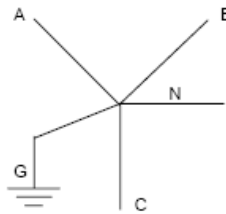


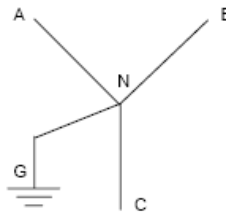


## Different Electrical Systems Require Different SPDs

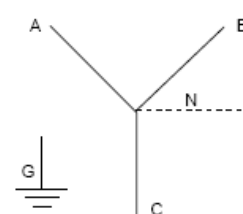
Better SPDs are designed for specific electrical systems, as opposed to one-size-fits-all. The most common application pitfalls involve the electrical system's reference to ground. Below are several 480V 3 phase 3 wire systems. Note how each is different. Misapplication can effect surge protection, trip up diagnostics and/or instantaneously fail a SPD. SPD manufacturers will gladly talk to you in advance to avoid a warranty return later! Please call for help as appropriate. Similar logic applies to 208Y/120V systems. Also note that non-North American systems have different grounding references.



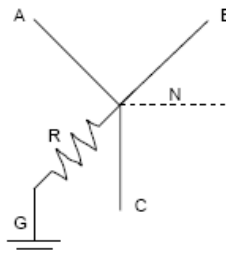
**480Y/277V Grounded Wye**  
3-phase 4-wire  
Neutral pulled into facility  
System has reference to ground  
L-L: 480V  
L-N: 277V  
L-G: 277V  
Most Common system configuration  
Voltage codes: APT '4', SIE 'E'



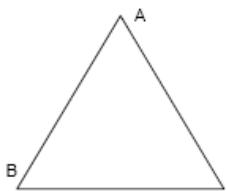
**480Y/277V Grounded Wye**  
3-phase 3 or 4-wire  
Neutral not pulled into facility  
System has reference to ground  
L-L: 480V  
L-N: 277V  
L-G: 277V  
Common system configuration at MCC, pumping and water treatment  
Voltage codes: APT '4', SIE 'E'



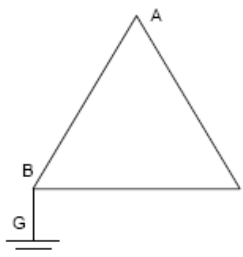
**480Y/277V Ungrounded Wye**  
3-phase 3 or 4-wire  
Neutral may, or may not, be pulled into facility  
System has no reference to ground  
L-L: 480V  
L-N: 277V  
L-G: Floats because no ref to ground  
Rare system configuration  
Note NEC 285.3(2).  
Voltage codes: APT '5', SIE 'F'



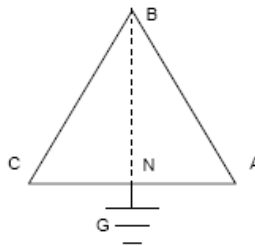
**480Y/277V Resistive Grounded Wye**  
3-phase 4-wire  
Neutral may, or may not, be pulled into facility  
System has reference to ground  
L-L: 480V  
L-N: 277V  
L-G: 480-277V  
Becoming popular system on high-tech  
Voltage codes: call for more info APT '5', SIE 'F'



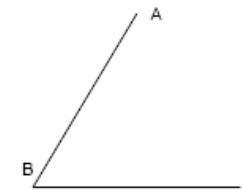
**480V Ungrounded Delta**  
3-phase 3-wire  
System has no reference to ground  
L-L: 480V  
L-G: Floats because no ref to ground  
Common system configuration at older industrial facilities, normally not used on new construction  
Note NEC 285.3(2).  
Voltage codes: APT '5', SIE 'F'



**480V Corner grounded Delta**  
3-phase 3-wire  
System has reference to ground  
L-L: 480V  
L-G: B-G=0V, A-G=480V, C-G=480V  
Occasionally seen at industrial facilities, normally not used on new construction  
Note NEC 285.3(2).  
Voltage codes: APT '51'



**240/480V Hi-Leg Grounded Delta**  
3-phase 4-wire  
System has reference to ground  
L-L: 480V  
L-N: B-N=418V, A-N=240V, C-N=240V  
L-G: B-G=418V, A-G=240V, C-G=240V  
Very rare system, tends to be rural  
Various solutions, call for info



**480V Open Delta**  
3-phase 3 or 4-wire  
Could be ungrounded, corner grounded or Hi-leg  
Very rare, tend to be rural  
Various solutions, call for info

Stay in touch with APT Engineering Sales at 800-237-4567, visit our website, [www.aptspd.com](http://www.aptspd.com), or email us at [info@aptvss.com](mailto:info@aptvss.com).