Jewish Community Alliance of Southern Maine
Portland, Maine
Booster Power Supply Standby Battery Calculations

Fire Alarm Control Panel

	G4HFRF-S7VMC Speaker/Strobe				G1RF-VM Strobe Only			Ceiling SS	Quiescent Current	Alarm Current	Remaining % of Ckt Capacity
	15cd	30cd	75cd	110cd	15cd	75cd	110cd	75cd			
(mA)	55	78	153	196	59	152	191	281			
Panel											
Circuit 1			2			10			0.0000	1.8260	39.13 %
Circuit 2			5			6			0.0000	1.6770	44.10 %
									0.0000	0.0000	100.00 %
									0.0000	0.0000	100.00 %
									0.0000	**3.5030**	41.62 % Remaining % Panel
									Total Quiescent	Total Alarm	

All currents are expressed as mA.
Max current per ckt = 2.5 Amps. Max current per panel = 10.0 Amps.

NAC Circuit Voltage Drop/Maximum Length Calculations

Formulas Used:

R_t = (D) x (R_w) / 1000'
V_d = (R_t) x (I_t)
Substitute for (R_t) and solve for D
D = ((4.0) x (1000)) / ((R_w) x (I_t))

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

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.**

STROBE CIRCUIT MAX WIRE LENGTH CALCULATION

	G4HFRF-S7VMC Speaker/Strobe				G1RF-VM Strobe Only			Ceiling SS	Total Circuit Current	Ω per 1000' Pair 14AWG (5.2)	
	15cd	30cd	75cd	110cd	15cd	75cd	110cd	75cd			
	55	78	153	196	59	152	191	281			
Circuit 1	0	0	2	0	0	10	0	0	1.8260	421.27	Ft
Circuit 2	0	0	5	0	0	6	0	0	1.6770	458.69	Ft
Circuit 3	0	0	0	0	0	0	0	0	0.0000	#DIV/0!	Ft
Circuit 4	0	0	0	0	0	0	0	0	0.0000	#DIV/0!	Ft

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BPS10 Strobe Booster Panel 1

BPS10A

	G4HFRF-S7VMC Speaker/Strobe				G1RF-VM Strobe Only			Ceiling SS	Quiescent Current	Alarm Current	Remaining % of Ckt Capacity
	15cd	30cd	75cd	110cd	15cd	75cd	110cd	75cd			
(mA)	55	78	153	196	59	152	191	281			
Panel									0.0700	0.2700	
Circuit 1			3			8			0.0000	1.6750	33.00 %
Circuit 2			4			1	2		0.0000	1.1460	54.16 %
Circuit 3			9			1			0.0000	1.5290	38.84 %
Circuit 4			4			8			0.0000	1.8280	26.88 %
									0.0700	**6.4480**	35.52 % Remaining % Panel
									Total Quiescent	Total Alarm	

All currents are expressed as mA.
Max current per ckt = 2.5 Amps. Max current per panel = 10.0 Amps.

Total Quiescent Amp x Time Required (60 Hours)	4.200	AmpHr
Total Alarm Amp x Time Required (15 Minutes)	1.612	AmpHr
Total Battery Required	5.812	AmpHr
Total Battery Required + 20%	**6.974**	AmpHr
Battery Supplied	**7.2**	AmpHr

NAC Circuit Voltage Drop/Maximum Length Calculations

Formulas Used:

R_t = (D) x (R_w) / 1000'
V_d = (R_t) x (I_t)
Substitute for (R_t) and solve for D
D = ((4.0) x (1000)) / ((R_w) x (I_t))

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

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.**

STROBE CIRCUIT MAX WIRE LENGTH CALCULATION

	G4HFRF-S7VMC Speaker/Strobe				G1RF-VM Strobe Only			Ceiling SS	Total Circuit Current	Ω per 1000' Pair 14AWG (5.2)	
	15cd	30cd	75cd	110cd	15cd	75cd	110cd	75cd			
	55	78	153	196	59	152	191	281			
Circuit 1	0	0	3	0	0	8	0	0	1.6750	459.24	Ft
Circuit 2	0	0	4	0	0	1	2	0	1.1460	671.23	Ft
Circuit 3	0	0	9	0	0	1	0	0	1.5290	503.09	Ft
Circuit 4	0	0	4	0	0	8	0	0	1.8280	420.80	Ft