

51 Baxter Blvd  
Portland, Maine

**NAC Circuit Voltage Drop/Maximum Length Calculations**

**Formulas Used:**  
 $R_t = (D) \times (R_w) / 1000'$   
 $V_d = (R_t) \times (I_t)$   
 Substitute for (Rt) and solve for D  
 $D = ((4.0) \times (1000)) / ((R_w) \times (I_t))$

**R<sub>t</sub>** = Total Circuit Resistance  
**D** = Total Circuit Length (Feet)  
**R<sub>w</sub>** = Wire Resistance (Ω) per 1000' Pair (Ohms)  
**V<sub>d</sub>** = Circuit Voltage Drop (Max allowed is 4.0Vdc)  
**I<sub>t</sub>** = Total Circuit Current

**Notes:**

1. NAC Circuit terminal voltage 24Vdc.
2. A maximum allowable voltage drop of 4Vdc will provide a minimum of 20 Vdc per circuit.
3. Current values listed per device are based on 20Vdc.

	G1F-HDVM (Horn/Strobe)				G1F-VM Strobe		G4LFWF-H	WP H/S	Total Circuit Current	Ω per 1000' Pair	
	15cd	30cd	75cd	110cd	15cd	110cd	75cd	110cd		12AWG (3.5)	14AWG (5.2)
FACP	88	137	193	248	71	191	188	180			
Circuit1	1	0	0	2	2	0	0	0	0.7260	1574.18	1059.55 Ft
Circuit2	2	0	1	1	0	0	0	0	0.6170	1852.28	1246.73 Ft
Circuit3	0	0	0	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0! Ft
Circuit4	0	0	0	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0! Ft