V-Link-200® Wireless Sensor
Programmable Low-Pass Filter

Contents

FILTER OVERVIEW

The V-Link-200 wireless sensor node uses low-pass filters (LPF) for anti-aliasing and to reduce signal noise. Each differential channel contains a passive LPF located before the INAMP and a programmable LPF prior to the analog to digital conversion. The programmable LPF uses a 3rd order Sallen-Key configuration. Combined, the filters achieve a flat passband and approximately 40 dB/ decade roll-off. A block diagram of the V-Link-200 and Bode plots for each filter setting are available below.
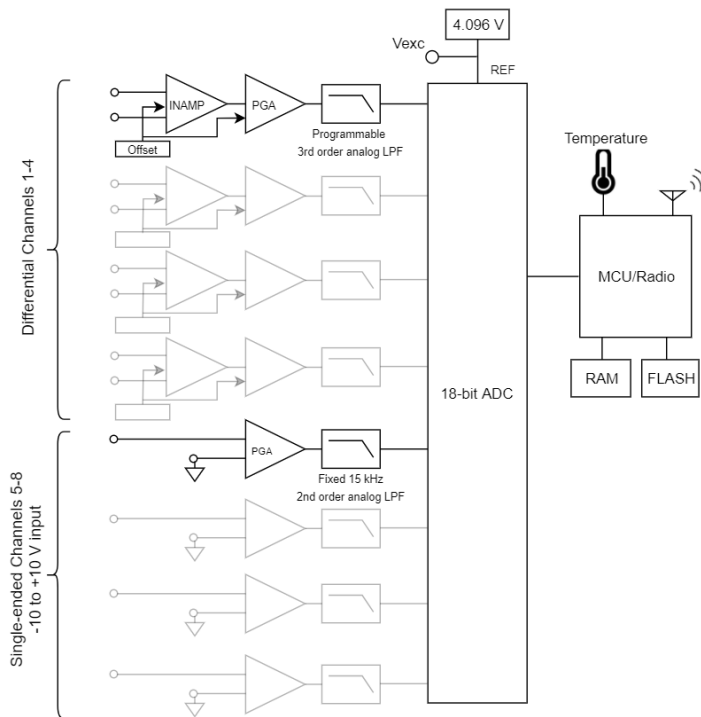

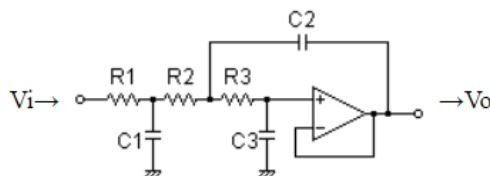**Figure 1. V-Link-200 Electrical Block Diagram.**

Figure 2. V-Link-200 Programable Low-pass Filter using 3rd-order Sallen-Key Configuration.

LORD Sensing TECHNICAL NOTE

CONFIGURABLE LPF

Using SensorConnect, users can independently configure the filter for each differential input channel.

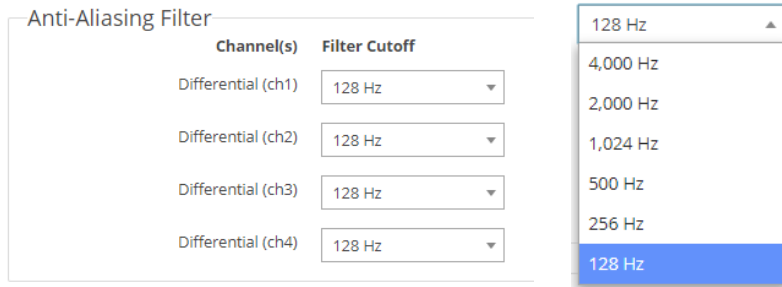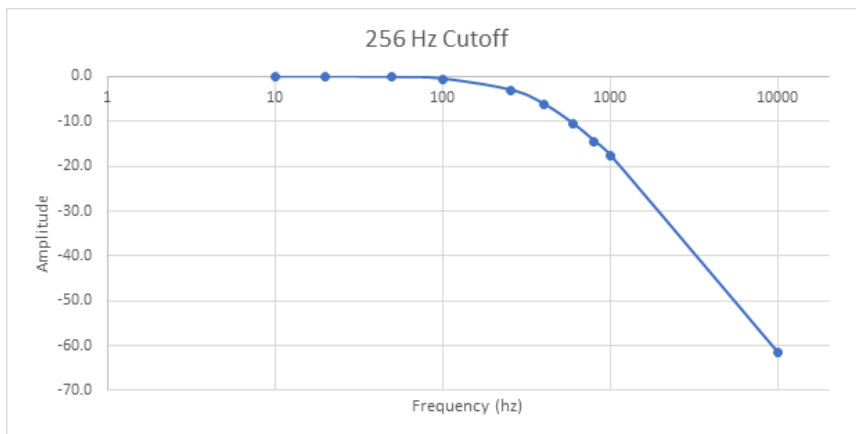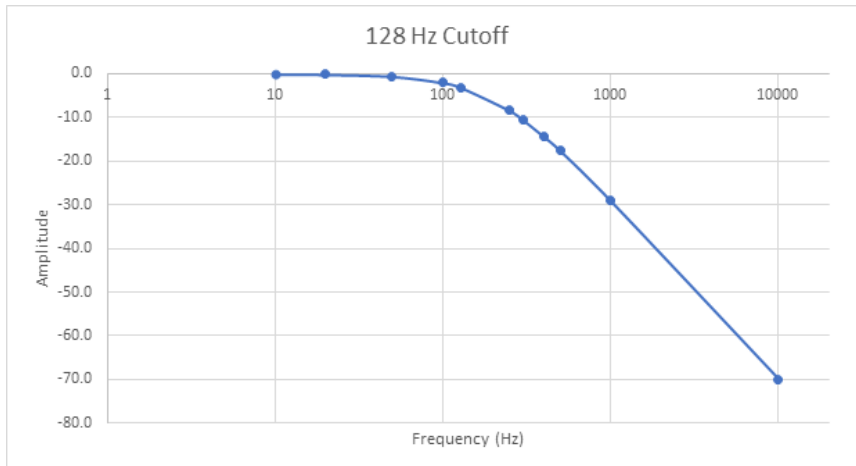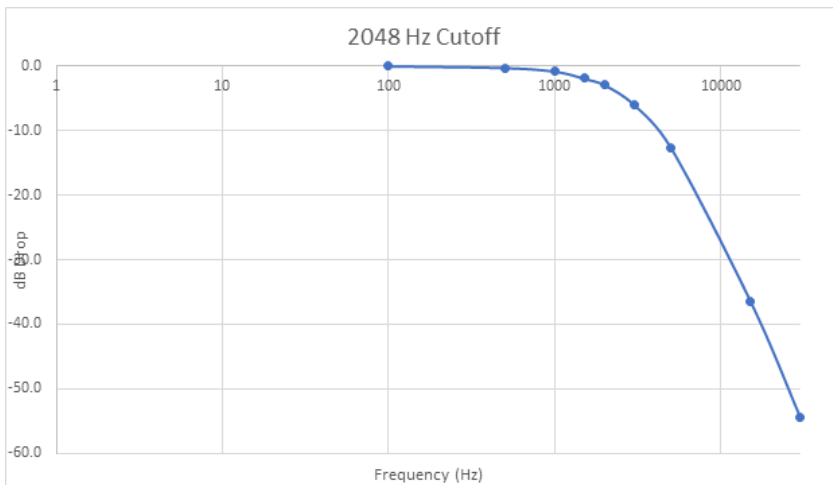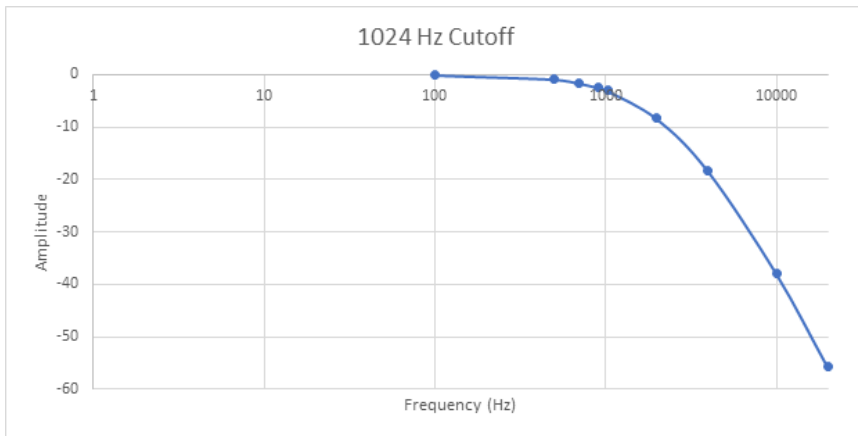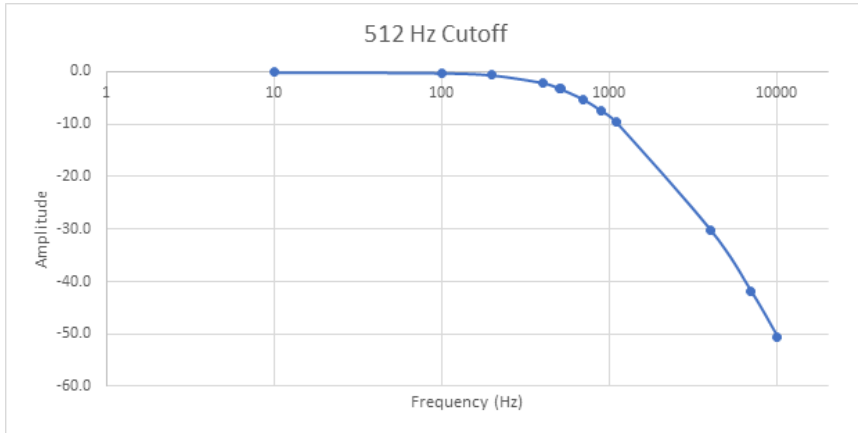**Figure 3. Configurable Low-Pass Filter.**

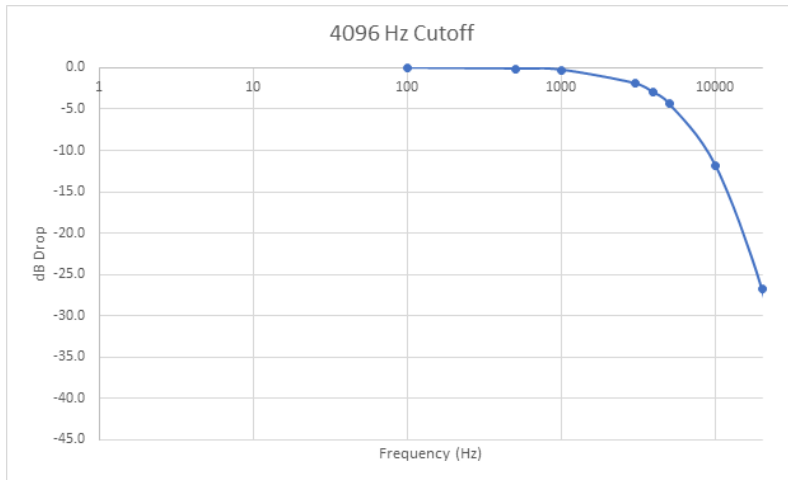## FREQUENCY RESPONSE

The following images are Bode plots displaying the frequency response of the V-Link-200 differential channel filters.

512 Hz Cutoff

1024 Hz Cutoff

2048 Hz Cutoff

ANTI-ALIASING

The default mode for the V-Link-200 is to power the sensor continuously while sampling. To ensure proper anti-aliasing, leave the "Sensor Always On" feature enabled and set the configurable low-pass filter to ½ of the sample rate or lower.
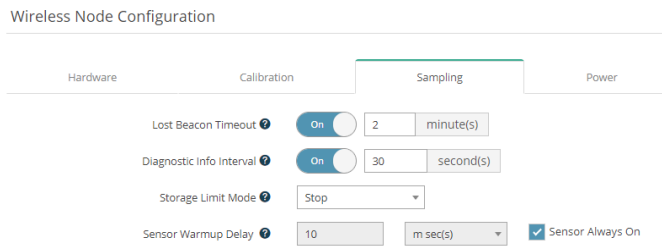

Figure 4. Screenshot of SensorConnect V-Link-200 Configuration Screen.

SWITCHED EXCITATION

Extend the battery life of the V-Link-200 significantly by duty cycling power to the sensor. Disable "Sensor Always On" and set an appropriate Sensor Warmup Delay. This is appropriate for applications that do not require anti-aliasing.