

**UNE - Ludcke Auditorium  
Portland, Maine  
NAC Circuit Voltage Drop/Maximum Length Calculations**

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**Formulas Used:**

$$R_t = (D) \times (R_w) / 1000'$$

$$V_d = (R_t) \times (I_t)$$

Substitute for (R<sub>t</sub>) 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.
- 4 Calculations assume 75 candela rating for all Speaker/Strobes & 15 candela for Strobe Units.

**HORN/STROBE CIRCUIT MAX WIRE LENGTH CALCULATION**

Current (mA)	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM (20v)		495S	757-8A	Total Circuit Current	Ω per 1000' Pair		Volt Drop
	88	109	193	248	71	188	350	260		12AWG (3.5)	14AWG (5.2)	
Ckt/Cd	15cd	30cd	75cd	110cd	15	75cd		110cd	Amp	Max Length (Ft)	Max Length (Ft)	
iO64 Ckt1	5	2	5		5				1.9780	577.78	388.89	4.0
iO64 Ckt2							1		0.3500	3265.31	2197.80	4.0
n/a									0.0000	#DIV/0!	#DIV/0!	4.0
n/a									0.0000	#DIV/0!	#DIV/0!	4.0