NAC Circuit Voltage Drop Calculation

Project Name	**Huntington Apartments Building 1**		
Date	**1/25/2013**		
Circuit Number	**1**		
Area Covered	**Ground Floor**		
NAC Source Alarm Voltage	20.4	Wire Gauge	Resistance Per MFt Cable
Minimum Device Voltage	16		
Distance to first appliance	20	14	5.84
Total Circuit Current	0.728		
Wire Gauge for balance of circuit		14	5.84

Circuit is within limits

	Device Current	Distance from previous device	Voltage at Device	Drop from source	Percent Drop
Appliance 1	0.064		20.31	0.09	0.4%
Appliance 2	0.044	10	20.28	0.12	0.6%
Appliance 3	0.078	25	20.19	0.21	1.1%
Appliance 4	0.044	30	20.09	0.31	1.5%
Appliance 5	0.078	15	20.05	0.35	1.7%
Appliance 6	0.044	25	19.99	0.41	2.0%
Appliance 7	0.044	30	19.92	0.48	2.4%
Appliance 8	0.078	35	19.85	0.55	2.7%
Appliance 9	0.044	25	19.81	0.59	2.9%
Appliance 10	0.044	25	19.78	0.62	3.0%
Appliance 11	0.044	25	19.76	0.64	3.1%
Appliance 12	0.044	25	19.74	0.66	3.2%
Appliance 13	0.078	15	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
END	0.000	0	19.74	0.66	3.3%
Totals	0.728	305			

Appliance circuit voltage drop calculations start at "end of battery life" as NAC Source Alarm Voltage and use 20% below nameplate rating for Minimum Appliance Voltage.

Note. Wire resistance is based on the 1996 NEC Table 8 Uncoated DC resistance. Solid conductors except gauges 10 and 12 which are for stranded.

NAC Circuit Voltage Drop Calculation

Project Name	**Huntington Apartments Building 1**		
Date	**1/25/2013**		
Circuit Number	**2**		
Area Covered	**1st Floor**		
NAC Source Alarm Voltage	20.4	Wire Gauge	Resistance Per MFt Cable
Minimum Device Voltage	16		
Distance to first appliance	40	14	5.84
Total Circuit Current	0.664		
Wire Gauge for balance of circuit		14	5.84

Circuit is within limits

	Device Current	Distance from previous device	Voltage at Device	Drop from source	Percent Drop
Appliance 1	0.078		20.24	0.16	0.8%
Appliance 2	0.044	10	20.21	0.19	0.9%
Appliance 3	0.044	25	20.13	0.27	1.3%
Appliance 4	0.078	30	20.04	0.36	1.7%
Appliance 5	0.044	15	20.01	0.39	1.9%
Appliance 6	0.044	25	19.95	0.45	2.2%
Appliance 7	0.078	30	19.89	0.51	2.5%
Appliance 8	0.044	35	19.84	0.56	2.7%
Appliance 9	0.044	25	19.81	0.59	2.9%
Appliance 10	0.044	25	19.79	0.61	3.0%
Appliance 11	0.044	25	19.77	0.63	3.1%
Appliance 12	0.078	25	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
END	0.000	0	19.76	0.64	3.1%
Totals	0.664	310			

Appliance circuit voltage drop calculations start at "end of battery life" as NAC Source Alarm Voltage and use 20% below nameplate rating for Minimum Appliance Voltage.

Note. Wire resistance is based on the 1996 NEC Table 8 Uncoated DC resistance. Solid conductors except gauges 10 and 12 which are for stranded.

NAC Circuit Voltage Drop Calculation

Project Name	**Huntington Apartments Building 1**		
Date	**1/25/2013**		
Circuit Number	**3**		
Area Covered	**1st Floor**		
NAC Source Alarm Voltage	20.4	Wire Gauge	Resistance Per MFt Cable
Minimum Device Voltage	16		
Distance to first appliance	60	14	5.84
Total Circuit Current	0.664		
Wire Gauge for balance of circuit		14	5.84

Circuit is within limits

	Device Current	Distance from previous device	Voltage at Device	Drop from source	Percent Drop
Appliance 1	0.078		20.17	0.23	1.1%
Appliance 2	0.044	10	20.13	0.27	1.3%
Appliance 3	0.044	25	20.05	0.35	1.7%
Appliance 4	0.078	30	19.97	0.43	2.1%
Appliance 5	0.044	15	19.93	0.47	2.3%
Appliance 6	0.044	25	19.88	0.52	2.6%
Appliance 7	0.078	30	19.82	0.58	2.9%
Appliance 8	0.044	35	19.76	0.64	3.1%
Appliance 9	0.044	25	19.73	0.67	3.3%
Appliance 10	0.044	25	19.71	0.69	3.4%
Appliance 11	0.044	25	19.69	0.71	3.5%
Appliance 12	0.078	25	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
END	0.000	0	19.68	0.72	3.5%
Totals	0.664	330			

Appliance circuit voltage drop calculations start at "end of battery life" as NAC Source Alarm Voltage and use 20% below nameplate rating for Minimum Appliance Voltage.

Note. Wire resistance is based on the 1996 NEC Table 8 Uncoated DC resistance. Solid conductors except gauges 10 and 12 which are for stranded.

Siemens FACP Battery Calculations

Job Name: HUNTINGTON APTS
Date: 1/25/2013

	STANDBY	ALARM
TOTAL SYSTEM CURRENT	**0.393**	**2.080**

TOTAL FACP BATTERY CALCULATIONS

TOTAL STANDBY CURRENT	A/H REQ'D		A/H STANDBY	
0.393 Amps X	24	HRS.	**9.422**	
TOTAL ALARM CURRENT	A/H REQ'D		A/H ALARM	
2.080 Amps X	5	MIN.	**0.217**	

Required Battery Capacity	**9.639**
Always use a battery with higher AH rating than required.	

BATTERY SUPPLIED: 2x12 AH