



Building on Mirus Lineator Filter's success in the industrial market for harmonic mitigation and power conditioning, the Lineator has been introduced into the Solar market as a power conditioner to substantially reduce background V_{thd} from the utility to significantly less than the IEEE Std 519-2022 limits for utility voltage distortion. In addition, the Lineator can rebalance the nominal voltage seen by the solar inverter (often to less than 1% Ph-Ph imbalance levels), add voltage correction tap provisions via an optional auto transformer for nominal voltage correction, and via the optional Coordinated Surge Protection (CSP-MOV) along with the filters capacitance reactance, to provide effective surge and transient voltage protection.

The following questions are intended to help determine if your applications can benefit from using the Mirus Lineator filter.

Subject: **Source/Background Voltage Distortion**

Background: According to IEEE Std 519-2022, the maximum source V_{thd} level at <1000V is 8 %, meaning that the Utility may not follow the IEEE recommended power quality level should the LV interconnect point be above the 8 % V_{thd} threshold.

Question: Does the solar inverter manufacturer require a limit on the source/utility voltage distortion levels to which the inverter will be connected? What is that percentage of fundamental limit, i.e., V_{thd} %?

Answer:

Subject: **Source Voltage Imbalance**

Background: A Utility/Voltage source voltage imbalance of greater than 2 % (i.e., a 12 V imbalance phase to phase on a 600 V system or 9 V on a 480 V system), may trigger false trips for Solar Inverters and cause current injection imbalances.

Question: Does the solar inverter manufacturer have a required installation source imbalance tolerance threshold within their specifications?

Answer:

Subject: **Over-Excitation: The potential of coordinating Utility/Source voltage levels to the Inverter rated nominal voltage requirements.**

Background: Mirus is aware of some solar installations where the Utility voltage tolerance has actually met the utility requirements for the voltage/service class, but the solar inverters have not operated properly and experienced nuisance trips. This has impacted the dependability and consistency of operation.

Question: What is the acceptable nominal operating voltage range as specified by the inverter manufacturer and what maximum short term surges and transient voltage limits are acceptable for these manufacturers?

Answer: