

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

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

**NOTE**

1. 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
2. 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 [H04W 52/04](#))}
- 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 ([H03G 3/32](#) , [H03G 3/34](#) 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 ( <a href="#">variable bandpass or bandstop filters 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