DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION

# APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

**APPLICATION #: OSP-0764**

## HCAI Special Seismic Certification Preapproval (OSP)

**Type:** [X] New [ ] Renewal

## Manufacturer Information

Manufacturer: APC by Schneider Electric

Manufacturer's Technical Representative: Scott Littler

Mailing Address: 6700 Tower Circle, Suite 700, Franklin, TN 37067

Telephone: (615) 267-9407 Email: Scott.Littler@se.com

## Product Information

Product Name: UPS and Batteries

Product Type: UPS

Product Model Number: Smart-UPS Modular

General Description: Smart-UPS Modular units in seismic racks.

Mounting Description: Rigid, Floor Mounted

Tested Seismic Enhancements: None

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HCAi
OSP-0764
BY: Mohammad Karim
DATE: 05/02/2023
CALIFORNIA BUILDING CODE, 2022

## Applicant Information

Applicant Company Name: Pre Compliance

Contact Person: Galen Reid

Mailing Address: 36 SW Wall Street, Bend, OR 97702

Telephone: (541) 241-2310 Email: galen@go-pre.com

Title: Principal

## California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: PRE COMPLIANCE

Name: Andrew Coughlin California License Number: S6082

Mailing Address: 36 SW Wall Street, Bend, OR 97702

Telephone: (415) 635-8461 Email: Andy@go-pre.com

## Certification Method

- [ ] GR-63-Core
- [x] ICC-ES AC156
- [ ] IEEE 344
- [ ] IEEE 693
- [ ] NEBS 3
- [ ] Other (Please Specify):

## Testing Laboratory

Company Name: UNIVERSITY OF BUFFALO (SEESL)

Contact Person: Yushan Fu

Mailing Address: 212 Ketter Hall, Buffalo NY 14260

Telephone: (716) 645-3491 Email: yushanfu@buffalo.edu

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## Seismic Parameters

Design Basis of Equipment or Components ($F_p/W_p$) = 1.36 (z/h=1); 1.21 (z/h=0)

$S_{DS}$ (Design spectral response acceleration at short period, g) = 1.89 (z/h = 1); 2.68 (z/h = 0)

$a_p$ (Amplification factor) = 1

$R_p$ (Response modification factor) = 2.5

$\Omega_0$ (System overstrength factor) = 2.0

$I_p$ (Importance factor) = 1.5

z/h (Height ratio factor) = 1 and 0

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

**HCAI Approval** (For Office Use Only) - **Approval Expires on 05/02/2029**

Date: 5/2/2023

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: $S_{DS}$ (g) = See Above z/h = See Above

Condition of Approval (if applicable):

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED COMPONENTS

**Manufacturer:** APC by Schneider Electric
**Product Type:** UPS
**Model Line:** APC Smart-UPS Modular

**Seismic Parameters**
$S_{DS}$ = 1.89g for z/h=1
$S_{DS}$ = 2.68g for z/h=0
$I_p$ = 1.5

**Building Codes**
CBC 2022

## TABLE 1

**Mounting Configuration: Base Mounted - Rigid**

**Construction Summary**
Carbon steel framed enclosure

**Options Summary**
Rack enclosures populated with components from Table 2

| Model Name | Model | Max. Dimensions (in) D | W | H | Wt. (lb) | C.G. Ht. (in) | Notes | UUT |
|---|---|---|---|---|---|---|---|---|
| APC NetShelter SX 18U Seismic Enclosure | AR3006X977 | 35.4 | 23.6 | 36.4 | 177 | 18 | | Interp. |
| | | | | | \| | \| | | Interp. |
| | | | | | 585 | 18 | | 3 |
| APC NetShelter SX 24U Seismic Enclosure | AR3004X977 | 35.4 | 23.6 | 47.2 | 198 | 18 | | Interp. |
| | | | | | \| | \| | | Interp. |
| | | | | | 605 | 26 | | 4 |
| APC NetShelter VX 42U Seismic Enclosure | AR2144BLK | 42.2 | 23.5 | 81.5 | 520 | 26 | | Interp. |
| | | | | | \| | \| | | Interp. |
| | | | | | 725 | 26 | | 1 |
| | | | | | \| | \| | | Interp. |
| | | | | | 890 | 31 | | 2 |

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# SPECIAL SEISMIC CERTIFICATION CERTIFIED SUBCOMPONENTS

**Manufacturer:** APC by Schneider Electric
**Product Type:** UPS
**Model Line:** APC Smart-UPS Modular

**Seismic Parameters**
$S_{DS}$ = 1.89g for z/h=1
$S_{DS}$ = 2.68g for z/h=0
$I_p$ = 1.5

**Building Codes**
CBC 2022

## TABLE 2

**Table Description:** Electrical Components

| Component (APC) | Model | Dimensions (in) | | | Wt. (lb) | Notes | UUT |
|---|---|---|---|---|---|---|---|
| | | D | W | H | | | |
| APC Smart UPS Modular[1] | SRYL5K15(RM)XLT | 27.6 | 17.3 | 15.4 | 160 | 5kVA/5kW (N+0 Configuration) | Interp. |
| | SRYL5K20(RM)XLT | 27.6 | 17.3 | 15.4 | 160 | | Interp. |
| | SRYL10K15(RM)XLT | 27.6 | 17.3 | 15.4 | 202 | 10 kVA / 10kW (N+0 Configuration) | 1 |
| | SRYL10K20(RM)XLT | 27.6 | 17.3 | 15.4 | 202 | | Interp. |
| | SRYL15K15(RM)XLT | 27.6 | 17.3 | 15.4 | 244 | 15kVA / 15kW (N+0 Configuration) | Interp. |
| | SRYL15K20(RM)XLT | 27.6 | 17.3 | 15.4 | 244 | | Interp. |
| | SRYL20K20(RM)XLT | 29.1 | 17.3 | 20.5 | 327 | 20kVA / 20kW (N+0 Configuration) | Interp. |
| | SRYL5K15(RM)XLT | 27.6 | 17.3 | 15.4 | 202 | 5kVA / 5kW (N+1 Configuration) | 1 |
| | SRYL5K20(RM)XLT | 27.6 | 17.3 | 15.4 | 202 | | Interp. |
| | SRYL10K15(RM)XLT | 27.6 | 17.3 | 15.4 | 244 | 10 kVA / 10kW (N+1 Configuration) | Interp. |
| | SRYL10K20(RM)XLT | 27.6 | 17.3 | 15.4 | 244 | | Interp. |
| | SRYL15K15(RM)XLT | 29.1 | 17.3 | 20.5 | 285 | 15kVA / 15kW (N+1 Configuration) | Interp. |
| | SRYL15K20(RM)XLT | 29.1 | 17.3 | 20.5 | 285 | | Interp. |
| | SRYL20K20(RM)XLT | 29.1 | 17.3 | 20.5 | 369 | 20kVA / 20kW (N+1 Configuration) | 2,3,4 |
| Power Module | SRYL5KPMT | 22.9 | 8.4 | 2.5 | 20 | | 1,2,3,4 |
| Battery Module | SRYLBM | 22.9 | 8.4 | 2.5 | 22 | | 1,2,3,4 |
| UPS Frame 100A | SRYLF15KRMT | 27.6 | 17.3 | 13.4 | 118 | | 1 |
| UPS Frame 125A | SRYLF20KRMT | 27.6 | 17.3 | 13.4 | 118 | | 2,3,4 |
| Extended Run Frame | SRYLFXBPRM4 | 29.1 | 17.3 | 5.1 | 44 | | 1,2,3,4 |
| Service Bypass | SRYLSBP20KP | 29.7 | 17.3 | 13.4 | 53 | | 3,4 |

[1] UPS models listed consist of an arrangement of the other components listed in this table.

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# SPECIAL SEISMIC CERTIFICATION TESTING SUMMARY

| UUT | Model | Test Report | Test Laboratory | $S_{DS}$ | z/h | $I_p$ |
|---|---|---|---|---|---|---|
| 1 | APC Smart-UPS Modular Ultra – 15 kVA in 42U NetShelter VX | 2201000-TR-001 (UUT21) | SEESL | 1.89<br>2.68 | 1.0<br>0.0 | 1.5 |
| 2 | APC Smart-UPS Modular Ultra – 20 kVA in 42U NetShelter VX | 2201000-TR-001 (UUT20) | SEESL | 1.90<br>2.72 | 1.0<br>0.0 | 1.5 |
| 3 | APC Smart-UPS Modular Ultra - 20 kVA in 18U NetShelter SX | 2201183-TR-001 (UUT11) | SEESL | 2.06<br>2.90 | 1.0<br>0.0 | 1.5 |
| 4 | APC Smart-UPS Modular Ultra - 20 kVA in 24U NetShelter SX | 2201183-TR-001 (UUT10b) | SEESL | 1.93<br>2.74 | 1.0<br>0.0 | 1.5 |

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Notes:

# SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

## UUT 1

**Test Report#** 2201000-TR-001 (UUT21)

**Manufacturer:** APC by Schneider Electric
**Model Line:** APC Smart-UPS Modular
**Model:** 15 kVA in 42U NetShelter VX
**Serial Number:** N/A

**Highest Passed Test Level**

| $S_{DS}$ | z/h | $I_p$ | $A_{flx-h}$ | $A_{rig-h}$ | $A_{flx-v}$ | $A_{rig-v}$ |
|---|---|---|---|---|---|---|
| 1.89 | 1 | 1.5 | 3.02 | 2.27 | 1.79 | 0.71 |
| 2.68 | 0 | | | | | |

**Dimensions (in) / Weight (lb.)**

| Depth | Width | Height | Wt. | C.G. Ht. |
|---|---|---|---|---|
| 42.2 | 23.5 | 81.5 | 725 | 26 |

**Lowest Natural Frequency (Hz)**

| Front-Back | Side-Side | Vertical |
|---|---|---|
| 11.95 | 6.47 | 22.70 |

**Building Code**

CBC 2022

**Test Criteria**

ICC-ES AC156

**Construction/Option Summary**

Carbon steel framed enclosure

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**UUT Mounting Details:**

UUT was rigid base mounted using (4) M12 Grade 8.8 bolts and flat washers at 65 lb-ft torque.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

**List of Included Subcomponents**

| Description | Model # | Wt. (lbs.) |
|---|---|---|
| NetShelter VX 42U Cabinet | AR2144BLK | 523 |
| 15kVA UPS *(consists of the below listed components)* | SRYL10K15(RM)XLT / SRYL5K15(RM)XLT | 202 |
| 100A, 15kVA UPS Frame | SRYLF15KRMT | 118 |
| Power Module (x2) | SRYL5KPMT | 20 |
| Battery Module (x2) | SRYLBM | 22 |

# SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

## UUT 2

**Test Report#** 2201000-TR-001 (UUT20)

**Manufacturer:** APC by Schneider Electric
**Model Line:** APC Smart-UPS Modular
**Model:** 20 kVA in 42U NetShelter VX
**Serial Number:** N/A

**Highest Passed Test Level**

| $S_{DS}$ | z/h | $I_p$ | $A_{flx-h}$ | $A_{rig-h}$ | $A_{flx-v}$ | $A_{rig-v}$ |
|---|---|---|---|---|---|---|
| 1.90 | 1 | 1.5 | 3.04 | 2.28 | 1.81 | 0.72 |
| 2.72 | 0 | | | | | |

**Dimensions (in) / Weight (lb.)**

| Depth | Width | Height | Wt. | C.G. Ht. |
|---|---|---|---|---|
| 42.2 | 23.5 | 81.5 | 890 | 31 |

**Lowest Natural Frequency (Hz)**

| Front-Back | Side-Side | Vertical |
|---|---|---|
| 10.88 | 6.84 | 22.89 |

| Building Code | Test Criteria | Construction/Option Summary |
|---|---|---|
| CBC 2022 | ICC-ES AC156 | Carbon steel framed enclosure |

**UUT Mounting Details:**

UUT was rigid base mounted using (4) M12 Grade 8.8 bolts and flat washers at 65 lb-ft torque.
Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

**List of Included Subcomponents**

| Description | Model # | Wt. (lbs.) |
|---|---|---|
| NetShelter VX 42U Cabinet | AR2144BLK | 523 |
| 20kVA UPS *(consists of the below listed components)* | SRYL20K20(RM)XLT | 369 |
| 125A, 20kVA UPS Frame | SRYLF20KRMT | 118 |
| Power Module (x5) | SRYL5KPMT | 20 |
| Battery Module (x5) | SRYLBM | 22 |
| Extended Run Frame | SRYLFXBPRM4 | 44 |

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# SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

## UUT 3

**Test Report#** 2201183-TR-001 (UUT11)

**Manufacturer:** APC by Schneider Electric
**Model Line:** APC Smart-UPS Modular
**Model:** 20 kVA in 18U NetShelter SX
**Serial Number:** N/A

**Highest Passed Test Level**

| $S_{DS}$ | z/h | $I_p$ | $A_{flx-h}$ | $A_{rig-h}$ | $A_{flx-v}$ | $A_{rig-v}$ |
|---|---|---|---|---|---|---|
| 2.06 | 1 | 1.5 | 3.30 | 2.47 | 1.93 | 0.77 |
| 2.90 | 0 | | | | | |

**Dimensions (in) / Weight (lb.)**

| Depth | Width | Height | Wt. | C.G. Ht. |
|---|---|---|---|---|
| 35.4 | 23.6 | 36.4 | 585 | 18 |

**Lowest Natural Frequency (Hz)**

| Front-Back | Side-Side | Vertical |
|---|---|---|
| 12.47 | 7.19 | 20.59 |

**Building Code**

CBC 2022

**Test Criteria**

ICC-ES AC156

**Construction/Option Summary**

Carbon steel framed enclosure

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**UUT Mounting Details:**

UUT was rigid base mounted using (8) 3/8" Grade 5 bolts, (1) at each internal and external bracket. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

**List of Included Subcomponents**

| Description | Model # | Wt. (lbs.) |
|---|---|---|
| NetShelter SX 18U Cabinet | AR3006X977 | 177 |
| Service Bypass | SRYLSBP20KP | 53 |
| 20kVA UPS *(consists of the below listed components)* | SRYL20K20(RM)XLT | 369 |
| 125A, 20kVA UPS Frame | SRYLF20KRMT | 118 |
| Power Module (x5) | SRYL5KPMT | 20 |
| Battery Module (x5) | SRYLBM | 22 |
| Extended Run Frame | SRYLFXBPRM4 | 44 |

# SPECIAL SEISMIC CERTIFICATION UUT SUMMARY

## UUT 4

**Test Report#** 2201183-TR-001 (UUT10b)

**Manufacturer:** APC by Schneider Electric
**Model Line:** APC Smart-UPS Modular
**Model:** 20 kVA in 24U NetShelter SX
**Serial Number:** N/A

**Highest Passed Test Level**

| $S_{DS}$ | z/h | $I_p$ | $A_{flx-h}$ | $A_{rig-h}$ | $A_{flx-v}$ | $A_{rig-v}$ |
|---|---|---|---|---|---|---|
| 1.93 | 1 | 1.5 | 3.09 | 2.32 | 1.83 | 0.73 |
| 2.74 | 0 | | | | | |

**Dimensions (in) / Weight (lb.)**

| Depth | Width | Height | Wt. | C.G. Ht. |
|---|---|---|---|---|
| 35.4 | 23.6 | 47.2 | 605 | 26 |

**Lowest Natural Frequency (Hz)**

| Front-Back | Side-Side | Vertical |
|---|---|---|
| 7.88 | 3.80 | 19.54 |

| Building Code | Test Criteria | Construction/Option Summary |
|---|---|---|
| CBC 2022 | ICC-ES AC156 | Carbon steel framed enclosure |

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**UUT Mounting Details:**

UUT was rigid base mounted using (8) 3/8" Grade 5 bolts, (1) at each internal and external bracket. Unit maintained structural integrity and remained operational per manufacturer requirement following shake table test. All contents were included in the unit per operating conditions.

**List of Included Subcomponents**

| Description | Model # | Wt. (lbs.) |
|---|---|---|
| NetShelter SX 24U Cabinet | AR3004X977 | 199 |
| Service Bypass | SRYLSBP20KP | 53 |
| 20kVA UPS *(consists of the below listed components)* | SRYL20K20(RM)XLT | 369 |
| 125A, 20kVA UPS Frame | SRYLF20KRMT | 118 |
| Power Module (x5) | SRYL5KPMT | 20 |
| Battery Module (x5) | SRYLBM | 22 |
| Extended Run Frame | SRYLFXBPRM4 | 44 |