



$$R_{shunt} = (20K/N) * Z / (20K/N) - Z$$

where N = number of inputs
and Z = desired output impedance

$$\text{Insertion loss (dB)} = 20 \log (Z / 20K+Z)$$

Input impedance: 20K (assigned to one output)
10K (assigned to both outputs)

Example: 16 line inputs mixed to a pair of
200-ohm mic-level outputs

$$R_{shunt} = (20K/16)*200 / (20K/16)-200$$

$$= 250K/1050 = 238 \text{ ohms}$$

$$\text{Insertion loss} = 20 \log (200 / 20200)$$

$$= 20 \log (.0099) = 40 \text{ dB}$$

Note: Source impedance of line inputs is
assumed to be much smaller than 20K.

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