

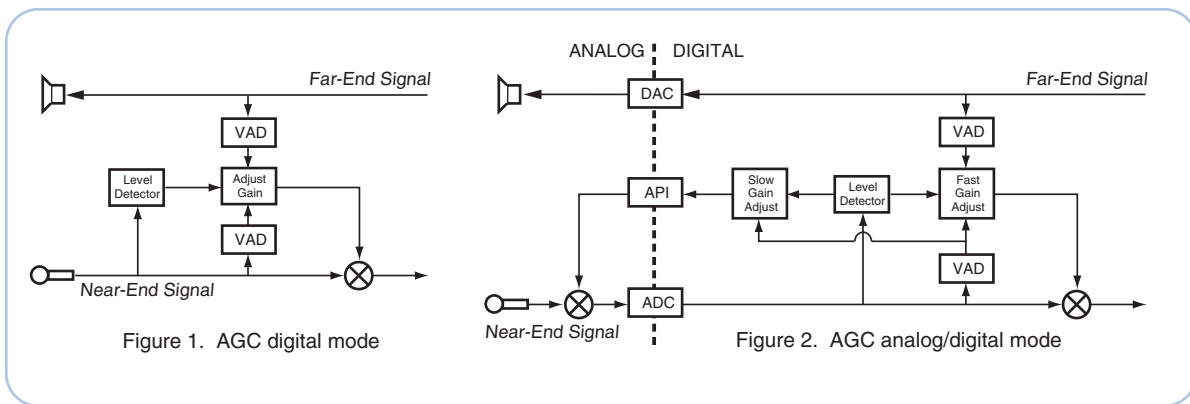
# GIPS Automatic Gain Control

## Consistent audio level with GIPS AGC

Global IP Solutions' Automatic Gain Control (AGC) is designed for real-time two-way communications. The GIPS AGC algorithm automatically adjusts the level of an audio signal to achieve consistent and comfortable audio levels. In a VoIP environment the audio levels very much depend on user audio settings, equipment type and surroundings, and as a result, an AGC is essential to avoid signal clipping or too low signal levels.

The GIPS AGC can operate in two modes: a pure digital or a combined analog and digital mode. The digital mode (Figure 1) can be used in conferencing applications, audio mixing and speakerphones where the analog signal level cannot be adjusted. In edge devices where the analog signal level can be adjusted, for example PC clients, the combined analog and digital mode AGC (Figure 2) adds additional value by improving the SNR of the signal and by being able to prevent audio clipping.

To prevent the background noise from increasing during the absence of speech, the GIPS AGC digital also includes a voice activity detection (VAD) function. The VAD ensures that the gain is adjusted only when speech is present in the input signal.



### Key benefits

- High quality AGC
- Software solution portable to platform of choice
- Stand-alone AGC
- Very low memory and complexity solution
- Response time less than 1ms for digital AGC



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## GIPS Automatic Gain Control

### Features

- Operates in two AGC modes: digital or a combination of analog and digital
- Operates on both narrowband and wideband signals (8 and 16 kHz sampling rate)
- Includes voice activity detection (VAD) functionality
- Available in fixed point ANSI C code and DSP (TI C54x, and Starcore 810x) off-the-shelf.  
Other DSP platform optimizations on request

### Digital AGC specification

- Operates on signal blocks that have a length of 10 and 20 ms
- Upper Gain Limit: +14 dB (user selectable)
- Lower Gain Limit: -4 dB (user selectable)

### Analog/Digital AGC specification

- Operates on signal blocks that have a length of 10 and 20 ms
- Upper Gain Limit: determined by hardware
- Lower Gain Limit: unlimited