

Motor Feeder Voltage Drop Calculator

Estimate feeder running and starting-event voltage drop from aggregate current and a starting-motor scenario.

Generated October 10, 2026

<https://www.elecatrix.com/motors-starters/motor-feeder-voltage-drop-calculator/>

Inputs

Input	Value	Unit
Aggregate running current	96	A
Starting motor running current	24	A
Starting motor starting current	144	A
One-way length	200	ft
Conductor resistance	0.321	ohm/1000 ft
System voltage	480	V
Phase model	Balanced three-phase	

Results

Result	Value	Unit
One-way resistance	0.0642	ohm
Phase multiplier	1.7321	x
Running feeder voltage drop	10.675	V
Running feeder voltage drop	2.224	%
Running end voltage	469.325	V
Start-event feeder current	216	A
Start-event voltage drop	24.0187	V
Start-event voltage drop	5.0039	%
Start-event end voltage	455.9813	V
Approximate running loss	1024.7977	W

Motor Feeder Voltage Drop Calculator

Estimate feeder running and starting-event voltage drop from aggregate current and a starting-motor scenario.

Generated October 10, 2026

<https://www.elecatrix.com/motors-starters/motor-feeder-voltage-drop-calculator/>

Calculation details

Detail	Value	Unit
Calculation basis	The start-event current replaces the selected motor running current with that motor starting current, then applies the selected phase voltage-drop multiplier.	
Screening boundary	Motor feeder voltage-drop arithmetic only; no diversity, source impedance, utility flicker, feeder sizing, protection, code, or manufacturer approval result is made.	

Formulas

start-event current = aggregate running current - starting motor running current + starting motor starting current

one-way resistance = one-way length x conductor resistance / 1000

running feeder voltage drop = phase multiplier x aggregate running current x one-way resistance

start-event voltage drop = phase multiplier x start-event current x one-way resistance

end voltage = system voltage - voltage drop

Warnings and limitations

This feeder estimate assumes the entered simultaneous-current scenario. It does not size feeders, apply diversity, model source impedance, check utility flicker, verify protection, or approve code/equipment compliance.