power from a Eaton UPS
- Popup messaging on Windows to notify UPS on battery conditions

Requirements

- Eaton UPS
- Computer or server running an operating system supported by CoreLogic
- UPS-native or Eaton X-Slot communications supporting serial, USB or SNMP

Shutdown

Computer shutdown is achieved through the use of NetWatch software. The shutdown message is sent in the form of a network broadcast from the ConnectUPS or BestLink connectivity card to all available NetWatch clients on the network. In the event of a power failure all clients are notified to shutdown based upon their local settings.

Eaton Modbus Profiler

General Description

Profiler is a power management and UPS software tool that creates a Modbus register map for a particular Eaton UPS. It reads the available parameters in a UPS and compares them with a list of universally supported Modbus parameters. If the parameter in the UPS and parameter in the master list both exist, then the Profiler program reports the supported parameter.

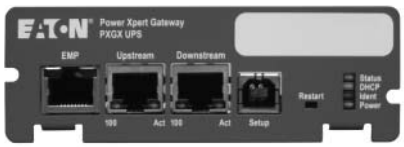
Intelligent Power Software Suite

Intelligent Power Software Suite

General Description

The Intelligent Power® Software Suite CD ships with Eaton UPSs and delivers the latest power monitoring and management software. This software works in conjunction with your UPSs and other power devices to provide a total power solution for your network. Perfect for virtualized environments, the software suite even integrates seamlessly with VMware's vCenter Server™ and Microsoft's SCVMM™.

Power Xpert Gateway UPS Card—Uninterruptible Power Supplies



Power Xpert Gateway UPS Card

General Description

The Power Xpert Gateway UPS Card (PXGX UPS) provides Web-enabled, real-time monitoring of Powerware Uninterruptible Power Supplies (UPS) through standard on-board Web pages, Power Xpert Software or third-party software.

An integral part of the Power Xpert Architecture, which provides end-to-end PowerChain solutions, the PXGX UPS provides a central point to connect distribution products to an Ethernet network.

Features

Information is presented in organized, user-friendly Web pages and includes the following:

- UPS system identification
- Voltage
- Current
- Frequency
- Energy
- Output Power
- Power—full load %
- Battery information
  - History and maintenance
  - Run time remaining
  - Voltage
  - % battery left

For full details on the Power Xpert Gateway UPS card, see **Tab 2**, **Section 2.3**.

33

ConnectUPS Web/ SNMP Products

ConnectUPS Web/SNMP Products

General Description

The Eaton ConnectUPS Web/SNMP product family provides seamless Eaton UPS integration into the Ethernet network and the Internet. The built-in Web server allows the users to monitor and manage the UPSs through the ConnectUPS via a standard Web browser.

HTTP, SNMP, SMTP, WAP, Telnet compatibility and a console port enable dynamic and versatile support for a large variety of system configurations.

When used in conjunction with NetWatch client software, the ConnectUPS products also provide graceful shutdown of operating systems of up to 255 computers powered by a single UPS.

Application Focus

- Ethernet, Internet connectivity device
- Graceful shutdown functionality when used in conjunction with NetWatch power management software
- Integration to standard SNMP, HTTP, WAP, SMTP compliant applications

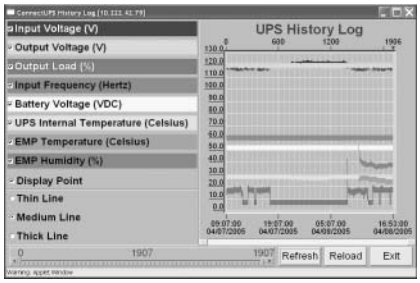
Key Product Features

- Supports real-time monitoring and control of UPSs across the network
- Enables monitoring and control via Web browsers, SNMP-compliant network management systems or power management software
- Delivers alarm notifications through e-mail, to mobile phones, pagers, or SNMP traps
- Enables rapid identification and analysis of critical power conditions
- Logs and graphs detailed historical data to analyze trends
- Uses standard communication protocols on 10 Mb and 100 Mb Ethernet networks
- Performs as a switching hub for three 10/100Mbps connections (ConnectUPS-X)
- Enables orderly shutdown and restart of remote UPSs
- Supports optional Eaton environmental monitoring probe (EMP) for temperature, humidity and other contact sensor monitoring, management
- User Interface support for local languages (English, Chinese, Spanish, French, German, Italian, other
- Interworks with optional Eaton probe to monitor environmental conditions: temperature and humidity at remote sites
- Supports in-service installation and upgrades without interrupting critical loads (most UPS models)

Event Notification

ConnectUPS products send real-time alert notifications to four designated recipients via e-mail, PCS mobile phone, or pager, and via SNMP traps to an NMS or network messaging to Eaton NetWatch software. Each recipient has the option of receiving real-time event messages, daily status reports based on criticality, containing data and event log files, or a combination of routine reports and event notifications.

Monitoring



Monitoring

Gain up-to-the-minute assurance that computing and communication.

systems are receiving the continuous, clean power they demand. Through easily navigable Web pages, network administrators can check system status and view critical meter information, such as input and output voltage, UPS load, battery voltage and condition, at any time.

ConnectUPS-X, ConnectUPS-BD, and ConnectUPS-E products have built-in data and event logs that track and record specific power-related occurrences over time, at user-defined increments as fine as one-minute intervals.

Communication—Input/Output

- 10/100 Ethernet
- 3-port switching hub (ConnectUPS-X model only)
- HTTP
- SNMP
- SMTP
- WAP
- Telnet

Management

From a Web browser or NMS, which may be hundreds or thousands of miles away, a system administrator can shut down or reboot a remote UPS, perform remote UPS battery tests, and set up scheduled shutdowns of UPSs and associated servers.

The ability to shut down or restart systems without a site visit dramatically reduces field service expense and response time. Scheduled shutdowns can be devised to conserve power or tighten security during specific time periods, such as evenings or weekends.

Integration

- Network management systems (NMS) via SNMP
- Mobile phones via WAP
- Optional EMP (environmental monitoring probe) for temperature and humidity monitoring

Load Segment Control

Turns separate load segments (receptacle groups) on and off at predefined times, or automatically during power outage events. In addition load segments can be turned off and back on again manually over the network or locally.

Information Tables

Table 33.4-1. Technical Specifications

Model	ConnectUPS-X	ConnectUPS-BD	ConnectUPS-E	BestLink
Description	Card providing remote monitoring and control of Eaton UPSs			
Protocol support	http, SNMP, TFTP, Telnet, BootP, DHCP, WAP, ARP, RARP			
PS slot type	X-Slot	BestDock	External	External
Network support	Ethernet 10/100Base-T			
Switching hub	Yes (three 10/100Base-T connections)		No	
Temperature and humidity monitoring	Yes			
UPS compatibility	See chart below			
Supported MIB	UPS standard MIB RFC-1628, Eaton MIB, MIB II, 2003			BestLink MIB
?/S supported or shutdown	Microsoft Windows 9X, ME, 2000/NT and XP, Various UNIX (including Linux) Versions, Novell NetWare, Macintosh			
Operating temperature	0–40°C			
Operating humidity	10–80%, noncondensing			
Power input	9 Vdc unregulated			12V unregulated
Power consumption	3.5 watts			
Dimensions in inches (mm)	4.70 x 4.50 x 1.50 (119.4 x 114.3 x 38.1)	5.30 x 3.20 x 1.30 (134.6 x 81.3 x 33.0)	5.30 x 3.40 x 1.10 (134.6 x 86.4 x 28.00)	5.30 x 3.40 x 1.10 (134.6 x 86.4 x 28.0)
Weight	6 oz.	4 oz.	6 oz.	6 oz.
Regulatory	FCC Class B			

Table 33.4-2. ConnectUPS/Eaton UPS Compatibility

Model	Part Number	Eaton UPSs	Environmental Monitoring Probe
X-Slot ConnectUPS-X Kit	116750221-001	5115 RM, 5125, 9125, 9320, 9330, 9335, 9340, and 9390 via expansion chassis: 9120, 9170+, 9315	Yes
Best dock ConnectUPS-BD kit	116750222-001	9120 and 9170+	Yes
ConnectUPS-E kit	116750223-001	9150 and 9305	Yes
Best Link Web/SNMP Kit	116750225-001	FERRUPS	—

33

Relay Products

Relay Products

General Description

Eaton relay interface cards enable automatic shutdown and network monitoring of Eaton UPS system status through a connected computer.

The relay interface cards are available in two models, the X-Slot version and BestDock version. Both are dedicated adapters that provide the essential dry-contact interface between an Eaton UPS and any relay-connected computer, including the IBM AS/400, as well as a variety of industrial applications.

Application Focus

- Basic network device monitoring
- Multiple single- or three-phase Eaton UPSs
- Single UPS and parallel systems (single/three phase UPS)

Key Product Features

- Simple integration with building and security alarm systems
- Compatibility with simple shutdown methods, i.e., IBM AS/400 and Windows UPS service
- Option available for all UPS models excluding 3110,3115, 5115 (tower) models
- Isolated Form-C relay contacts
- Compatibility with simple shutdown methods, i.e., IBM AS/400 and Windows UPS service

Requirements

- Compatible Eaton UPS
- IBM AS/400 cable to connect between DB-15 port on card to computer

Monitoring

Monitoring is accomplished though the use Eaton relay products that provide alarm information via Form-C dry contacts that are connected the customer alarm panel.

Management/Shutdown

IBM AS/400 computer shutdown is achieved by using the computer port on the Eaton relay cards for use with all X-Slot compatible UPS models along with the appropriate cable. For information on AS/400 cables available for all relay products please refer to either the Eaton single- or three-phase UPS price lists.

Integration

Simple integration with building management systems or building alarm systems can be achieved by connecting the Form-C dry contact outputs from the relay product to the digital inputs on the I/O controller provided by the BMS or security alarm vendor.

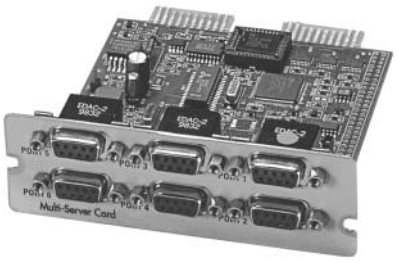
Ordering Information

Table 33.4-3. Ordering Information

Product Name	Part Number
Relay card (X-Slot)	1018460
Relay card (BD)	1014018
Relay interface adapter	103001185-002
Industrial relay card	103003055

Serial Protocol Products

Multi-Server Card



Multi-Server Card

General Description

The multi-server card is a power quality connectivity product designed to enable multiple devices connected to a single UPS system to be managed and controlled independently.

This multi-server card is designed to function with any Eaton UPS that has an X-Slot communication device, and is also compatible with Eaton expansion chassis. The multi-server card has six serial ports, three of which correspond with the multiple load segments of your Eaton UPS. By using multiple serial cables and LanSafe software, you can perform simultaneously yet independent monitoring and control of up to six servers with a mixture of operating systems.

Application Focus

Single UPS module and parallel systems (single/three-phase UPS)

Key Product Features

- Multiple serial ports provide greater power management control and flexible monitoring
- LanSafe compatibility provides simultaneous monitoring of computer loads
- Allows user to configure each server to provide a graceful shutdown at the optimum time desired
- Works with multiple operating systems
- Independent control of serial ports gives load shedding capability for maximum runtime of critical loads
- Simultaneously provides RS-232 monitoring and relay output monitoring
- Plug and Play (PnP) protocol for easy configuration

Monitoring

Monitoring is achieved through RS-232 serial communications between the connectivity device and the host computer running LanSafe.

Table 33.4-4. Technical Specifications—Dimensions in Inches (mm)

Part Number	05146447-5502
Description	X-Slot card with multiple Serial connections for serial communications with Eaton UPS
UPS compatibility	PW 5125, PW 9125, PW 9330, PW 9340, expansion chassis
Serial cable	PN 124102022-002
O/S supported for shutdown	All O/S supported by Eaton Lan Safe operating temperature 0–40°C
Operating humidity	10–80% noncondensing
Power input	9 Vdc unregulated
Power consumption	1.5 Walls
L x W x H	4.7 x 4.5 x 1.5 (120 x 114 x .39)
Weight	7 oz.
Regulatory	FCC Class A

33

Eaton Modbus Card

Eaton Modbus Card

General Description

The Eaton Modbus Card is an X-Slot Eaton UPS connectivity device that provides continuous, reliable and accurate remote monitoring of a Eaton UPS system through a building management system (BMS) or industrial automation system (IAS).

The card provides the means to integrate data from the Eaton UPS into the user-provided management system using Modicon®, Modbus RTU protocol. Key power quality and UPS status information may be monitored in real-time to aid in the management of the UPS and notification of potential power problems.

33

Application Focus

- Single UPS module and parallel systems (single/three-phase UPS)
- BMS/IAS integration

Key Product Features

- Real-time monitoring of power conditions through building management systems (BMS)
- Supports Modbus RTU/Jbus protocol
- Seamless data integration via included Profiler software package
- Flexible input/output communication methods: RS-232 and RS-485 multi-drop (network)
- Optically isolated communication ports
- User-selectable communication topologies
- Supports wide range of UPSs via native Eaton X-Slot UPSs or via Eaton expansion chassis
- Eaton Modbus profiler utility provides exact UPS parameter list (register map) for BMS data integration
- Supports both commands 02 (read input status) and 04 (read input register) from a BMS query
- Compatible with common BMS platforms such as: Siemens Apogee, JCI Metasys, Honeywell EBI, Liebert SiteScan, and Invensys Climate Controls

Requirements

Eaton expansion chassis required for UPS models without communication slots.

Note: Modbus Card is included with the expansion chassis as standard.

Integration

UPS data is easily integrated into the building management system by connecting the UPS into the RS-485 power and environmental device network which in turn gets converted to Ethernet for easy access by the BMS host computer running the management software.

Table 33.4-5. Ordering Information

Product Name	Part Number
Modbus Card	103002510-5501

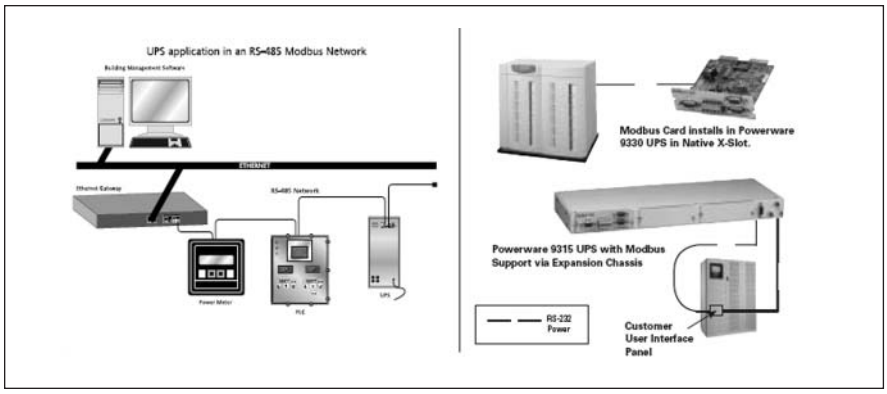


Figure 33.4-1. Typical Configurations and Installation Methods

Table 33.4-6. Technical Data and Specifications

Part Number	103002510-5501		
Description	X-Slot card providing integration with Modbus network and monitoring of associated UPS through building management system (BMS)		
Modbus command support	Read input status (alarms and status points, function 02) read input register (meters, function 04)		
Profiler	Automatically generates Modbus register map for each UPS (Windows 32 application)		
Configuration	Via VT-100 terminal emulation through DB-9 port		
Baud rate	Selectable 1200 to 19.2 k		
Slave address	Selectable 1 to 247		
Network connections	RS-485 through isolated terminal block or DB-9 port RS-232 through DB-9 port		
Communications topology	Selectable two-wire or four-wire		
Additional hardware features	Selectable termination resistance Selectable polarity resistance		
UPS compatibility via native X-Slot	Eaton 5125, 9125, 9170+, 9330, 9340, 9390		
UPS compatibility via expansion chassis	Eaton Prestige 9	Eaton 5115	Eaton 9315 Hot Sync parallel redundant module
	Eaton Plus 12, 18, 36	Eaton 9120	Eaton 9315 Hot Sync parallel capacity UPM;
	Eaton 9315 reverse transfer module	Eaton 9170+	Eaton 9315 Hot Sync parallel capacity SBM
Operating temperature	10° to 40°C		
Operating humidity	20–80% relative humidity (noncondensing)		
Power input	9 Vdc unregulated		
Power consumption	1.5 Watts		
Dimensions in inches (mm)	4.70 L x 4.50 W x 1.50 H (119.4 L x 114.3 W x 38.1 H)		
Weight	7 oz		
Regulatory	FCC Class B		

Expansion Chassis

Expansion Chassis

General Description

The expansion chassis is a three-slot power quality peripheral device that expands communication methods for a UPS through its support for X-Slot cards. It comes pre-configured with a card that conforms to the Modicon, Modbus protocol.

Application Focus

- Single UPS module and parallel systems (single/three-phase UPS)

Key Product Features

- Creates wide array of communication options for UPSs
- Primary focus on Eaton 9315 UPS models to enable use of new X-Slot communication cards
- Acts as the framework for protocol conversion via compatible X-Slot cards to: Modbus; SNMP; HTTP
- Built-in Modbus card provides integration of UPS information into building management systems
- Compatible with X-Slot cards: Modbus card (one included); ConnectUPS-X SNMP/Web adapter; ConnectUPS-M SNMP module; single port serial card; multi-server card
- Flexible mounting options
- Redundant power inputs

Integration

The expansion chassis and associated cards effectively act as a protocol converter easily integrating the Eaton UPS into open architecture management systems. This device may be placed on or close to the associated UPS system using the included mounting feet. The kit includes brackets for rack and wall mounting.

Two additional slots are available for use with any of the following cards:

- A ConnectUPS™-X SNMP/Web adapter—monitor via SNMP or the Web
- A ConnectUPS-M SNMP module—monitor via simple network management protocol (SNMP)
- A single port serial card—connect an additional server for monitoring and graceful shutdown
- A multi-server card—connect up to three servers for monitoring and graceful shutdown, supports load segment control and RS-232 signals for low battery and AC fail
- A Modbus card—connect to another Modbus network, monitor via BMS

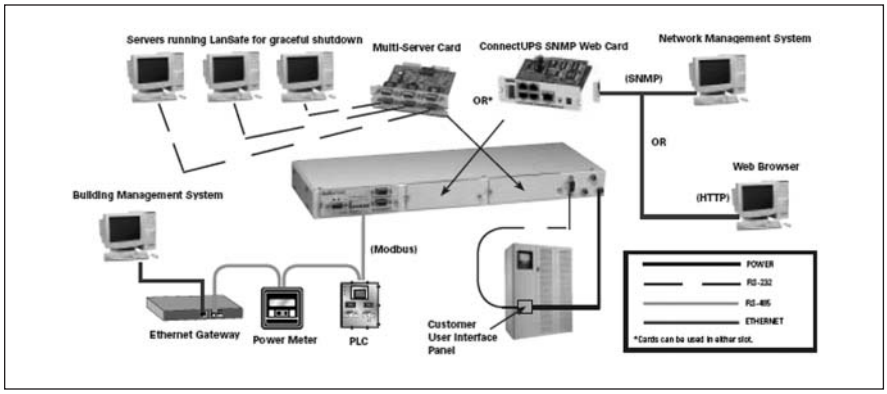


Figure 33.4-2. Typical Configuration

Table 33.4-7. Technical Data

Part Number	**05147063**
Description	Adds Modbus card plus two additional slots for X-Slot communication cards to supported UPSs
Included card	Modbus card
Optional cards	ConnectUPS-Web/SNMP-X xHub card
	ConnectUPS-M SNMP module
	Single port serial card
	Multi-server card
	Additional Modbus card
Communication with UPS	DB-9 via Included serial cable
UPS compatibility	Eaton 5115; Eaton 5125; Eaton 9120; Eaton 9125; Eaton 9155; Eaton 9170+; Eaton Prestige 9; Eaton Plus 12, 18, 36; Eaton 9315 Reverse Transfer Module; Eaton 9315 Hot Sync Parallel Redundant Module; Eaton 9315 Hot Sync Parallel Capacity UPM; Eaton 9315 Hot Sync Parallel Capacity SBM; Eaton 9320; Eaton 9335; Eaton 9390
Mounting	Stand-alone (ft), rack (19 inches, 483 mm), or wall mount
Operating temperature	10° to 40°C
Operating humidity	20 to 80% relative humidity (noncondensing)
Power input	Switchable 230/120 Vac, 50/60 Hz (via included transformer)
Power consumption	6 watts maximum
Dimensions in inches (mm)	18.00 x 1.75 x 6.00 (457.2 x 44.4 x 152.4)
Weight	6 lbs (including 1 lb for power supply)
Regulatory	FCC Class B

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Power Distribution Unit

Power Distribution Unit

General Description

Eaton's line of three-phase power distribution units (PDUs) provide robust power distribution that can be easily tailored to meet the design specifications of any facility or data center. The PDU offers ratings from 50 to 300 kVA and K13 and K20 transformers, including TP-1 high efficiency versions. Packed with Eaton's advanced Energy Management System (EMS), understanding your facility's power distribution and characteristics has never been easier.

Features

Standard Options

- Panelboards with 400A panel main breaker
- 225A frame or 400A frame (on >150 kVA) additional subfeed breakers
- Branch circuit monitoring up to 100A per branch CT
- See-through Plexiglas doors
- Input and ground compression lug provisions
- Air skirts
- Dual input with manual Kirk key interlock
- Lockout breaker tabs
- Load bank test lugs

Accessibility and Serviceability

- Ample cabling space between panelboards and for subfeed breakers
- Standard top and bottom cable access for more flexible installation options
- Front access for operation and general service requirements
- Easily removable side and rear covers with captive hardware
- Front access control panel for all standard communication expansion and maintenance

Aesthetics and Flexibility

- Line and Match design with other Eaton power quality products gives a clean professional appearance to facilities and data centers
- Improved paint and surface texture for easy cleaning and maintenance
- Side car options to expand distribution capacity

Safety and Quality

- Protective trim panels cover panelboard bus/breakers/wiring from accidental contact
- Substantial partitions separate Low/High/Control voltage sections for safer servicing
- UL/CSA approved 60950
- Supported by Eaton's extensive network of over 240 field technicians for fast reliable service

Monitoring and Connectivity

- Eaton's Energy Management System (EMS) provides state-of-the-art monitoring and alarming provisions
- Access information via 8 x 40 character on-unit display or remotely via your network through the Power Xpert Gateway PDP card
- Stores consumption trends for up to 24 months
- 60A and 100A branch breaker CTs available
- Time-stamped metering
- Custom alarm settings

Power Xpert Gateway PDP card

The Power Xpert Gateway PDP card provides connectivity allowing the Power Distribution Unit to seamlessly communicate via an Ethernet network. With its built-in Web server, the Power Xpert Gateway PDP card provides PDU information remotely, without additional software.

Technical Data

Table 33.5-1. Technical Specifications ①

Category	Up to 150 kVA	200–300 kVA
Electrical Characteristics		
kVA	50/75/100/125/150	200/225/300
Input ratings	208/380/400/415/480/600V—three-phase, three-wire + ground (single and dual input)	
Output ratings	208V– three-phase, four-wire + ground	
Frequency	60 Hz	
Transformer type	Copper/double shielding/Class R (220°C) insulation	
Transformer characteristics	150°C temp. rise/K13 (standard) and K20 (optional)/standard and TP-1 efficiency	
Transformer compensation taps	(4) 2–1/2% FCBN / (2) 2–1/2% FCAN	
Neutral rating	200%	
Power Distribution		
Panelboards	Up to six 42-pole panels—two panels in main cabinet and four panels in sidecars ②	
Panelboard options	Eaton (bolt-on or plug-on) or Square D panels (225A and 400A main breakers)	
Subfeed breakers	Up to eight 225A frame	Up to 12 225A Frame ②③ Up to five 400A Frame ② Up to three 600A Frame ②
Branch breaker	Factory installed branch circuit breaker ④	
Additional subfeed breakers	Up to two 225A frame	Up to two 225A frame or one 400A frame
Sidecars	Up to two front or side facing sidecars	
Sidecar options	Two 42-pole panels or four 225A frame subfeeds	
Dimensions		
Main cabinet	39.00 (990.6) W x 35.00 (889.0) D x 80.00 (2032.0) H	44.00 (1117.6) W x 35.00 (889.0) D x 80.00 (2032.0) H
Front facing sidecar	24.00 (609.6) W x 35.00 (889.0) D x 80.00 (2032.0) H	
Side facing sidecar	9.50 (241.3) W x 35.00 (889.0) D x 80.00 (2032.0) H	
Standards		
Standards	NEMA, UL 60950, CSA 60950	

① Due to continuing improvements, specifications are subject to change without notice.
② Please see sales configurator for additional information.
③ When using optional PRL3 chassis, a maximum of eight 225A frame breakers can be installed.
④ Branch breaker schedule required at time of order.

Options

- Branch circuit monitoring
- Subfeed breaker monitoring
- High kAIC input, panel and subfeed breakers
- Surge protection device (100 or 200 kA) UL 1449
- Lightning arrestor
- Transient suppression plate
- Isolated ground (standard)
- Clear plexiglas doors
- Load bank test lugs (standard)
- Lockout breaker tabs
- Air skirts
- Floor stands (12, 18, 24, 30, 36 and 48 inches)
- High voltage input junction box
- Low voltage control junction box
- Input and ground compression lugs
- Dual input with Kirk key interlock

Connectivity

- Modbus RTU (RS-232/RS-485)
- Power Xpert Gateway Card—PXGX1000 (Modbus TCP/IP, SNMP, Ethernet)

General

- Natural convection cooling
- All swivel casters
- System level metering included
- 8 x 40 character LCD display
- Top and bottom entry
- Protective trim panels
- Cable management for input and panel wiring
- Two X-Slots for communication

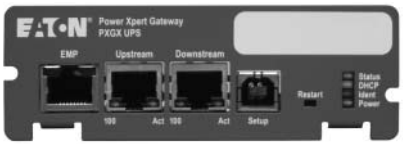
Control

- Local EPO
- REPO provisions
- Four building alarm inputs (NO or NC)

Optional Custom Shutdowns on Alarms

- Phase rotation/loss
- Ground/neutral overcurrent
- Transformer overtemperature
- Output overload
- Input voltage out of tolerance
- Frequency out of tolerance

Power Xpert Gateway PDP Card



Power Xpert Gateway PDP Card

General Description

The Power Xpert Gateway PDP card provides connectivity, allowing Eaton, PDUs, RPPs, PDRs and RPMs to seamlessly communicate via an Ethernet network. With its built-in Web server, the Power Xpert Gateway PDP card provides power distribution products' information remotely, without additional software.

Features, Benefits and Functions

The Power Xpert Gateway Power Distribution Products Card (PXGXPDP) provides Web-enabled, real-time monitoring of Powerware Power Distribution Units (PDUs), Rack Power Modules (RPM) and Powerware RPPs through standard on-board Web pages, Power Xpert Software or third-party software.

An integral part of the Power Xpert Architecture, which provides end-to-end PowerChain solutions, the PXGX PDP provides a central point to connect distribution products to an Ethernet network. Information is presented in organized, user-friendly Web pages and include the following:

- PDU system identification
- Graphic panel layouts
- Voltage
- Current
- Frequency
- Energy
- Power
- THD (current and voltage)

For detailed information on the PXGXPDP card, refer to **Tab 2**, **Section 2.3**.

Energy Management System

Monitored Parameters

- Input voltage (L-L and L-N)
- Input current (A, B and C phases)
- Output voltage (L-L and L-N)
- Output current (A, B and C phases)
- Output neutral current
- System ground current
- kVA, kW, Hz
- Monthly, yearly, total kW
- Input voltage THD (all phases)
- Output voltage THD (all phases)
- Power factor (lead/lag indicator)
- Output current % (A, B and C phases)

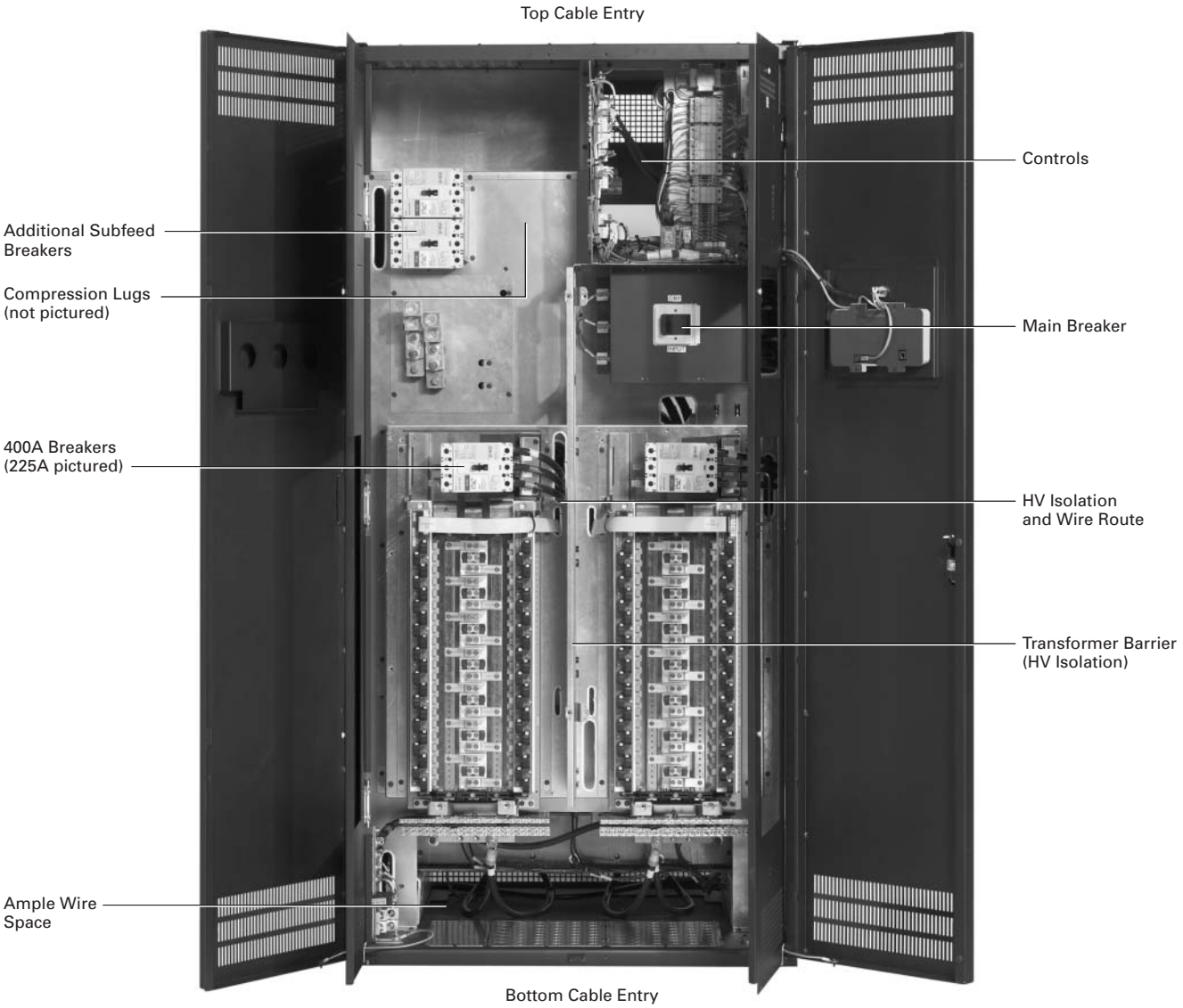
Load Profiling

Captures highest and lowest reading on monthly basis with trend information over the last 24 months

- Input/output voltage
- Input/output current
- Input/output frequency
- Input/output power factor
- Input/output kVA
- Input/output voltage THD
- Ground and neutral current

Warnings/Alarms

- Transformer over-temp and shutdown
- Input/output overvoltage and undervoltage
- Input/output overfrequency and underfrequency
- Input/output phase rotation
- Input/output voltage and current THD
- Output overload (three levels)
- Remote EPO
- Building alarms (two programmable)
- Summary alarm
- Communication fault



Power Distribution Unit Features

50–150 kVA PDU

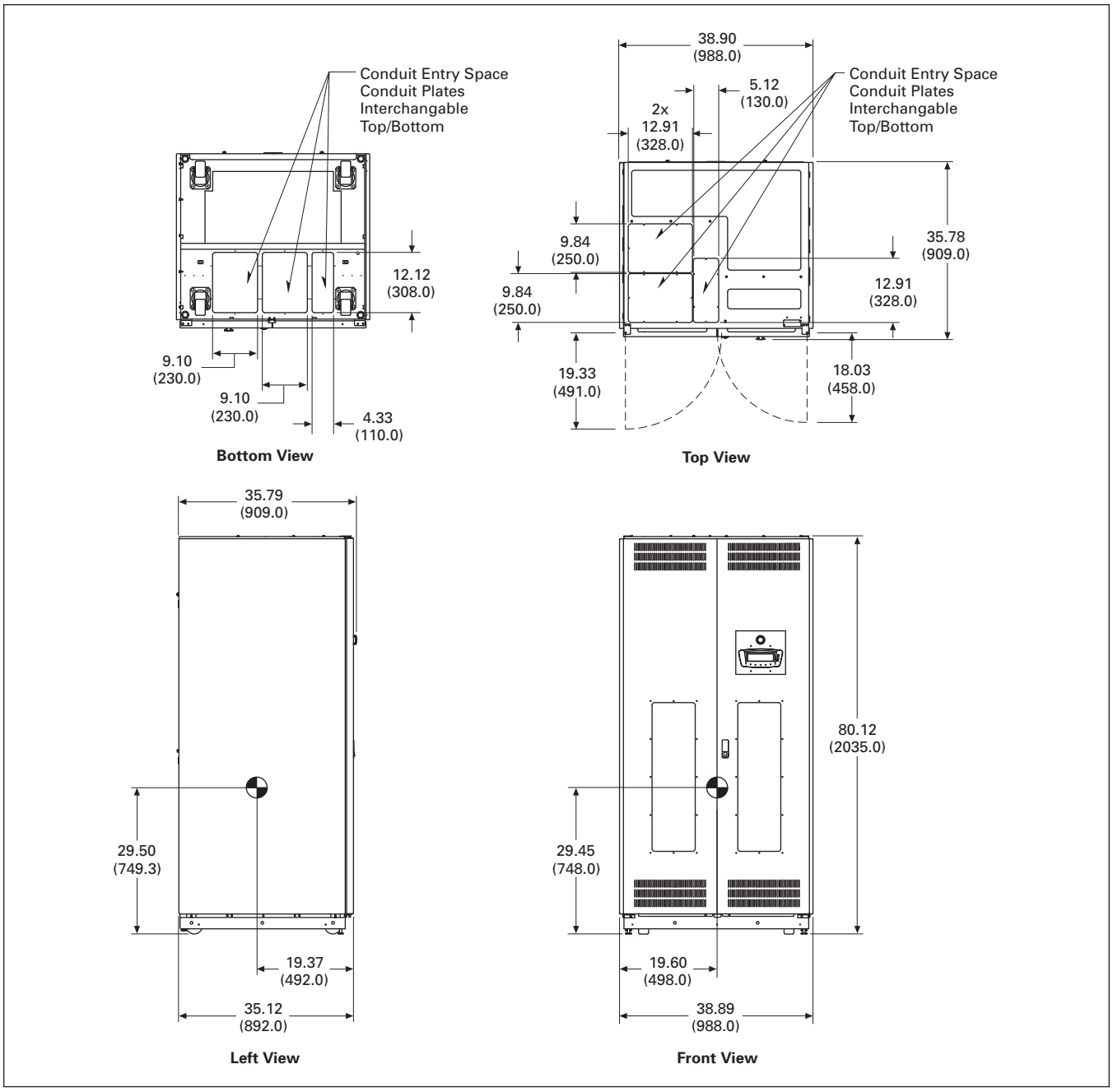


Figure 33.5-1. 50–150 kVA PDU—Main Cabinet—Dimensions in Inches (mm)

Notes:

1. Weight: 2786 lbs (1264 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

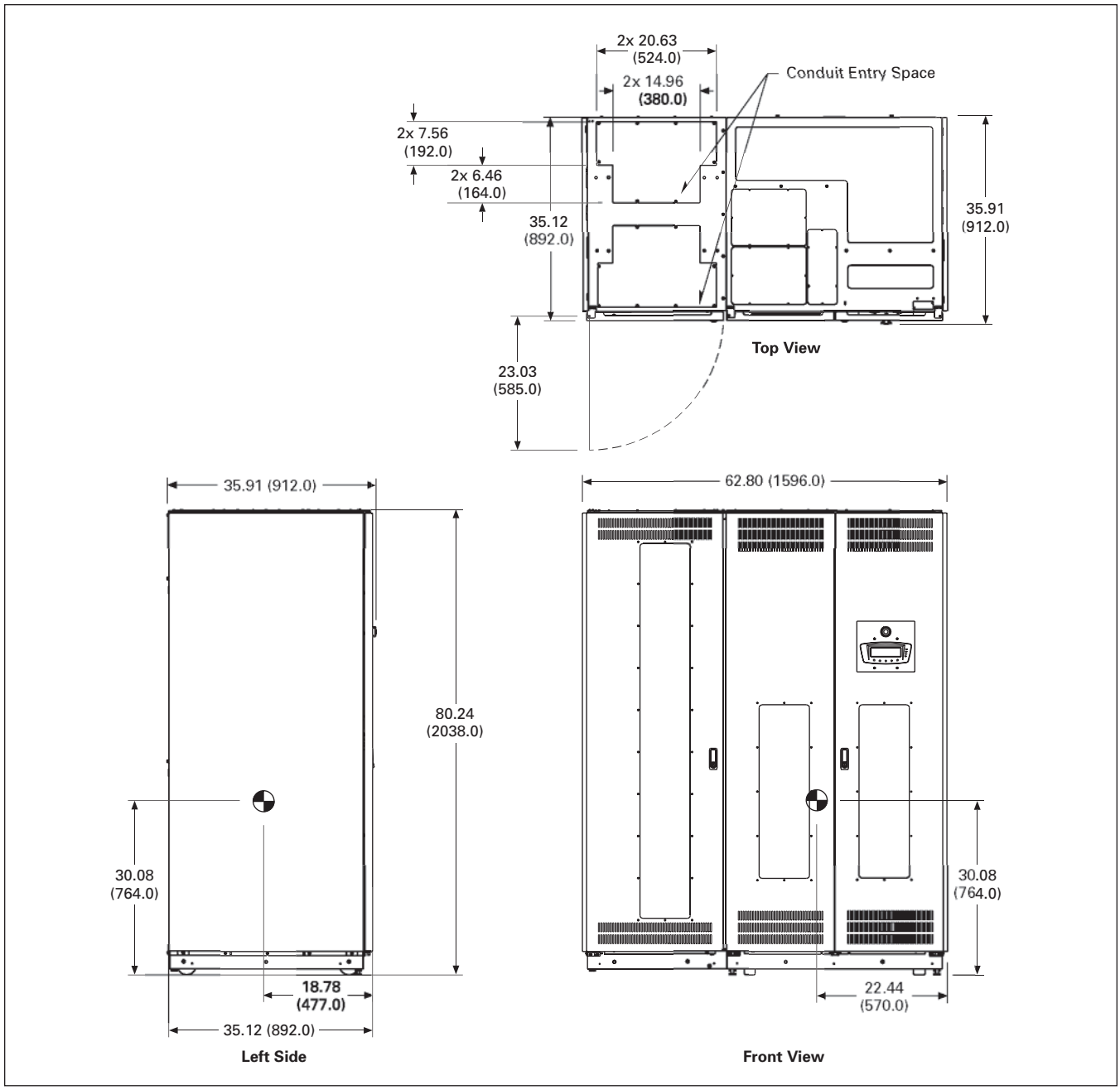


Figure 33.5-2. 50–150 kVA PDU—Main Cabinet—Left Front Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3062 lbs (1389 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

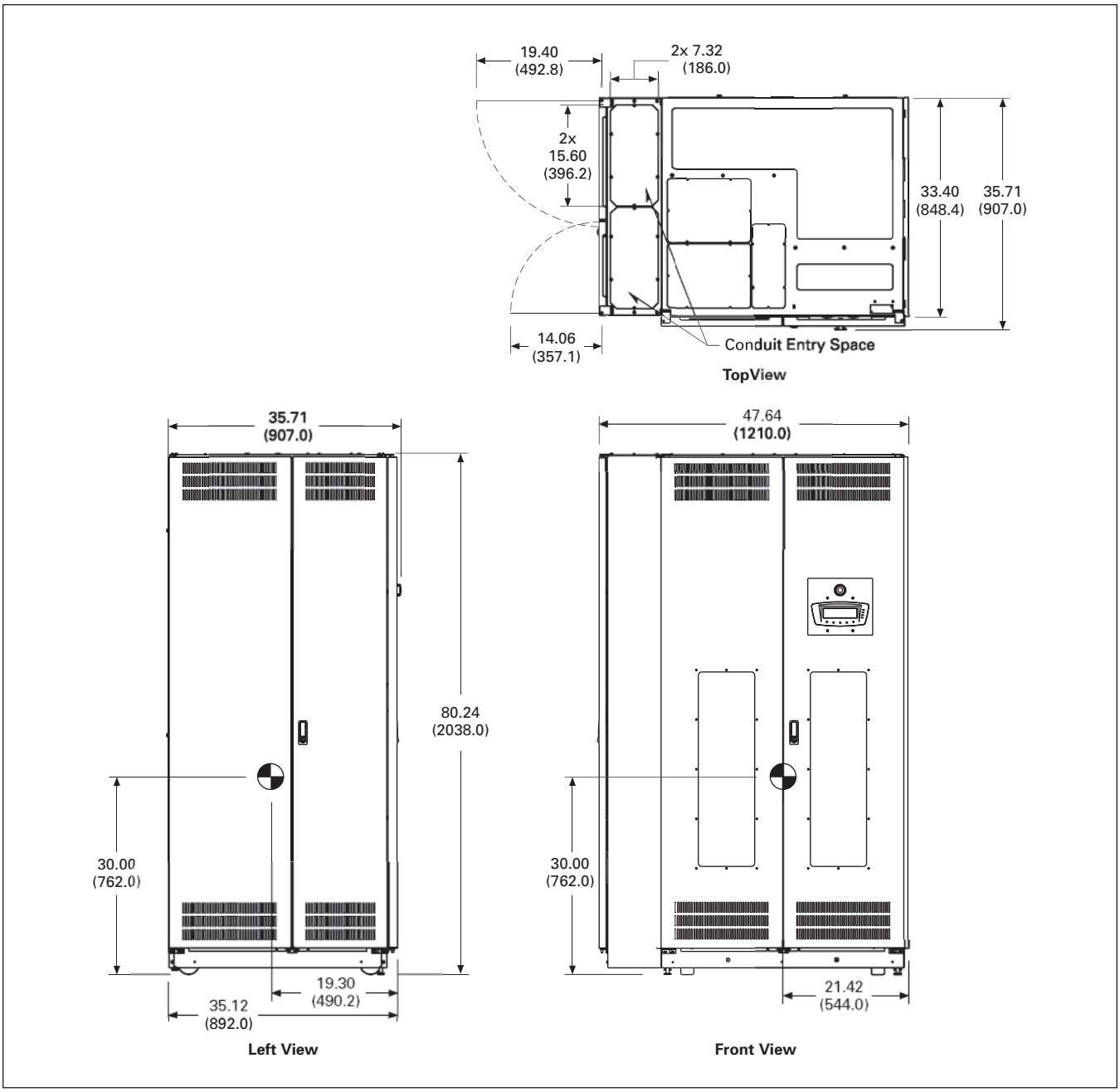


Figure 33.5-3. 50–150 kVA PDU—Main Cabinet—Left Side Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3038 lbs (1378 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

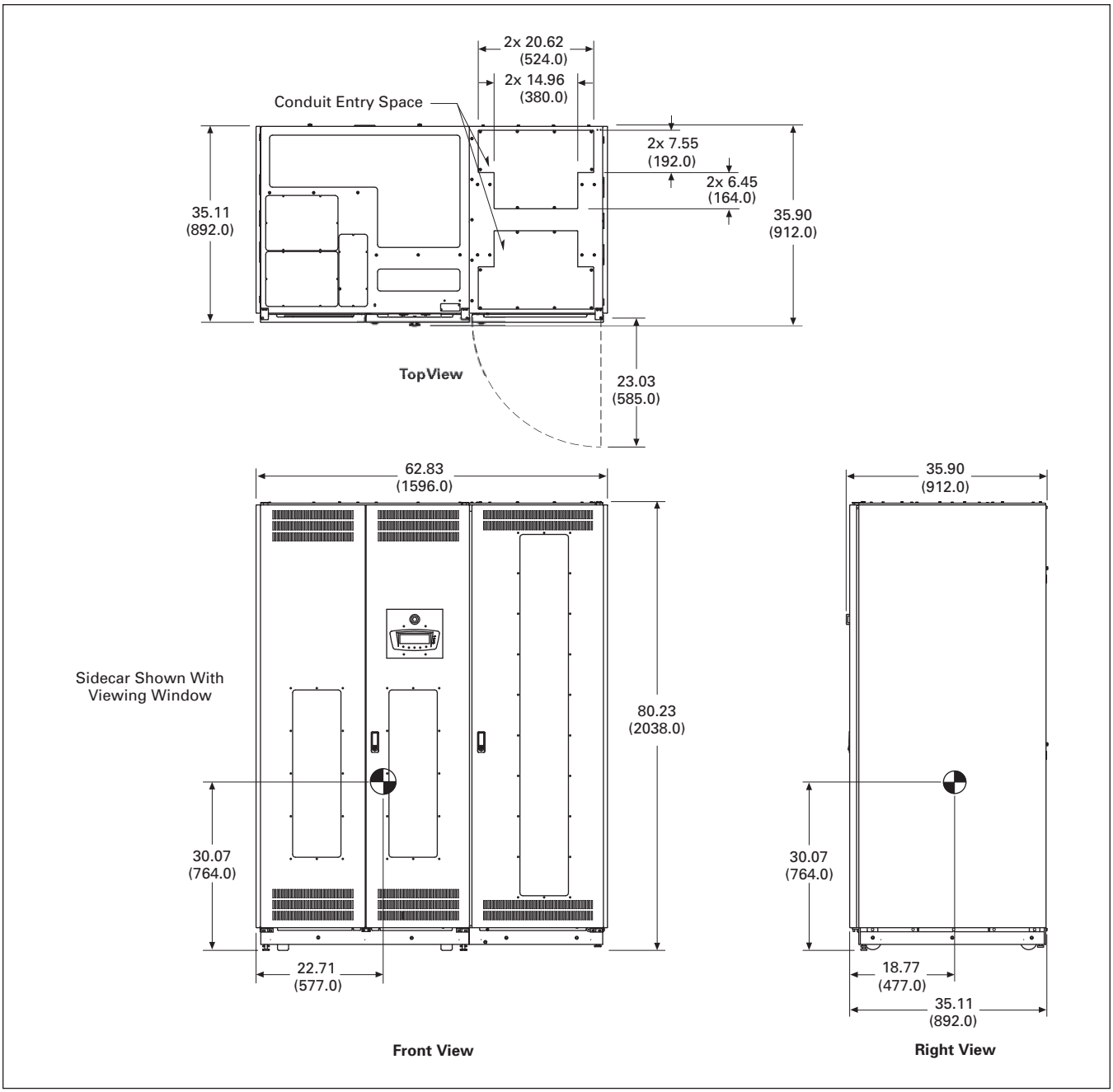


Figure 33.5-4. 50–150 kVA PDU—Main Cabinet—Right Front Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3062 lbs (1389 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

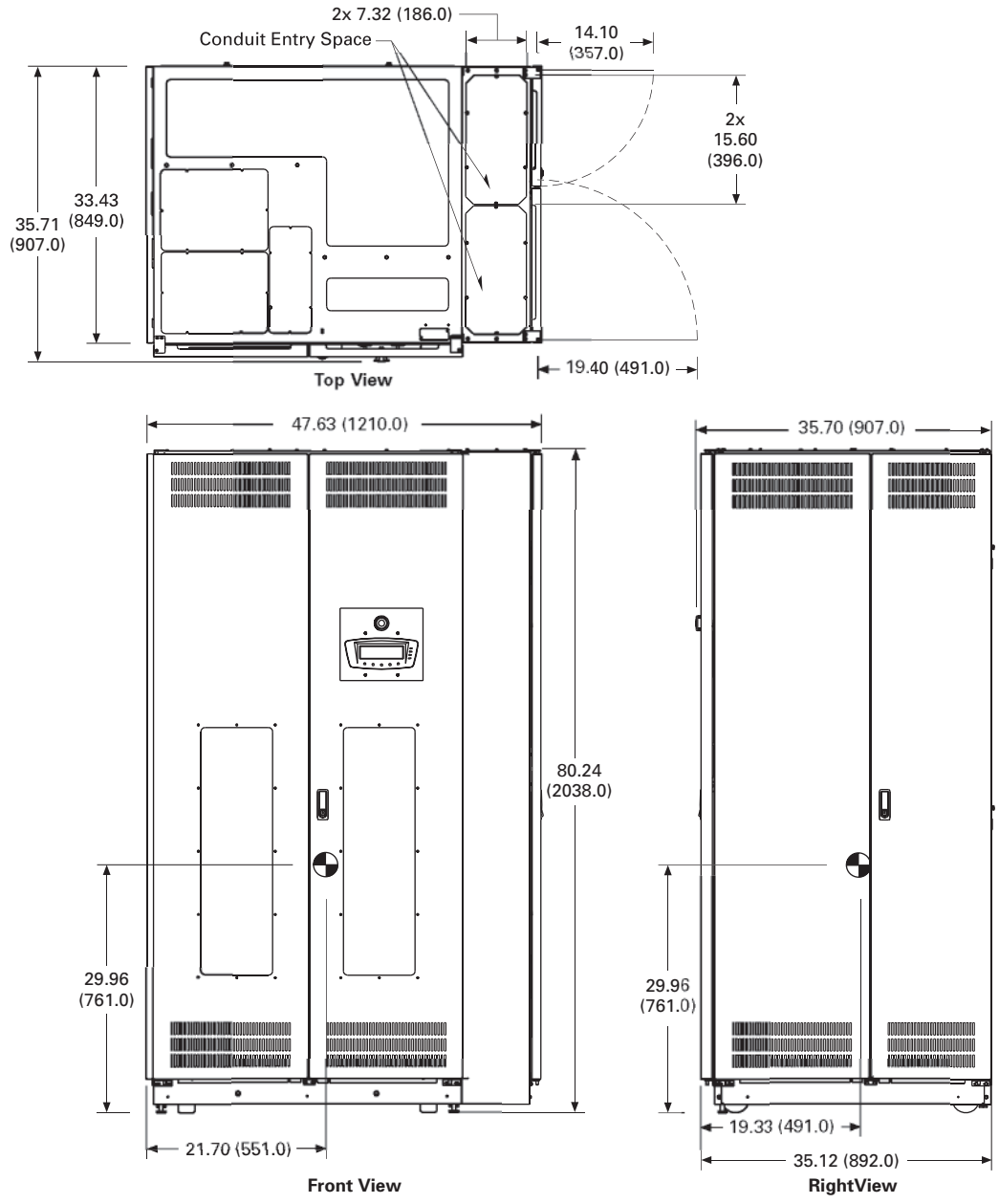


Figure 33.5-5. 50–150 kVA PDU—Main Cabinet—Right Side Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3038 lbs (1378 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

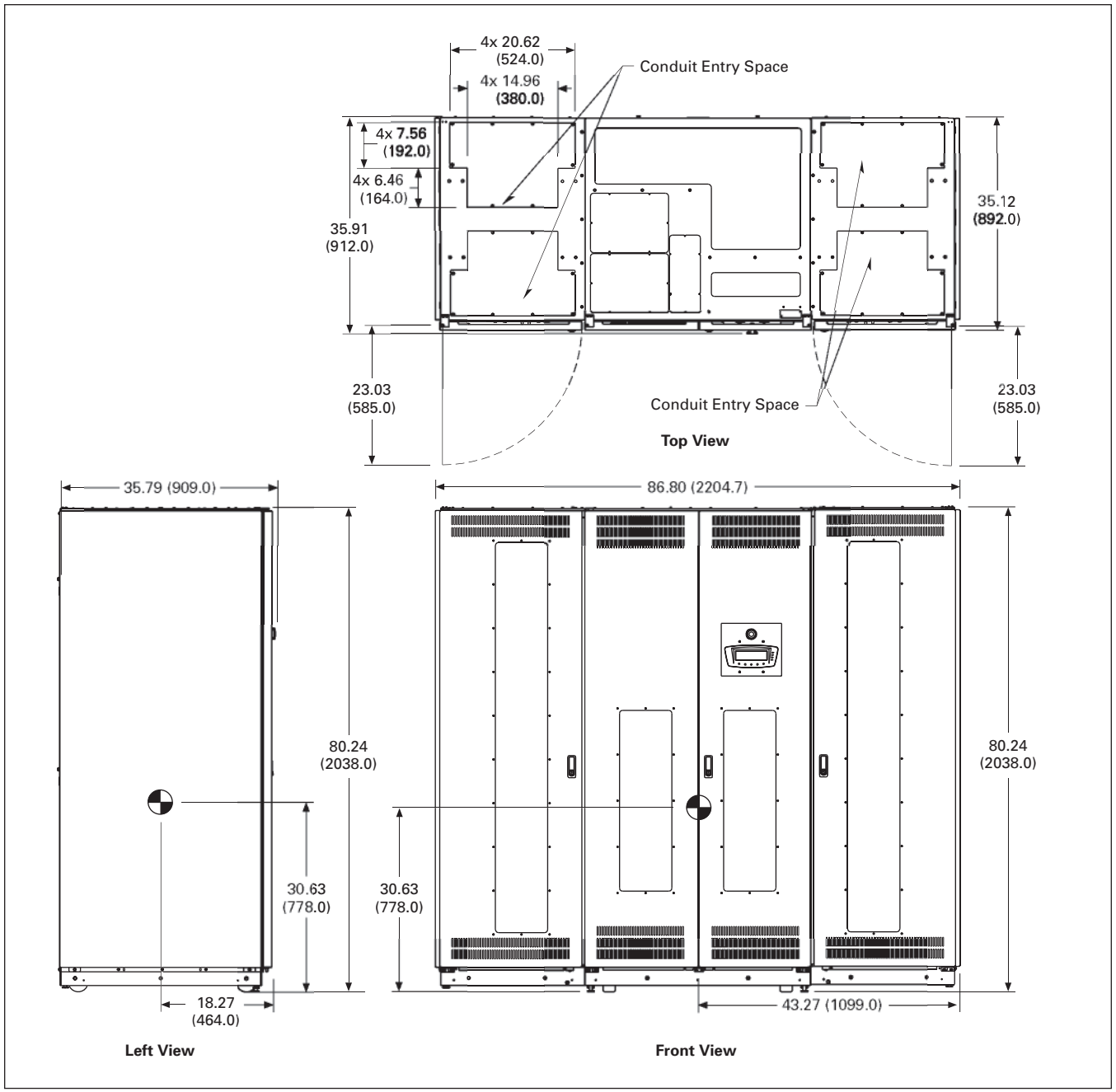


Figure 33.5-6. 50–150 kVA PDU—Main Cabinet—Two Front Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3338 lbs (1514 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

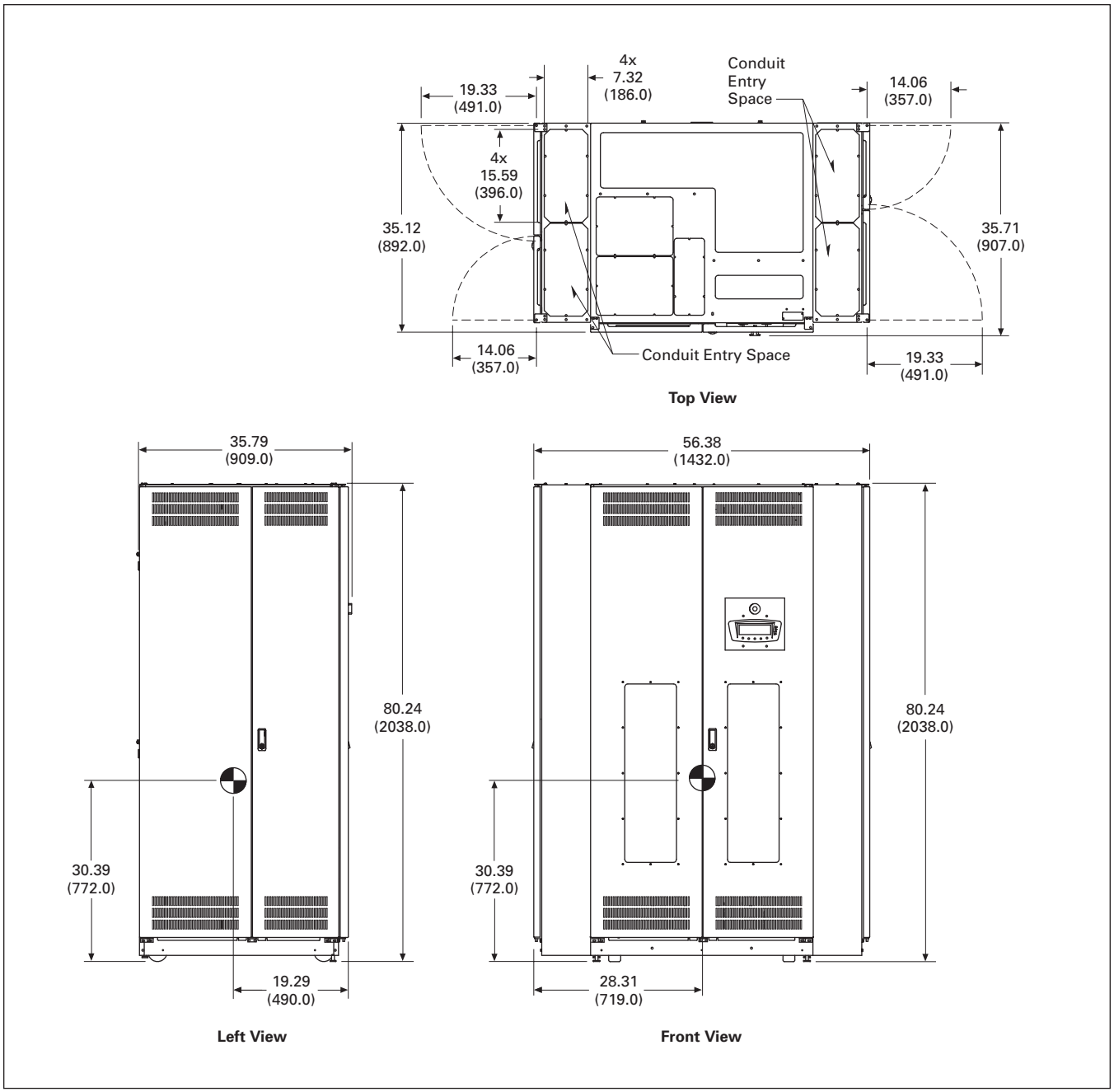


Figure 33.5-7. 50–150 kVA PDU—Main Cabinet—Two Side Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3289 lbs (1492 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

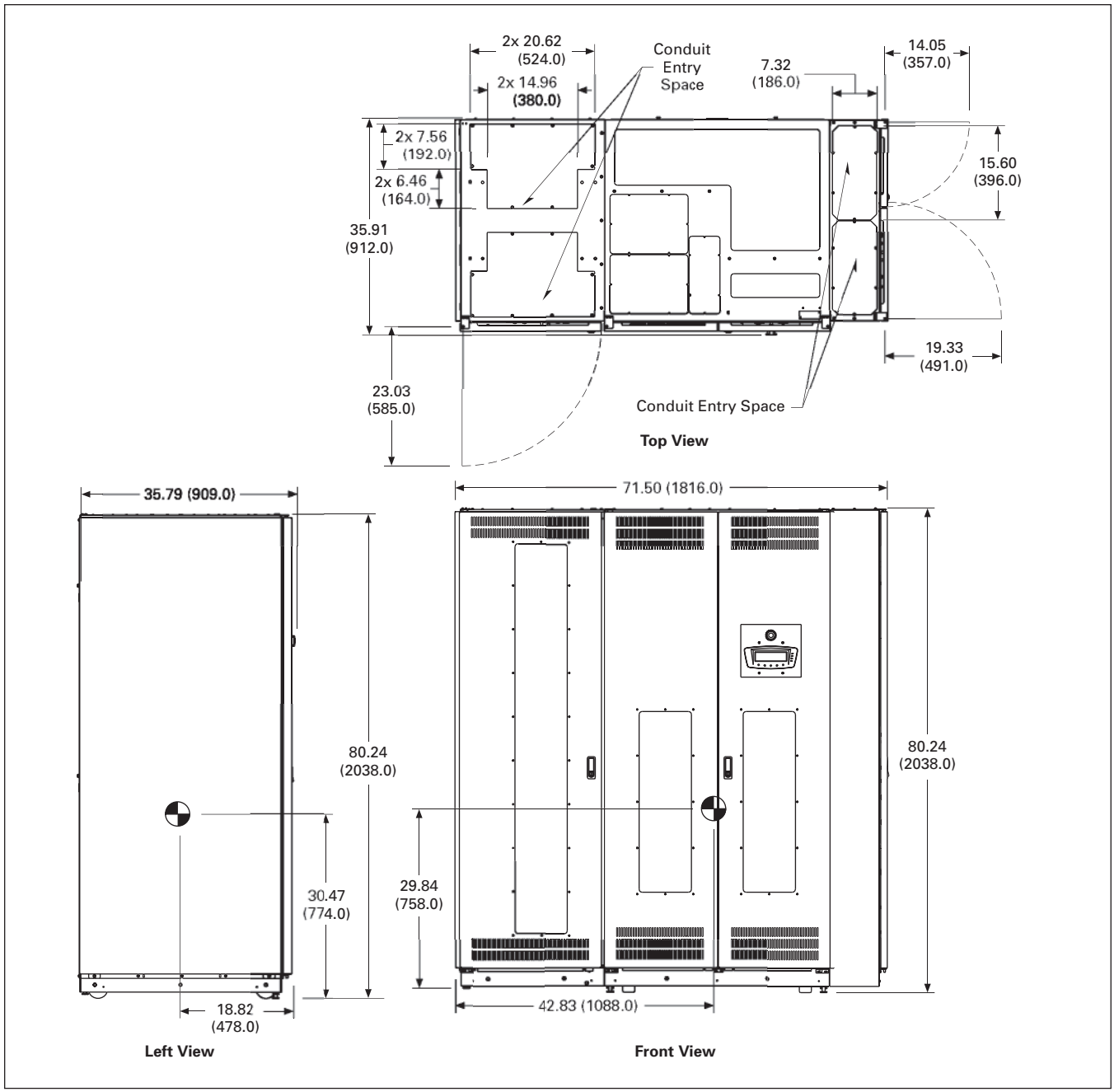


Figure 33.5-8. 50–150 kVA PDU—Main Cabinet—Left Front Facing Sidecar and Right Side Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3314 lbs (1503 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

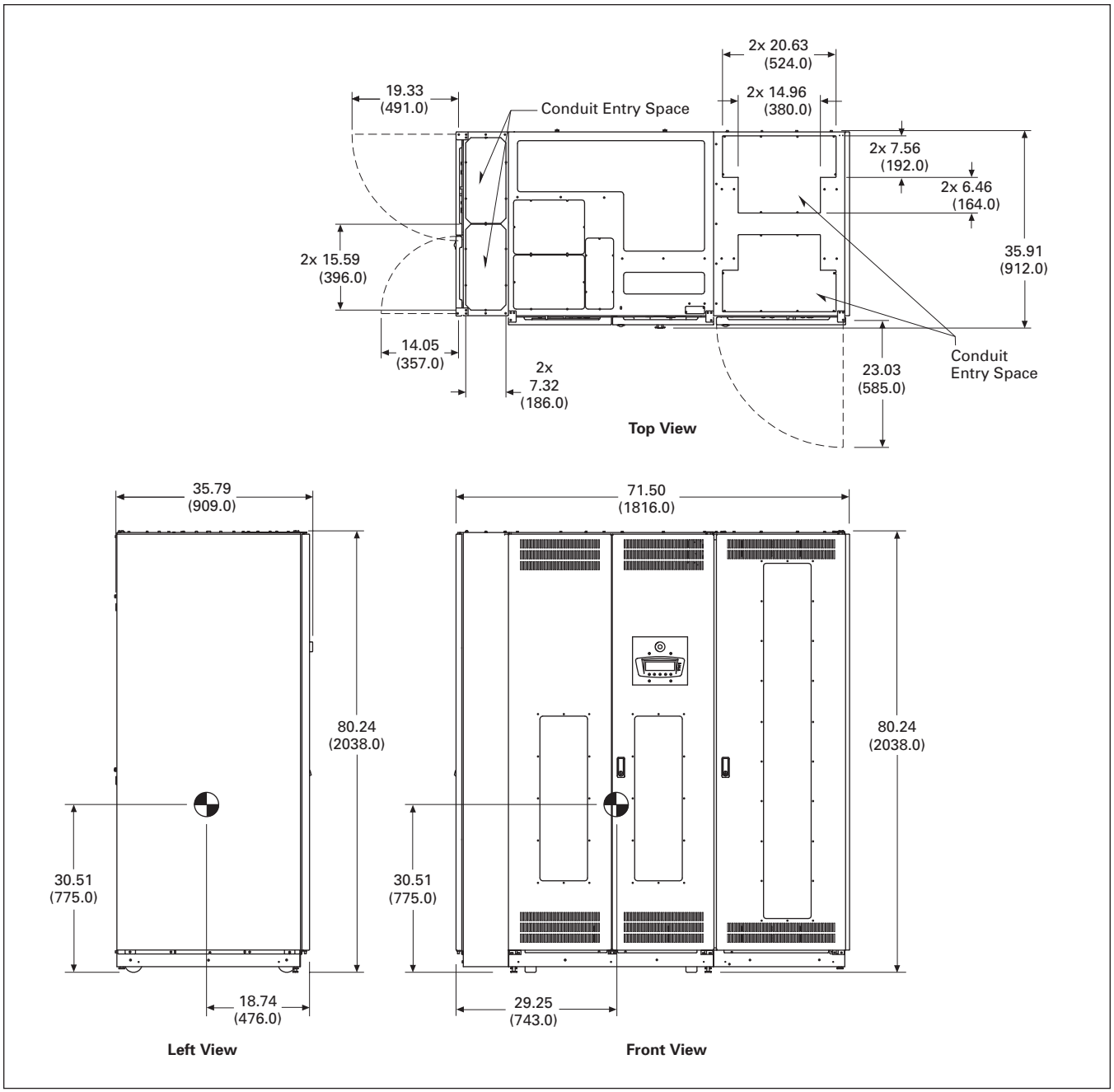


Figure 33.5-9. 50–150 kVA PDU—Main Cabinet—Right Front Facing Sidecar and Left Side Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3314 lbs (1503 kg) for PRL3 and 150 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for PRL3 and 150 kVA transformer.
9. Specifications are subject to change.

50–150 kVA PDU

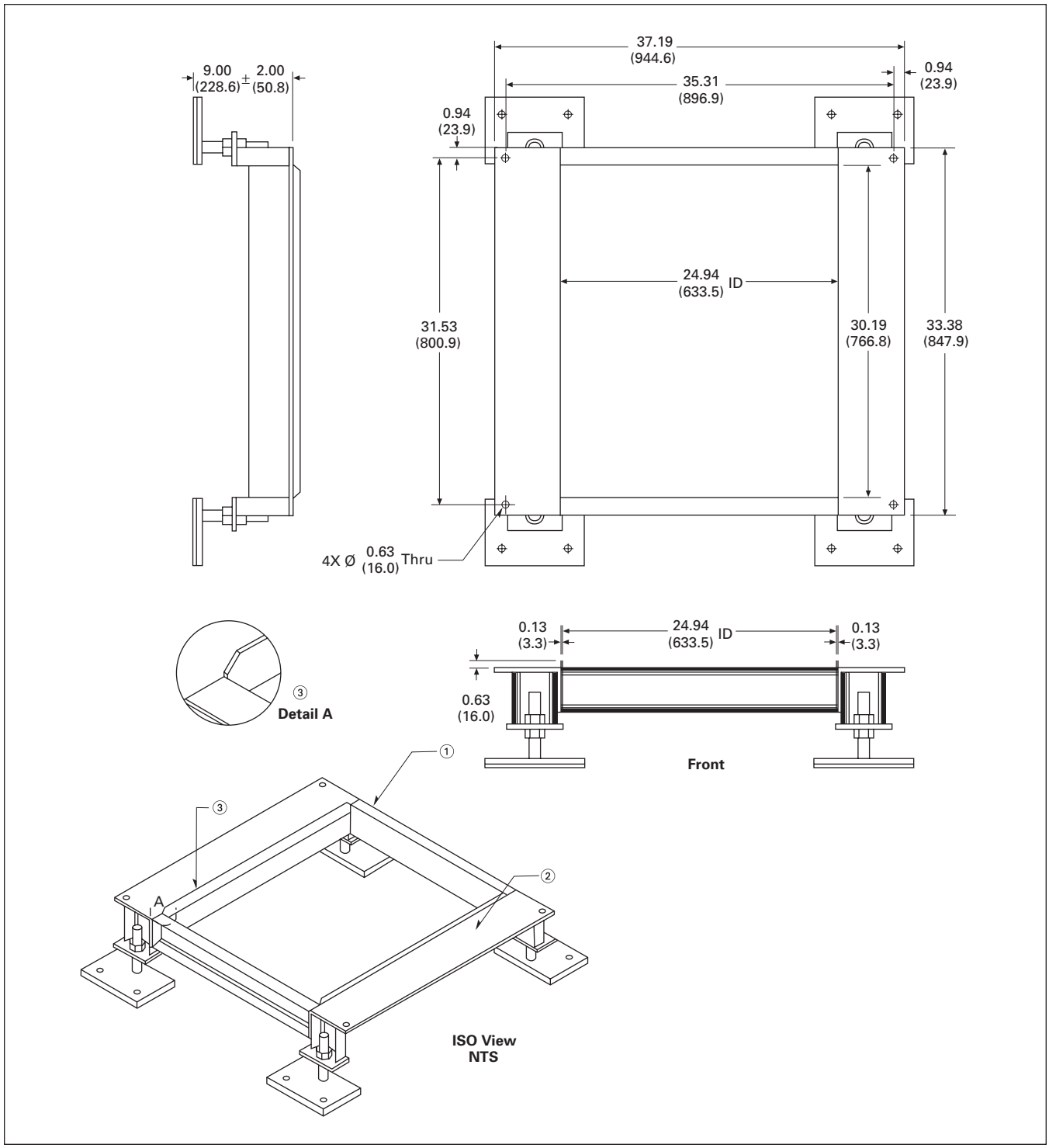


Figure 33.5-10. 50–150 kVA PDU—Floor Stand, 9.00 Inch (228.6) Non-Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.

50–150 kVA PDU

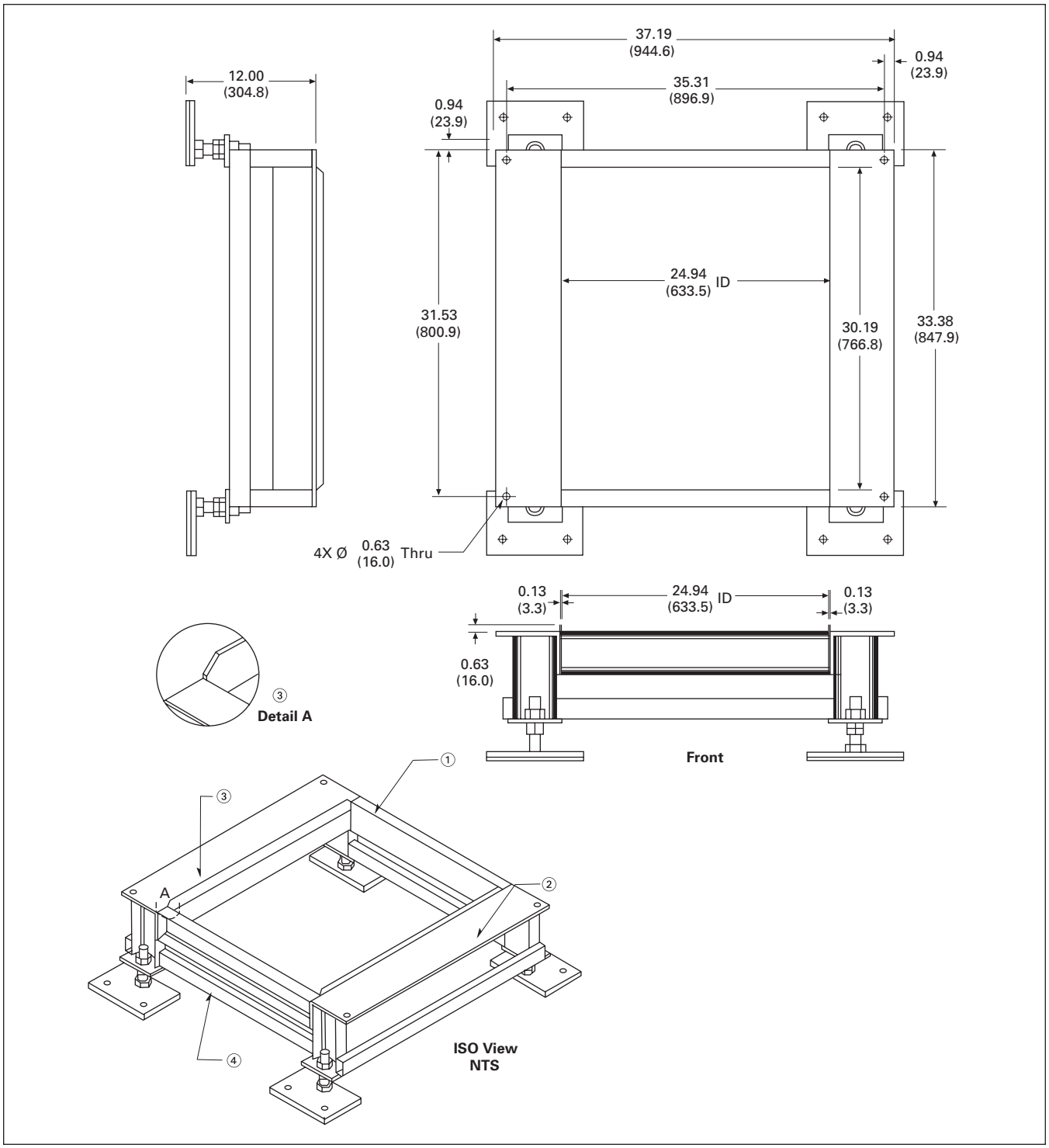


Figure 33.5-11. 50–150 kVA PDU—Floor Stand, 12.00 Inch (304.8) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

50–150 kVA PDU

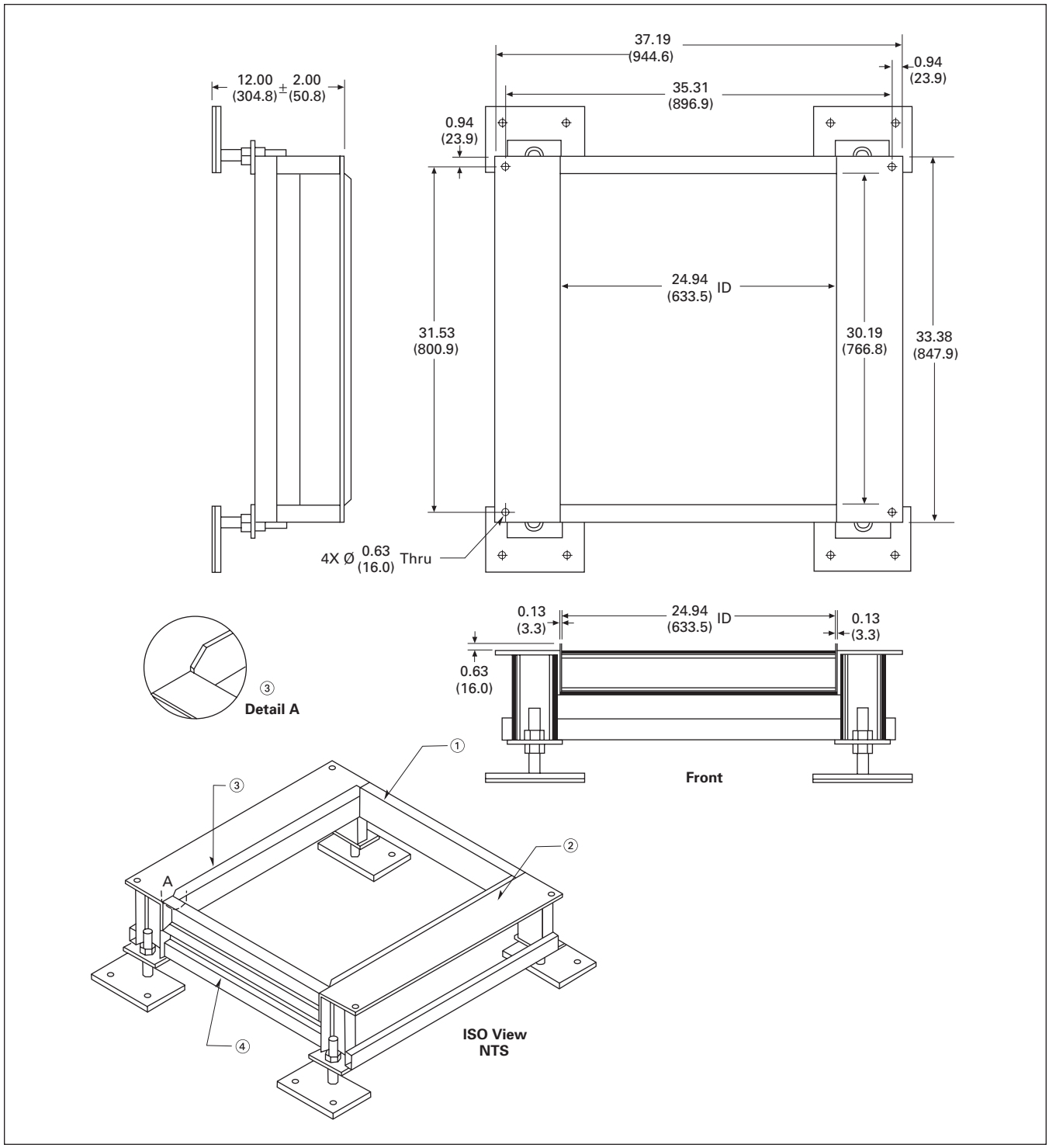


Figure 33.5-12. 50–150 kVA PDU—Floor Stand, 12.00 Inch (304.8) Non-Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

50–150 kVA PDU

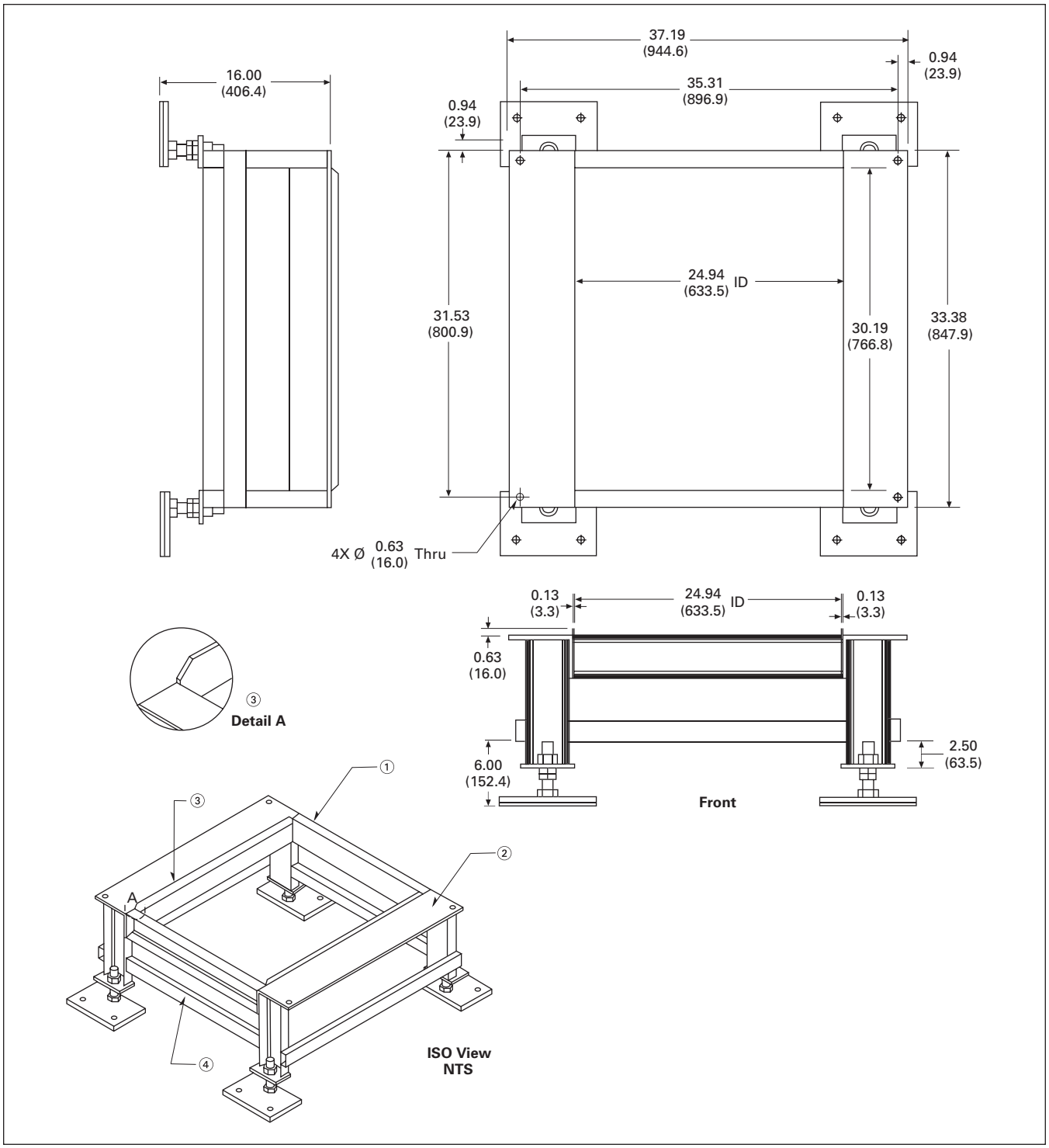


Figure 33.5-13. 50–150 kVA PDU—Floor Stand, 16.00 Inch (406.4) Non-Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

50–150 kVA PDU

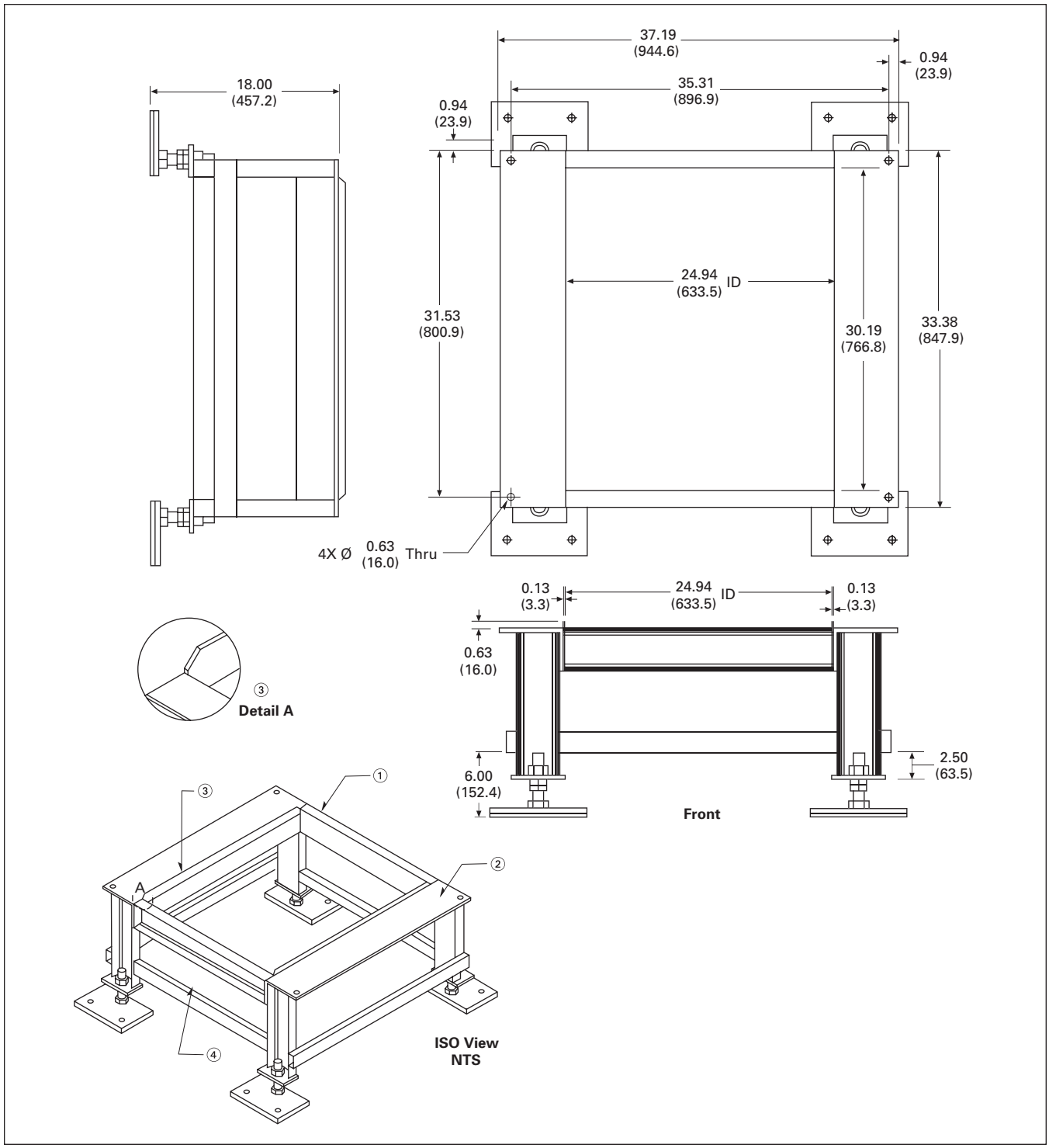


Figure 33.5-14. 50–150 kVA PDU—Floor Stand, 18.00 Inch (457.2) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

50–150 kVA PDU

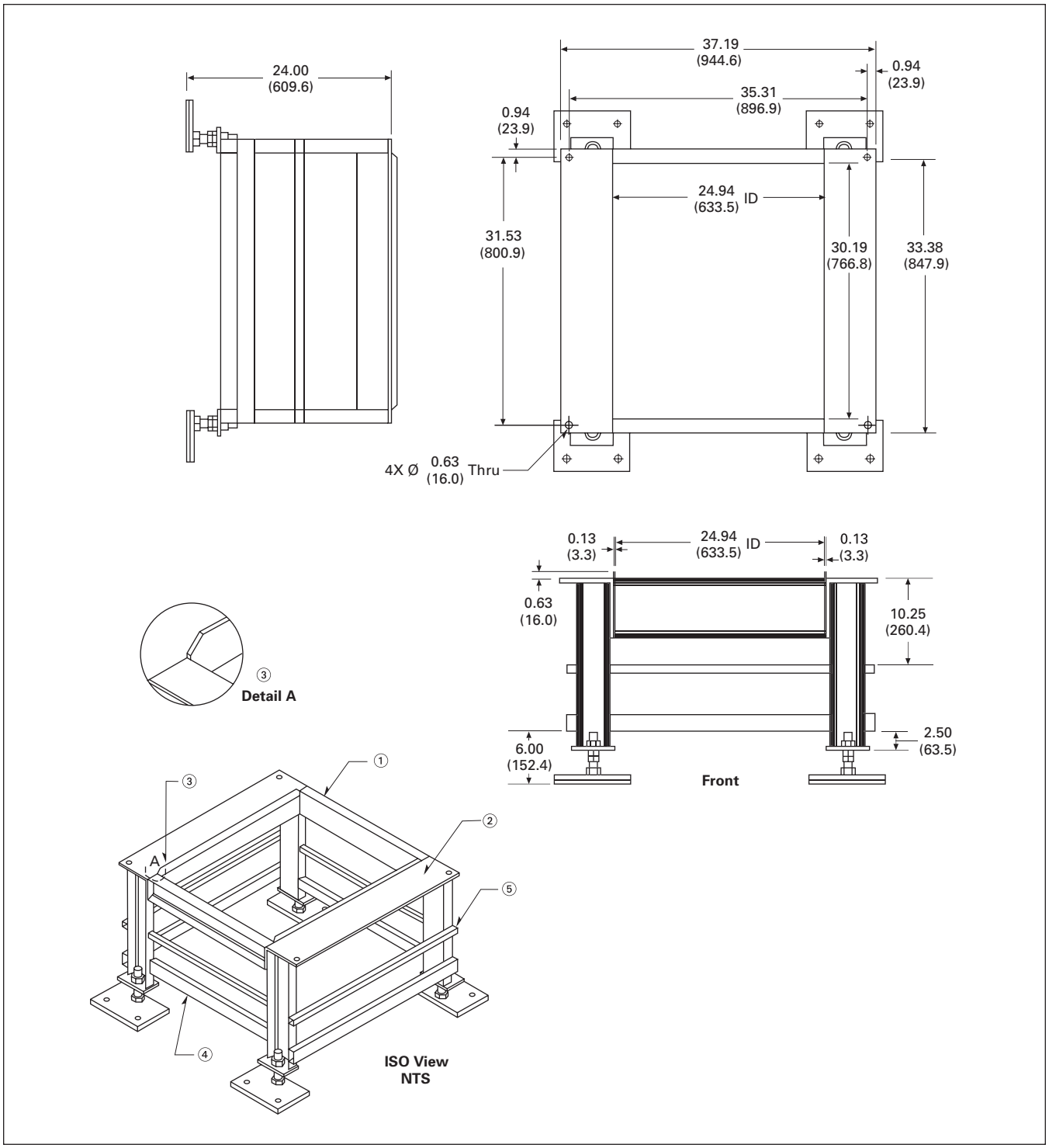


Figure 33.5-15. 50–150 kVA PDU—Floor Stand, 24.00 Inch (609.6) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

50–150 kVA PDU

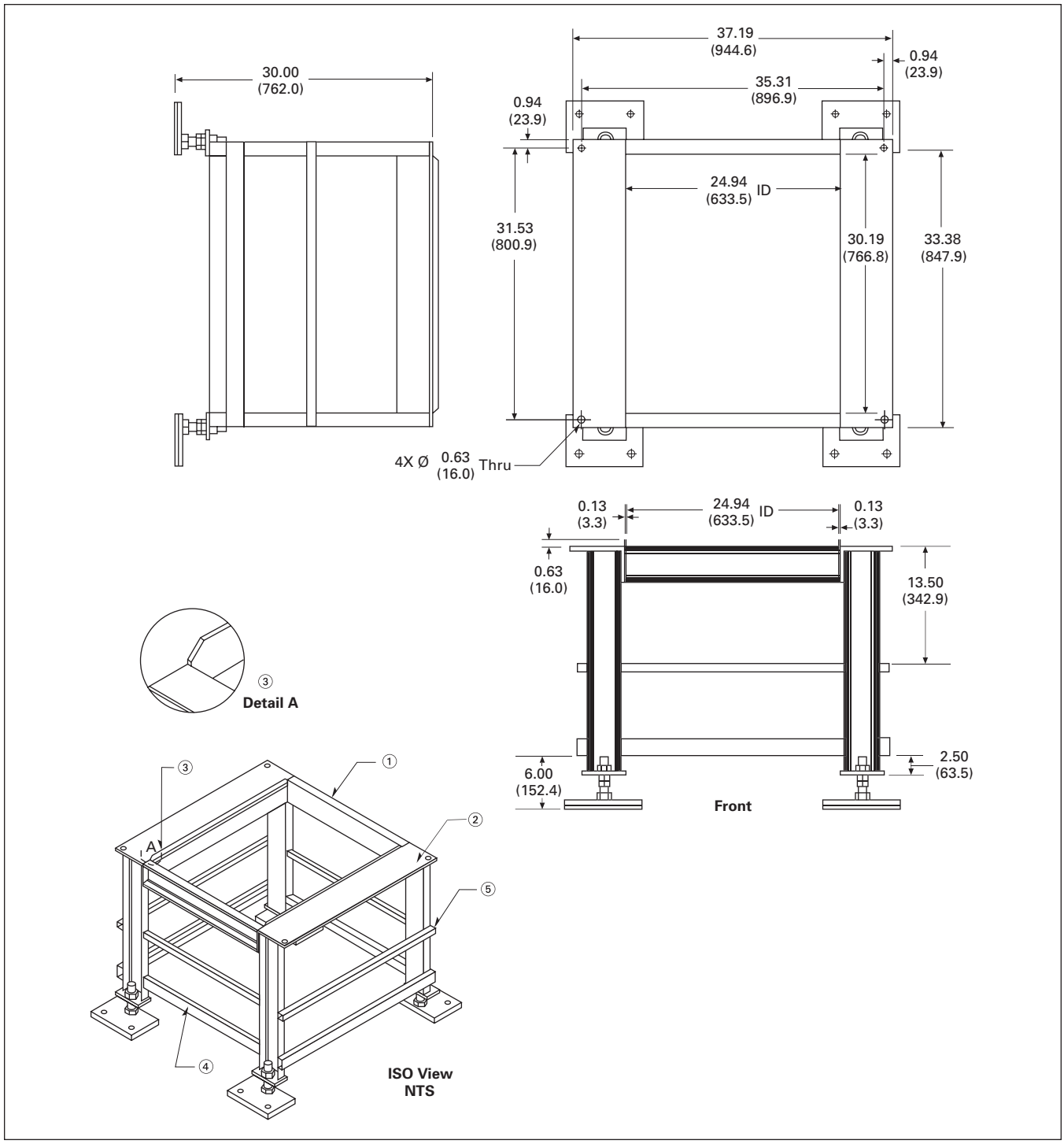


Figure 33.5-16. 50–150 kVA PDU—Floor Stand, 30.00 Inch (762.0) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

50–150 kVA PDU

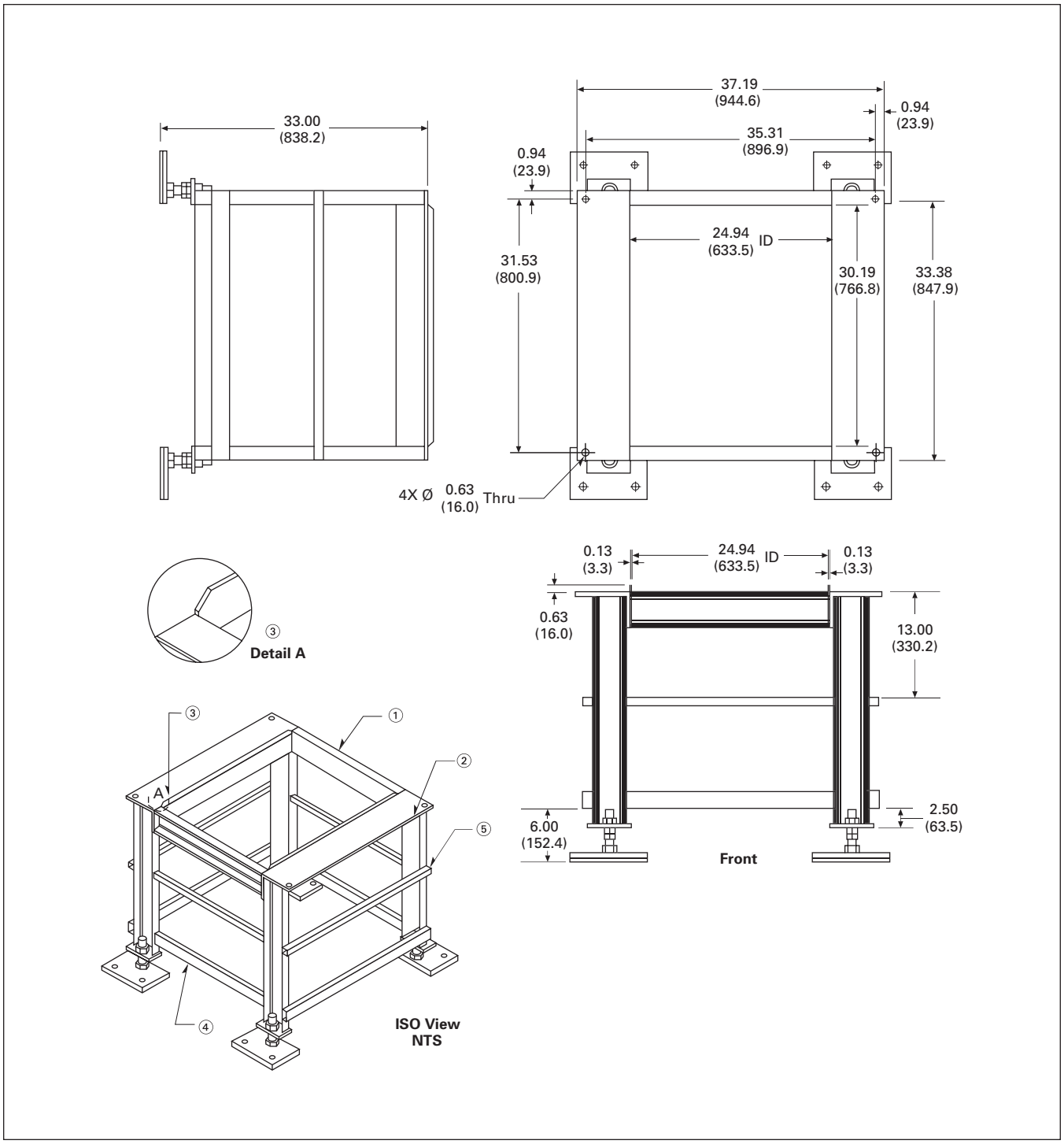


Figure 33.5-17. 50–150 kVA PDU—Floor Stand, 33.00 Inch (838.2) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

50–150 kVA PDU

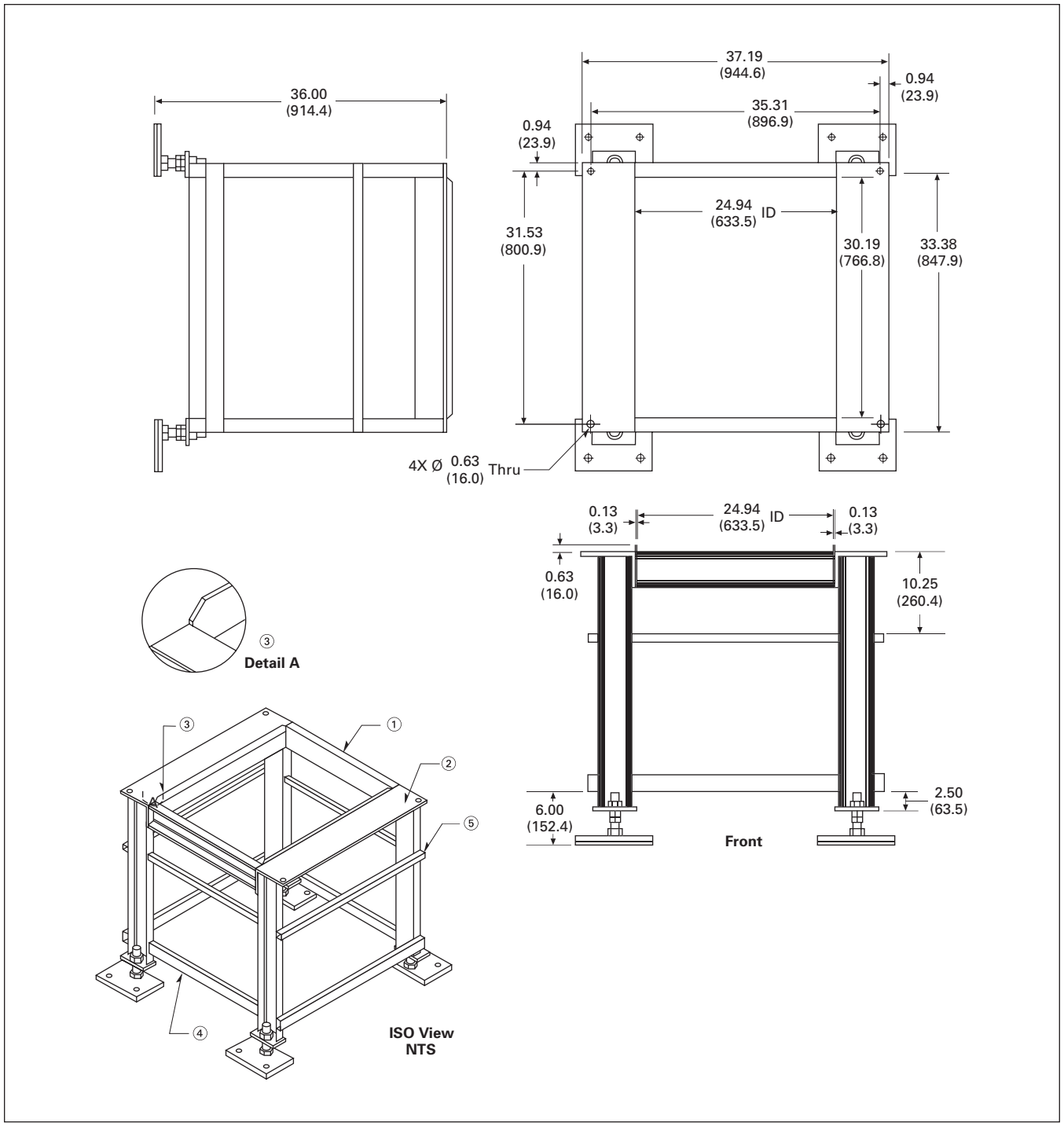


Figure 33.5-18. 50–150 kVA PDU—Floor Stand, 36.00 Inch (914.4) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

50–150 kVA PDU

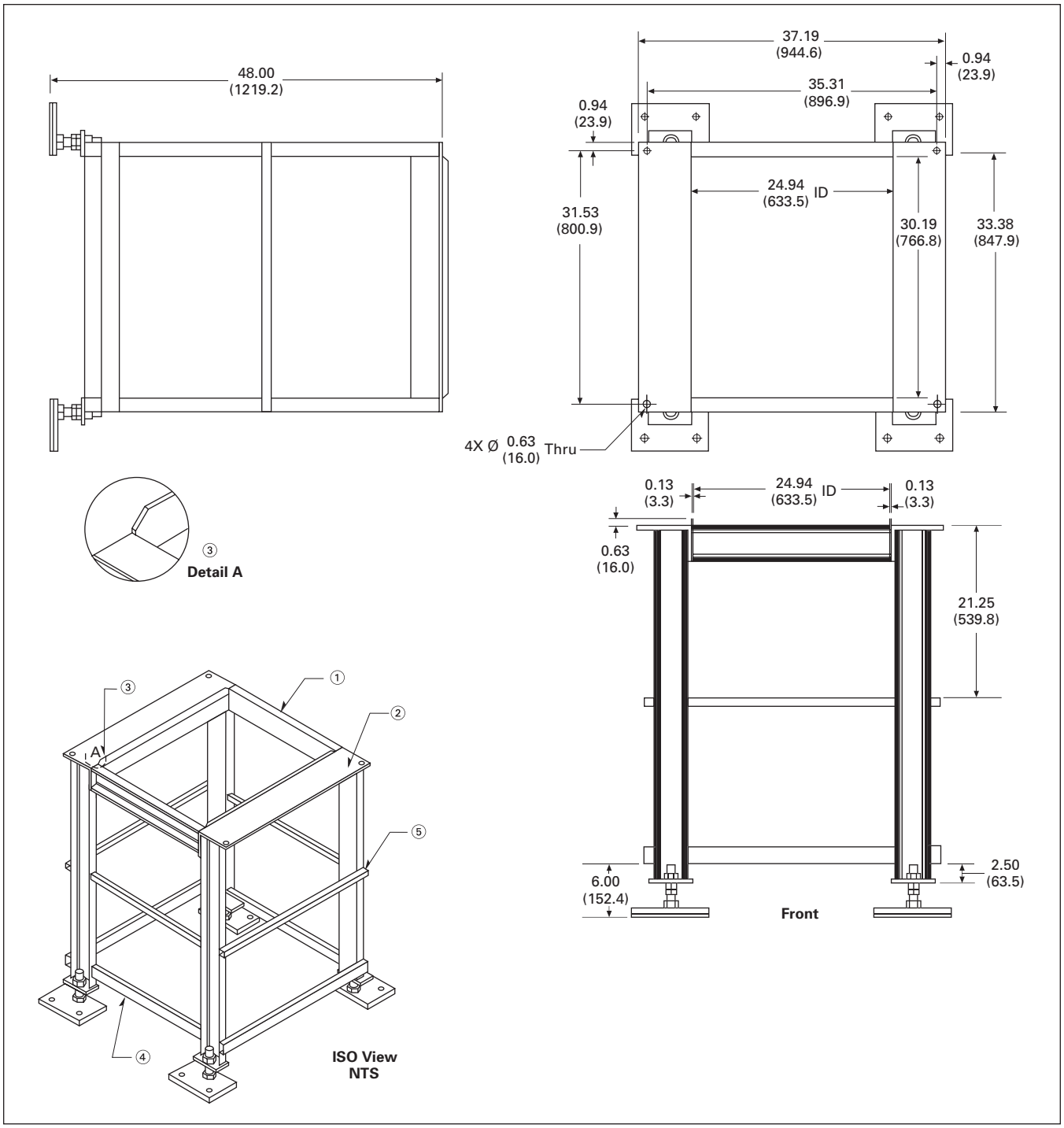


Figure 33.5-19. 50–150 kVA PDU—Floor Stand, 48.00 Inch (1219.2) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

200–300 kVA PDU

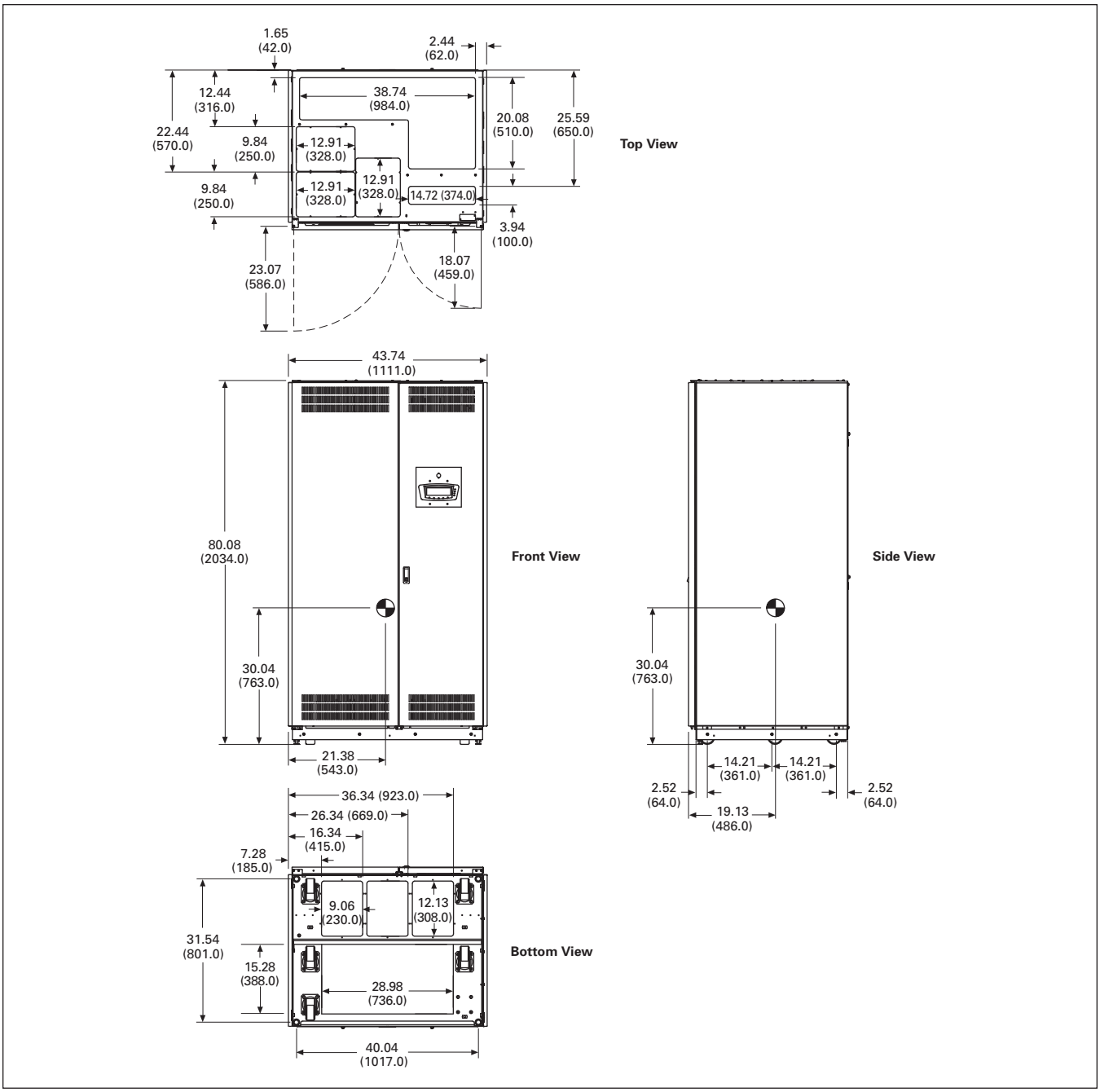


Figure 33.5-20. 200–300 kVA PDU—Main Cabinet—Dimensions in Inches (mm)

Notes:

1. Weight: 3565 lbs (1617 kg) for 300 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for 300 kVA transformer.
9. Specifications are subject to change.

200–300 kVA PDU

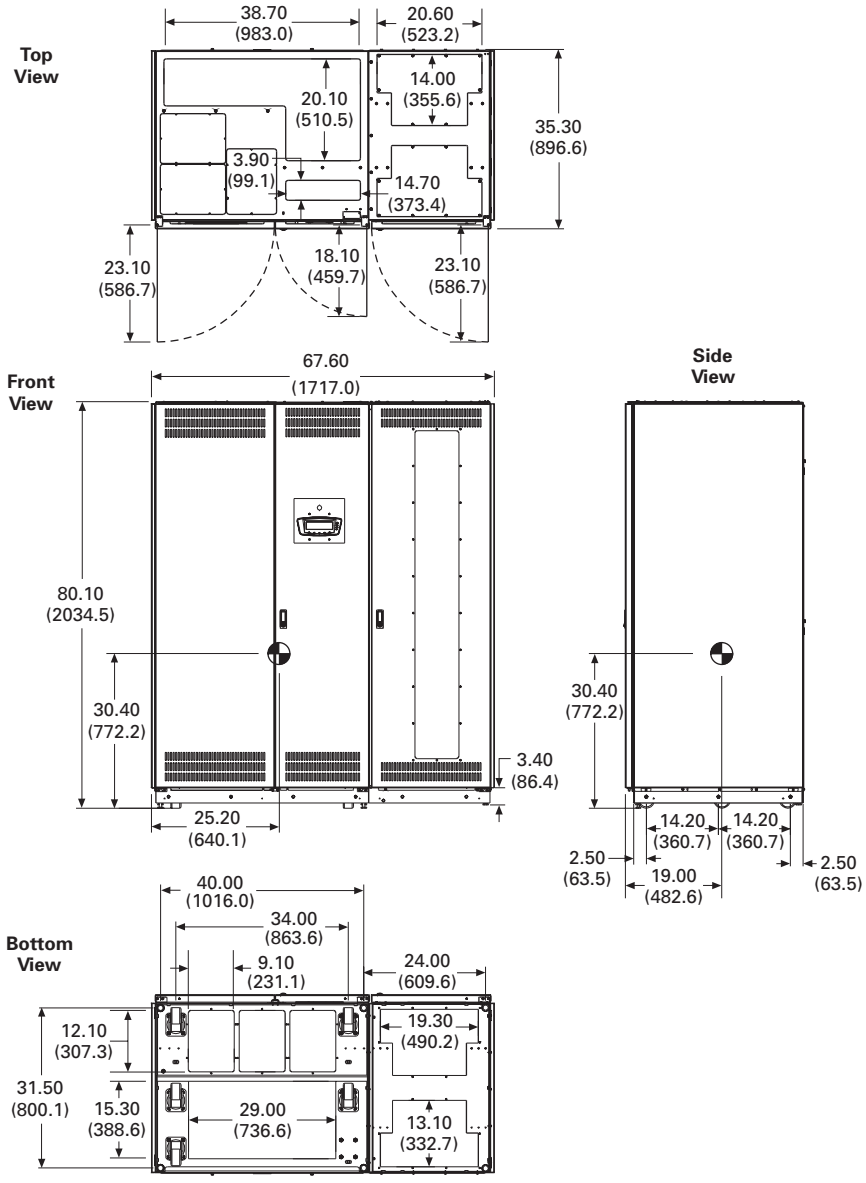


Figure 33.5-21. 200–300 kVA PDU—Main Cabinet—Front Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3842 lbs (1742 kg) for 300 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for 300 kVA transformer.
9. Specifications are subject to change.

200–300 kVA PDU

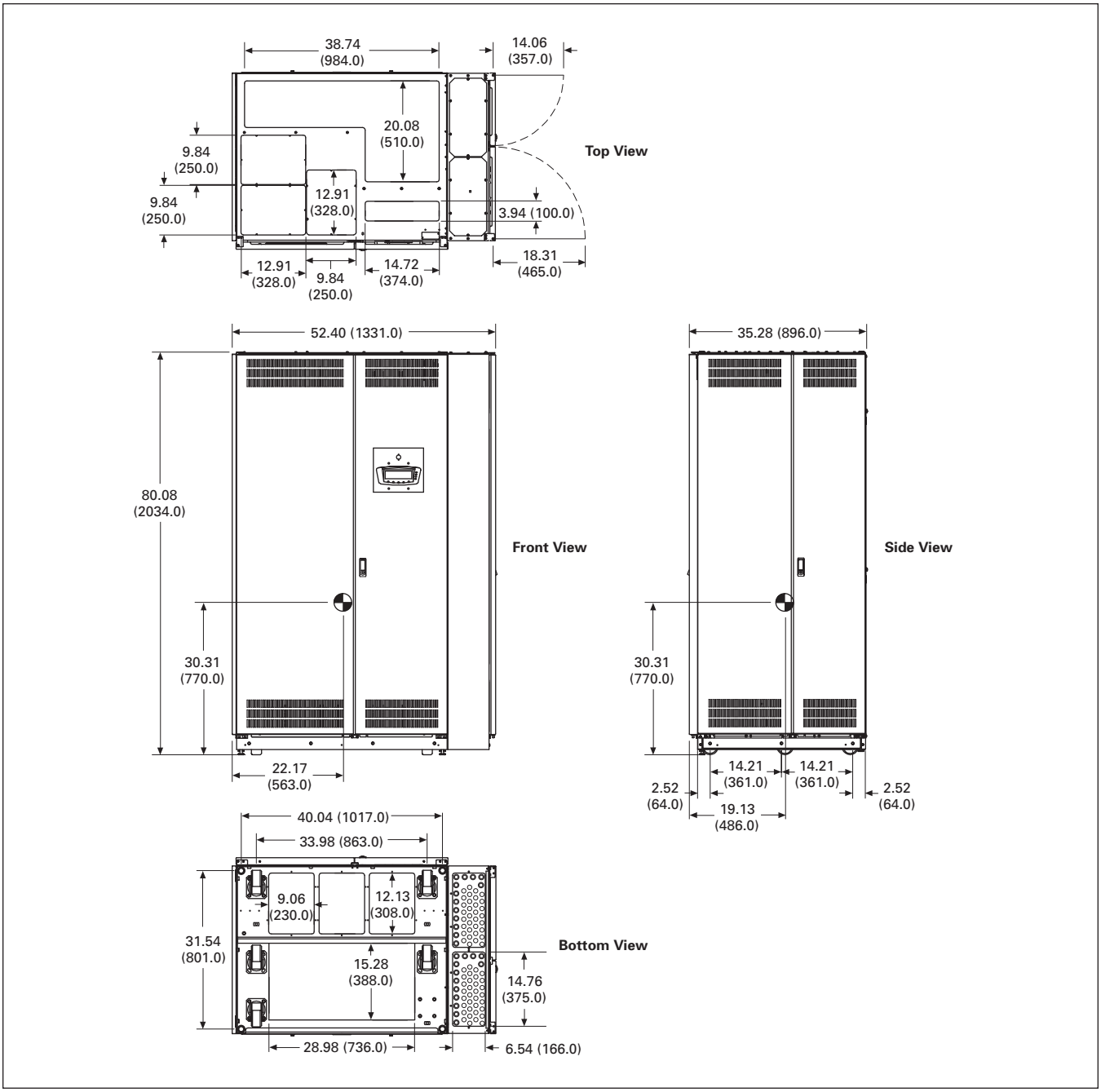


Figure 33.5-22. 200–300 kVA PDU—Main Cabinet—Side Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. Weight: 3816 lbs (1731 kg) for 300 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for 300 kVA transformer.
9. Specifications are subject to change.

200–300 kVA PDU

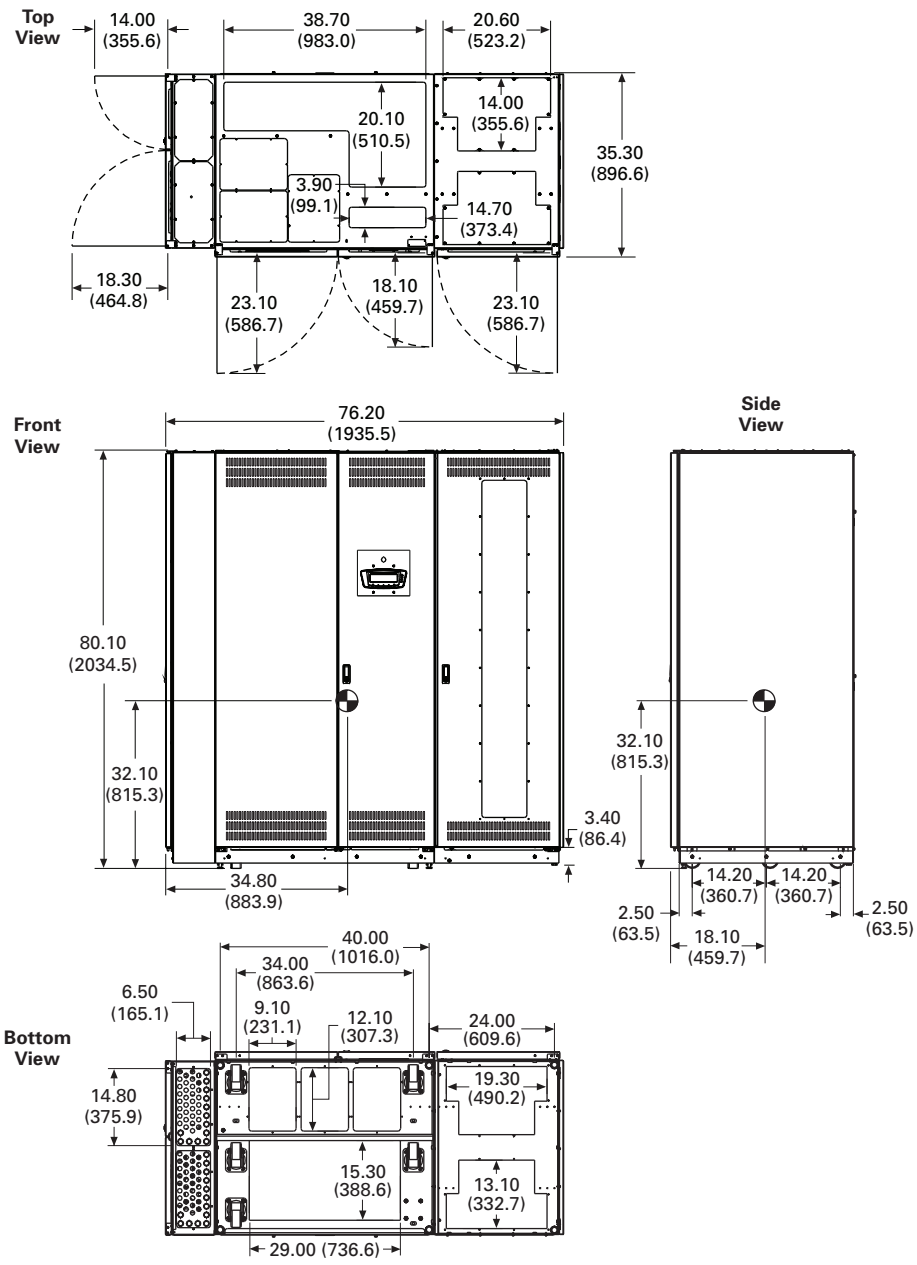


Figure 33.5-23. 200–300 kVA PDU—Main Cabinet—Front and Side Facing Sidecars—Dimensions in Inches (mm)

Notes:

1. Weight: 4091 lbs (1856 kg) for 300 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for 300 kVA transformer.
9. Specifications are subject to change.

200–300 kVA PDU

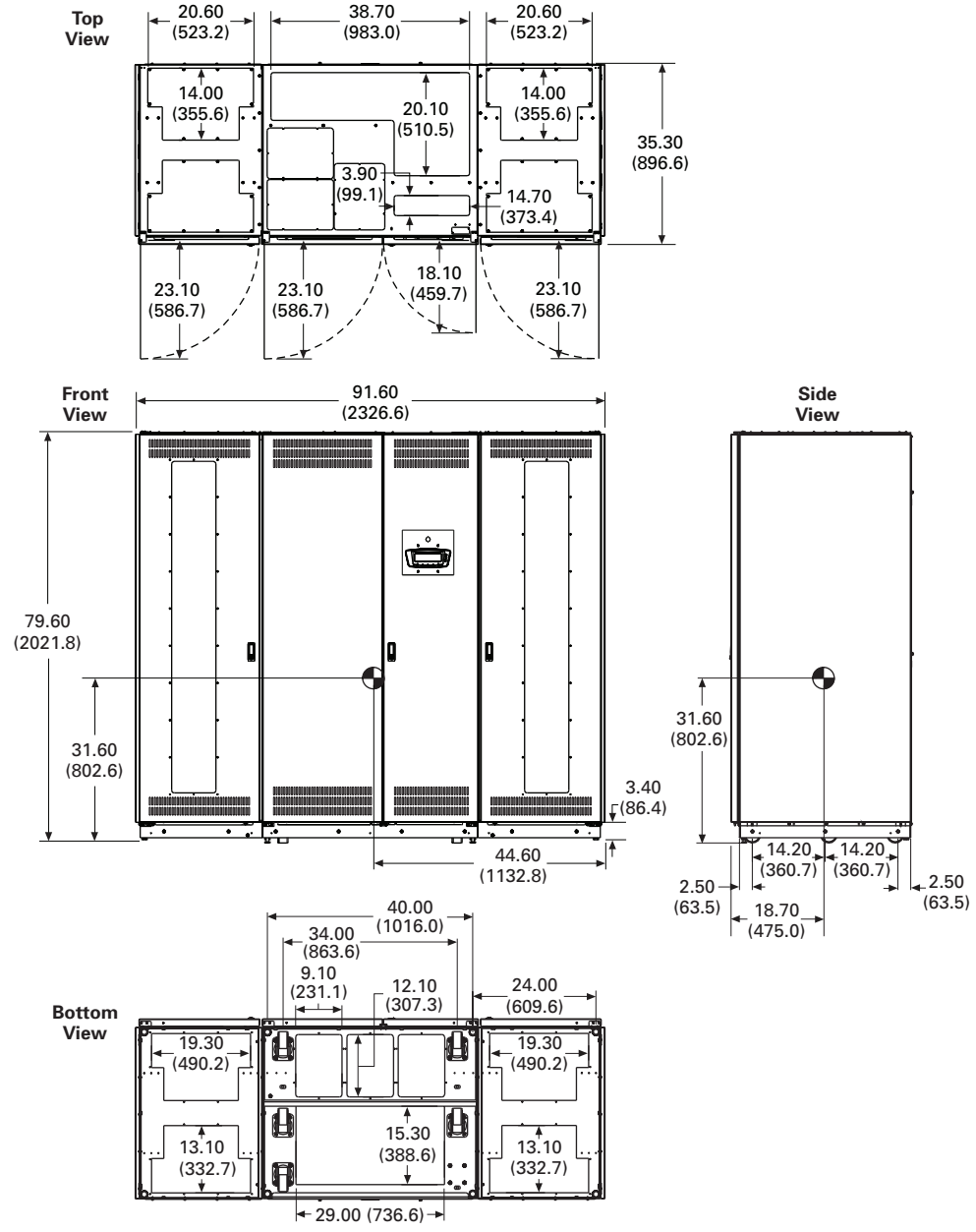


Figure 33.5-24. 200–300 kVA PDU—Main Cabinet—Two Front Facing Sidecars—Dimensions in Inches (mm)

Notes:

1. Weight: 4116 lbs (1867 kg) for 300 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for 300 kVA transformer.
9. Specifications are subject to change.

200–300 kVA PDU

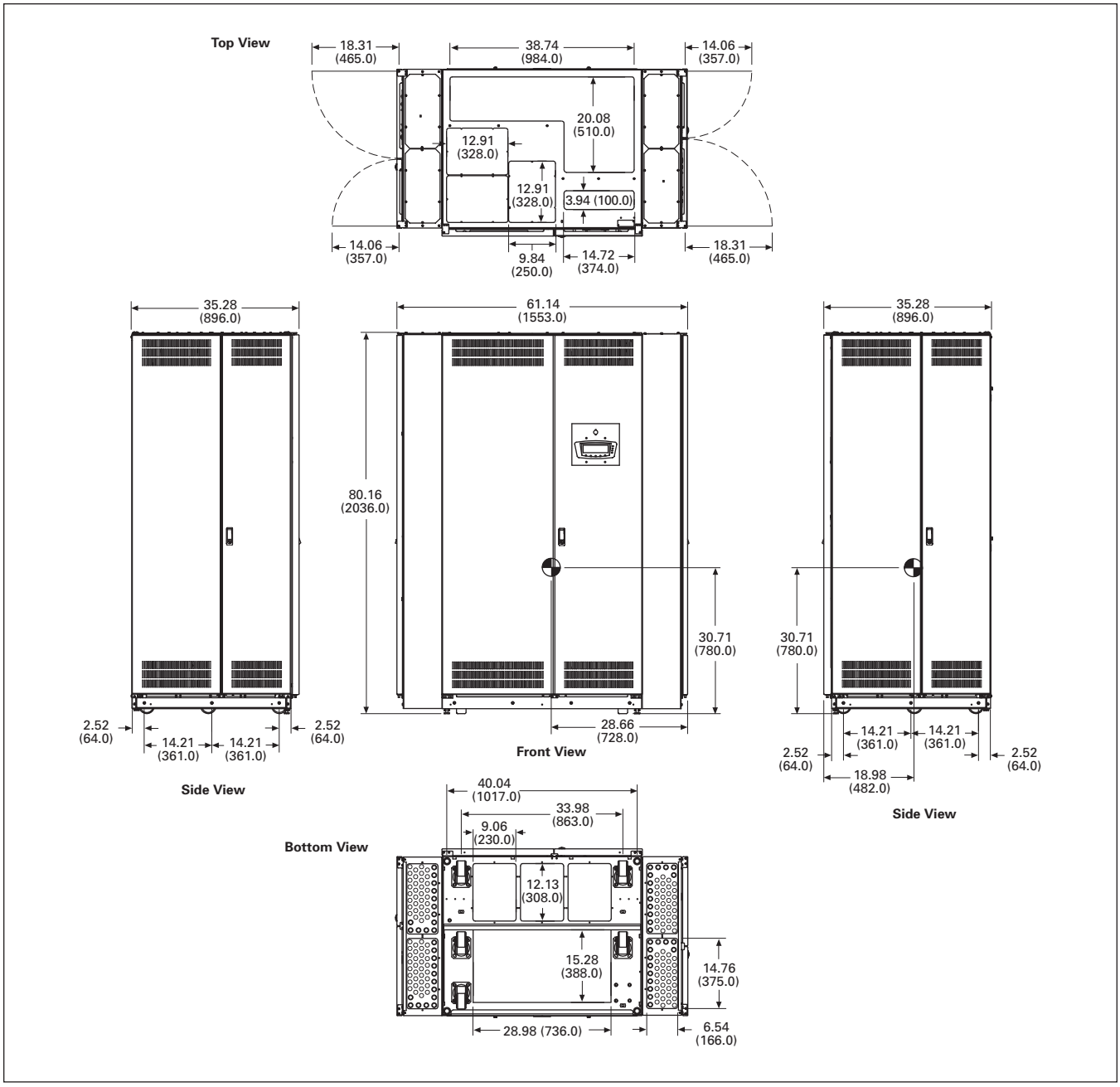


Figure 33.5-25. 200–300 kVA PDU—Main Cabinet—Two Side Facing Sidecars—Dimensions in Inches (mm)

Notes:

1. Weight: 4067 lbs (1845 kg) for 300 kVA transformer different configurations may have different weight.
2. The system must be installed on a level floor suitable for computer or electronic equipment.
3. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
4. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
5. Minimum 18.00-inch (457.2 mm) clearance in front and minimum 4.00-inch (101.6 mm) in rear of the cabinet are required for cooling air intake servicing space for rear access is 24.00 inches (609.6 mm).
6. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
7. All wiring is to be in accordance with national and local electric codes.
8. Center of gravity location shown for 300 kVA transformer.
9. Specifications are subject to change.

200–300 kVA PDU

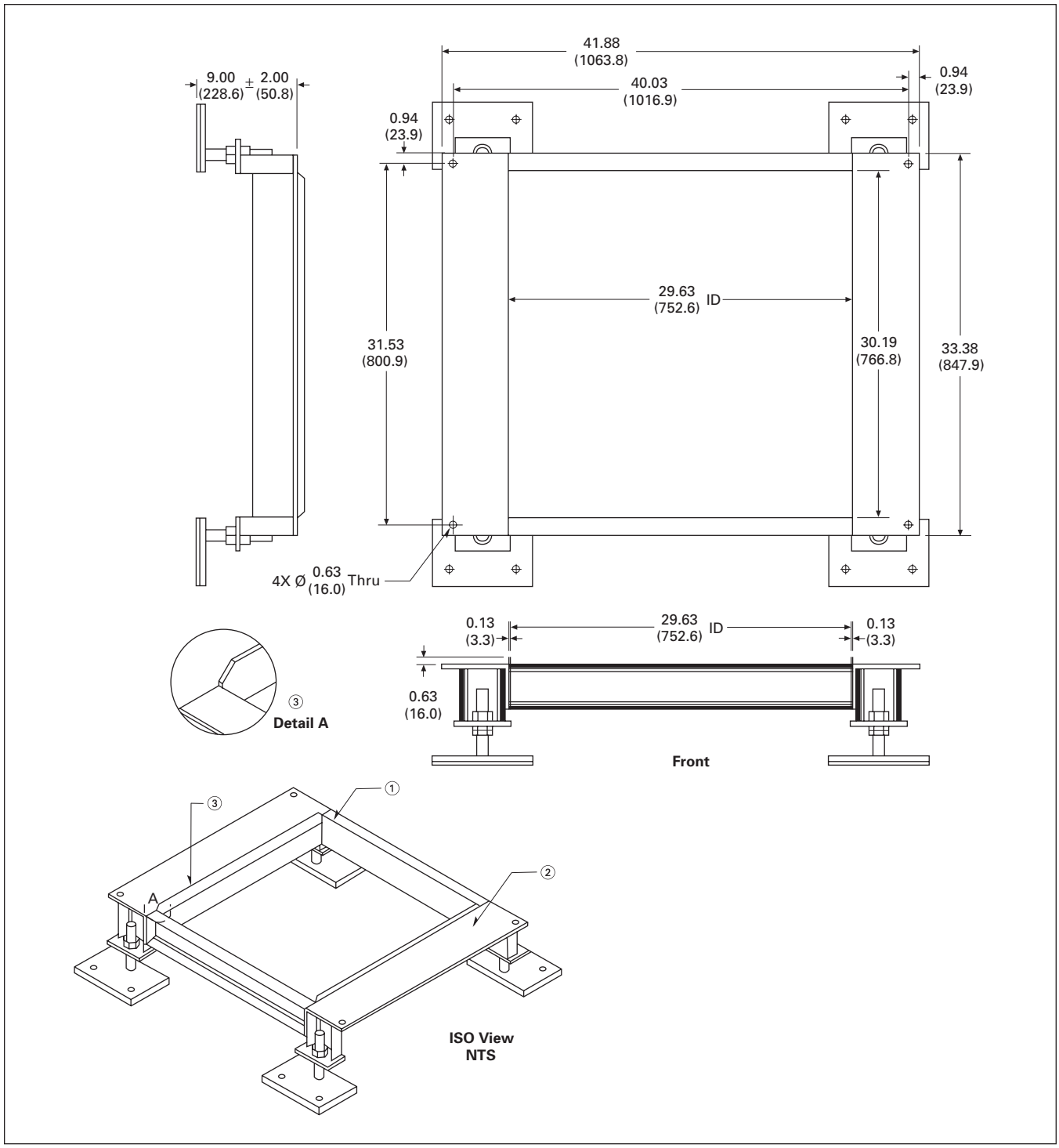


Figure 33.5-26. 200–300 kVA PDU—Floor Stand, 9.00 Inch (228.6) Non-Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.

200–300 kVA PDU

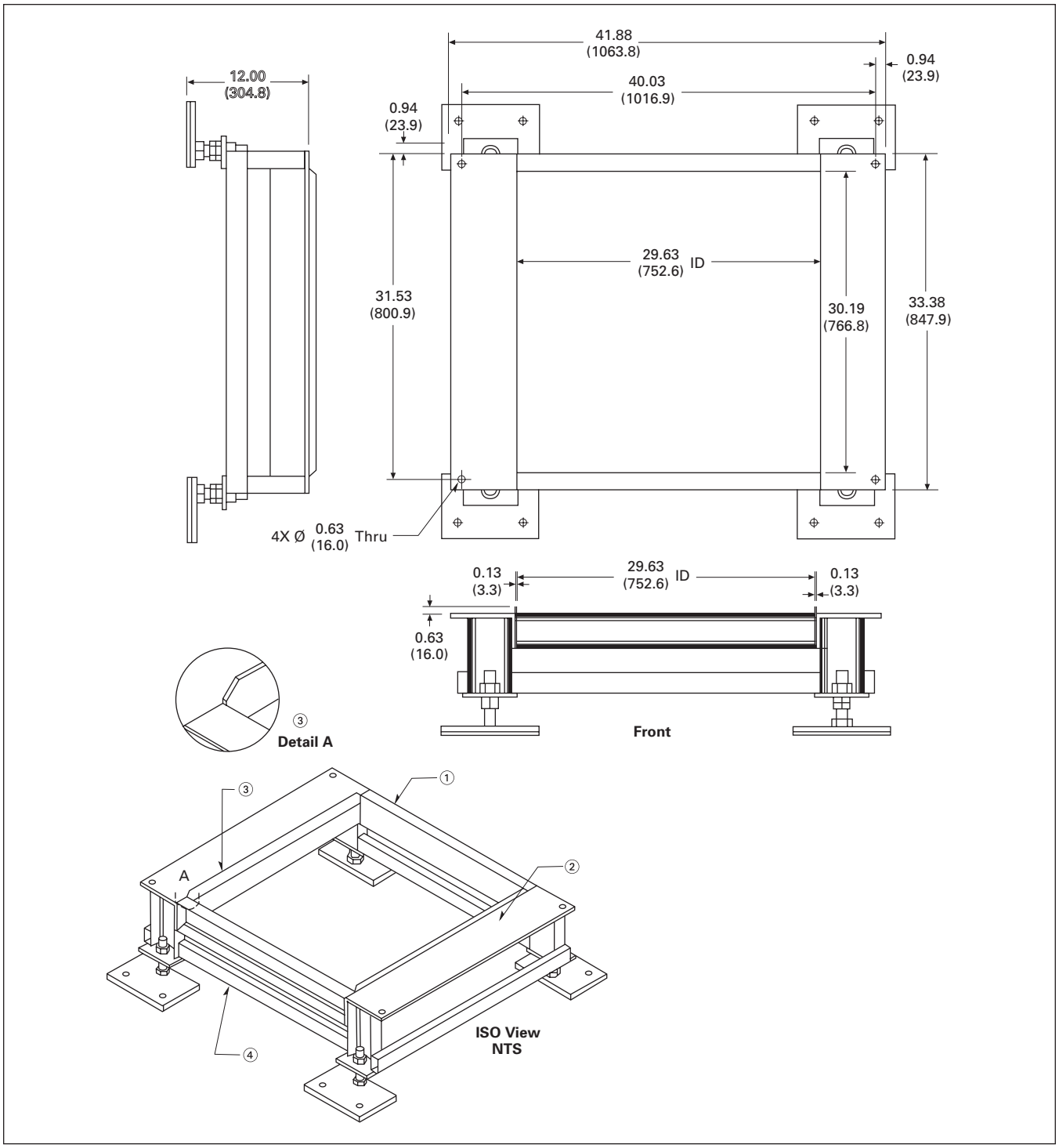


Figure 33.5-27. 200–300 kVA PDU—Floor Stand, 12.00 Inch (304.8) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

200–300 kVA PDU

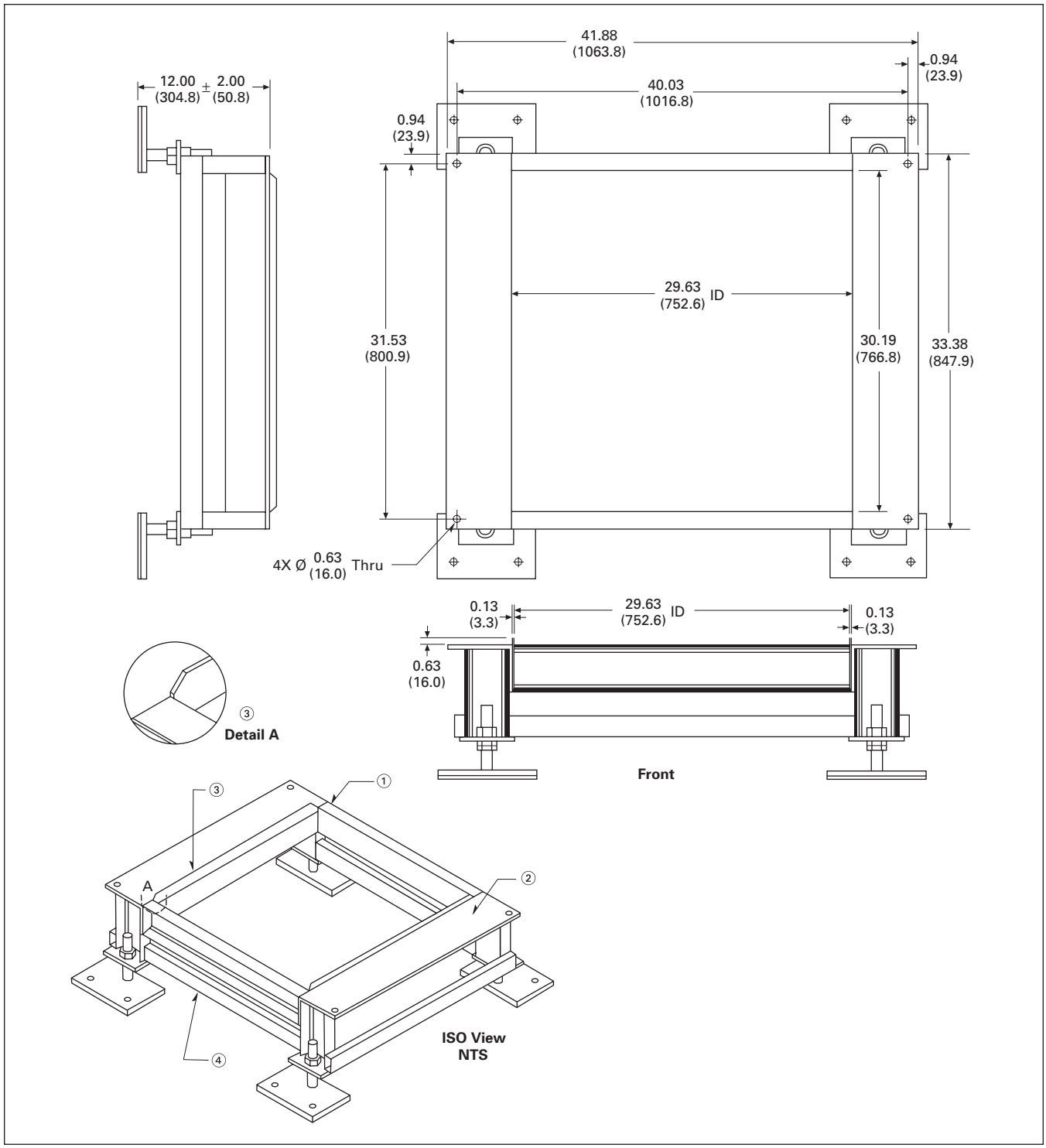


Figure 33.5-28. 200–300 kVA PDU—Floor Stand, 12.00 Inch (304.8) Non-Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

200–300 kVA PDU

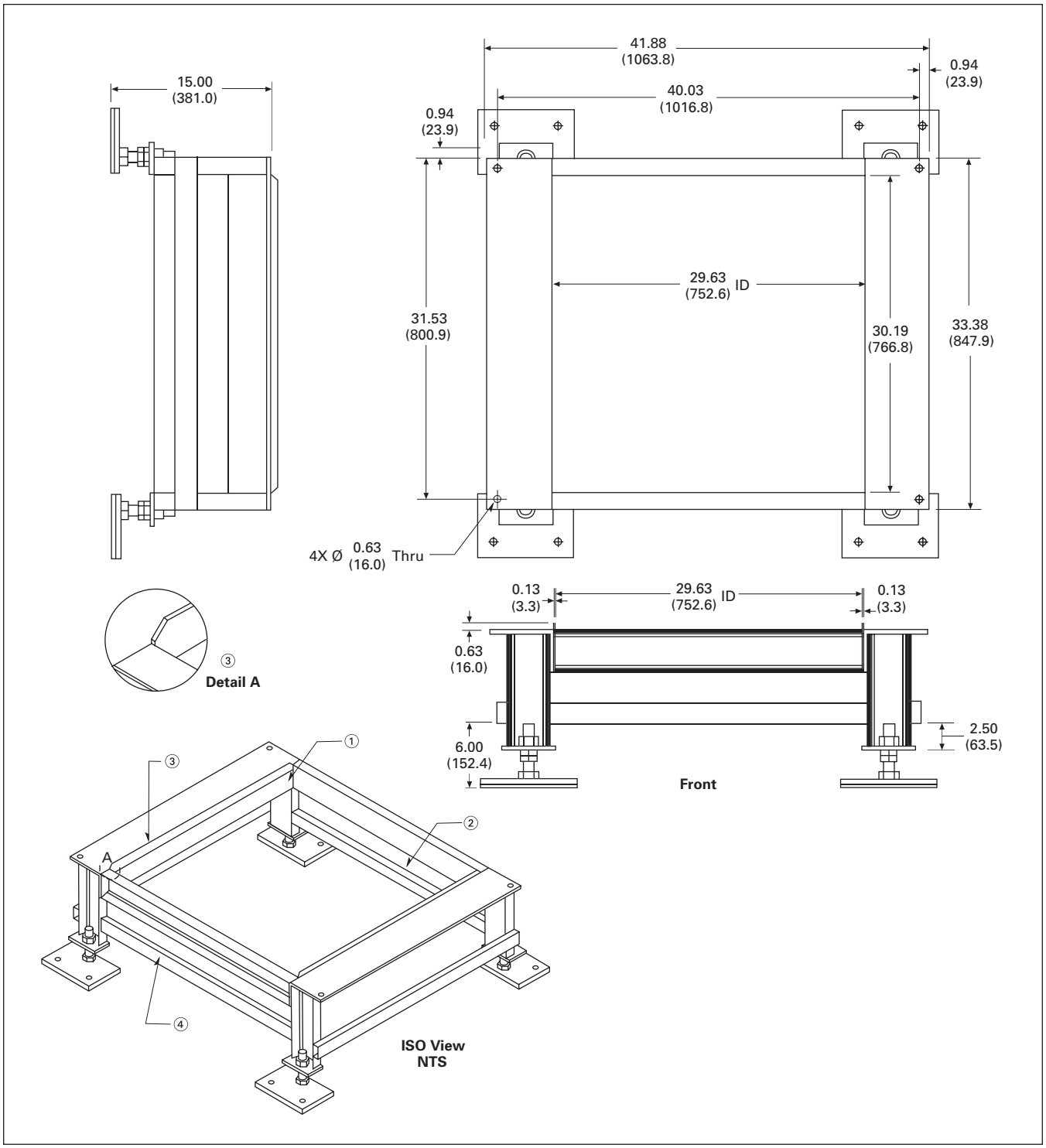


Figure 33.5-29. 200–300 kVA PDU—Floor Stand, 15.00 Inch (381.0) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

200–300 kVA PDU

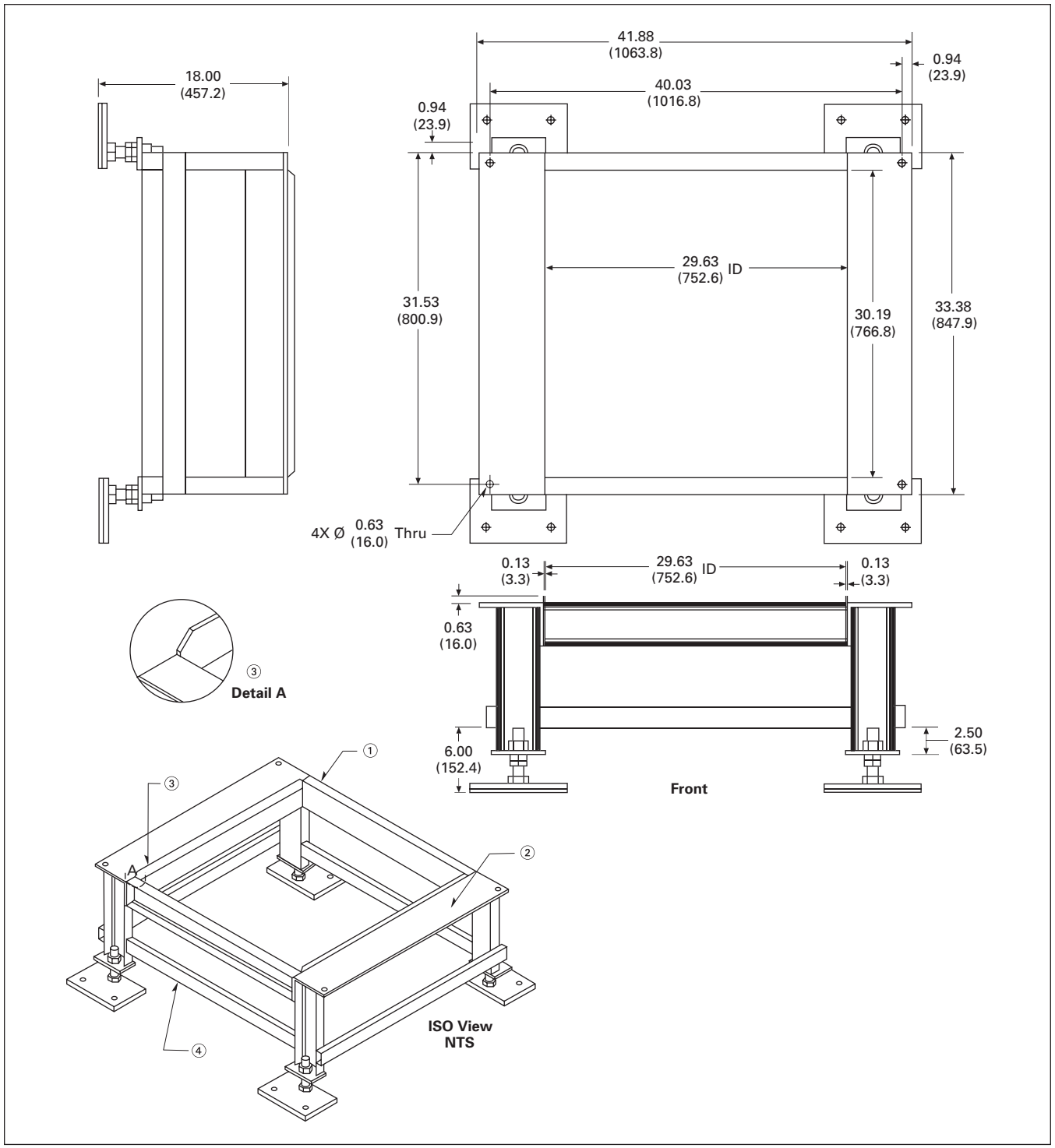


Figure 33.5-30. 200–300 kVA PDU—Floor Stand, 18.00 Inch (457.2) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.

200–300 kVA PDU

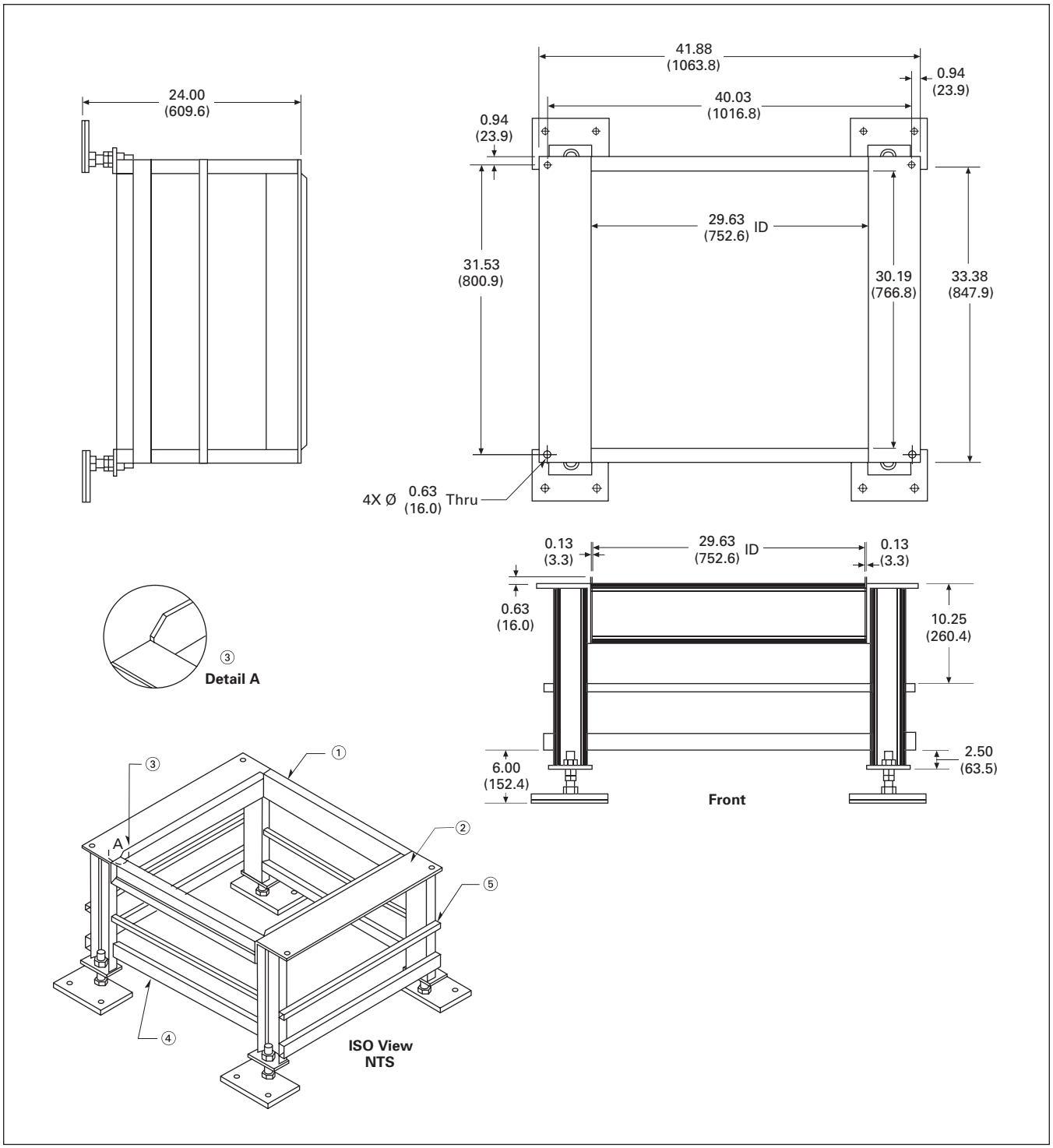


Figure 33.5-31. 200–300 kVA PDU—Floor Stand, 24.00 Inch (609.6) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

200–300 kVA PDU

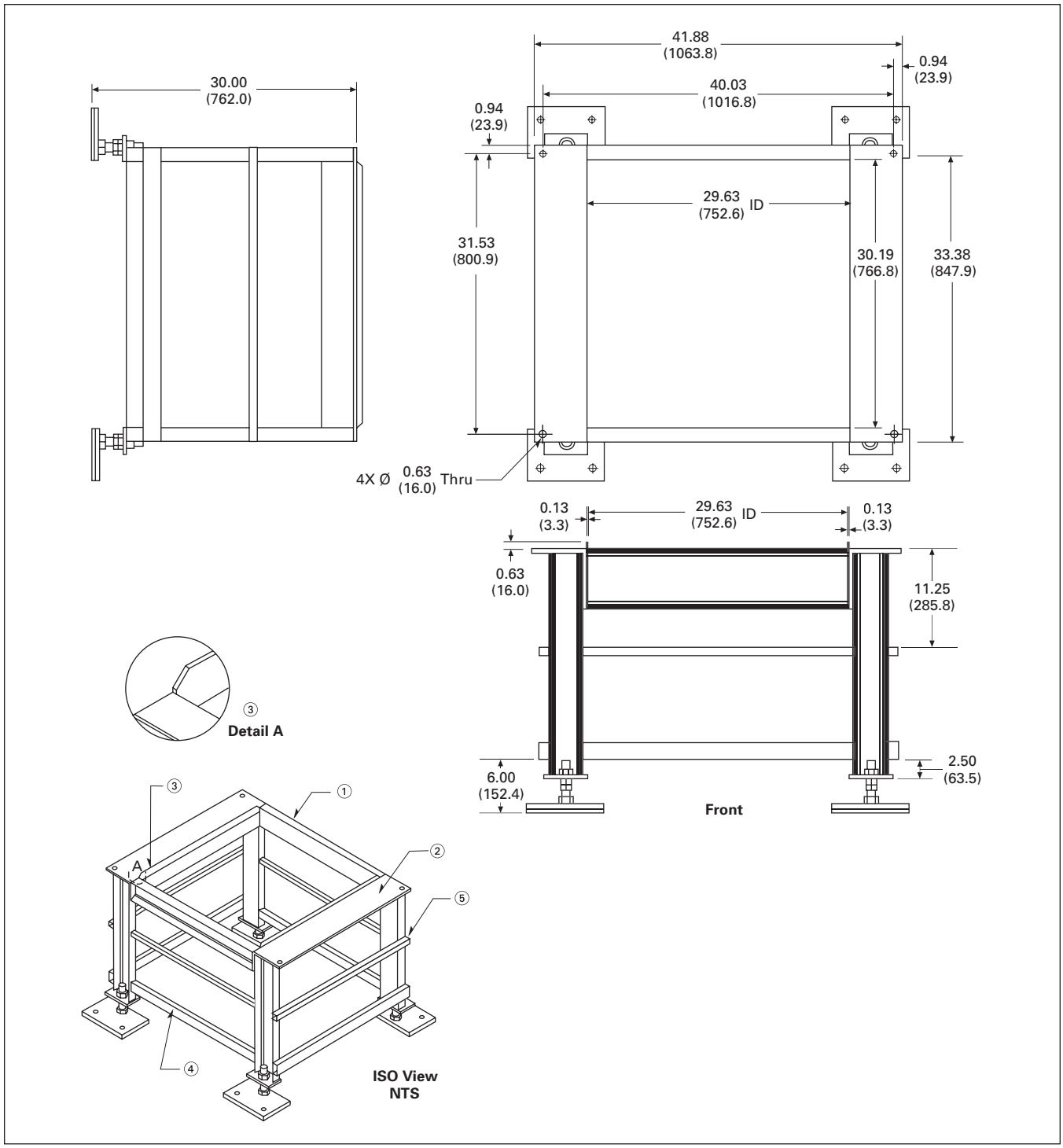


Figure 33.5-32. 200–300 kVA PDU—Floor Stand, 30.00 Inch (762.0) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

200–300 kVA PDU

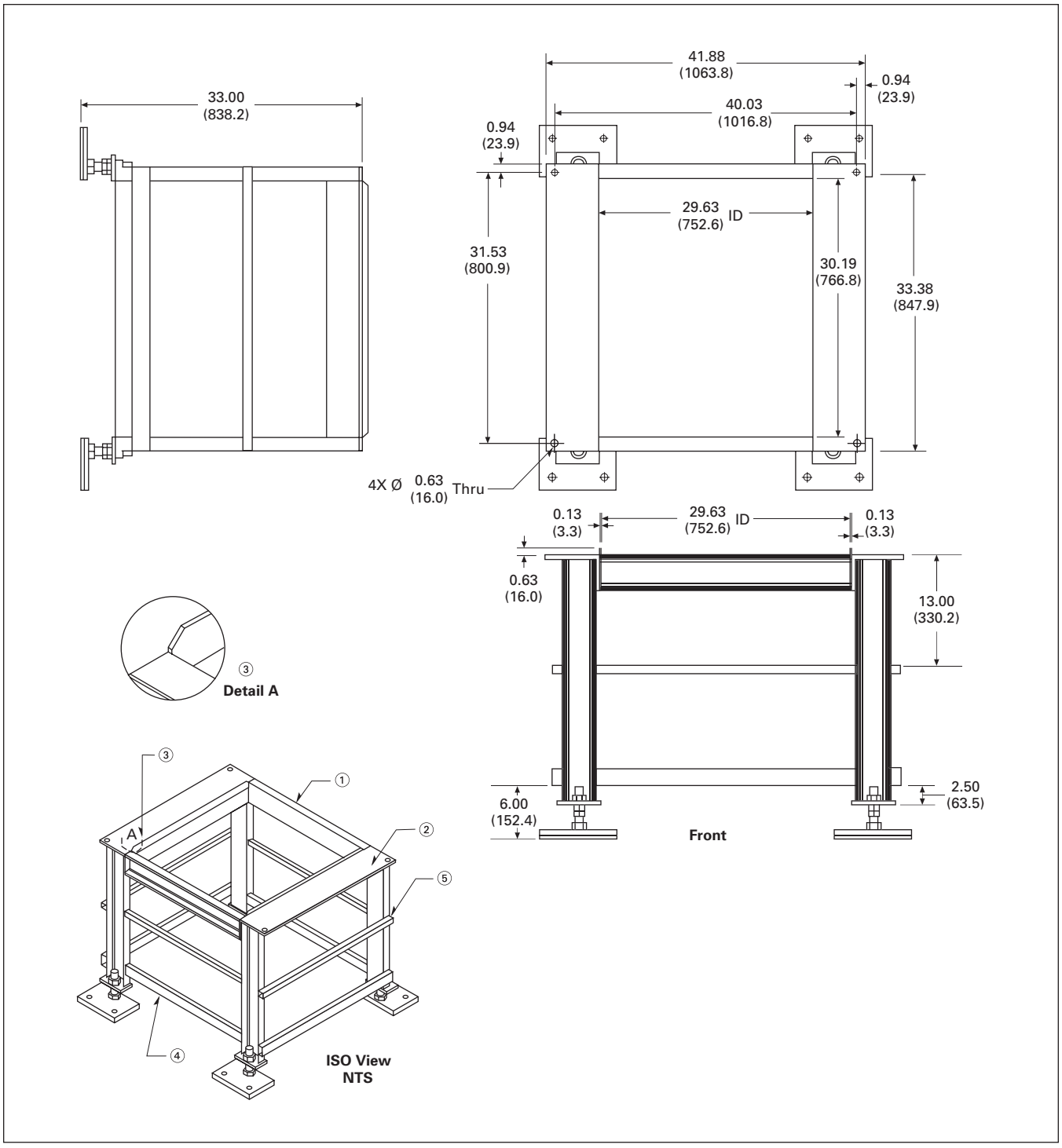


Figure 33.5-33. 200–300 kVA PDU—Floor Stand, 33.00 Inch (838.2) Non-Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

200–300 kVA PDU

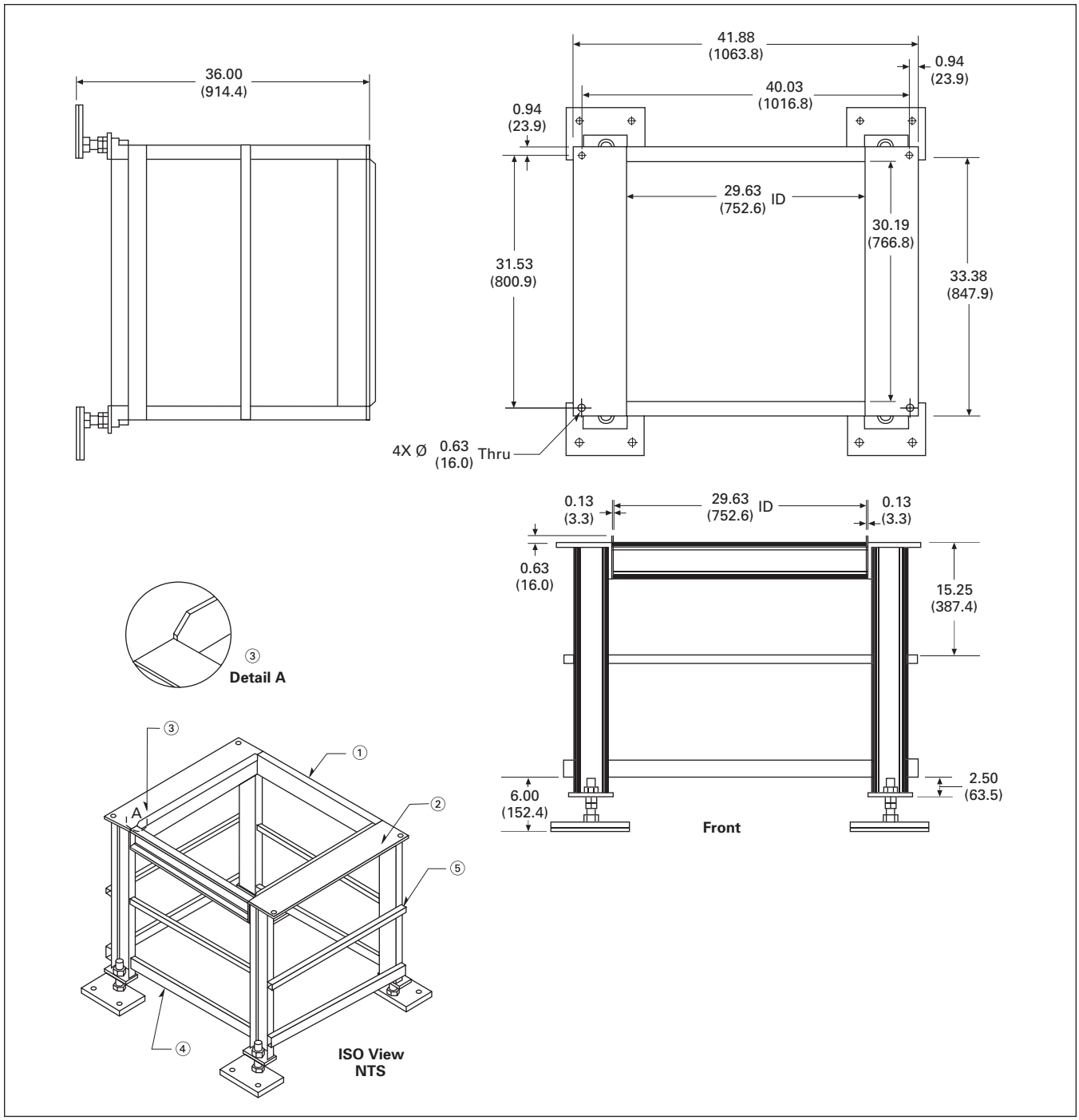


Figure 33.5-34. 200–300 kVA PDU—Floor Stand, 36.00 Inch (914.4) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

200–300 kVA PDU

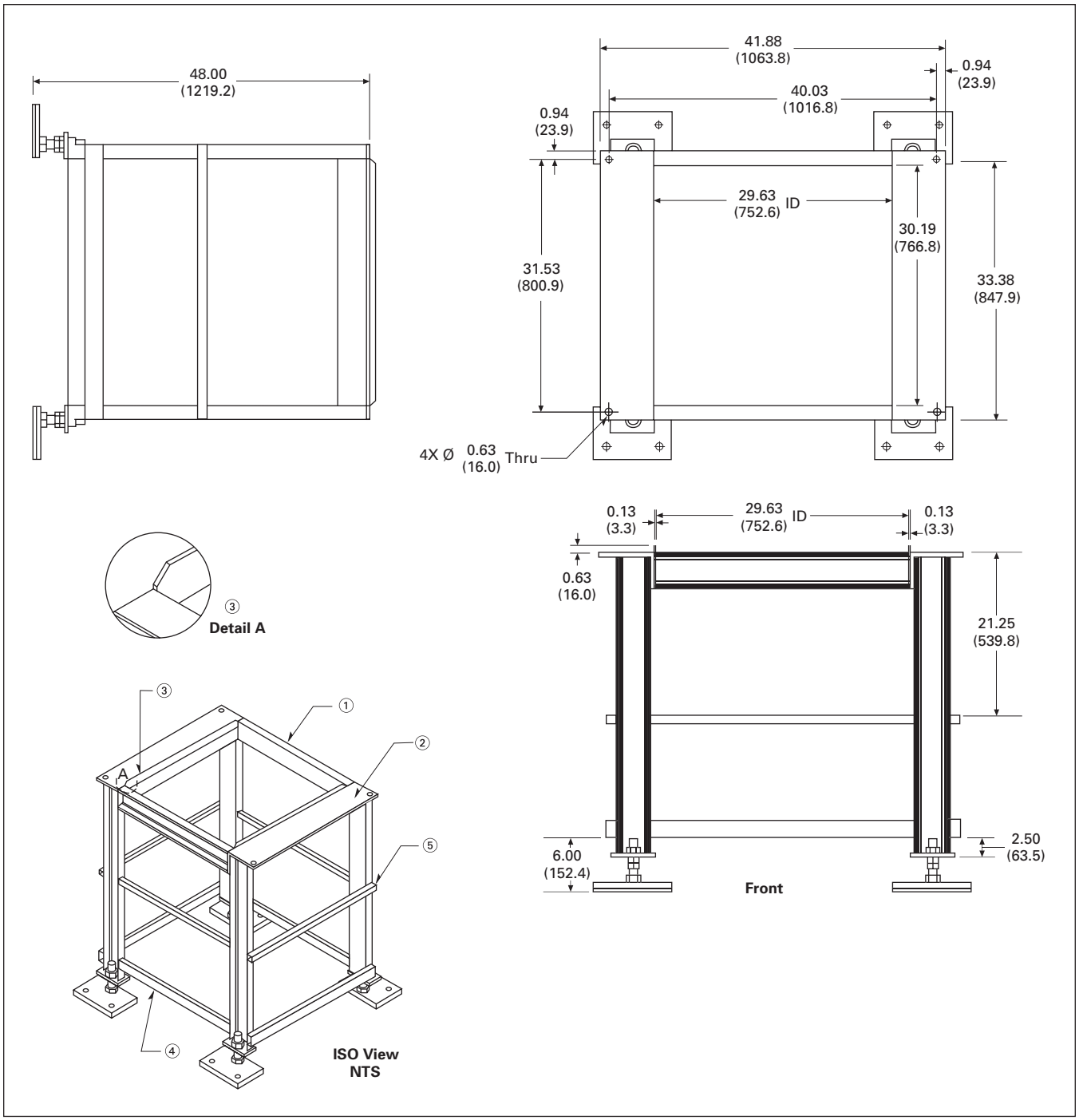
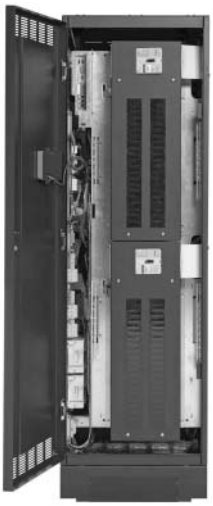


Figure 33.5-35. 200–300 kVA PDU—Floor Stand, 48.00 Inch (1219.2) Seismic—Dimensions in Inches (mm)

Notes: Unless otherwise specified.
1. Top front and rear C4 x 5.4#.
2. Angle 6.00 x 4.00 x 0.38 inches thick (152.4 x 101.6 x 9.7).
3. Guide rails 1.50 x 0.13 inches thick (38.1 x 3.3), with 45° chamfers on top corners.
4. Lower support TS 2x1.
5. Middle support 1.00 inch (25.4) square tubing.

Remote Power Panel



Remote Power Panel

General Description

Eaton's Remote Power Panel (RPP) provides big power in a small footprint, perfect for space-cramped facilities or an end-of-row distribution solution. The RPP can be configured with up to four 400A panelboards, providing 168 poles of power distribution in a free-standing structure with a footprint of just four square feet. Loaded with Eaton's advanced Energy Management System (EMS), understanding your facility's power distribution and characteristics has never been easier.

Features

Standard Options

- Direct connection to panelboards with BCMS option
- Panelboards with 400A panel main breaker
- Branch circuit monitoring up to 100A per branch CT
- See-through Plexiglas doors
- Rack-style doors
- Reinforced conduit landing plates
- Rear access cut-out for two front panel installations
- Air skirts

Accessibility and Serviceability

- Ample cabling space between panelboards (up to 5.00 inches)
- Standard top and bottom cable access for more flexible installation options
- Up to two panelboards can be mounted on both the front and rear faces
- Easily removable side covers with captive hardware
- Rear access cut-out for dual front panel installations

Aesthetics and Flexibility

- Line and Match design with other Eaton power quality products gives a clean professional appearance to facilities and data centers
- Improved paint and surface texture for easy cleaning and maintenance
- Available Plexiglas and rack-style door options
- Top or bottom panelboard configuration

Safety and Quality

- Protective trim panels cover panel-board wiring from accidental contact
- Substantial partitions separate high/control voltage sections for safer servicing
- UL/CSA approved 60950
- Supported by Eaton's extensive network of over 240 field technicians for fast reliable service

Monitoring and Connectivity

- Eaton's Energy Management System (EMS) provides state-of-the-art monitoring and alarming provisions
- Access information via 8 x 40 character on-unit display or via your network through the PXGX1000 Power Xpert Gateway card
- Stores consumption trends for up to 24 months
- 60A and 100A branch breaker CTs available
- Time-stamped metering
- Custom alarm settings

Technical Data

Table 33.5-2. Technical Specifications ①

Category	RPP
Electrical Characteristics	
Input/output	208/120V—three-phase, four-wire + ground
Input ratings	100/225/450/900A
Input type	Single feed into main lug Dual feed into main lugs (up to four) Direct connection to panelboard main breaker
Frequency	60 Hz
Neutral rating	200%
Power Distribution	
Panelboards	Up to four 42-pole panels—two panels in front and two in rear
Panelboard options	Eaton (bolt-on or plug-in) or Square D panels (225A and 400A main breakers)
Branch breakers	Factory-installed branch circuit breakers ②
Dimensions	
Main cabinet	24.00 (609.6) W x 24.00 (609.6) D x 80.00 (2032.0) H
Standards	
Standards	NEMA, UL 60950, CSA 60950

① Due to continuing improvements, specifications are subject to change without notice.
② Please see sales configurator for additional information.

Options

- Energy Management System
- High kAIC panel main breakers
- Branch circuit monitoring
- Floor Stands (12, 18, 24, 30, 36 and 48 inches)
- Isolated ground (standard)
- Distribution cables (whips)
- Clear Plexiglas doors
- Isolation barrier for dual feed input
- Top or bottom panelboard installation
- Extra knock-out, incoming and conduit plates
- Transient suppression plate
- Surge protection device (100 or 200 kA)
- Low voltage control junction box
- Mesh rack doors
- Four building alarm inputs (NO or NC)

Connectivity

- Modbus RTU (RS-232/RS-485)
- Power Xpert Gateway Card—PXGX1000 (Modbus TCP/IP, SNMP, Ethernet)

Energy Management System

Monitored Parameters

- Input voltage (L-L and L-N)
- Input current (A, B and C phases)
- Output voltage (L-L and L-N)
- Output current (A, B and C phases)
- Output neutral current
- System ground current
- kVA, kW, Hz
- Monthly, yearly, total kW
- Input voltage THD (all phases)
- Output voltage THD (all phases)
- Power factor (lead/lag indicator)
- Output current % (A, B and C phases)

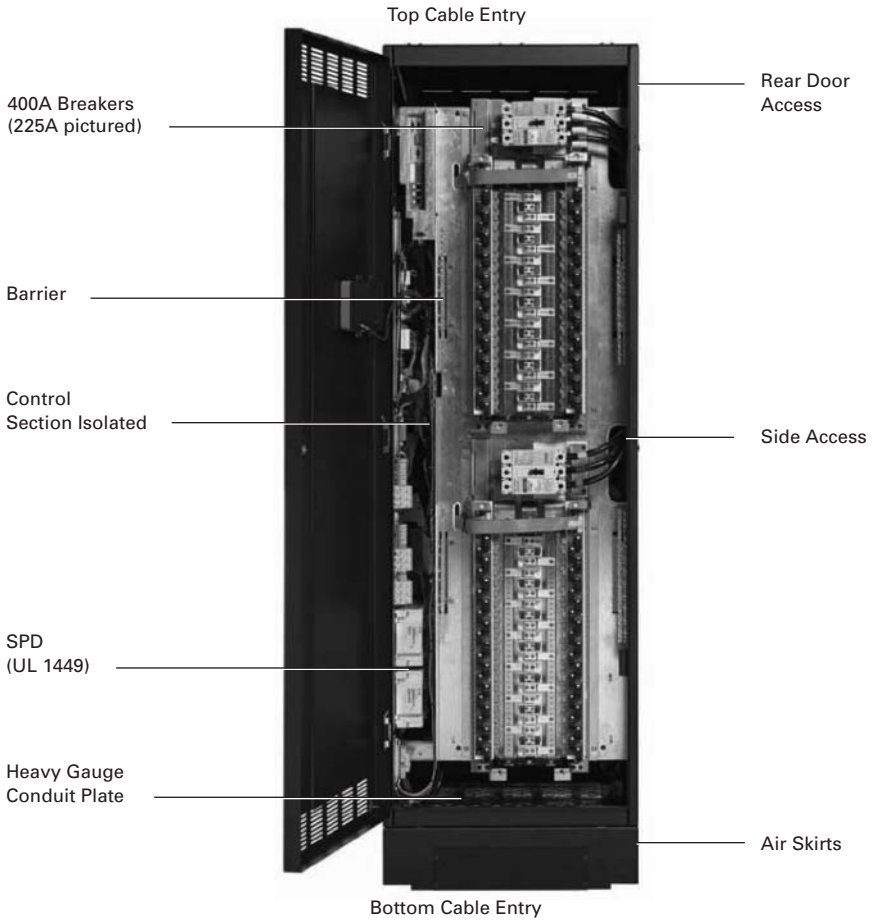
Load Profiling

Captures highest and lowest reading on monthly basis with trend information over the last 24 months

- Input/output voltage
- Input/output current
- Input/output frequency
- Input/output power factor
- Input/output kVA
- Input/output voltage THD
- Ground current
- Neutral current

Warnings/Alarms

- Input/output overvoltage and undervoltage
- Input/output overfrequency and underfrequency
- Input/output phase rotation
- Input/output voltage THD
- Input/output current THD
- Output overload (three levels)
- Building alarms (two programmable)
- Summary alarm
- Communication fault connectivity



Remote Power Panel Features

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RPP Schematics—Direct Feed, Single MLO and Dual MLO without Metering

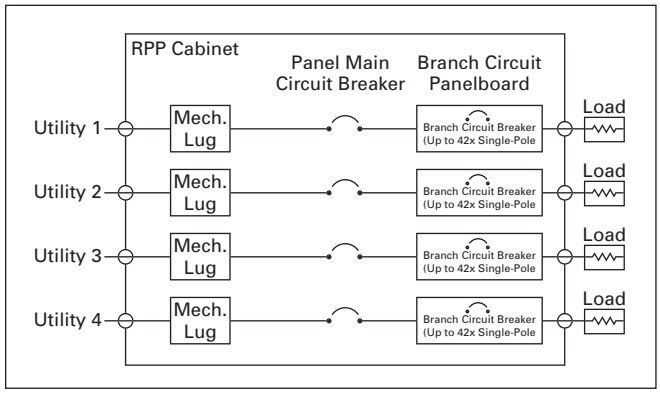

Figure 33.5-36. RPP Direct Connect ①

① One-line diagram shown with quad-panelboard configuration. The maximum number of panelboards available may vary.

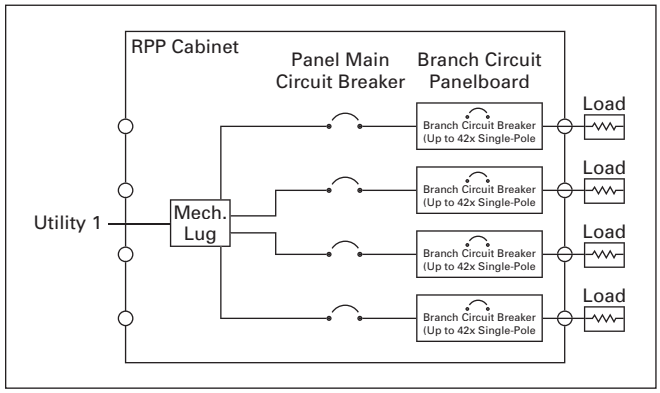

Figure 33.5-37. RPP Single MLO ②

② One-line diagram shown with quad-panelboard configuration. The maximum number of panelboards available may vary.

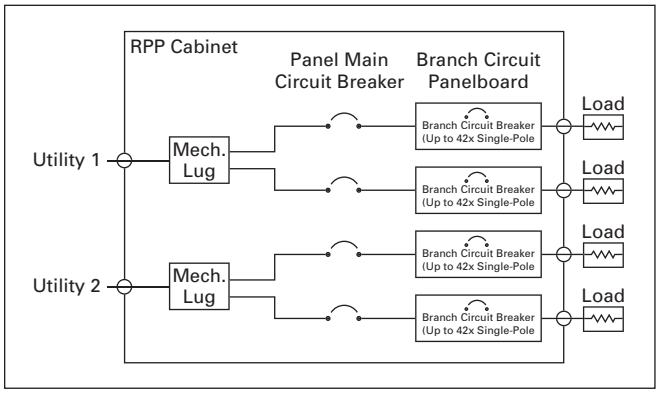

Figure 33.5-38. RPP Dual MLO ③

③ One-line diagram shown with quad-panelboard configuration. The maximum number of panelboards available may vary.

RPP Site Planning

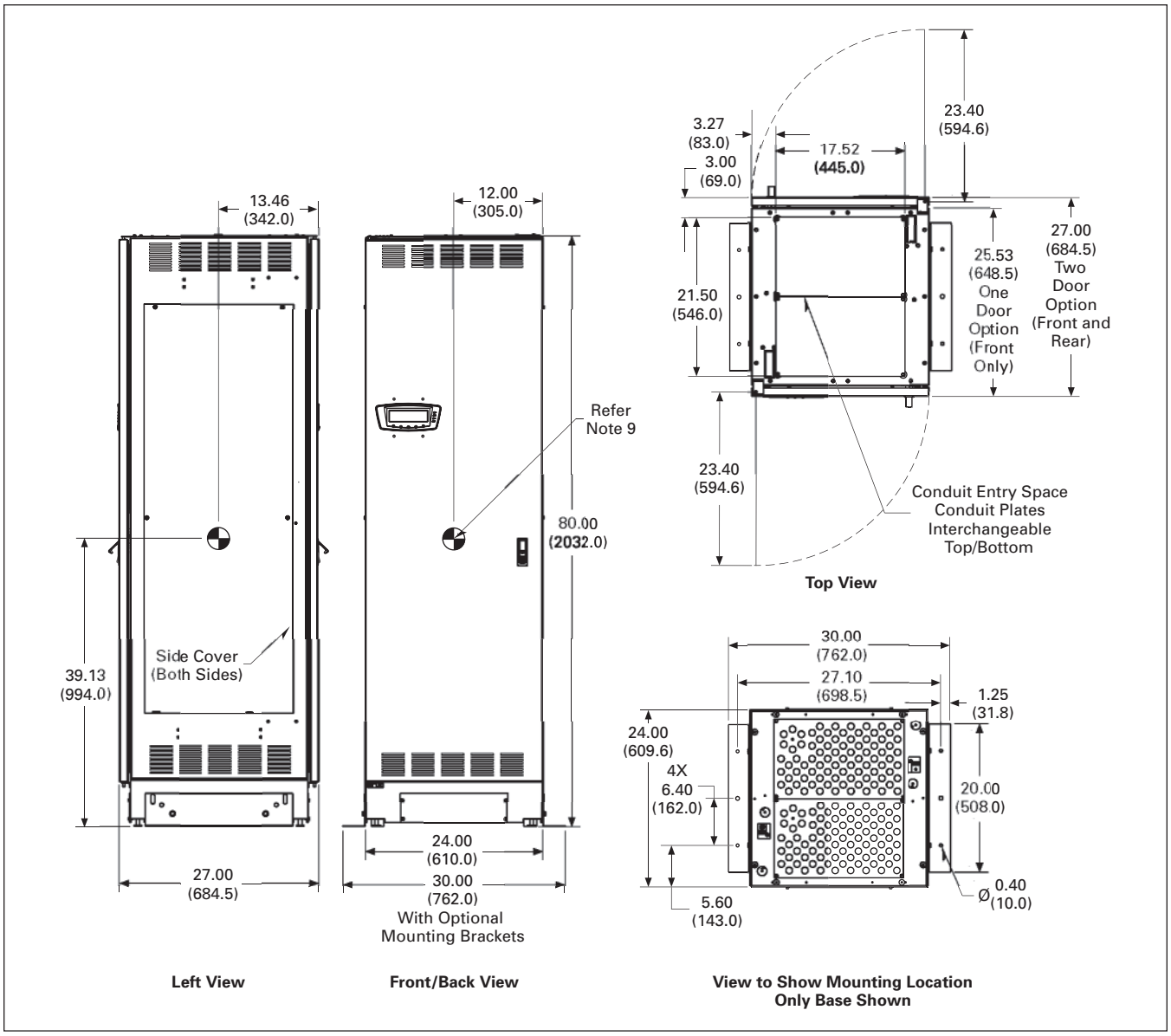

Figure 33.5-39. 50–150 kVA PDU—Main Cabinet—Right Front Facing Sidecar and Left Side Facing Sidecar—Dimensions in Inches (mm)

Notes:

1. For optional mounting brackets use shipping brackets.
2. Weight: 880 lbs (399 kg) for the worst case. Different configurations may have different weight.
3. The system must be installed on a level floor suitable for computer or electronic equipment.
4. The system must be installed in a temperature and humidity controlled indoor area free of conductive contaminants.
5. Ambient temperature range: 32°–104°F (0°–40°C), recommended operating range: 68°–77°F (20°–25°C) maximum relative humidity 95% noncondensing.
6. Minimum 36.00-inch (914.4 mm) clearance in front and rear of the cabinet are required for cooling air intake and servicing space for front and rear access unit. For front unit minimum clearance in front 36.00-inch (914.4 mm). None required in back. Side access is required for service.
7. Top and bottom cable entries through removable access plates are standard for all configurations. Access plates shall be custom-modified to suit conduit sizes.
8. All wiring is to be in accordance with national and local electric codes.
9. Center of gravity location shown for dual feed, 400A panelboard (four). Center of gravity might vary for different configurations.
10. Specifications are subject to change.

RPP Floor Stand

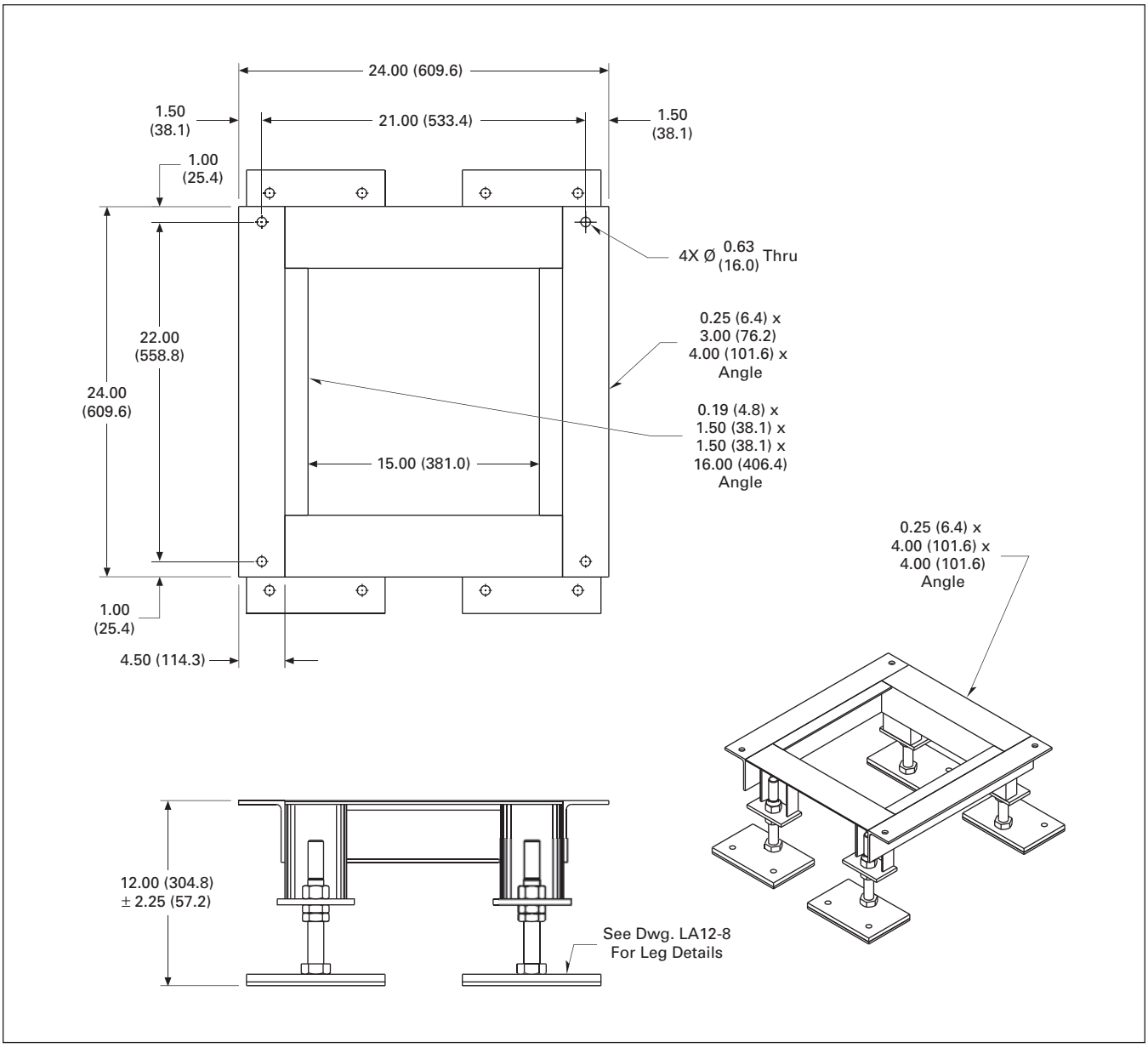

Figure 33.5-40. RPP Floorstand, 12.00 Inch (304.8)—Dimensions in Inches (mm)

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RPP Floor Stand

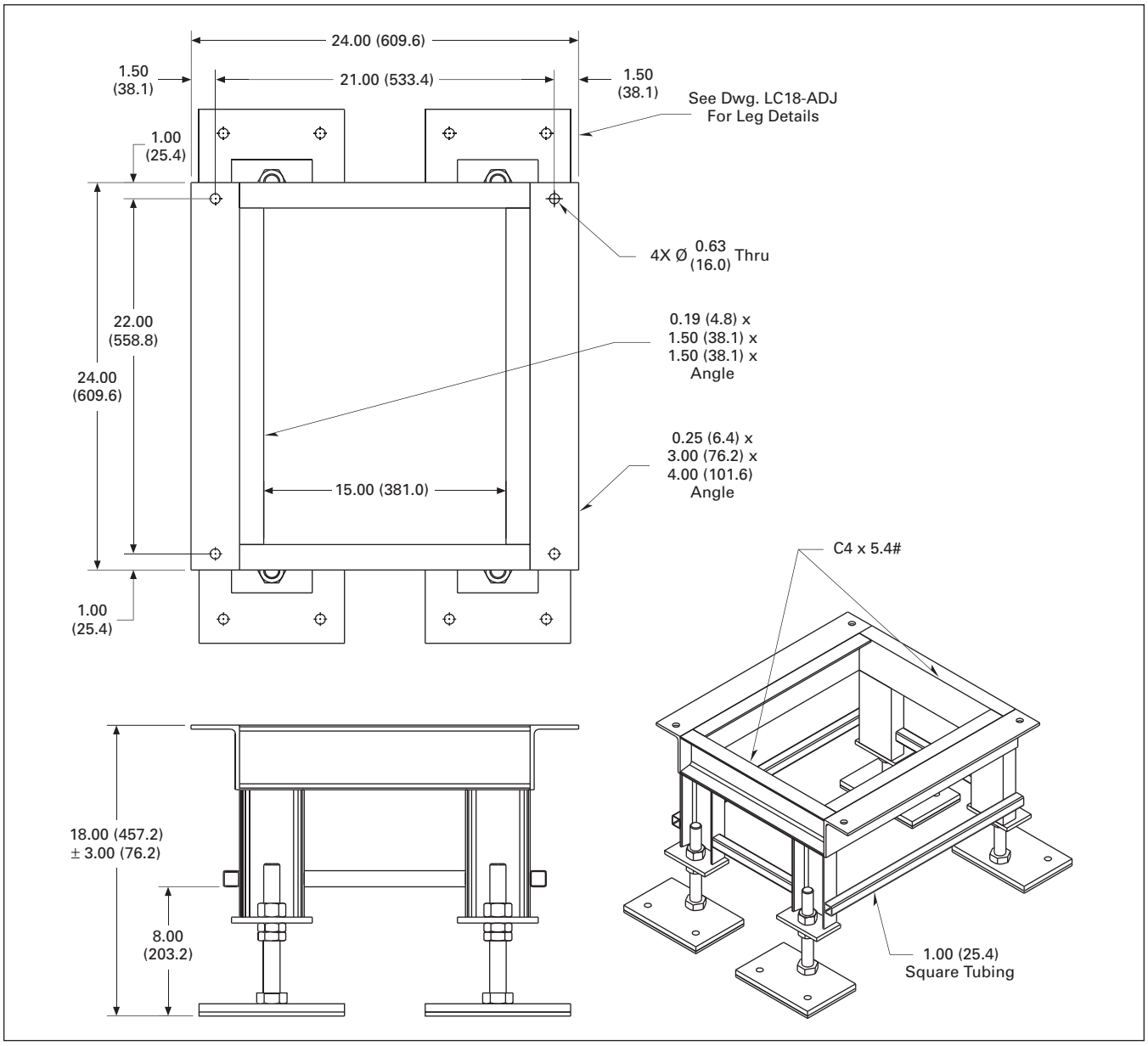

Figure 33.5-41. RPP Floorstand, 18.00 Inch (457.2)—Dimensions in Inches (mm)

33

RPP Floor Stand

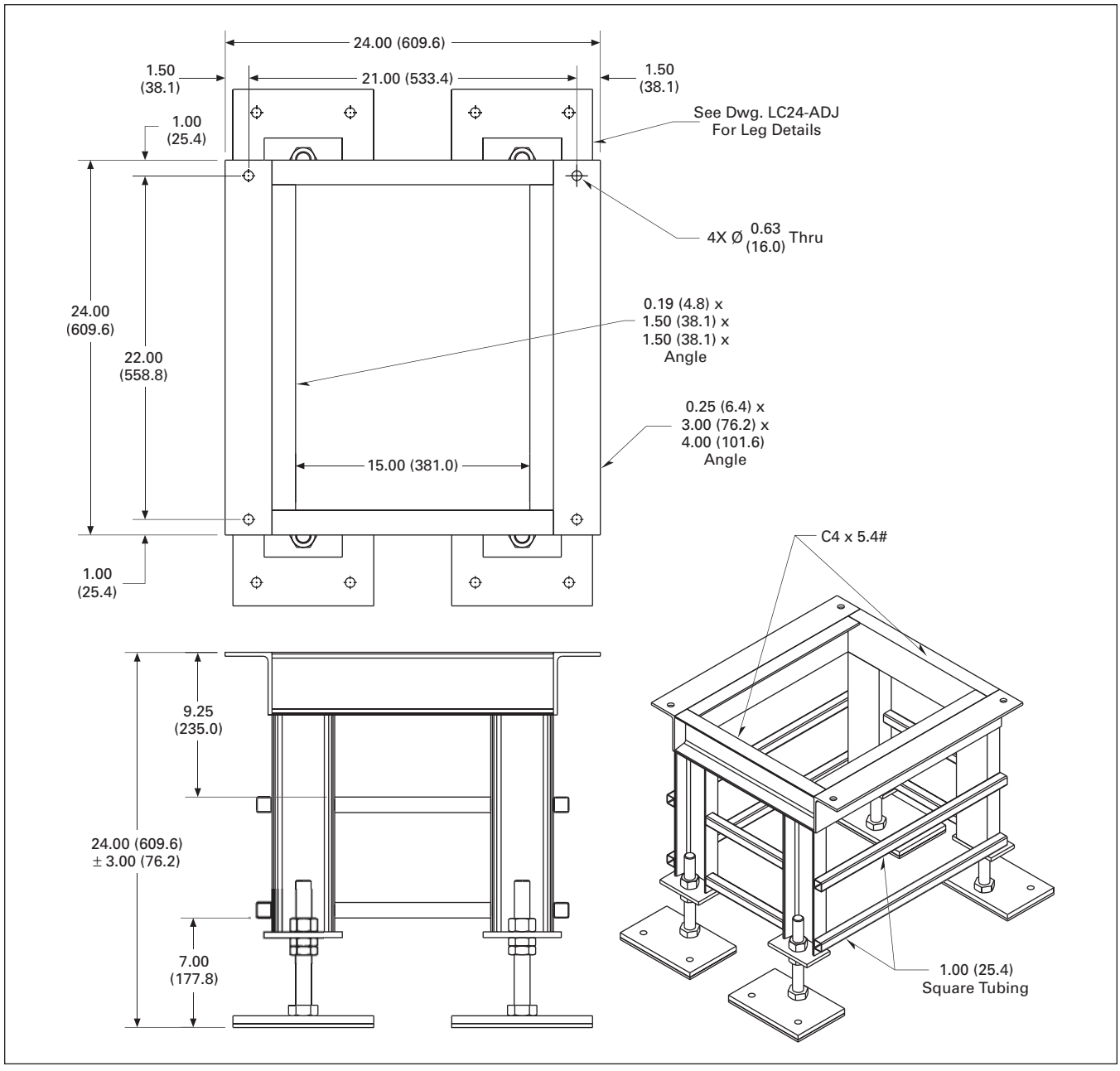

Figure 33.5-42. RPP Floorstand, 24.00 Inch (609.6)—Dimensions in Inches (mm)

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RPP Floor Stand

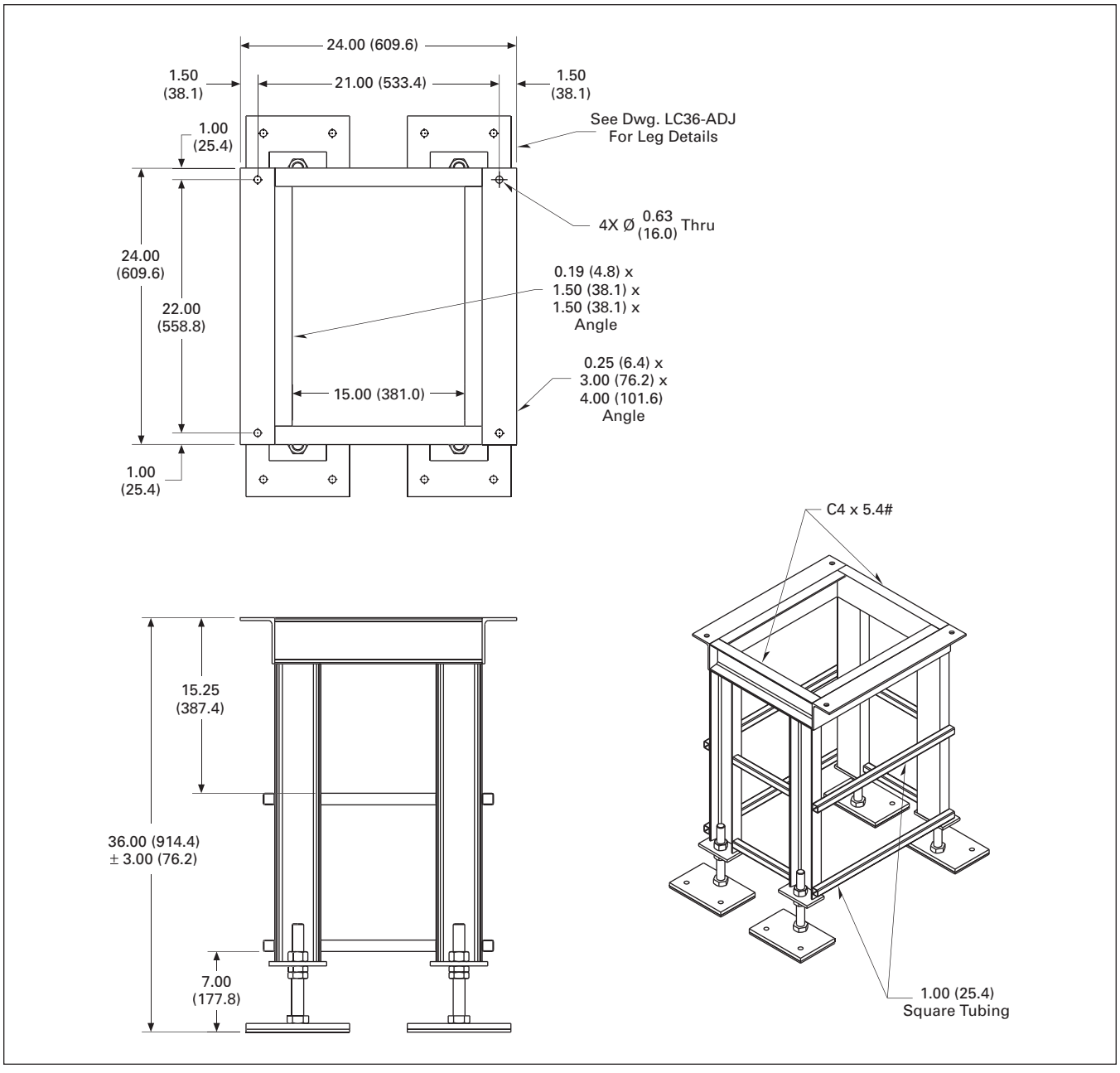

Figure 33.5-43. RPP Floorstand, 36.00 Inch (914.4)—Dimensions in Inches (mm)

33

RPP Floor Stand

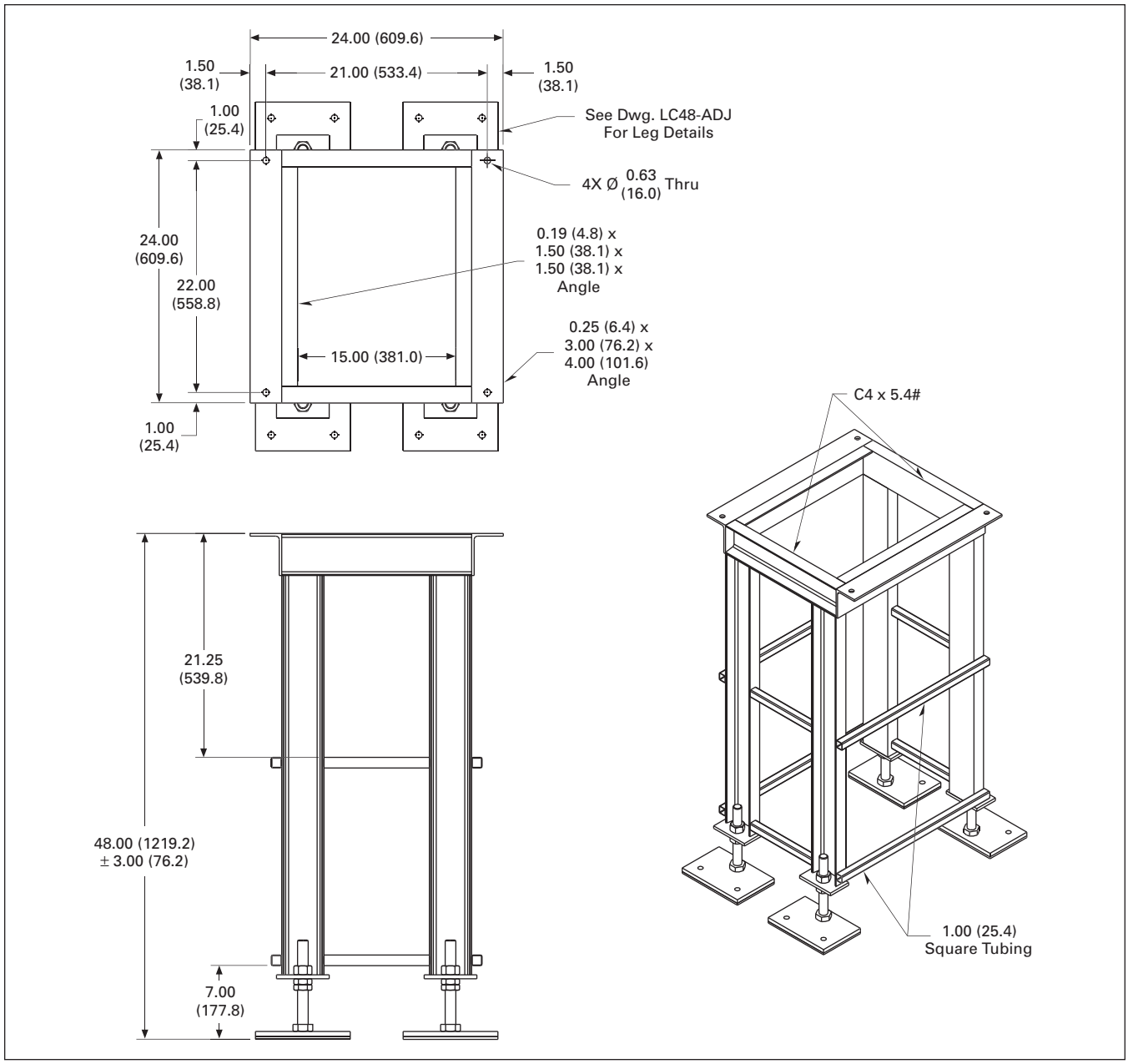

Figure 33.5-44. RPP Floorstand, 48.00 Inch (1219.2)—Dimensions in Inches (mm)

33

Glossary of Power Terms

Commonly Used Terms

ampere (A or Amp): The unit of measure for the "rate of flow" of electricity, analogous to "gallons per minute." VA x 0.7 (power factor) = Watts

alternating current (AC): An electric current that reverses its direction at regularly recurring intervals.

blackout: A zero-voltage condition lasting for more than two cycles.

brownout: A steady state of low voltage, but not zero voltage.

direct current (DC): An electric current in which the flow of electrons is in one direction, such as supplied by a battery.

double conversion: A UPS design in which the primary power path consists of a rectifier and inverter. Double conversion isolates the output power from all input anomalies such as low voltage surges and frequency variations.

electrical line noise: Radio frequency interference (RFI), electromagnetic interference (EMI) and other voltage or frequency disturbances.

electromagnetic interference (EMI): Electrical interference that can cause equipment to work improperly. EMI can be separated into conducted EMI (interference conducted through cables out of the UPS) and radiated EMI (interference conducted through the air).

Energy Saver System (ESS): Eaton's proprietary energy-saving technology that allows large three-phase UPSs to operate at greater than 99% efficiency across load levels down to 20%, while maintaining maximum protection for the load.

hertz (Hz): A unit of frequency equal to one cycle per second.

high voltage spike: Rapid voltage peak up to 6000V.

hot-swappable: The ability to change a module without taking the critical load off the UPS.

input voltage range: The voltage range within which a UPS operates in "normal" mode and does not require battery power.

inverter: UPS assembly that converts internal DC power to output AC power to run user's equipment. When the inverter is supporting 100% of the load at all times, as with an online UPS, there is no break from utility power to battery power.

line-interactive: An offline UPS topology in which the system interacts with the utility line in order to regulate the power to the load.

load: The equipment connected to and protected by a UPS.

maintenance bypass: An external wiring path to which the load can be transferred in order to upgrade or perform service on the UPS without powering down the load.

noise: (1) A disturbance that affects a signal; it can distort the information carried by the signal. (2) Random variations of one or more characteristics of any entity such as voltage, current or data. (3) Loosely, any disturbance tending to interfere with normal operation of a device.

offline: Any UPS that does not fit the definition of online. Line-interactive and standby topologies are offline.

online: (1) A UPS that provides power to the load from its inverter 100% of the time, regulating BOTH voltage and frequency, usually double conversion topology.

plug and play: An electrical device that does not require an electrician to install.

power factor (PF): The ratio of real power to apparent power. Watts divided by VA. Most power supplies used in communication and computer equipment have a power factor of 0.7. (PF = 0.7)

VA x PF = W

W/PF = VA

power sag: Low voltage (below nominal).

power surge: High voltage (above nominal).

rack-mount: Ability to mount an electrical assembly into a standardized rack.

rectifier: UPS component that converts incoming AC power to DC power for feeding the inverter and for charging the battery.

redundancy: Duplication or repetition of elements in electronic equipment to provide alternative functional channels in case of failure.

relay communication: Communication between a UPS and a computer through the opening and closing of solid state relays which are pre-defined to indicate UPS status.

RS-232: The standard for serial interfaces (serial refers to the eight bits of each character successively sent down one wire) used by most computers, modems and printers; a 25-pin physical interface.

run time: The amount of time the battery in a UPS is designed to support the load.

sine wave: A waveform that represents periodic oscillations of a pure frequency.

single-phase: Power system with one primary waveform.

standby: UPS technology where power is applied to the load directly from the utility under normal operation, but switched to the inverter and battery for emergency support (offline topology).

three-phase: A power system with three primary voltage waveforms spaced equally 120° out of phase with each other.

Total Harmonic Distortion (THD): Describes how much the circuit voltage deviates from a perfect sine wave. A poor voltage THD is most often manifested in a "flat topped" waveform that comes from the inability of a power source to respond to the demands of highly non-linear loads.

uninterruptible power system (UPS): An electrical system designed to provide instant, transient-free back up power during power failure or fault. Some UPSs also filter and/or regulate utility power (line conditioning).

Variable Module Management System (VMMS): Eaton's efficiency maximizing technology that allows the 9395 UPS to achieve peak efficiency at low load levels.

volt/voltage (V): Electrical pressure that pushes current through a circuit. High voltage in a computer circuit is represented by 1; low (or zero) voltage is represented by 0; volts direct current (Vdc); volts alternating current (Vac).

VoltAmps (VA): Voltage x amps.

watts (W): The rate of doing electrical work.

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