

Automatic Gain Control

AGC

PRODUCT DESCRIPTION

The Adaptive Digital Technologies Automatic Gain Control (AGC) algorithm is used to automatically adjust the speech level of an audio signal to a predetermined value. In digital network-based equipment, audio signals come from different locations, each signal having its own nominal level. The AGC algorithm can be used to maintain the speech levels from these various sources at a common level so that subsequent processing operates on signals within a specified dynamic range.

The AGC algorithm performs gain adjustments incrementally at a rate determined by the input signal level to avoid distortion of the output signal. The algorithm also incorporates functionality to prevent excessive gain increases during prolonged intervals of silence.

FEATURES

- Programmable upper and lower gain settings
- Programmable output level
- Programmable noise threshold level
- Low per-channel memory requirements
- C-callable
- Designed for multi-channel operation

AVAILABILITY

ADT AGC is available on the following Platforms: Other configurations are available upon request.

Product	Platform	Memory Model	Endian	Code Gen Tool Version
ADT_agc_c64xp	TI TMS320C64x+	L3	Little	N/R
ADT_agc_c64x	TI TMS320C64x	L3	Little	N/R
ADT_agc_c55x	TI TMS320C55x	Large	Little	N/R
ADT_agc_c54x	TI TMS320C54x	Far	N/A	N/R
ADT_agc_arm9	ARM9e	N/A	Little	2011_09-70_linux
ADT_agc_cortex-a15	ARM Cortex-A15	N/A	Little	2011_09-70_linux
ADT_agc_cortex-a9	ARM Cortex-A9	N/A	Little	2011_09-70_linux
ADT_agc_cortex-a8	ARM Cortex-A8	N/A	Little	2011_09-70_linux
ADT_AGC_cortex-m3	Cortec-M3	N/A	Little	2011_09-69_BareMetal
ADT_AGC_cortex-m4	Cortec-M4	N/A	Little	2011_09-69_BareMetal
ADT_AGC_lib	Win32 lib	N/A	Little	VS2010
ADT_AGC_dll	Win32 DLL	N/A	Little	VS2010
ADT_AGC_i686	i686	N/A	Little	gcc

Endian, byte order: "Little Endian" means that the low-order byte of the number is stored in memory at the lowest address, and the high-order byte at the highest address. "Big Endian" means that the high-order byte of the number is stored in memory at the lowest address, and the low-order byte at the highest address.

Acronyms

Mm – Memory Model: Memory Model is specific to Texas Instruments processors.

TI – Texas Instruments

SPECIFICATIONS

Sampling Rate: 8 kHz, 12Khz, 16KHz

Frame Size: Programmable

Output Level Range: 0...-30 dBm

Upper Gain Limit: +23 dB

Lower Gain Limit: -23 dB

TI TMS320C5000

C54x

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of 16-bit word.

MIPS Per Channel	Program Memory	Data Memory	Per-Channel Data
0.27	456	270	22

C55x

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of byte.

MIPS Per Channel	Program Memory	Data Memory	Per-Channel Data
0.22	931	270	48

TI TMS320C6000

C64x

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of byte.

MIPS Per Channel	Program Memory	Data Memory	Per-Channel Data
0.18	2208	890	36

C64x+

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of byte.

MIPS Per Channel	Program Memory	Data Memory	Per-Channel Data
0.17	1696	890	36

Specifications continued -

ARM® DEVICES

Cortex A8/A9/A15

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of 8-bit byte.

Device	MIPS	Program Space	Data Memory	Per-Channel Data Space
Cortex-A8/A9/A15	0.4	2464	648	72

ARM9e

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of 8-bit byte.

Device	MIPS	Program Space	Data Memory	Per-Channel Data Space
ARM9e	0.6	2704	264	70

Cortex M3/M4* - Available

*Contact Sales for CPU utilization and memory requirements. 610-825-0182 x120 or toll free 1-800-340-2066 x120

PC/Windows

Win Static Lib

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of bytes.

MIPS	Program Memory	Data Memory	Per Channel Data Memory
0.33	2128	280	72

Win DLL

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of bytes.

MIPS	Program Memory	Data Memory	Per Channel Data Memory
0.33	2128	280	72

Linux

Linux i686

CPU UTILIZATION & MEMORY REQUIREMENTS

All Memory usage is given in units of bytes.

MIPS	Program Memory	Data Memory	Per Channel Data Memory
0.33	3673	336	72

We specify MIPS (Millions of Instructions Per Second) as MCPS (Millions of Instruction Cycles Per Second). Unless otherwise specified, peak MIPS are indicated.

FUNCTIONS

AGC_ADT_agcinit (...)	Initiates a channel of AGC
AGC_ADT_agcrun (...)	Run a channel of AGC

Deliverables

The deliverable items are platform dependent. In general, there is one library. (Sometimes multiple variants of the library are included in the deliverables.) There are also header files, some of which are specific to the product and others are common across many of Adaptive Digital's products. Also included in the deliverables is product documentation, which includes a users guide and usually includes release notes and a data sheet. Sample/test code may be included as well.

Adaptive Digital is a member of the Texas Instruments Developer Network, and ARM Connected Community.

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