

Audio Converter

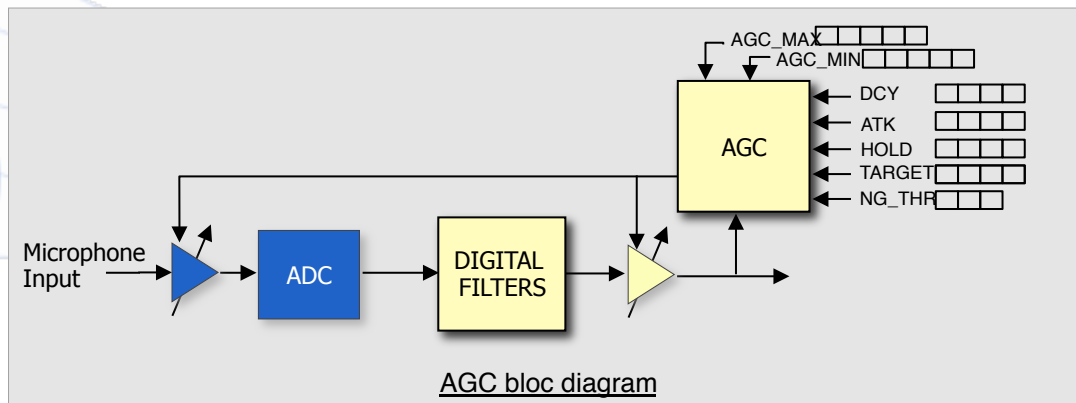
Sound Processing: Automatic Gain Control

DOLPHIN INTEGRATION

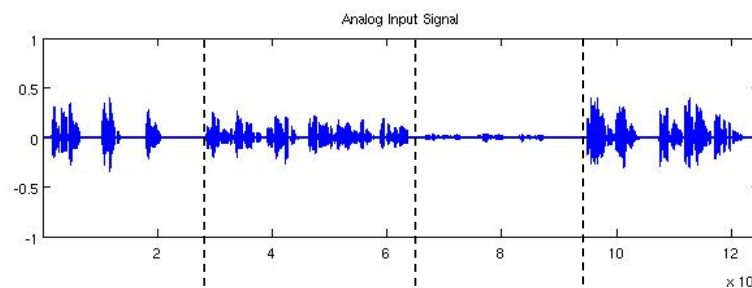
**Advanced feature for
optimal recording quality**

High voice fidelity

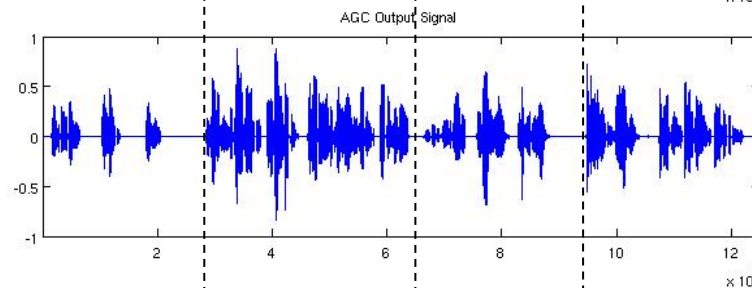
The Automatic Gain Control enables to automatically manage the amplification ratio of the input signal during sound recording. It offers a comfort for the final user thanks to an adjustment of gain applied on the signal for insuring a stable sound level on the output.



Voice track with no enhancement



Same voice track with AGC enhancement

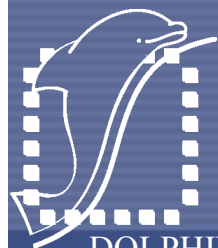


Gain = 1 dB Gain = 3 dB Gain = 15 dB Gain = 2 dB

KEY BENEFITS of Automatic Gain Control

- **During sound recording: gain adjustment for stable sound level**
- Anti-saturation: if the signal exceed the critical threshold, the gain is quickly reduced to prevent any signal saturation
- Level control: if the input signal level is too weak or too strong, the AGC will control the gain for increasing or decreasing the signal
- Noise limiter: if the input level signal is under the noise gate threshold, it is considered as noise and no gain adjustment is performed for avoiding any unexpected noise amplification
- Flexible configuration of "Attack" and "Decay" time for enabling end-user selecting sound flavor





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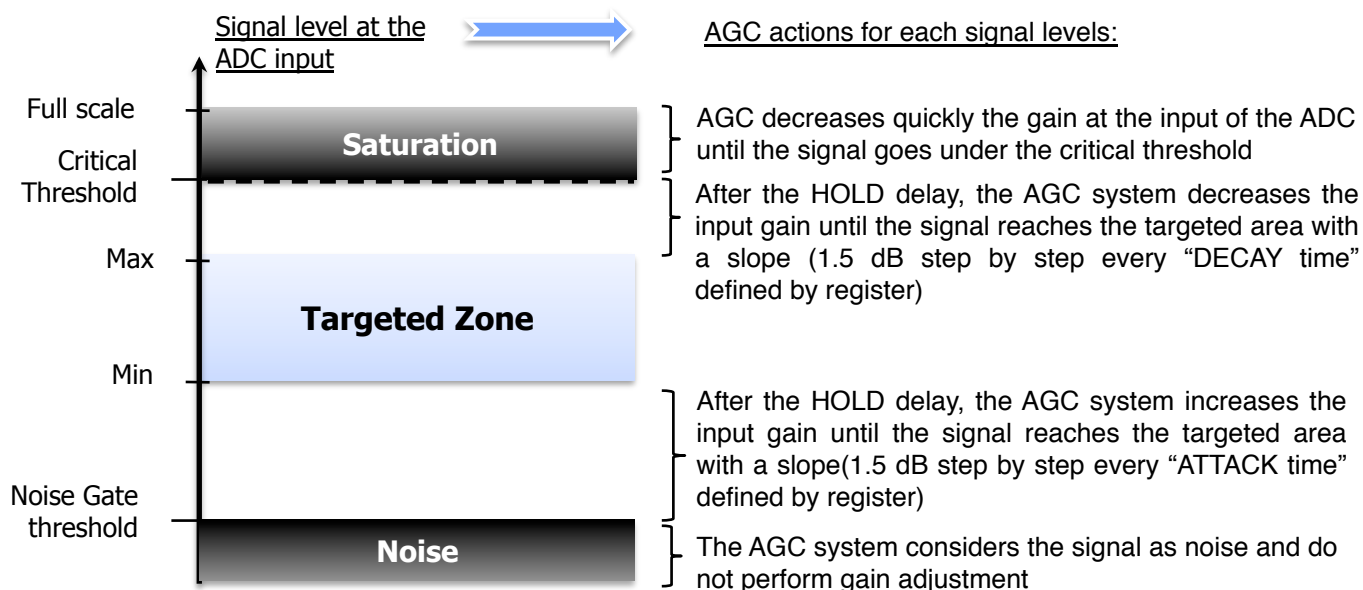
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End-user requirements are progressively increasing for enhancing audio comfort, so that the first generation of Automatic Gain Control now is giving room for a second generation.

The accuracy and the stability of setting can be tested thanks to the Software Design Model (SDM) which helps to define the configuration settings matching the application and system requirements.

Automatic Gain Control PARAMETERS



Comparison matrix between hardware and software AGC

	Prevention from ADC saturation	Sound recording quality	Power consumption	Configuration	Click / pop Noise during gain change
Fully software AGC or software control with hardware gain	High latency loop Need of DSP availability to monitor and detect ADC saturation	SNR degradation Signal and noise are amplified at the end of the conversion chain	Power consumption Adding DSP workload may lead to increase its clock frequency and then impact power consumption	Easy update Easy to modify setup or algorithm by software update	Risk of Pop/click Fully software gain adjustment at any time may introduce pop noise
Hardware AGC	Fast recovery: AGC feature directly accesses to analog hardware gain	Optimized DRgr (Dynamic Range over gain range) Pre-amplifier gain is directly adjusted by AGC to optimize signal level at the input of the ADC chain	Low complexity RTL block No significant impact on the codec power consumption	Fully configurable Thresholds, delay, gain range and slope ,... configurable by register settings. Very robust design used in several application (third generation)	Reduced risk of Pop/click Embedded zero crossing feature prevents from unexpected noise during gain change

SPECIFIC DELIVERABLES

VIC DELIVERABLES

- Specifications & User's Manual
- Software Development Model to help setting register values

