

Equalizers

* Equalizers are electrical N/w's designed to counteract the attenuation or phase distortion occurring in any part of the circuit.

* The N/w that counteracts the attenuation distortion is called attenuation equalizer.

* The N/w that counteracts the phase or delay distortion is called phase or delay equalizer.

* The counteraction can be achieved by introducing additional attenuation at those freq's, at which the attenuation is least.

So the overall attn. is independent of freq.

* Or else by \uparrow ing the amplification at those freq's at which the attn. is

greater.
* \therefore delay or phase equalizer the group velocities in order that delay or phase distortion is minimized.

* \therefore equalizers are N/w whose freq and phase attn. characteristics are adjusted to the inverse to those of the lines.

* resulting in an overall uniform freq. response over the distorted freq. band

Types

1. Series
2. Shunt
3. L, T, Π
4. Bridged T or lattice structure.

Classification

Equalizers have been broadly classified as,
1) Attenuation or amplitude Equalizer
2) Phase or delay Equalizer.

1. Attenuation or amplitude Equalizers

* A N/w that exhibits a prescribed amplitude change b/w i/p and o/p as a fn. of frequency generally without regard to phase.

* Attenuation equalizers are used largely in transmission, recording and reproduction of speech and must give the desired characteristics of various transducers, tr-ion lines, amplifiers etc.

2. phase or delay equalizers

* It is a N/w, that exhibits a prescribed phase change b/w i/p and o/p as a fn. of freq, generally without regard to amplitude.

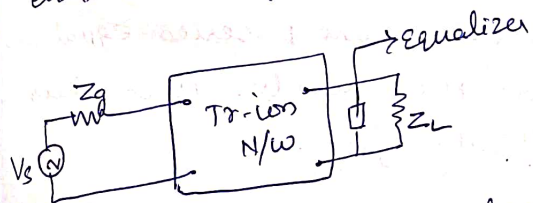
* Such a N/w may be ^{constructed} solely of reactive elements.

* ... of the waveform of the i/p signal is important
Eg:- Facsimile and TV signal tr-ion over lines.

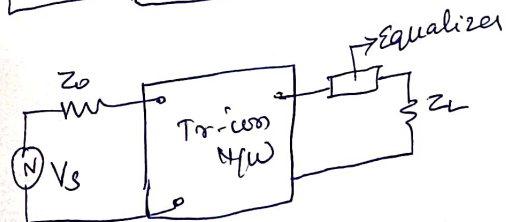
series and shunt Equalizers

* 2 terminal N/w

* Connected either in series or in shunt with the sending or receiving end of the N/w to be corrected.



Shunt Type



Series Type

* used as shunt equalizer → shunt loss is introduced, which varies with freq.

Case : I if L & C are arranged to resonate at a freq. slightly higher than the highest operating freq, the shunt loss will be minimum at this freq.

Case : II For freq below this, the value of terminal impedance will fall and the shunt loss P_{sh} as the freq \downarrow i.e.

\therefore 2 terminal shunt + series equalizer suffers from the disadv. that their impes vary with freq.