

**UNE- Hersey Hall Portland**

**Booster Power Supply Standby Battery Calculations**

**BPS6A Strobe Booster Panel #1 - 1st Floor**

	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM		Quiescent Current	Alarm Current	Remaining % of Ckt Capacity
	15cd	30cd	75cd	110cd	15cd	30cd			
Panel	88	109	193	248	71	98	0.0700		
Circuit 1			2					0.3860	84.56 %
Circuit 2	4		1		11	2		1.5220	39.12 %
Circuit 3	3				13	5		1.6770	32.92 %
Circuit 4								0.0000	100.00 %
							<b>0.0700</b>	<b>3.5850</b>	64.15 %
							Total Quiescent	Total Alarm	Remaining % Panel

All currents are expressed as mA.  
 Max current per ckt = 2. Amps. Max current per panel = 6.0 Amps.

Total Quiescent Amp x Time Required (24 Hours)      1.680 AmpHr  
 Total Alarm Amp x Time Required (5 Minutes)          0.299 AmpHr  
 Total Battery Required    1.979 AmpHr  
 Total Battery Required + 20%                                **2.375 AmpHr**  
 Battery Supplied    **7.2 AmpHr**

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

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 ( $\Omega$ ) per 1000' Pair (Ohms)**  
 **$V_d$  = Circuit Voltage Drop (Max allowed is 4.0Vdc)**  
 **$I_t$  = Total Circuit Current**

Notes:

- 1 BPS Power supply 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 BPS Power supply output is straight DC (not regulated).

**STROBE CIRCUIT MAX WIRE LENGTH CALCULATION**

BPS/Ckt-Cd	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM		Total Circuit Current	$\Omega$ per 1000' Pair		Volt Drop
	15cd	30cd	75cd	110cd	15cd	30cd		12AWG (3.5)	14AWG (5.2)	
	88	109	193	248	71	98	Amp	Max Length (Ft)	Max Length (Ft)	
BPS1	1	0	0	2	0	0	0.3860	2960.77	1992.83	4.0
	2	4	0	1	0	11	1.5220	750.89	505.41	4.0
	3	3	0	0	0	13	1.6770	681.49	458.69	4.0
	4	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0!	4.0

**UNE- Hersey Hall Portland**

**Booster Power Supply Standby Battery Calculations**

**BPS6A Strobe Booster Panel #2 - 3rd Floor**

	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM				Quiescent Current	Alarm Current	Remaining % of Ckt Capacity	
	15cd	30cd	75cd	110cd	15cd	30cd						
Panel	88	109	193	248	71	98			0.0700			
Circuit 1	3				21	1				1.8530	25.88 %	
Circuit 2	3				19	1				1.7110	31.56 %	
Circuit 3										0.0000	100.00 %	
Circuit 4										0.0000	100.00 %	
									<b>0.0700</b>	<b>3.5640</b>	64.36 %	Remaining % Panel
									Total Quiescent	Total Alarm		

All currents are expressed as mA.  
 Max current per ckt = 2. Amps. Max current per panel = 6.0 Amps.

Total Quiescent Amp x Time Required (24 Hours)      1.680 AmpHr  
 Total Alarm Amp x Time Required (5 Minutes)          0.297 AmpHr  
 Total Battery Required    1.977 AmpHr  
 Total Battery Required + 20%                                **2.372** AmpHr  
 Battery Supplied    **7.2** AmpHr

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

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 ( $\Omega$ ) per 1000' Pair (Ohms)**  
 **$V_d$  = Circuit Voltage Drop (Max allowed is 4.0Vdc)**  
 **$I_t$  = Total Circuit Current**

Notes:

- 1 BPS Power supply 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 BPS Power supply output is straight DC (not regulated).

**STROBE CIRCUIT MAX WIRE LENGTH CALCULATION**

BPS/Ckt-Cd	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM				Total Circuit Current	$\Omega$ per 1000' Pair		Volt Drop	
	15cd	30cd	75cd	110cd	15cd	30cd				12AWG (3.5)	14AWG (5.2)		
	88	109	193	248	71	98			Amp	Max Length (Ft)	Max Length (Ft)		
BPS1	1	3	0	0	0	21	1	0	0	1.8530	616.76	415.13	4.0
	2	3	0	0	0	19	1	0	0	1.7110	667.95	449.58	4.0
	3	0	0	0	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0!	4.0
	4	0	0	0	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0!	4.0

# UNE- Parker Pavilion Portland

## Booster Power Supply Standby Battery Calculations

### BPS6A Strobe Booster Panel #3 - 1st FI

	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM		Quiescent Current	Alarm Current	Remaining % of Ckt Capacity
	15cd	30cd	75cd	110cd	15cd	30cd			
Panel	88	109	193	248	71	98	0.0700		
Circuit 1	5		5		1			1.4760	40.96 %
Circuit 2	5		2		5			1.1810	52.76 %
Circuit 3	4		6		4			1.7940	28.24 %
Circuit 4								0.0000	100.00 %
							<b>0.0700</b>	<b>4.4510</b>	55.49 %
							Total Quiescent	Total Alarm	Remaining % Panel

All currents are expressed as mA.  
 Max current per ckt = 2. Amps. Max current per panel = 6.0 Amps.

Total Quiescent Amp x Time Required (24 Hours)      1.680 AmpHr  
 Total Alarm Amp x Time Required (5 Minutes)          0.371 AmpHr  
 Total Battery Required    2.051 AmpHr  
 Total Battery Required + 20%                                **2.461 AmpHr**  
 Battery Supplied    **7.2 AmpHr**

### Strobe Circuit Voltage Drop/Maximum Length Calculations

#### 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 BPS Power supply 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 BPS Power supply output is straight DC (not regulated).

### STROBE CIRCUIT MAX WIRE LENGTH CALCULATION

BPS/Ckt-Cd	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM		Total Circuit Current	Ω per 1000' Pair		Volt Drop		
	15cd	30cd	75cd	110cd	15cd	30cd		12AWG (3.5)	14AWG (5.2)			
	88	109	193	248	71	98	Amp	Max Length (Ft)	Max Length (Ft)			
BPS1	1	5	0	5	0	1	0	0	1.4760	774.29	521.16	4.0
	2	5	0	2	0	5	0	0	1.1810	967.70	651.34	4.0
	3	4	0	6	0	4	0	0	1.7940	637.04	428.78	4.0
	4	0	0	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0!	4.0

# UNE- Proctor Hall Portland

## Booster Power Supply Standby Battery Calculations

### BPS6A Strobe Booster Panel #4 - 2nd FI

	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM		Quiescent Current	Alarm Current	Remaining % of Ckt Capacity
	15cd	30cd	75cd	110cd	15cd	30cd			
Panel	88	109	193	248	71	98	0.0700		
Circuit 1	3	1	3		5			1.3070	47.72 %
Circuit 2	3		1		2			0.5990	76.04 %
Circuit 3								0.0000	100.00 %
Circuit 4								0.0000	100.00 %
							<b>0.0700</b>	<b>1.9060</b>	80.94 %
							Total Quiescent	Total Alarm	Remaining % Panel

All currents are expressed as mA.  
 Max current per ckt = 2. Amps. Max current per panel = 6.0 Amps.

Total Quiescent Amp x Time Required (24 Hours)      1.680 AmpHr  
 Total Alarm Amp x Time Required (5 Minutes)          0.159 AmpHr  
 Total Battery Required    1.839 AmpHr  
 Total Battery Required + 20%                                **2.207** AmpHr  
 Battery Supplied    **7.2** AmpHr

### Strobe Circuit Voltage Drop/Maximum Length Calculations

#### 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 BPS Power supply 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 BPS Power supply output is straight DC (not regulated).

### STROBE CIRCUIT MAX WIRE LENGTH CALCULATION

BPS/Ckt-Cd	G1RF-HDVM Horn/Strobe (20v)				G1RF-VM		Total Circuit Current	Ω per 1000' Pair		Volt Drop		
	15cd	30cd	75cd	110cd	15cd	30cd		12AWG (3.5)	14AWG (5.2)			
	88	109	193	248	71	98	Amp	Max Length (Ft)	Max Length (Ft)			
BPS1	1	3	1	3	0	5	0	0	1.3070	874.41	588.55	4.0
	2	3	0	1	0	2	0	0	0.5990	1907.94	1284.19	4.0
	3	0	0	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0!	4.0
	4	0	0	0	0	0	0	0	0.0000	#DIV/0!	#DIV/0!	4.0