IDEAL VS PRACTICAL OP-AMP

FEATURE	IDEAL OP-AMP	PRACTICAL OP-AMP
Open-loop Gain (A_OL)	Infinite	Very high, but finite (typically 10^5 – 10^6)
Input Impedance (Z_in)	Infinite	Very high, but finite (typically 10^6 – 10^{12} Ω)
Output Impedance (Z_out)	Zero	Low, but not zero (typically 50 – 100 Ω)
Bandwidth	Infinite	Limited; gain decreases at high frequency
Slew Rate	Infinite	Limited; output cannot change instantaneously (e.g., 0.5 – 20 V/µs)
CMRR (Common Mode Rejection Ratio)	Infinite	Very high, but finite (e.g., 80 – 120 dB)
Offset Voltage	Zero	Small voltage present at output even if inputs are equal (few mV)
Noise	Zero	Some internal noise is present
Stability	Perfect	Can drift with temperature, power supply variations, or aging