# DNA Line Filter M20 Desktop R1

**and**

# DNA Line Filter M20LF Desktop

**mxdna.com**

**Protect Sensitive Loads From Dirty Electricity On AC Line (Mode 1)**
or
**Protect AC Line From Dirty Electricity Produced by Certain Loads (Mode 2)**


**Important Note 1:** See Section 6 of this document for cautions to unplug this unit from the incoming AC Line before operating the Mode Switch**.**

**Important Note 2:** See Section 7 of this document to understand the difference in 60 Hz idle current between the standard nodel ( M20 Desktop ) and the low frequency model ( M20LF Desktop ).

## 1. Introduction

This product provides a filtering technology that is flexible in its application. Specifically:

- By setting a front panel switch, the user can configure this unit to protect sensitive loads (Mode 1) or to protect the AC Line from being polluted with Dirty Electricity (DE) from certain Dirty-Electricity-generating loads (Mode 2).
- Loads are connected through the front panel AC outlet, so that application is handled entirely by the user. NOTE: other DNA Line Filter products require installation by a professional electrician.

## 2. DE on the AC line is caused by a wide variety of devices (sources):

- Dirty electricity coming in from the power utility company connection. This dirty electricity can be from: 1] the non-linearities in the utility company's infrastructure, e.g. transformers. This type of dirty electricity is often referred-to as "harmonics", 2] broadband dirty electricity from insulator arcing, corona/multipaction in the utility company's infrastructure, 3] poor/corroded connections within the power utility company's infrastructure, 4] dirty electricity from neighboring residential, commercial and industrial properties.
- Dirty electricity from switch mode power supplies that power various electronics which are connected to the A.C. line, including computers, **off-the-grid power inverters such as solar array inverters and wind mill inverters**, office machines, uninterruptible power supplies (UPS), entertainment electronics, etc.
- Dirty electricity from switch mode power supplies that are a part of lighting such a LED lights and especially compact fluorescent light.

- Harmonics from traditional power supplies (not switch mode supplies) that power various electronics, noted above.
- Dirty electricity and harmonics from motor speed controls, light dimmers and solid state switches. The latter includes SCR's and Triacs.
- Harmonics from electrical motors.
- Broadband Dirty electricity from electric arc welders. This is severe, intense dirty electricity.
- Dirty electricity from induction heaters. This is severe, intense dirty electricity.
- Dirty electricity from certain Radio Frequency (RF) transmitters.

## 3. Parallel Products Versus Filter Products

Many of our DNA products are "parallel" devices that provide a path-of-least resistance to the DE. Examples of these parallel products are: RxDNA-V2X, PxDNA, RxDNA-V3LF. They capture the DE and turn it into a small amount of heat. These parallel devices typically reduce DE in the range of 10:1 to 60:1.

The DNA Line Filter products are true filters and typically reduce Dirty Electricity 500:1 or more. This product, the DNA Line Filter M20 Desktop is a true filter and achieves that same 500:1 or more, reduction.

## 4. Mode 1 Applications For Protecting Sensitive Loads

- There are many examples of sensitive loads. A high fidelity audio/stereo system will frequently buzz or hum when there is strong DE on the AC line. For people who have very high-end "audiophile grade" systems it will frequently be so, that they cannot achieve the low noise (signal-to-noise ratio) and low distortion that is specified by the manufacturer of their equipment. This is due to excessive DE on the AC line.
- Personal lighting, such as a desk lamp, that is physically close to someone's work area, will saturate that person in DE Electric field and Magnetic field (from the lamp and the lamp power cord), if there is DE on the AC line.

## 5. Mode 2 Applications For Protecting AC Line From DE Generated By A Specific Load

- A notorious device (load) that generates considerable DE is a pool pump. The type of speed control that is used in many, if not all pool pumps, places a very strong DE on the AC line that is feeding the pump. That DE then rides on the AC line wiring, throughout the dwelling, and that DE radiates Electric and Magnetic fields into the living space, thereby affecting people and pets, in the dwelling. By connecting the pool pump through this DNA filter (in Mode 2) the DE will typically be reduced by 500:1 or more.
- Another notorious device (load) is a portable heater with pulse-width-modulation heat control. There are various styles of portable heaters. One popular style looks like the steam-hot-water radiators of the past. These heaters are usually available in 2 basic heat control approaches. The first approach is a simple On/Off thermostat. This approach does not produce constant DE. The second approach utilizes a fast on/off pulsing of the electricity as it is applied to the heating elements. This type of heat control produces considerable DE. By connecting this portable heater through this DNA filter (in Mode 2) the DE will typically be reduced by 500:1 or more.

# 6. Using The DNA Line Filter M20 Desktop

1. **Important Caution: Always have the the incoming AC line cord of this unit, unplugged when changing the Mode switch**.
2. If you are using the unit in Mode 1, then set the mode switch to Mode 1, then connect the AC line cord to a power source (wall outlet) and connect the sensitive load to the unit's AC outlet.
3. If you are using the unit in Mode2, then set the Mode switch to Mode 2, then connect the AC line cord to a power source (wall outlet) and connect the DE-generating load to the unit's AC outlet.
4. The light on the unit indicates that it is operational. If it occurs that there is too much DE then the front panel circuit breaker will cycle to the "open" position and the unit will not be providing filtering at that time. It is unlikely that there will occur any situation of excessive DE that would cause the circuit breaker to "open". If this does happen though, unplug the unit from the AC line and manually reset (push) the circuit breaker button and power up the unit again. If for any reason the problem persists, contact your Dealer for support.

# 7. Specifications

There are 2 Desktop models:
M20 Desktop standard frequency model
M20LF Desktop low frequency model

The exact attenuations of these 2 models is detailed on the mxdna.com website:
https://rfreduce.com/mxdna3/#m15201

**Idle Current Discussion**
These 2 models draw different idle currents at 60 Hz. This idle current is "reactive". In the U.S. usually residential customer's utility meters do not register reactive currents. For a variety of commercial, industrial, institutional, etc. customers this may or may not be true.

The idle currents are given in the specifications below.

**Mechanical**

Dimensions: 7.9 x 8 x 12 inches

Approximate Weight M20 Desktop: 18 lbs. ( to be updated shortly )

Approximate Weight M20LF Desktop: 25 lbs. ( to be updated shortly )

**Electrical**

120 VAC 50/60 Hz

M20 Desktop Idle Current (Reactive) at 120 VAC = 1.0 amps

M20LF Desktop Idle Current (Reactive) at 120 VAC = 3.2 amps