IRIS Network - Portland

NAC Circuit Voltage Drop/Maximum Length Calculations*

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Reviewed for Code Compliance
Inspections Division
Approved with Conditions

Date: 01/13/15

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

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

Substitute for (R_t) and solve for D

$D = ((4.0) \times (1000)) / ((R_w) \times (I_t))$

R_t = Total Circuit Resistance
D = Total Circuit Length (Feet)
R_w = Wire Resistance (Ω) per 1000' Pa
V_D = Circuit Voltage Drop (Max allowed is 4.0Vdc)
I_t = 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.**

	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM Strobe (20v)			495S	Total Circuit Current	Ω per 1000' Pair	
	15cd	30cd	75cd	110cd	15cd	30cd	75cd	n/a			
	88	109	193	248	71	98	188	350		12AWG (3.5)	14AWG (5.2)
Circuit 1	3		3		5				1.1980	953.97 Ft	642.10 Ft
Circuit 2	4	1	4						1.2330	926.89 Ft	623.87 Ft
Circuit 3								1	0.3500	3265.31 Ft	2197.80 Ft
Circuit 4										Ft	Ft

* Power provided by Fire Alarm Panel - See FACP Battery Backup Calculations for further information.