

**CPC****COOPERATIVE PATENT CLASSIFICATION****H03G**

**CONTROL OF AMPLIFICATION** ( impedance networks, e.g. attenuators, [H03H](#); control of transmission in lines [H04B 3/04](#))

**NOTE**

This subclass covers:

- control of gain of amplifiers or frequency-changers,
- control of frequency range of amplifiers,
- limiting amplitude or rate of change of amplitude

Attention is drawn to the Note following the title of subclass [H03F](#).

**H03G 1/00**

**Details of arrangements for controlling amplification** { for arrangements combined with means for generating a controlling signal, or these means per se, see the other main groups of [H03G](#) }

**H03G 1/0005**

- . { Circuits characterised by the type of controlling devices operated by a controlling current or voltage signal }

**H03G 1/0011**

- .. { the device being at least one of the amplifying tubes of the amplifier }

**H03G 1/0017**

- .. { the device being at least one of the amplifying solid state elements of the amplifier }

**H03G 1/0023**

- ... { in emitter-coupled or cascode amplifiers ([H03GB4F](#) takes precedence)}

**H03G 1/0029**

- ... { using FETs }

**H03G 1/0035**

- .. { using continuously variable impedance elements }

**H03G 1/0041**

- ... { using thermistors }

**H03G 1/0047**

- ... { using photo-electric elements }

**H03G 1/0052**

- ... { using diodes }

**H03G 1/0058**

- .... { PIN-diodes }

**H03G 1/0064**

- .... { Variable capacitance diodes }

**H03G 1/007**

- ... { using FET type devices }

**H03G 1/0076**

- ... { using galvanomagnetic elements }

**H03G 1/0082**

- ... { using bipolar transistor-type devices }

**H03G 1/0088**

- .. { using discontinuously variable devices, e.g. switch-operated }

**H03G 1/0094**

- ... { using switched capacitors }

**H03G 1/02**

- . Remote control of amplification, tone, or bandwidth ( remote control in general [G05](#) , [G08](#) ; combined with remote tuning or selection of resonant circuits [H03J](#))

**H03G 1/04**

- . Modifications of control circuit to reduce distortion caused by control ( modifications to reduce influence of variations of internal impedance of amplifying elements caused by control [H03F 1/08](#))

- H03G 3/00**      **Gain control in amplifiers or frequency changers** { without distortion of the input signal } ( gated amplifiers [H03F 3/72](#) ; peculiar to television receivers [H04N](#))
- [H03G 3/001](#)      . { Digital control of analog signals }
- [H03G 3/002](#)      . { Control of digital or coded signals ([H03G 3/3089](#) take precedence )}
- [H03G 3/004](#)      . { Control by varying the supply voltage }
- [H03G 3/005](#)      . { Control by a pilot signal ([H03G 3/001](#) takes precedence )}
- [H03G 3/007](#)      . { Control dependent on the supply voltage }
- [H03G 3/008](#)      . { Control by switched capacitors }
- [H03G 3/02](#)      . Manually-operated control { [H03G 3/001](#) and [H03G 3/002](#) take precedence }
- [H03G 3/04](#)      ..      in untuned amplifiers
- [H03G 3/06](#)      ...      having discharge tubes
- [H03G 3/08](#)      ....      incorporating negative feedback
- [H03G 3/10](#)      ...      having semiconductor devices
- [H03G 3/12](#)      ....      incorporating negative feedback
- [H03G 3/14](#)      ..      in frequency-selective amplifiers
- [H03G 3/16](#)      ...      having discharge tubes
- [H03G 3/18](#)      ...      having semiconductor devices
- [H03G 3/20](#)      . Automatic control ( { [H03G 3/005](#) takes precedence } ; combined with volume compression or expansion [H03G 7/00](#))
- [H03G 3/22](#)      ..      in amplifiers having discharge tubes
- [H03G 3/225](#)      ...      { controlling or controlled by the (local) oscillators of a (super)heterodyne receiver }
- [H03G 3/24](#)      ...      Control dependent upon ambient noise level or sound level
- [H03G 3/26](#)      ...      Muting amplifier when no signal is present { or when only weak signals are present, or caused by the presence of noise, e.g. squelch systems }
- [H03G 3/28](#)      ....      in frequency-modulation receivers; { in angle-modulation receivers }
- [H03G 3/30](#)      ..      in amplifiers having semiconductor devices
- [H03G 3/3005](#)      ...      { in amplifiers suitable for low-frequencies, e.g. audio amplifiers ([H03G 3/32](#) , [H03G 3/34](#) take precedence )}
- [H03G 3/301](#)      ....      { the gain being continuously variable }
- [H03G 3/3015](#)      .....      { using diodes or transistors }
- [H03G 3/3021](#)      .....      { by varying the duty cycle }
- [H03G 3/3026](#)      ....      { the gain being discontinuously variable, e.g. controlled by switching }
- [H03G 3/3031](#)      .....      { using switched capacitors }
- [H03G 3/3036](#)      ...      { in high-frequency amplifiers or in frequency-changers ([H03G 3/3052](#) , [H03G 3/32](#) , [H03G 3/34](#) take precedence )}

H03G 3/3042	....	{ in modulators, frequency-changers, transmitters or power amplifiers ( transmission power control in bidirectional transmission systems <a href="#">H04W 52/04</a> )}
H03G 3/3047	.....	{ for intermittent signals, e.g. burst signals }
H03G 3/3052	...	{ in bandpass amplifiers (H.F. or I.F.) or in frequency-changers used in a (super)heterodyne receiver ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> take precedence )}
H03G 3/3057	....	{ using at least one diode as controlling device }
H03G 3/3063	....	{ using at least one transistor as controlling device, the transistor being used as a variable impedance device }
H03G 3/3068	....	{ Circuits generating control signals for both R.F. and I.F. stages }
H03G 3/3073	....	{ Circuits generating control signals when no carrier is present, or in SSB, CW or pulse receivers }
H03G 3/3078	....	{ Circuits generating control signals for digitally modulated signals }
H03G 3/3084	...	{ in receivers or transmitters for electromagnetic waves other than radiowaves, e.g. lightwaves ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> take precedence )}
H03G 3/3089	...	{ Control of digital or coded signals }
H03G 3/3094	...	{ in parametric amplifiers ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> take precedence )}
H03G 3/32	...	the control being dependent upon ambient noise level or sound level
H03G 3/34	...	Muting amplifier when no signal is present { or when only weak signals are present, or caused by the presence of noise signals, e.g. squelch systems }
H03G 3/341	....	{ Muting when no signals or only weak signals are present ( <a href="#">H03G 3/344</a> , <a href="#">H03G 3/345</a> take precedence )}
H03G 3/342	....	{ Muting when some special characteristic of the signal is sensed which distinguishes it from noise, e.g. using speech detector ( <a href="#">H03G 3/344</a> , <a href="#">H03G 3/345</a> take precedence )}
H03G 3/344	....	{ Muting responsive to the amount of noise (noise squelch) ( <a href="#">H03G 3/345</a> takes precedence )}
H03G 3/345	....	{ Muting during a short period of time when noise pulses are detected, i.e. blanking ( <a href="#">H03G 3/348</a> takes precedence )}
H03G 3/347	.....	{ dependent on the rate of noise pulses }
H03G 3/348	....	{ Muting in response to a mechanical action or to power supply variations, e.g. during tuning; Click removal circuits }

**H03G 5/00****Tone control or bandwidth control in amplifiers**

H03G 5/005	.	{ of digital signals ( see provisionally also <a href="#">H03G 5/00</a> )}
H03G 5/02	.	Manually-operated control ( variable bandpass or bandstop filters <a href="#">H03H 7/12</a> )
H03G 5/025	..	{ Equalizers; Volume or gain control in limited frequency bands }
H03G 5/04	..	in untuned amplifiers
H03G 5/06	...	having discharge tubes
H03G 5/08	....	incorporating negative feedback
H03G 5/10	...	having semiconductor devices
H03G 5/12	....	incorporating negative feedback

- H03G 5/14 . . in frequency-selective amplifiers
- H03G 5/16 . Automatic control
- H03G 5/165 . . { Equalizers; Volume or gain control in limited frequency bands }
- H03G 5/18 . . in untuned amplifiers
- H03G 5/20 . . . having discharge tubes
- H03G 5/22 . . . having semiconductor devices
- H03G 5/24 . . in frequency-selective amplifiers
- H03G 5/26 . . . having discharge tubes
- H03G 5/28 . . . having semiconductor devices
  
- H03G 7/00** **Volume compression or expansion in amplifiers { frequency dependent [H03G 9/00](#) }**
- H03G 7/001 . { without controlling loop ([H03G 7/007](#) , [H03G 7/02](#) , [H03G 7/06](#) take precedence )}
- H03G 7/002 . { in untuned or low-frequency amplifiers e.g. audio amplifiers ([H03G 7/007](#) , [H03G 7/001](#) , [H03G 7/008](#) , [H03G 7/02](#) , [H03G 7/06](#) take precedence )}
- H03G 7/004 . . { using continuously variable impedance devices }
- H03G 7/005 . . { using discontinuously variable devices, e.g. switch-operated }
- H03G 7/007 . { of digital or coded signals ( see provis. also [H03G 7/00](#))}
- H03G 7/008 . { Control by a pilot signal ([H03G 7/007](#) , [H03G 7/02](#) , [H03G 7/06](#) take precedence )}
- H03G 7/02 . having discharge tubes
- H03G 7/04 . . incorporating negative feedback
- H03G 7/06 . having semiconductor devices
- H03G 7/08 . . incorporating negative feedback
  
- H03G 9/00** **Combinations of two or more types of control, e.g. gain control and tone control**
- H03G 9/005 . { of digital or coded signals }
- WARNING**  
 Not complete pending reclassification; see provisionally also group [H03G 9/00](#) )
- H03G 9/02 . in untuned amplifiers ( combined tone controls for low and high frequencies [H03G 5/00](#)) { compression or expansion combined with volume control [H03G 7/00](#) }
- H03G 9/025 . . { frequency-dependent volume compression or expansion, e.g. multiple-band systems ([H03G 9/10](#) , [H03G 9/18](#) take precedence )}
- H03G 9/04 . . having discharge tubes
- H03G 9/06 . . . for gain control and tone control
- H03G 9/08 . . . . incorporating negative feedback

- H03G 9/10 . . . for tone control and volume expansion or compression
- H03G 9/12 . . having semiconductor devices
- H03G 9/14 . . . for gain control and tone control
- H03G 9/16 . . . . incorporating negative feedback
- H03G 9/18 . . . for tone control and volume expansion or compression
  
- H03G 9/20 . in frequency-selective amplifiers
- H03G 9/22 . . having discharge tubes
- H03G 9/24 . . having semiconductor devices
  
- H03G 9/26 . in untuned amplifying stages as well as in frequency-selective amplifying stages ( gain control in both stages [H03G 3/00](#) ; tone control or bandwidth control [H03G 5/00](#) ) { compression or expansion combined with volume control [H03G 7/00](#) }
- H03G 9/28 . . all amplifying stages having discharge tubes
- H03G 9/30 . . all amplifying stages having semiconductor devices
  
- H03G 11/00 Limiting amplitude; Limiting rate of change of amplitude; { Clipping in general }**
  
- H03G 11/002 . { without controlling loop ([H03G 11/004](#) , [H03G 11/006](#) , [H03G 11/008](#) , [H03G 11/02](#) , [H03G 11/04](#) , [H03G 11/06](#) , [H03G 11/08](#) take precedence; see provisional also [H03G 11/00](#)) }
- H03G 11/004 . { using discharge tubes ([H03G 11/008](#) takes precedence ) }
- H03G 11/006 . { in circuits having distributed constants ([H03G 11/008](#) takes precedence ) }
- H03G 11/008 . { of digital or coded signals ( see provis. also [H03G 11/00](#) , [H03G 11/02](#)) }
- H03G 11/02 . by means of diodes ( { [H03G 11/008](#) , } [H03G 11/04](#) , [H03G 11/06](#) , [H03G 11/08](#) take precedence )
- H03G 11/025 . . { in circuits having distributed constants }
- H03G 11/04 . Limiting level dependent on strength of signal; Limiting level dependent on strength of carrier on which signal is modulated { [H03G 11/008](#) takes precedence }
- H03G 11/06 . { Limiters of angle-modulated signals }; such limiters combined with discriminators ([H03G 11/00](#) takes precedence; discriminators having an inherent limiting action [H03D 3/00](#))
- H03G 11/08 . Limiting rate of change of amplitude { [H03G 11/008](#) takes precedence }
  
- H03G 99/00 Subject matter not provided for in other groups of this subclass**
  
- H03G 2201/00 Indexing scheme relating to subclass [H03G](#)**
  
- H03G 2201/10 . Gain control characterised by the type of controlled element

- H03G 2201/103 . . being an amplifying element
- H03G 2201/106 . . being attenuating element
  
- H03G 2201/20 . Gain control characterized by the position of the detection
- H03G 2201/202 . . being in baseband
- H03G 2201/204 . . being in intermediate frequency
- H03G 2201/206 . . being in radio frequency
- H03G 2201/208 . . being in power supply of the amplifier
  
- H03G 2201/30 . Gain control characterized by the type of controlled signal
- H03G 2201/302 . . being baseband signal
- H03G 2201/305 . . being intermediate frequency signal
- H03G 2201/307 . . being radio frequency signal
  
- H03G 2201/40 . Combined gain and bias control
  
- H03G 2201/50 . Gain control characterized by the means of gain control
- H03G 2201/502 . . by switching impedance in feedback loop
- H03G 2201/504 . . by summing selected parallel amplifying paths, i.e. more amplifying/attenuating paths summed together
- H03G 2201/506 . . by selecting one parallel amplifying path
- H03G 2201/508 . . by using look-up tables
  
- H03G 2201/60 . Gain control characterized by varying time constants in control loop
- H03G 2201/603 . . time constant being continuous
- H03G 2201/606 . . time constant being discrete
  
- H03G 2201/70 . Gain control characterized by the gain control parameter
- H03G 2201/702 . . being frequency, e.g. frequency deviations
- H03G 2201/704 . . being number of multiplexed channels
- H03G 2201/706 . . being quality indicator, e.g. BER,C/I
- H03G 2201/708 . . being temperature