

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

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

**NOTES**

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 ([H03G 1/0029](#) 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 ([H03G 3/32](#), [H03G 3/34](#) take precedence)}
- H03G 3/3089 . . . {Control of digital or coded signals}
- H03G 3/3094 . . . {in parametric amplifiers ([H03G 3/32](#), [H03G 3/34](#) 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 ([H03G 3/344](#), [H03G 3/345](#) 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 ([H03G 3/344](#), [H03G 3/345](#) take precedence)}
- H03G 3/344 . . . . {Muting responsive to the amount of noise (noise squelch) ([H03G 3/345](#) takes precedence)}
- H03G 3/345 . . . . {Muting during a short period of time when noise pulses are detected, i.e. blanking ([H03G 3/348](#) 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 [H03G 5/00](#))}
- H03G 5/02 . Manually-operated control ([variable bandpass or bandstop filters](#) [H03H 7/12](#))
- 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

<b>H03G 7/00</b>	<b>Volume compression or expansion in amplifiers {(frequency dependent H03G 9/00)}</b>
H03G 7/001	<ul style="list-style-type: none"> <li>• {without controlling loop (H03G 7/007, H03G 7/02, H03G 7/06 take precedence)}</li> </ul>
H03G 7/002	<ul style="list-style-type: none"> <li>• {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)}</li> </ul>
H03G 7/004	<ul style="list-style-type: none"> <li>• . {using continuously variable impedance devices}</li> </ul>
H03G 7/005	<ul style="list-style-type: none"> <li>• . {using discontinuously variable devices, e.g. switch-operated}</li> </ul>
H03G 7/007	<ul style="list-style-type: none"> <li>• {of digital or coded signals (see provis. also H03G 7/00)}</li> </ul>
H03G 7/008	<ul style="list-style-type: none"> <li>• {Control by a pilot signal (H03G 7/007, H03G 7/02, H03G 7/06 take precedence)}</li> </ul>
H03G 7/02	<ul style="list-style-type: none"> <li>• having discharge tubes</li> </ul>
H03G 7/04	<ul style="list-style-type: none"> <li>• . incorporating negative feedback</li> </ul>
H03G 7/06	<ul style="list-style-type: none"> <li>• having semiconductor devices</li> </ul>
H03G 7/08	<ul style="list-style-type: none"> <li>• . incorporating negative feedback</li> </ul>
<b>H03G 9/00</b>	<b>Combinations of two or more types of control, e.g. gain control and tone control</b>
H03G 9/005	<ul style="list-style-type: none"> <li>• {of digital or coded signals}</li> </ul>
H03G 9/02	<ul style="list-style-type: none"> <li>• in untuned amplifiers (combined tone controls for low and high frequencies H03G 5/00 {compression or expansion combined with volume control H03G 7/00})</li> </ul>
H03G 9/025	<ul style="list-style-type: none"> <li>• . {frequency-dependent volume compression or expansion, e.g. multiple-band systems (H03G 9/10, H03G 9/18 take precedence)}</li> </ul>
H03G 9/04	<ul style="list-style-type: none"> <li>• . having discharge tubes</li> </ul>
H03G 9/06	<ul style="list-style-type: none"> <li>• . . for gain control and tone control</li> </ul>
H03G 9/08	<ul style="list-style-type: none"> <li>• . . . incorporating negative feedback</li> </ul>
H03G 9/10	<ul style="list-style-type: none"> <li>• . . . for tone control and volume expansion or compression</li> </ul>
H03G 9/12	<ul style="list-style-type: none"> <li>• . having semiconductor devices</li> </ul>
H03G 9/14	<ul style="list-style-type: none"> <li>• . . for gain control and tone control</li> </ul>
H03G 9/16	<ul style="list-style-type: none"> <li>• . . . incorporating negative feedback</li> </ul>
H03G 9/18	<ul style="list-style-type: none"> <li>• . . . for tone control and volume expansion or compression</li> </ul>
H03G 9/20	<ul style="list-style-type: none"> <li>• in frequency-selective amplifiers</li> </ul>
H03G 9/22	<ul style="list-style-type: none"> <li>• . having discharge tubes</li> </ul>
H03G 9/24	<ul style="list-style-type: none"> <li>• . having semiconductor devices</li> </ul>
H03G 9/26	<ul style="list-style-type: none"> <li>• 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})</li> </ul>
H03G 9/28	<ul style="list-style-type: none"> <li>• . all amplifying stages having discharge tubes</li> </ul>
H03G 9/30	<ul style="list-style-type: none"> <li>• . all amplifying stages having semiconductor devices</li> </ul>
<b>H03G 11/00</b>	<b>Limiting amplitude; Limiting rate of change of amplitude; {Clipping in general}</b>

- 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