

# Hypersignal VIDSP Studio Function List

## **1 Channel X Display**

Displays input from a single channel

## **1 to 2 Demultiplexer**

Demultiplexes one input channel to two channel output based on a select input

## **1 to 4 Demultiplexer**

Demultiplexes one channel input to four channel outputs based on two control inputs

## **1/3 Octave Band Analyzer**

Performs 1/3 octave band analysis on the input signal

## **1st Order Butterworth Filter**

Performs 1st order Butterworth filtering on the input data based on some conditions

## **2 Channel X Display**

Displays two waveforms on one grid

## **2 to 1 Multiplexer**

Multiplexes two channel input to one channel output based on a select input

## **2 to 4 Decoder**

Decodes two binary (0,1) inputs to four 1-hot outputs

## **2-Channel Display**

Displays input from two channels in several display modes.

## **4 Input AND**

Performs logical AND function on four input signals

## **4 Input OR**

Performs logical OR function on four input signals

## **4 to 1 Multiplexer**

Multiplexes four channel input to one channel output based on two control inputs

## **Absolute Value**

Outputs the absolute value of the input signal

## **Accumulate**

Accumulates data values of all frames

## **Add**

Adds two input signals

## **AGC**

Automatic Gain Control

## **Alarm Clock**

Allows the user to set an alarm to go off at a specified time

## **Analog Meter**

Implements an analog meter control

## **Annunciator**

Changes appearance based on different threshold values

## **Arbitrary Signal Generator**

Generates an arbitrary waveform via a mouse

## **ArcCosine(x)**

Calculates the ArcCosine value of the input signal

## **ArcSine(x)**

Calculates the ArcSine value of the input signal

## **ArcTangent(x)**

Calculates the ArcTangent value of the input signal

## **Arctangent(y/x)**

Quadrant Arctangent (Atan2)

## **Autocorrelation**

Calculates the autocorrelation function of the input signal

## **Bartlett Window**

Performs Bartlett windowing on the input signal

## **Biquad**

Implements a biquad, and applies this to the input signal

## **Bit Mask**

Masks off user-specified bits in the input signal

## **Bitmap Display**

Displays a selected bitmap

## **Blackman Window**

Performs Blackman windowing on the input signal

## **Boxcar Window**

Performs Boxcar (Rectangle) windowing on the input signal

## **Buffer**

Buffers and outputs a specified number of the input samples

## Button

Button that produces an off/on value, can link to other buttons

## CD Knob

CD Control Knob

## Center Clip

Clips the input signal by comparing it to two specified threshold levels

## Channel Information

Displays a channels information

## Clip

Clips the data elements by comparing with two specified threshold levels

## Command Switch

Switch for controlling (starting/stopping, etc.) worksheets, typically used for power switch

## Complex to Real

Converts the complex input values to the corresponding real and imaginary values

## Concatenate

Concatenates two input frames into one output frame

## Constant Generator

Generates a constant (DC) waveform

## Convert

Converts input data from integer to floating point, or from floating point to integer

## Convolution

Convolve two input signals together

## Correlation

Cross-correlates two input channel signals

## Cosine Generator

Generates a cosine waveform

## Cosine(X)

Calculates the cosine value of each element of an input signal

## Data Display

Data Display for viewing data in multiple text formats - allows pasting to other windows applications

## De-interleave 2 Channels

Separates one channel input into two channel output

## De-interleave 3 Channels

Separates one channel input into three channel output

## De-interleave 4 Channels

Separates one channel into four channel output

## De-interleave 5 Channels

Separates one channel input into five channel output

## De-Interleave 8 Channels

De-interleaves, or separates, one interleaved channel into eight channels

## Decimal to Binary

Decimal to Binary conversion block function

## Decimate

Decimates an input signal

## Delay

Delays input by specified number of samples

## DFT

Calculates the discrete Fourier transform of the input signal

## Difference Equation

Difference Equation Function

## Differentiate

Differentiates the input signal

## Digital Display

Displays the input signal using digital numbers

## Divide

Divides one signal by another

## DTMF Keypad

DTMF Keypad

## Exponential

Calculates the exponential function of the input signal

## Extract Sample

Extracts sample from specified index of input data frame

## FFT

Calculates the Fast Fourier Transform of the input signal

## File Read

This block reads an input file.

## File Write

Writes the input signal to a data file

## FIR Filter

Applies an existing FIR filter to the input signal

## Five Input Add

Adds the corresponding elements of five input signals

## Five Position Toggle Switch

Five Position Vertical Toggle Switch

## Fixed Offset

Adds a specified offset value to each element of the input signal

## Four Input Add

Adds the corresponding elements of four input signals

## Four Position Toggle Switch

Four Position Vertical Toggle Switch

## Frame Count

Counts the number of frames the simulation has run

## Frame Maximum

Finds the maximum of each frame of the input signal

## Frame Mean

Calculates the mean for each frame of the input signal

## Frame Minimum

Finds the minimum value for each frame of the input signal

## Frame Range

Calculates the range of values of the input frame

## Frame Size

Extracts the framesize of the input signal

## Frame Standard Deviation

Calculates the frame standard deviation of the input signal

## Frame Variance

Calculates the frame variance of the input signal

## Frequency Zoom

Calculates the magnitude (frequency) of the input signal at any frequency range with any frequency step

## Function Generator

Function Generator Control Front Panel

## Gain

Multiplies each element of the input signal by a constant

## General Knob

General knob used for offsets, etc.

## Global Maximum

Finds the maximum value of all data passed through this block

## Global Mean

Calculates the mean of all data passed through this block

## Global Minimum

Finds the minimum value of all data passed through this block

## Global Range

Calculates the range of values of the all input frames

## Global Standard Deviation

Calculates the standard deviation of all data passed through this block

## Global Variable

Global Variable to allow dynamic assignment, or placeholder, function

## Global Variance

Calculates the variance of all data passed through this block

## Hamming Window

Performs Hamming windowing on the input signal

## Hanning Window

Performs Hanning windowing on the input signal

## Horizontal Bar Chart

Horizontal bar chart

## Horizontal Bar Graph

Graph data horizontally

## Horizontal Slider

Horizontal slider control

## Hyperbolic Cos(x)

Calculates the Hyperbolic Cosine value of each element of the input signal

## Hyperbolic Sin(x)

Calculates the Hyperbolic Sine of the input signal

## Hyperbolic Tan(x)

Calculates the Hyperbolic Tangent value of the input signal

## IIR Filter

Applies an existing IIR filter to the input signal

## Impulse Generator

Generates a unit impulse with the specified delay sample

## Impulsive Noise Generator

Generates an impulse noise waveform

## Integrate

Integrates the input signal

## Interleave 2 Channels

Interleaves two channel inputs to one channel output

## Interleave 3 Channels

Interleaves three channel inputs to one channel output

## Interleave 4 Channels

Interleaves four channel inputs to one channel output

## Interleave 5 Channels

Interleaves five channel inputs to one channel output

## Interleave 8 channels

Interleaves, or combines, eight channels into one

## Internet Receiver

Receive data through the internet

## Internet Transmitter

Transmit data through the internet

## Interpolate

Interpolates the input signal

## Inverse DFT

Calculates the inverse Discrete Fourier Transform of the input signal

## Inverse FFT

Calculates the inverse Fast Fourier Transform of the input signal

## Keypad

Implements a keypad control

## Knob

Implements a knob control

## LED

User control LED which gets set when a threshold is reached

## LED

Simple two bitmap LED control

## LED Button

Simple LED Button

## LED Meter

LED Meter indicator

## LED Meter

Implements a light emitting diode meter control

## Linear Fit

Performs a Linear curve fit to the input signal

## Log

Calculates the natural logarithm (base e) value of each element of the input signal

## Log10

Calculates the common logarithm (base 10) value of each element of the input signal

## Logical AND

Performs logical AND function on two input signals

## Logical NAND

Performs logical NAND function on two input signals

## Logical NOR

Performs logical NOR function on two input signals

## Logical NOT

Performs the logical NOT function on the input signal

## Logical OR

Performs logical OR function on two input signals

## Logical XOR

Performs logical XOR (Exclusive-OR) function on two input signals

## Logx(y)

Calculates the logarithm (base x) value of each element of the input signal

## Magnitude

Calculates the magnitude of the complex input signal

## Modulus

Divides the input frame of data with the Modulus value

## Momentary Button

Output different values when the button is in the pressed or non-pressed state

## Multiply

Multiplies the corresponding elements of two input signals

## Noise Generator

Generates a noise waveform with normal distribution

## Notch Filter

Performs the notch filter

## Numeric Indicator

Numeric display to display a single value

## Octave Band Analyzer

Performs an octave band analysis on the input signal

## Offset

Adds the element of channel 1 to each element of channel 0

## Ones Complement

Performs ones complement bit conversion on each element of the input signal

## Pad

Pads the output frame with the specified pad value

## Peak Extractor

Finds peaks within a frame of data, either by position or magnitude

## Peak Hold

Holds the peak value for each frame sample globally or for a number of frames

## Phase

Calculates the ArcTangent of both the real and imaginary component of the complex input

## Pow

Calculates the user specified exponent (power) value of the input signal

## Power Spectrum

Performs an average in time across frames

## PRN Generator

Generates a pseudo random noise waveform

## Ramp Generator

Generates a ramp waveform

## Real to Complex

Converts real and imaginary values into the corresponding complex values

## Reciprocal

Calculates the  $1/x$  value for a data sample x

## Rectify

Performs either half or full wave rectification on the input signal

## Replace Sample

Replaces sample with input value at specified index

## Replace Subset

Replaces a subset of data at a specified location within a frame

## Reverse

The Reverse block outputs the input data in reverse order.

## Root Mean Square

Calculates the frame root mean square of the input signal

## Sample Rate

This block obtains the sample rate information from the input channel

## Sawtooth Generator

Generates a sawtooth signal

## Scale

Multiplies or scales each element of channel 0 by the first value of channel 1

## Schmidt Trigger

Schmidt Trigger

## Serial Command Receiver

Receives commands from serial port

## Shift Left

Applies a user-specified left shift to each data value of the input frame

## Shift Right

Applies a user-specified right shift to each data value of the input frame

## Sinc(x)

Calculates the Sinc ( $\sin x/x$ ) value of the input signal

## Sine Generator

Generates a sine waveform

## Sine(x)

Calculates the sine value of the input signal

## Single Channel Display

Displays input from a single channel in several different display modes

## Sound Card A/D

Sound card A/D

## Sound Card D/A

Sound Card D/A

## Spectral Inversion

Performs a spectral inversion (flipping spectrum) in the time domain

## Spectrogram

Displays input from a single channel using color denoting amplitude

## Split

Splits input frame into two output frames

## Square

Calculates the square of the input signal

## Square Root

Calculates the square root of the input signal

## Square Wave Generator

Generates a square wave

## Static Array (buffer)

Array used for holding results and feeding other blocks (ignores Data Ready condition)

## Strobe

Finds the amplitude of the signal at the given index (zero-based) within the frame

## Subset

The Subset block outputs a subset of the input data.

## Subtract

Subtracts the corresponding elements of channel 1 input from channel 0 input

## Sum

Outputs the sum of the input data frame values

## Sweep (Chirp) Generator

Generates a sweep (Chirp) waveform

## Table Lookup

Performs a table lookup function

## Tangent(x)

Calculates the tangent value of the input signal

## Terminate Block Diagram

Stops simulation at this block

## Text Display

Text display block

## Three Input Add

Adds the corresponding elements of three input signals

## Three Position Toggle Switch

Three position vertical toggle switch

## Threshold

Examines the input data and outputs zero if the data is not greater than the specified threshold

## **Time Sweep Control Knob**

Time Sweep Control Knob

## **Timer**

Generates a pulse or level change at a specified time interval

## **Toggle Button**

User control button used to create an alternating 0/1 output value

## **Triangle Wave Generator**

Generates a triangle waveform

## **Triggered Buffer**

Buffers input data when the selected trigger criteria is met

## **Two Position Toggle Switch**

Two position vertical toggle switch

## **Variable Notch Filter**

Variable Notch Filter

## **Variable Signal Generator**

Generates a signal based on the given equation

## **Vertical Bar Chart**

Vertical bar chart

## **Vertical Bar Graph**

Graph data vertically

## **Vertical Scaling Knob**

General knob used for vertical trace control, etc.

## **Vertical Slider**

Vertical slider control

## **Waveform Editor**

Dynamically edit an incoming waveform

## **Write Com Port**

Sends the input data out of the specified port

## **XY Display**

Displays two channel signals using two orthogonal axes

## **Zero Crossing**

Calculates the number of zero crossings in an input signal