Timewave

DSP-599zx

DSP Noise & QRM Filter, RTTY Modem
Radio/Sound Card Interface

Noise Killer!

The Timewave DSP-599zx is the latest generation DSP filter incorporating the newest high speed CPU. The extra power gives the user unparalleled features and field upgradeable for the future. The new LCD display, push buttons, and Visible Memory™ let you see the exact settings of the filter. The optical encoders give the operator continuous tuning of filters.

NOISE REDUCTION

The noise reduction functions of the DSP-599zx operate by examining a characteristic of signals and noise called correlation, and dynamically filtering out the undesired noise. The degree of correlation is relative. Random noise such as white noise or static is uncorrelated. Speech is moderately correlated. Pure tones such as heterodynes are highly correlated. The DSP-599zx measures correlation and automatically filters out noise that is outside its correlation threshold-holds.

DATA and BANDPASS FILTERS

Narrow band signals like CW an RTTY require bandpass filters with steep skirts and linear phase response. Linear phase response maximizes the unusable signaling rate for a given bandwidth and minimizes ringing often heard on other types of extremely sharp filters. Filter skirts are so steep that a signal literally falls off the edge of the passband as you tune through a signal. Bandwidths range from 10 Hz to 600 Hz, and center frequencies from 200 to 2150 Hz. Narrow filters are useful for trying to dig out extremely weak signals from noise and QRM. The wider filters allow easy tuning and listening to multiple CW signals simultaneously. Data filters supported in this filter are RTTY, AMTOR, PacTOR, G-TOR™, HF Packet, SSTV, WeFAX, SITOR and CLOVER. RTTY has two methods of being used in addition to regular filtering. You have a complete data modem designed for RTTY. You can use the remodulator mode that detects and regenerates the mark and space to the modem.

VERSION 5.01 ENHANCEMENTS

Timewave’s DSP-599zx latest enhancements have something for every operator; CW Spotlight, Binaural CW, new noise processing techniques for the phone operator and SWL community. The PC/Radio mode allows you to explore the new sound card based implementations effortlessly.

TEST INSTRUMENTS

An added benefit of the powerful DSP processor and LCD display in the DSP-599zx is a Test Instrument mode. This mode is designed to provide the audio test instruments necessary for normal maintenance and setup of audio circuits in radio equipment installations. A low distortion audio sine wave generator and an audio millivoltmeter cover the frequency range from 20 Hz to 10 kHz. The millivoltmeter measures true rms and peak, as low as 1 mV, and the sine wave generator output is calibrated in the same units. The sine wave generator and the millivoltmeter operate simultaneously for gain and frequency response measurements.

FIRST to simultaneously reduce noise, kill heterodynes and QRM! 27 Empire Dr
DSP-599zx Specifications

**AUDIO INPUT**
- Impedance input: 20 K ohms or 22 ohms, jumper selectable
- Signal range for full output: 10 mV to 1.0 volt, front panel programmable

**AUDIO OUTPUT**
- Speaker output power: 1 watt into 8 ohms at 13.8 VDC, both channels A&B operating
- 3 watts into 4 ohms at 13.8 VDC, output channels A&B bridged
- Line output: 0 dB, referenced to input level, into 10K ohms. Not controlled by gain control
- Headphone jack: 1/4" two circuit jack, use stereo headphones to use all functions, mono headphones for most functions

**NOISE REDUCTION FILTERS**
- **Random Noise Reduction**: Frequency range = entire freq.range of selected bandpass filter, Attenuation = Up to 20 dB, varies with noise characteristics, Type = Adaptive, Delay = 5 msec max
- **Heterodyne Reduction**: Frequency range = entire freq.range of selected bandpass filter, Attenuation = Up to 50 dB, varies with noise characteristics, Type = Adaptive, Delay = 5 msec max

**BANDPASS FILTERS**
- **CW Filters**: Bandwidth = 10 Hz to 600 Hz, Center freq. = 300 to 1600 Hz.
- **CW Marker Tone**: Sine wave at center freq. of selected CW filter

**DATA FILTERS**
- **RTTY, AMTOR, PacTOR, G-TOR, HF Packet**: Bandwidth = 100 Hz to 600 Hz, Center freq. = 2210 Hz, plus option of 1700/default, 1360, 1300, 1530 or 2125 Hz.
- **SSTV**: 1100-1300 Hz & 1500-2300 Hz
- **WeFAX**: 1500-2300 Hz
- **CLOVER**: 2000-2500 Hz

**VOICE FILTERS**
- **Highpass**: Corner freq. = 20 to 1000 Hz., 10 Hz. steps.
- **Lowpass**: Corner freq. = 1000 to 5000 Hz., 10 Hz. steps

**SIGNAL PROCESSING**
- A-D/D-A Converter: 16 bit linear, sigma-delta conversion, dual channel
- Signal Processor: 16 bit, 27 ns Analog Devices ADSP-2181 with 80 kb of memory on board

**TEST INSTRUMENT**
- **Audio Generator**: Sine wave tunable from 20 Hz to 15 kHz.
- **Audio millivoltmeter**: True RMS from 10 uV to 2 V, 20-20 kHz calibrated in volts, dBm @ 600 ohms, relative dB

**MEMORY**
- Six Memories: All configuration setups can be stored and recalled (except volume control setting)

**DISPLAY**
- 2x16 alphanumeric characters, dot-matrix, yellow-green backlit LCD.

**DIMENSIONS**
- **Size**: 7.6 in. wide x 8.5 in. deep x 1.9 in. high (193 mm wide x 216 mm deep x 48 mm high)
- **Weight**: 2.0 lb. (0.9 Kg.)

**POWER**
- 12-16 VDC @ 1A, Fuse 1.5 A 5 mm x 20 mm

Note: RTTY, AMTOR, PacTOR, G-TOR and HF Packet data filter bandwidths are specified at -3 dB points to comply with traditional data filter specification methods. All other filter bandwidths are specified to comply with conventional DSP FIR filter parametric descriptions.