## SolaHD<sup>™</sup> SURGE PROTECTION ASSESSMENT CHECKLIST

When performing a full facility site assessment, there are many locations and factors to consider. Ideally an up-to-date one line electrical drawing of the building to be protected facilitates the selection of the proper surge protective devices (SPDs) and helps verify the correct line voltages (Wye/Delta) are identified. Regardless, a complete walk through site survey of the facility is recommended to ensure all critical locations are identified and targeted for surge protection.



#### **Notable UL and Code Changes**

#### UI 1449

#### 1998 – 2nd Edition

• Added limited current "slow burn" - 5 amps

#### 2007 – 2.5 Edition

- Added additional low amp testing
- Limited current 10 amps
- Intermediate levels fault currents: 50, 100, 500 and 1000 amps

#### 2009 – 3rd Edition

- Changed SVR to VPR (clamping voltages appear to be higher driven by kA increase)
- Added iNominal ratings basic performance rating for classifications
- 20kA iNominal Devices certified for UL96A Master Label lightning protection systems

#### 2014 – 4th Edition

Addition of categories (photovoltaic)

## National Electric Code (NEC)

#### 2002 – Article 285

Required SCCR rating on surge devices (previously not required)

#### 2008 - Article 708

• Critical Operating Power Systems required surge at all voltages

#### 2014 - Article 700.8

• SPD required for all Emergency systems

#### 2017 - Articles 620.51(E), 645.18, 670.6, 695.15

- Elevator, dumbwaiter, escalator, moving walk, platform lift, or stairway chairlift
- Critical Operations Data Systems
- Industrial machinery safety interlock

## • Fire pump controller

#### 2020 - Article 230.76

- All services supplying dwelling units
- Integral part of service or immediately adjacent
- Shall be Type 1 or Type 2
- Applies where service equipment is replaced

#### **NFPA/NEC Requirements**

- Emergency Systems
- Data Centers
- Critical Operating Power Systems
- Elevators, Escalators, Moving Walkways
- Critical Operations Data Systems
- Fire pump controllers
- Industrial Machines with Safety Interlocks

#### **IEEE Emerald Book Recommended Locations**

- Service Entrance (8.6.3)
- Distribution Panels (8.6.4)
- Critical Branch Panels (8.6.4)

## **IEEE Key Point of Use Locations**

- UPS input & bypass (8.6.5)
- Industrial & Factory Automation Electronic Equipment (8.6.6)
- Automatic Transfer Switch input (8.6.8)
- AC units including condensers & dry coolers (8.6.8)
- Each electrical conductor penetrating a structure (8.6) (includes power, voice, data, security, communications)

## Other Panels/Point-of-Use Location Examples

- UPS input & bypass: Voltage (Wye/Delta)
- Automatic Transfer Switch (ATS)
- Generator Start Signal Line (at both GenSet & ATS)
- Industrial & Factory Automation Equipment Panels
- HVAC Units Including Condensers & Dry coolers
- Security Cameras
- Security Recording Devices/Head End Units
- Fire Alarm Panels & Zone Loop Circuits
- Network Closets/Racks
- Telecom Panel
- Lighting panels indoor and outdoor lighting, including parking lot
- Key Processes or Other Mission Critical Equipment
- Other Copper Conductors that Penetrate the Building Structure



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Location / Designation	Voltage & Configuration	Panel Amp Rating	Spare Breaker or Space Available?	Other Notes/Space to Mount? (Top, Bottom, Left, Right, etc.)

Point of Use Equipment	Connection Type	Number of Units	Voltage / Current / Other	Notes

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