Versa-Filter System Quick Start Sheet

Overview

This document describes the basic operation of the Versa-Filter System. The system is a versatile electronic filter and signal conditioning system with analog I/O. It features programmable gain amplifiers, low-pass, high-pass, band-pass, band-stop, notch and inverse-notch filters that operate from DC to 20KHz with a 1Hz tuning resolution. A liquid crystal display shows the filter settings or the peak I/O signal levels. Each system has a pair of RS-232 serial ports that allow an unlimited number of systems to be daisy-chained together and controlled by a single PC. The filter type, cutoff frequencies, filter order, gain, and other parameters may be set by turning the knob on the front panel or by sending simple ASCII commands to the RS-232 port. An internal FLASH memory is used to store all module settings to one of five non-volatile memory locations. Memory location zero is recalled on power up.

Setting Versa-Filter Parameters

The LCD displays the parameter name on the left and the parameter value on the right: **'parameter: value'**. When the cursor is on the left side of the LCD, turning the knob selects the parameter to be adjusted. When the cursor is on the right side of the LCD, turning the knob will change the parameter's value and immediately update the Versa-Filter's setting. Pressing the knob repeatedly will position the cursor to the desired location on the LCD. Holding the knob down while turning it will also position the cursor.

The menu is arranged in a linear structure. The first menu entry is the Versa-Filter's function parameter: " **FUNC:**", which may have values such as "**LowPass**" or "**BandPass**". The next menu entry after: " **FUNC:LowPass**" will be the parameters associated with the low-pass function: " **LPfcut**", " **LPorder**", and " **LPgain**". After the filter function and associated parameters, the Versa-Filter's menu includes the global parameters. The complete list of parameters are shown in Table 1 and full parameter descriptions follow in the next section.

If the system's "**Mode:**" is set to "**A&BSeparate**", then individual "**aFUNC:**" and "**bFUNC:**" function parameters are displayed so that the desired function can be set for each channel. Otherwise, a space will appear before the **FUNC**, indicating that both channels are set to the same function.

The frequency settings for the band-pass and band-stop filter may be changed in several ways. The filter band edge frequencies for these filters can be set directly with f1 and f2 parameters or they may be specified indirectly by setting the center frequency and the bandwidth parameters. Making an adjustment of any one of these parameters recalculates the others.

Table 1: system parameters as shown on Versa-Filter display. (Valid options shown in square brackets)

Function Parameter			Global Parameters
[a, b, space] FUNC: [NoFunc, AllPass, LowPass, HighPass, BandPass, BandStop, Notch, InvNotch, UserFIR]			**Levels:in - - out - -** **RevertToLevels: [Y, N]** **FullScaleIn: ##Vpp** **SampleRate: [8KHz, 48KHz]** **InputSrc: [Analog, WtNoise]** **Mode: [A&B Common, A&BSeparate, Ch A Only]** **Cascade Ch A&B: [Y, N]** **Master Mode: [Y, N]** **Initialize: press** **Store: # press** **Recall: # press** **Firmware: Vx.xx** **Serial No: xxxxxx**
Function Sub-Parameters			
NoFunc **AllPass** **APGain: ###.##x** **LowPass** **LPfcut: #####Hz** **LPorder: ###x** **LPgain: ###.##x** **HighPass** **HPfcut: #####Hz** **HPorder: ###x** **HPgain: ###.##x**	**BandPass** **BPf1: #####Hz** **BPf2: #####Hz** **BPfcntr: #####Hz** **BPfwdth: #####Hz** **BPorder: ###x** **BPgain: ###.##x** **BandStop** **BSf1: #####Hz** **BSf2: #####Hz** **BSfcntr: #####Hz** **BSfwdth: #####Hz** **BSorder: ###x** **BSgain: ###.##x**	**Notch** **Nfnotch:#####Hz** **Nfwidth:#####Hz** **Ngain: ###.##x** **InvNotch** **INfcntr: #####Hz** **INfwdth:#####Hz** **INgain: ###.##x** **UserFIR** **UForder: ###** **UFtap:** **UFgain: ###.##x**	