RxDNA-V3LF Install Manual and Brochure R2

Palma Engineering
(Noble Electronics, Inc, Midwest Research Corp)

Note: RxDNA-V3LFa, is only available for 120 VAC applications..
RxDNA-V3LFb, is available for 120 and 240 VAC applications.

Introduction

The RxDNA-V3LF is focused on parallel filtering, to reduce Dirty Electricity (DE), specifically **in a low frequency regime**. In the low frequency region, it is a significant variation (improved attenuation) over the existing RxDNA-V2 and V2X parallel filters.

Background

There are many devices and systems that leak DE onto the AC power lines that power them. Among them are:
-- solar and wind inverters
-- smart meters and non-smart digital meters
-- motor speed controls
-- lamp dimmers
-- switching power supplies for computers, and a wide range of home, commercial and industrial appliances.
-- and many more .....

The Dirty Electricity is voltages and currents at high switching frequencies (example 20 kHz) that are riding on the wiring, throughout the facility. These voltages and currents radiate Electric fields and Magnetic fields into the living space and those fields induce voltages and currents into the human body.

Residential Solar and Wind Inverters

We have found that most invertors used in wind and solar installations, in the residential area, are typically switching at one of the following 3 frequencies: 16 kHz, 20 kHz or 25 kHz.

In most applications, our filters, like the RxDNA-V2X, provide good filtering at the above switching frequencies, as well as frequencies higher than cited above. On the other hand, with any architecture of power line filter, e.g. Parallel filter, or In Line filter, it is increasingly difficult to achieve usable reduction in DE as the frequency of the DE is lower. Below 16 kHz, it is difficult, but not impossible, to achieve significant reduction in DE, when the inverter in question, is switching at less than 16 kHz.

Large Utility, Commercial and Industrial Solar Farms

When the amount of solar power being supplied is 100's of kilowatts, megawatts, or multi megawatt, it is difficult to switch (within the switching inverter) the extremely large amount of power, at the frequencies typically used in residential applications, as noted above. In these cases, the inverter manufacturers typically resort to switching at lower frequencies, such as 3 kHz or 4 kHz.

These frequencies (3,4 kHz) are so close to the power line frequency (60 Hz), it is difficult to achieve usable reduction of DE within a filter. Fortunately it nevertheless can indeed be accomplished.

RxDNA-V3LF

The RxDNA-V3LF was designed to provide usable reduction in DE in the 3 kHz and higher, frequency regime. One of the challenges of such a design is to have a reasonably low idle current ay 60 Hz.

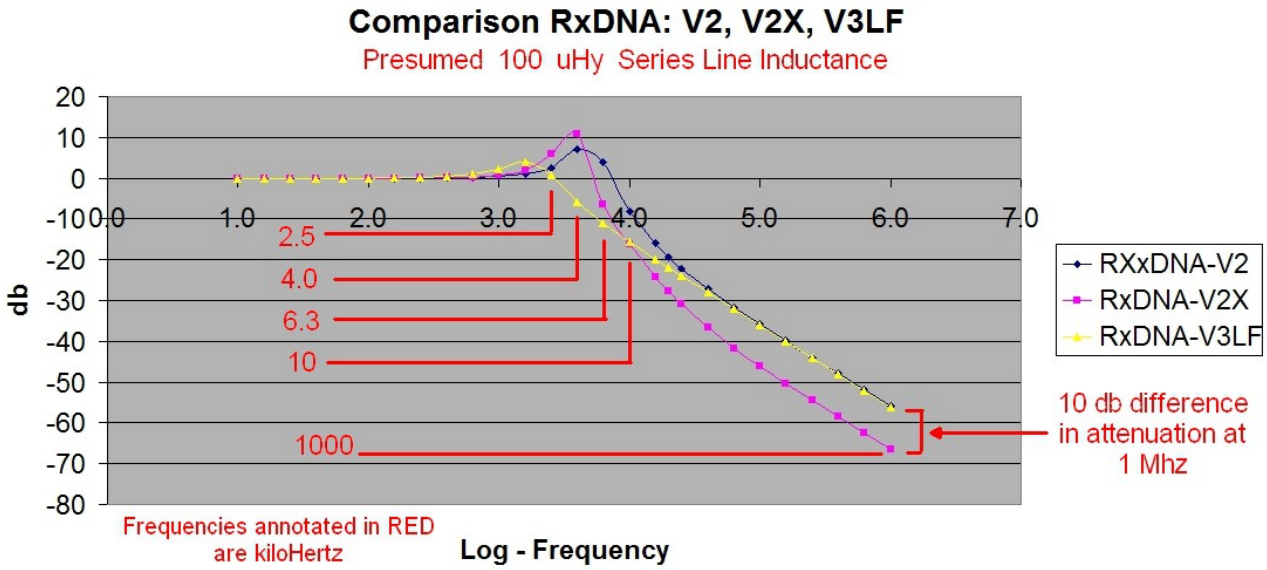
Idle Current

All Parallel filter draw some current at 60 Hz. This idle current is largely "reactive" meaning that in most residential applications, it will not cause an increased consumption of kilowatts as far as the utility is concerned.

There is one application area where the idle current must be minimized. When an off grid solar installation has batteries, then, during the battery discharge time, the Parallel filter idle current should be minimized, because it will contribute to battery discharge.

There are 2 models of the RxDNA-V3LF. One model has low idle current, and the other model has higher idle current.

The "low idle current" model is physically heavier and is more costly, than the model with the higher idle current. See specifications below, and consult our website for the latest prices. **Performance of the RxDNA-V3LF** is shown below for the more technically advanced readers.



Installation

We envision that 2 standard outlets will be installed at the Main circuit breaker panel with one outlet on one phase, and the other outlet on the other phase. Then, a RxDNA-V3LF will be plugged into each outlet. NOTE: total of 2 each RxDNA-V3LF's.

All Parallel filters rely on the inherent system impedance of the particular circuit in which they are installed. Principally, this "series" impedance is line inductance of the existing wiring, and the output impedance of the particular switching inverter. Therefore, a good approach to utilization of Parallel filters is to "test first" before installing, so simply, plug it into the target circuit and measure "before" and "after" DE strengths.

Parallel Connection of Multiple RxDNA-V3LF's

In some applications with severe DE, it may be advantageous to connect 2 or 3 RxDNA-V3LFb's on each circuit. **IMPORTANT: The RxDNA-V3LFa can NOT be connected in this way**. Only the RxDNA-V3LFb can be connected in this way. As noted above, testing before final deployment is a good idea. With Parallel connection, idle current will increase accordingly. Example: at 120 VAC, 2 each parallel connected RxDNA-V3LFb's on one circuit will draw 6.4 amps (reactive).

Mechanical
Dimensions: 8 x 8 x 12 inches
Approximate Weight RxDNA-V3LFa: 19 lbs.
Approximate Weight RxDNA-V3LFb: 6 lbs.

Electrical
50/60 Hz
Model A Idle Current (Reactive) at 120 VAC = 1.0 amps
Model B Idle Current (Reactive) at 120 VAC = 3.2 amps
Model B Idle Current (Reactive) at 240 VAC = 6.4 amps

Website Reference Including Prices
http://rfreduce.com/mxdna3/ - rxdnav3lf1