



Site Preparation,
Installation and Operator's Manual
for
Extended Battery Cabinet
for use with
Series 1
Uninterruptible Power Systems

Select Code 167-405-116
Issue 5

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Requesting a Declaration of Conformity

Units that are labeled with a CE mark comply with the following harmonized standards and EU directives:

- Harmonized Standards: EN 50091-1-1 and EN 50091-2
- EU Directives: 73/23/EEC, Council Directive on equipment designed for use within certain voltage limits
93/68/EEC, Amending Directive 73/23/EEC
89/336/EEC, Council Directive relating to electromagnetic compatibility
92/31/EEC, Amending Directive 89/336/EEC relating to EMC

The EC Declaration of Conformity is available upon request for products with a CE mark. For copies of the EC Declaration of Conformity, contact:

Powerware Corporation
Koskelontie 13
FIN-02920 Espoo
Finland
Phone: +358-9-452 661
Fax: +358-9-452 665 68

Class A EMC Statements

FCC Part 15

NOTE This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

ICES-003

This Class A Interference Causing Equipment meets all requirements of the Canadian Interference Causing Equipment Regulations ICES-003.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

EN50091-2

Some configurations are classified under EN50091-2 as “Class-A UPS for Unrestricted Sales Distribution.” For these configurations, the following applies:

WARNING This is a Class A-UPS Product. In a domestic environment, this product may cause radio interference, in which case, the user may be required to take additional measures.

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CHAPTER 1

INTRODUCTION

Thank you for your purchase of the Avaya Extended Battery Cabinet (EBC). Please follow the safety precautions in your Avaya UPS operator's manual before installing your EBC. The Avaya EBC is an accessory for your Series 1 UPS that extends the battery-backup run times for the UPS. The EBC is available in 60 and 120 Vdc models, both with or without a charger.

Up to ten EBCs can be attached to customize the battery run time for your application. For lower rated UPSs, up to eight hours of battery run time can be achieved with fewer than ten EBCs. When customizing an EBC system, verify that you have the required number of units with chargers according to the following table:

Total Number of EBCs per System	Minimum Number of EBCs with Chargers	Additional EBCs (with or without chargers)
1	1	0
2	1	1
3	2	1
4	2	2
5	3	2
6	3	3
7	4	3
8	4	4
9	5	4
10	5	5

UPS Model and Battery Configurations

There are two important considerations you need to evaluate when selecting the UPS model and battery configuration for your equipment:

1. Load requirements of the equipment you want to protect. Select the UPS model that meets the power consumption requirements of the equipment you want to protect. “Load Requirements” explains how to determine the load requirements (refer to your Avaya UPS operator’s manual).
2. Battery protection time. During a power failure, the UPS operates on battery, providing time to complete your computing activities prior to UPS shutdown. The duration of this time period is directly related to the UPS battery configuration and the amount of load on the UPS.

By adding battery modules, you can customize your UPS to provide enough battery protection time for normal processing activities. By selecting or not selecting the charger capability, you can provide recharge times consistent with your geographical area and utility performance.

The 120V EBC is used with a 3000 VA through 6000 VA UPS. The 60V model is used with the 800 VA EXT through 2000 VA UPS.

EBC System Recharge Time

The following table displays the estimated minimum recharge time, after a discharge at the rated load, to return the EBC batteries to 80% capacity.

Recharge Time to 80%	Battery Time Used			
	1 Hour	2 Hours	4 Hours	8 Hours
EBC System with all Chargers	14 hours	16 hours	20 hours	30 hours
EBC System with and without Chargers*	30 hours	35 hours	50 hours	70 hours

*Recharge times are based on the minimum number of chargers per system (see previous section).

EBC System Discharge Time (6000 VA UPS)

The following table displays the approximate discharge times, shown as a function of time versus load in VA. In addition to the number of EBCs required, a UPS with two battery modules (the standard configuration) is required for the times shown in the table.

Load (VA)*	Number of EBCs Required for Backup Time (with two battery modules)									
	0.25 Hour	0.5 Hour	1 Hour	2 Hours	3 Hours	4 Hours	5 Hours	6 Hours	7 Hours	8 Hours
1000			1	1	1	1	2	2	2	2
1500			1	1	2	2	2	3	3	3
2000		1	1	1	2	2	3	3	4	4
2500		1	1	2	2	3	3	4	4	5
3000	1	1	1	2	3	3	4	5	5	6
3500	1	1	1	2	3	4	5	5	6	7
4000	1	1	2	3	3	4	5	6	7	7
4500	1	1	2	3	4	5	6	7	7	8
5000	1	1	2	3	4	5	6	7	8	8
5500	1	1	2	3	4	5	7	7	8	9
6000	1	1	2	4	5	6	7	8	9	10

*Based on load power factor of 0.67.



NOTE Do not connect more than ten EBCs to the UPS. When configured with a Model 4500/5000/6000 UPS, a Bypass Distribution Module (BDM) is required.

EBC System Discharge Time (3000 VA UPS)

The following table displays the approximate discharge times, shown as a function of time versus load in VA. In addition to the number of EBCs required, a UPS with one battery module (the standard configuration) is required for the times shown in the table.

Load (VA)*	Number of EBCs Required for Backup Time (with one battery module)									
	0.25 Hour	0.5 Hour	1 Hour	2 Hours	3 Hours	4 Hours	5 Hours	6 Hours	7 Hours	8 Hours
500				1	1	1	1	1	1	1
1000			1	1	1	1	2	2	2	2
1500			1	1	2	2	2	3	3	3
2000		1	1	1	2	2	3	3	4	4
2500		1	1	2	2	3	3	4	4	5
3000	1	1	1	2	3	3	4	5	5	6

*Based on load power factor of 0.67.



NOTE Do not connect more than ten EBCs to the UPS.

EBC System Discharge Time (2000 VA and Below UPS)

The following table displays the approximate discharge times, shown as a function of time versus load in VA. In addition to the number of EBCs required, a UPS with internal batteries is required for the times shown in the table.

Load (VA)*	Number of EBCs Required for Backup Time (without battery modules)									
	0.25 Hour	0.5 Hour	1 Hour	2 Hours	3 Hours	4 Hours	5 Hours	6 Hours	7 Hours	8 Hours
500				1	1	1	1	1	1	1
1000			1	1	1	1	2	2	2	2
1500			1	1	2	2	2	3	3	3
2000		1	1	1	2	2	3	3	4	4

*Based on load power factor of 0.67.



NOTE Do not connect more than ten EBCs to the UPS.

CHAPTER 2

INSTALLATION

The following sections describe the installation and physical setup of the Extended Battery Cabinet.

Unpacking and Inspection

Carefully unpack the UPS and optional battery modules, making sure to retain the packaging materials for future shipment of the units. Examine each unit carefully for any signs of damage and immediately notify your Avaya service representative if damage is present.

Installing the EBC

Read all of the caution and warning statements in “Safety Warnings” of your Avaya UPS operator’s manual before performing the installation.

The following instructions assume you have already removed the EBCs from the pallets according to the unloading instructions on the outside of the shipping box.

Use the following procedure to set up the EBC:

1. Place the EBC near the operating site. The UPS should be well ventilated and away from direct sunlight or other heat source.



NOTE It is recommended to allow a minimum of 4.5” of space from the rear of the charger for proper ventilation.

2. If you are using only one EBC and want increased stability or a seismic installation, remove the mounting plates from the pallets (see Figure 1). Otherwise, skip to Step 6 on page 7.

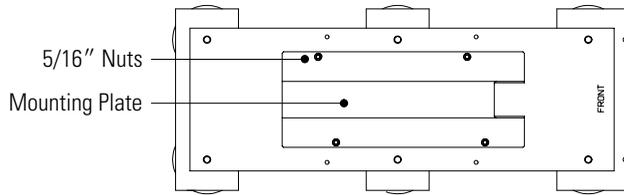


Figure 1. Seismic Installation Mounting Plate

3. A seismic installation of the EBC requires that the mounting plates be bolted to the floor. See Figure 2 for a detailed drill and mounting pattern.



NOTE For Zone 4, it is recommended to use 5/16" self-drill bolts and hardware with 1 5/16" minimum embedment for 3000PSI-strength concrete. Refer to your local building codes for seismic mounting requirements.

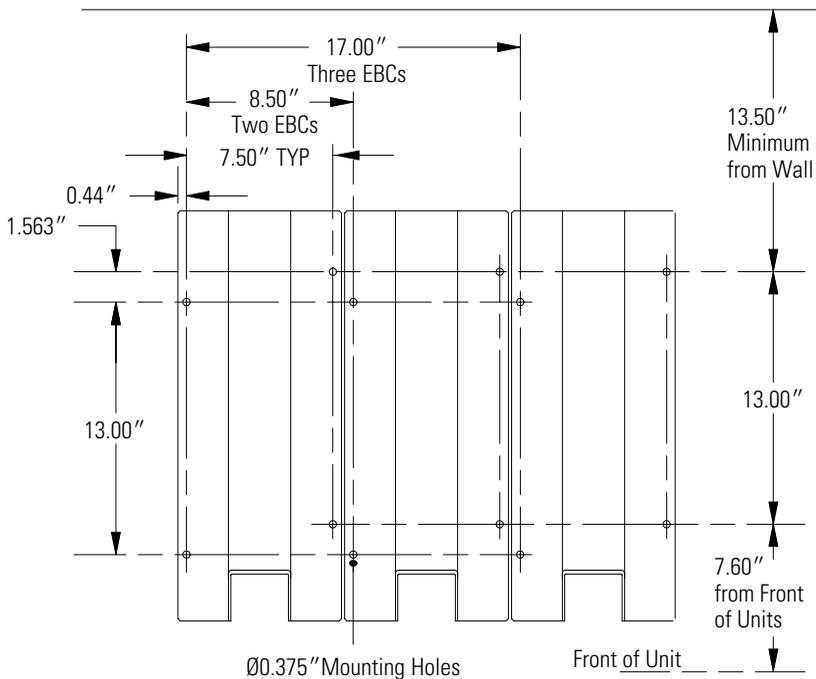


Figure 2. Seismic Installation Mounting Pattern

- Using customer-supplied bolts, attach one mounting plate to the floor for each EBC to be installed.



NOTE The floor mounting bolts are customer-supplied and should fit the 0.375" diameter mounting holes on the mounting plates.

- Using the 5/16" bolts removed when unloading each cabinet from its pallet, resecure the EBC to the mounting plate.
- With the cabinets now in their final position, join the cabinets together using the hardware provided in the kit tied to the rear of each unit. See Figure 3 and Figure 4 for joining details.

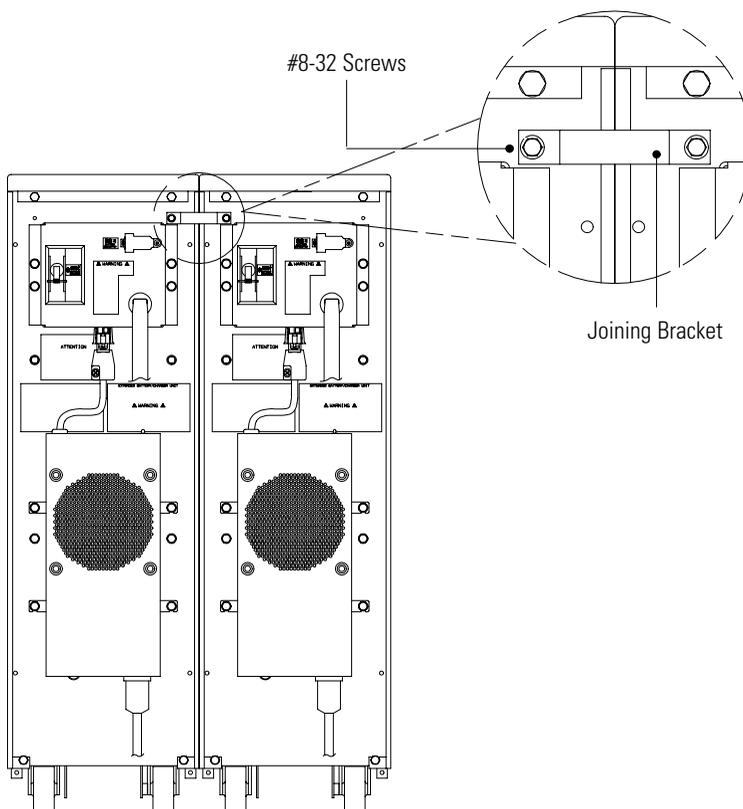


Figure 3. EBC Joining Details (Rear View)

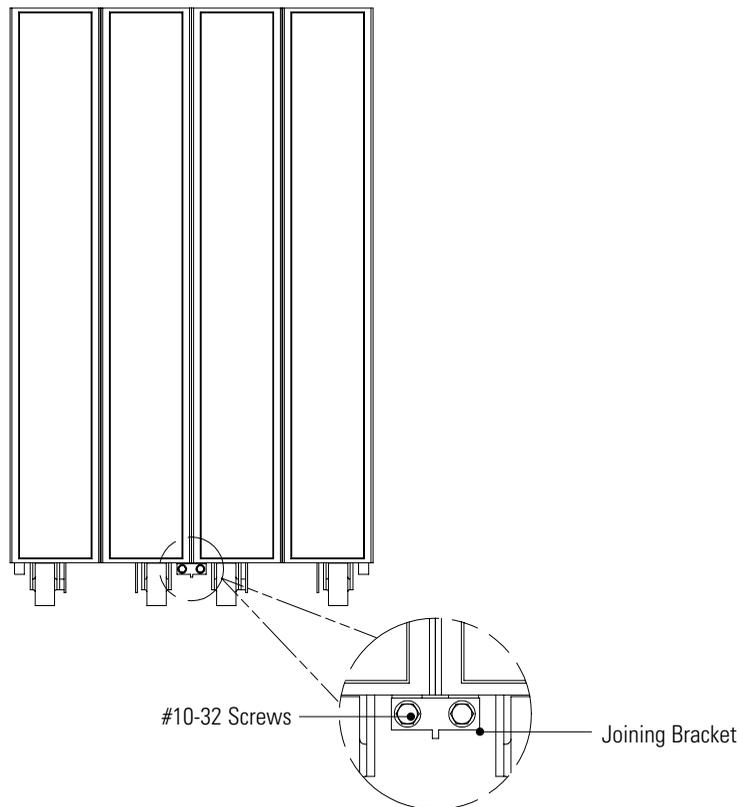


Figure 4. EBC Joining Details (Front View)

7. Verify the UPS power processing unit (PPU) or UPS cabinet is turned off.
8. Verify the circuit breaker on all EBCs and battery modules is in the OFF (O) position (see Figure 5 on page 10).
9. Plug the EBC battery output cord into the external battery connector on the PPU/UPS cabinet or battery module. All battery connectors are polarized to prevent incorrect connection.
10. Plug the IEC-320 AC line cord into the bottom of the charger, then plug the line cord into a wall outlet (each charger requires about 6A for 120 Vac or 3A for 220 Vac for AC input). Once powered, the charger LED illuminates indicating that the charger is properly operating.

11. If additional EBCs are to be used, plug the battery cord of the second cabinet into the battery connector of the first cabinet after pivoting the battery connector guard out of the way. Follow this procedure for each additional EBC.
12. Remove the breaker tie from the circuit breaker on all EBCs.
13. Switch the circuit breaker to the ON (|) position on each EBC and battery module connected to the UPS.
14. The UPS may now be turned on according to your Avaya UPS operator's manual.

Important Safeguards

- After you have connected EBCs to a UPS, do not attempt to lift them or place any unnecessary strain on the battery output connectors.
- Do not connect or disconnect EBCs or battery modules while the UPS is operating in Battery mode.
- When connecting or disconnecting EBCs, verify the circuit breaker on all EBCs and battery modules is in the OFF (O) position.

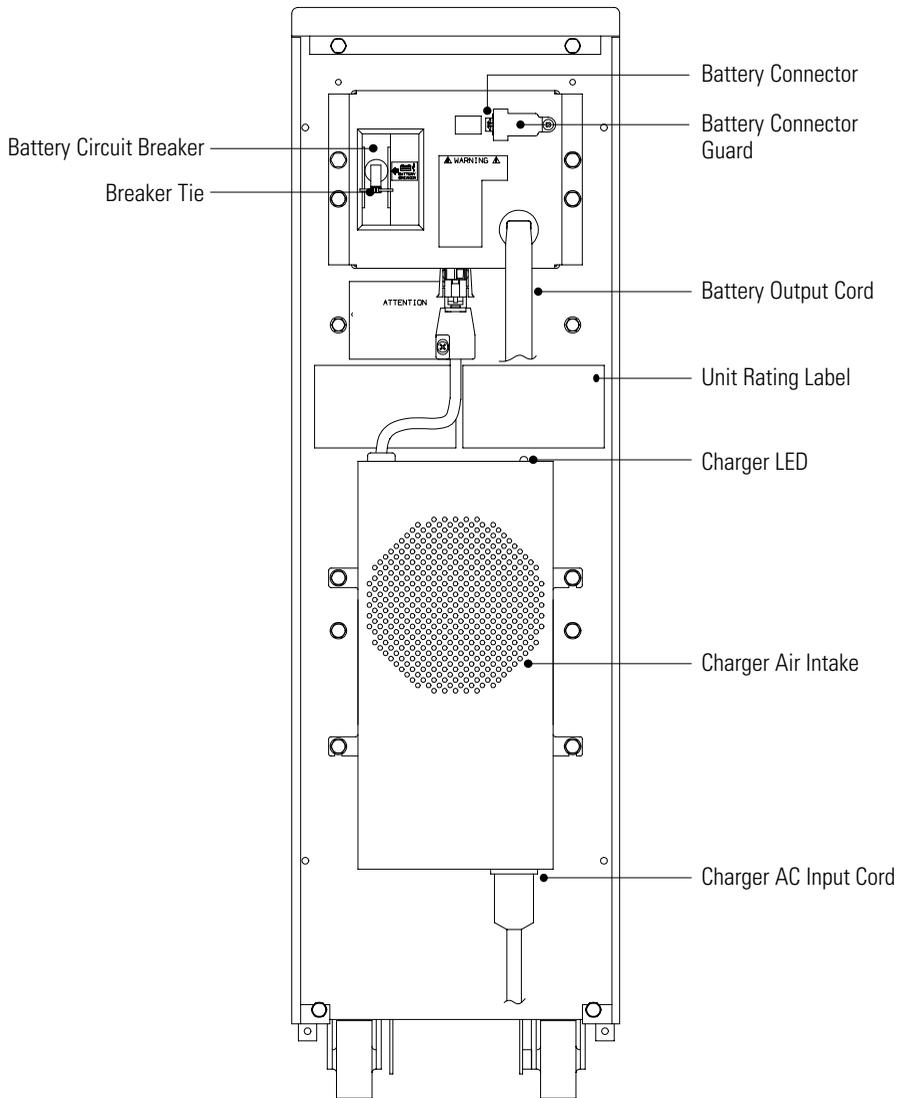


Figure 5. EBC Rear View

CHAPTER 3

SPECIFICATIONS

Table 1. Extended Battery Cabinet Technical Specifications

Battery Type	Valve-regulated lead acid (VRLA)
Expected Life	8-10 years or 400 deep discharges
Nominal Battery String Voltage	60 Vdc or 120 Vdc
Nominal Float Voltage	2.3V/cell
Recharge Current	1.1A per 60 Vdc or 120 Vdc per string
Charger AC Input	6A, 100-120 Vac, 50/60 Hz or 3A, 200-240 Vac, 50/60 Hz
Circuit Protection	Circuit breaker protection
Dimensions (WxDxH)	8.5" x 28.2" x 28.1" (21.6 x 71.6 x 71.4 cm)
Weight	Shipping weight with charger: 394 lb (179 kg) Shipping weight without charger: 388 lb (176 kg) Installed weight with charger: 360 lb (164 kg) Installed weight without charger: 354 lb (161 kg)
Operating Environment	Temperature: 0°C to 35°C (32°F to 95°F) Recommended use: 25°C (77°F); For each 8°C (15°F) rise in temperature, the battery loses approximately 50% of its rated life. Humidity: 5 to 95% (noncondensing)
Agency Approvals	Safety: EN50091-1, EN60950 UL 1778 CAN/CSA-C22.2 No. 107.1-M91 EMC: FCC Part 15 Class A CISPR 22 Class A, EN50091-2 UPS-A EN50082-1, IEC 801-2, -3, -4

Table 2. Parts List

EBC Model	Avaya Comcode
60 Vdc	408128023
120 Vdc	408128056
60 Vdc without charger	408128049
120 Vdc without charger	408128064

CHAPTER 4

TROUBLESHOOTING

The Extended Battery Cabinet is shipped with the battery charged. However, it may lose some of its charge during shipping and storage. You can use the EBC immediately after unpacking, but it may not provide the full-rated backup time during a power failure. Upon initial startup, the EBC may need to operate for approximately 24 hours to fully charge the battery and provide full battery-backup time.

Condition	Possible Cause	Action
System does not provide the expected backup time.	Battery circuit breakers are in the OFF (O) position.	Turn the battery circuit breaker to the ON () position for all connected EBCs and battery modules.
	EBC or battery module is not properly connected to the UPS.	Verify that the EBC cords and battery cords are connected.
	Low battery capacity.	Allow the battery to charge for 24 hours, then retest.
	Protected equipment power requirements exceed UPS capacity.	Reduce load, then retest.
I3 Battery Condition indicator on UPS front panel flashes.	Weak battery.	Allow the battery to charge for 24 hours, then retest. Have batteries replaced if condition persists.
	EBC or battery module is not properly connected to the UPS.	Verify that the EBC cords and battery cords are connected.
	One or more battery circuit breakers were not turned on during installation.	Turn the battery circuit breaker to the ON () position for all connected EBCs and battery modules.
	Battery circuit breaker is open (O).	Verify that the EBC/battery circuit breaker is in the ON () position.
Charger LED is not on.	EBC connections are not secure.	Verify that the EBC is properly connected.
	Charger has failed.	Contact your Avaya service representative.

Obtaining Service

The troubleshooting chart covers most of the difficulties you may encounter during normal operations. If you have any questions or problems with your UPS, call your Avaya service representative or the appropriate telephone number on the service label of your UPS.

Please have the following information ready when you call:

- Model number
- Serial number
- Version number (if available)
- Date of failure or problem
- Symptoms of failure or problem
- Customer return address and contact information



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