



Product Overview

Rhythm R3920: Preconfigured DSP System for Hearing Aids

For complete documentation, see the [data sheet](#)

Product Description

RHYTHM™ R3920 is a preconfigured hearing health processor based on a DSP platform. Featuring 16 channels of Wide Dynamic Range Compression and Impulse Noise Reduction, R3920 encompasses a rich set of advanced sound processing algorithms and is ideal for high end, full-featured hearing aids. The R3920 hybrid is available in one of the industry's smallest form-factors and is well-suited for all hearing aid types, including those placed deep in the ear canal.

Features

- Wide Dynamic Range Compression (WDRC)
- Impulse Noise Reduction (INR)
- Acoustic Environment Classification
- iLog™ 4.0 Datalogging
- Automatic Adaptive Directionality
- Adaptive Feedback Cancellor
- Adaptive Noise Reduction

Benefits

- R3920 contains 16 Channels of Wide Dynamic Range Compression, each with individual settings for Squelch Attenuation and Threshold, Low Level Gain, High Level Gain, Upper and Lower Thresholds, and Compression Ratio. Independent level detectors for both Squelch and WDRC are available with customizable attack and release times set in each channel.
- Loud, impulsive sounds in the environment such as slamming doors, dropped items, or clattering dishes dropped items can become uncomfortably or dangerously loud in a traditional hearing aid. The INR algorithm actively monitors and processes the incoming acoustic signal for such sounds. It ensures that the output sound preserves the integrity of the speech signal and is descriptive of the environment, while maintaining an optimal comfort level for the hearing aid user.
- iSceneDetect™ analyzes incoming acoustic signals in order to determine the appropriate classification for a given acoustic environment. Six separate environments are supported by iSceneDetect: quiet, speech in quiet, noise, speech in noise, music, and wind. The feature uses this classification to automatically adjust settings of other features for optimum audio performance.
- Enables the recording of various hearing aid parameters such as program selection, volume setting and ambient sound levels. The sampling interval can be configured to record from every 4 seconds up to once every 60 minutes. The manufacturer can program the fitting system to retrieve the data for further analysis after an extensive period of wearing the hearing aid. This allows the audiologist to fine tune the hearing aid and further counsel the end-user.
- The Automatic Adaptive Directional Microphone (ADM) algorithm automatically reduces the level of sound sources that originate from behind or to the side of the hearing aid wearer without affecting sounds from the front. The algorithm can also gather input from the acoustic environment classifier algorithm and automatically select whether directionality is needed or not, translating into additional current savings.
- Automatically reduces acoustic feedback. It allows for an increase in the stable gain while minimizing artifacts for music and tonal input signals. Additional tuning parameters make for more precise tuning of the algorithm to the hearing aid. The development tools for the R3920 offer a special calibration module to help assert the feedback present in the hearing aid the manufacturer has built to further optimize the Adaptive Feedback Cancellor algorithm.
- The Adaptive Noise Reduction algorithm monitors noise levels independently in 128 individual bands and employs advanced psychoacoustic models to reduce noise and provide user comfort. The algorithm can be set for varying levels of aggressiveness from 3 dB up to 12 dB.

- Tinnitus Masking
- EVOKE™ Advanced Acoustic Indicators
- In-situ Tone Generator
- R3920 is equipped with a noisefsource that can be used to mask tinnitus. The noise can be shaped and attenuated and then summed into the audio path either before or after the volume control. A white noise signal is generated and inserted into the audio path either before or after the volume control. Filtering can be performed on the white noise signal in order to shape the noise signal to a desired frequency and bandwidth. The tinnitus masker can be used as a stand alone tinnitus making device or as part of a hearing aid.
- Allows hearing aid manufacturers to provide more pleasing, multi-frequency tones simulating musical notes or chords to indicate events such as program or volume changes.
- The narrow-band noise stimulus feature can be used for in-situ validation of the hearing aid fitting. The frequency, level and duration of the stimuli are individually adjustable.

Applications

- Digital Audio Processing

End Products

- Hearing Aids

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