SK-4 Battery Calculation

Secondary Power Source Requirements

	Standby Current (amps)					Secondary Alarm Current (amps)				
Device Type	**Qty**		**Current Draw**		**Total**	**Qty**		**Current Draw**		**Total**
SK-4 Fire Panel	1	x	0.085000	=	0.085000	1	x	0.175000	=	0.175000
SK-XRM24		x	0.000000	=			x	0.000000	=	
SK-4XTM		x	0.005000	=			x	0.011000	=	
SK-CAC-4		x	0.001000	=			x	0.001000	=	
SK-4XZM		x	0.004000	=			x	0.008000	=	
SK-RZA4		x	0.004000	=			x	0.019000	=	
SK-4XLM		x	0.000000	=			x	0.000000	=	
Conventional Detectors	1	x	0.000050	=	0.000050	1	x	0.000000	=	0.000000
EOLR-1		x	0.020000	=			x	0.020000	=	
Miscellaneous Device 1		x	0.000000	=			x	0.000000	=	
Miscellaneous Device 2		x	0.000000	=			x	0.000000	=	
Miscellaneous Device 3		x	0.000000	=			x	0.000000	=	
Miscellaneous Device 4		x	0.000000	=			x	0.000000	=	
Miscellaneous Device 5		x	0.000000	=			x	0.000000	=	
NAC 1							x	0.000000	=	
NAC 2							x	0.000000	=	
Resettable 1			0.000000	=				0.000000	=	
Constant-Power 1			0.000000	=				0.000000	=	
			Total Standby Load		**0.085050**			**Total Alarm Load**		**0.175000**

SK-4 Battery Calculation

Note 1: You are fully responsible for verifying these calculations.
Note 2: Use the dropdowns in the **yellow** cells to enter values.

Calculation in Total Sheet

		Required Standby Time in Hours			
		24 Hours			
Standby Load Current	**0.08505 Amps**	x	24	=	2.041 AH
		Required Alarm Time in Minutes			
		5 Minutes			
Alarm Load Current (Amps)	**0.17500 Amps**	x	0.084	=	0.015 AH
			Total Current Load		**2.056 AH**
	Multiply by the Derating Factor		1.2	=	x 1.20
			Total Ampere Hours Required		**2.47 AH**

Recommended Batteries:	**BAT-1270 - 7AH Batteries**

Battery Check
The batteries can be charged by the SK-4 Charger.
The batteries can be housed in the SK-4 Cabinet.

Current Draw Check
NAC#1 current is within the limitations of the circuit.
NAC#2 current is within the limitations of the circuit.
SK-4 Control Panel: The output current is within the panel's limitations.

SK-4 Circuit Detail

NAC 1

Device	**Qty**		**Non-Alarm Draw**		**Total**	**Qty**		**Alarm Draw**		**Total**
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
			Total Standby Load		**0.000000**			**Total Alarm Load**		**0.000000**

NAC 2

Device	**Qty**		**Non-Alarm Draw**		**Total**	**Qty**		**Alarm Draw**		**Total**
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
			Total Standby Load		**0.000000**			**Total Alarm Load**		**0.000000**

Resettable 1

Device	**Qty**	**Non-Alarm Draw**	**Total**	**Qty**	**Alarm Draw**	**Total**

		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		Total Standby Load			**0.000000**		**Total Alarm Load**			**0.000000**

Constant-Power 1										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		Total Standby Load			**0.000000**		**Total Alarm Load**			**0.000000**

SK-4 EOL Voltage Drop

Starting Voltage	20.4 Volts
Minimum Voltage @ EOL	16 Volts
Voltage Drop Warning %	10.00%

	Current Draw	Wire Type	Resistance	Length	Actual Resistance	Voltage @ EOL	Percent Drop
Circuit Name	Amps	AWG	Ohms/1000 ft.	Feet (One Way)	Ohms	Volts	Percent
NAC 1	0.000	#14 Solid	3.07	0	0.00	20.40	0.00%
NAC 2	0.000	#14 Solid	3.07	0	0.00	20.40	0.00%

DIAMOND ELECTRONICS	P2	SK-PS10 Battery Calculation								
		Secondary Power Source Requirements								
		Standby Current (amps)					Secondary Alarm Current (amps)			
Device Type	Qty		Current Draw		Total	Qty		Current Draw		Total
SK-PS10 Power Module	1	X	0.1560	=	0.1560	1	X	0.1850	=	0.1850
NAC / Output # 1			0.0000	=	0.0000			0.8470	=	0.8470
NAC / Output # 2			0.0000	=	0.0000			1.8600	=	1.8600
NAC / Output # 3			0.0000	=	0.0000			1.6440	=	1.6440
NAC / Output # 4			0.0000	=	0.0000			1.2920	=	1.2920
NAC / Output # 5			0.0000	=	0.0000			0.8470	=	0.8470
NAC / Output # 6			0.0000	=	0.0000			0.8470	=	0.8470
NAC / Output # 7			0.0000	=	0.0000			0.0000	=	0.0000
			Total Standby Load		0.1560			Total Alarm Load		7.5220

DIAMOND ELECTRONICS	P2	SK-PS10 Battery Calculation
	Note 1: You are fully responsible for verifying these calculations. Note 2: You only need to make entries in the yellow cells	

Calculation in Total Sheet

		Required Standby Time in Hours			
		24 Hours			
Standby Load Current (Amps)	0.1560 Amps	X	24	=	3.744 AH
		Required Alarm Time in Hours			
		5 Minutes			
Alarm Load Current (Amps)	7.5220 Amps	X	0.084	=	0.632 AH
			Total Current Load		4.38 AH
	*Multiply by the Derating Factor		1.2	=	x 1.20
			Total Ampere Hours Required		5.25 AH

Recommended Batteries:	BAT-1270 - 7AH Batteries

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

DIAMOND ELECTRONICS	P2	SK-PS10 Circuit Detail								
		NAC / Output # 1								
Device	Qty		Non-Alarm Draw		Total	Qty		Alarm Draw		Total
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
HWL-LF	7	x	0.000000	=	0.000000	7	x	0.108000	=	0.756000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
			Total Standby Load		0.000000			Total Alarm Load		0.847000

NAC / Output # 2										
Device	Qty		Non-Alarm Draw		Total	Qty		Alarm Draw		Total
P2WH-LF @ 185 Candela	3	x	0.000000	=	0.000000	3	x	0.417000	=	1.251000
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
SWL @ 15 Candela	2	x	0.000000	=	0.000000	2	x	0.043000	=	0.086000
HWL-LF	4	x	0.000000	=	0.000000	4	x	0.108000	=	0.432000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
			Total Standby Load		0.000000			Total Alarm Load		1.860000

NAC / Output # 3										
Device	Qty		Non-Alarm Draw		Total	Qty		Alarm Draw		Total
P2WH-LF @ 185 Candela	3	x	0.000000	=	0.000000	3	x	0.417000	=	1.251000
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
SWL @ 15 Candela	2	x	0.000000	=	0.000000	2	x	0.043000	=	0.086000
HWL-LF	2	x	0.000000	=	0.000000	2	x	0.108000	=	0.216000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	

		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**1.644000**

NAC / Output # 4										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
P2WH-LF @ 185 Candela	2	x	0.000000	=	0.000000	2	x	0.417000	=	0.834000
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
SWL @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.043000	=	0.043000
HWL-LF	3	x	0.000000	=	0.000000	3	x	0.108000	=	0.324000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**1.292000**

NAC / Output # 5										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
HWL-LF	7	x	0.000000	=	0.000000	7	x	0.108000	=	0.756000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.847000**

NAC / Output # 6										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
HWL-LF	7	x	0.000000	=	0.000000	7	x	0.108000	=	0.756000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.847000**

NAC / Output # 7										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.000000**

DIAMOND ELECTRONICS

P2

SK-PS10 EOL Voltage Drop

Starting Voltage	20.4 Volts
Minimum Voltage @ EOL	16 Volts
Voltage Drop Warning %	10.00%

	Current Draw	Wire Type	Resistance	Length	ual Resista	ltage @ E	Percent Drop
Circuit Name	Amps	AWG	Ohms/1000 ft.	Feet (One Way)	Ohms	Volts	Percent
NAC / Output # 1	0.847	#14 Solid	3.07	100	0.61	19.88	2.55%
NAC / Output # 2	1.860	#14 Solid	3.07	100	0.61	19.26	5.60%
NAC / Output # 3	1.644	#14 Solid	3.07	100	0.61	19.39	4.95%
NAC / Output # 4	1.292	#14 Solid	3.07	100	0.61	19.61	3.89%
NAC / Output # 5	0.847	#14 Solid	3.07	125	0.77	19.75	3.19%
NAC / Output # 6	0.847	#14 Solid	3.07	125	0.77	19.75	3.19%
NAC / Output # 7	0.000	#14 Solid	3.07	0	0.00	20.40	0.00%

DIAMOND ELECTRONICS	P3	SK-PS10 Battery Calculation								
	Secondary Power Source Requirements									
	Standby Current (amps)					Secondary Alarm Current (amps)				
Device Type	Qty		Current Draw		Total	Qty		Current Draw		Total
SK-PS10 Power Module	1	X	0.1560	=	0.1560	1	X	0.1850	=	0.1850
NAC / Output # 1			0.0000	=	0.0000			0.6310	=	0.6310
NAC / Output # 2			0.0000	=	0.0000			0.6310	=	0.6310
NAC / Output # 3			0.0000	=	0.0000			0.8470	=	0.8470
NAC / Output # 4			0.0000	=	0.0000			0.8470	=	0.8470
NAC / Output # 5			0.0000	=	0.0000			0.6310	=	0.6310
NAC / Output # 6			0.0000	=	0.0000			0.6310	=	0.6310
NAC / Output # 7			0.0000	=	0.0000			0.0000	=	0.0000
			Total Standby Load		0.1560			Total Alarm Load		4.4030

DIAMOND ELECTRONICS	P3	SK-PS10 Battery Calculation			
	Note 1: You are fully responsible for verifying these calculations. Note 2: You only need to make entries in the yellow cells				
Calculation in Total Sheet					
		Required Standby Time in Hours			
		24 Hours			
Standby Load Current (Amps)	0.1560 Amps	X	24	=	3.744 AH
		Required Alarm Time in Hours			
		5 Minutes			
Alarm Load Current (Amps)	4.4030 Amps	X	0.084	=	0.370 AH
			Total Current Load		4.11 AH
	*Multiply by the Derating Factor		1.2	=	x 1.20
			Total Ampere Hours Required		4.94 AH

Recommended Batteries:	BAT-1270 - 7AH Batteries

* Derating Factor required to compensate for the non-linear discharge characteristic of a battery.

DIAMOND ELECTRONICS	P3	SK-PS10 Circuit Detail								
	NAC / Output # 1									
Device	Qty		Non-Alarm Draw		Total	Qty		Alarm Draw		Total
HWL-LF	5	x	0.000000	=	0.000000	5	x	0.108000	=	0.540000
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
			Total Standby Load		0.000000			Total Alarm Load		0.631000

NAC / Output # 2										
Device	Qty		Non-Alarm Draw		Total	Qty		Alarm Draw		Total
HWL-LF	5	x	0.000000	=	0.000000	5	x	0.108000	=	0.540000
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
			Total Standby Load		0.000000			Total Alarm Load		0.631000

NAC / Output # 3										
Device	Qty		Non-Alarm Draw		Total	Qty		Alarm Draw		Total
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
HWL-LF	7	x	0.000000	=	0.000000	7	x	0.108000	=	0.756000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	

		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.847000**

NAC / Output # 4										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
HWL-LF	7	x	0.000000	=	0.000000	7	x	0.108000	=	0.756000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.847000**

NAC / Output # 5										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
HWL-LF	5	x	0.000000	=	0.000000	5	x	0.108000	=	0.540000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.631000**

NAC / Output # 6										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
P2WK @ 15 Candela	1	x	0.000000	=	0.000000	1	x	0.091000	=	0.091000
HWL-LF	5	x	0.000000	=	0.000000	5	x	0.108000	=	0.540000
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.631000**

NAC / Output # 7										
Device	**Qty**	**Non-Alarm Draw**			**Total**	**Qty**	**Alarm Draw**			**Total**
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
		x	0.000000	=			x	0.000000	=	
Total Standby Load					**0.000000**	**Total Alarm Load**				**0.000000**

DIAMOND ELECTRONICS

P3

SK-PS10 EOL Voltage Drop

Starting Voltage	20.4 Volts
Minimum Voltage @ EOL	16 Volts
Voltage Drop Warning %	10.00%

	Current Draw	Wire Type	Resistance	Length	ual Resista	ltage @ E	Percent Drop
Circuit Name	Amps	AWG	Ohms/1000 ft.	Feet (One Way)	Ohms	Volts	Percent
NAC / Output # 1	0.631	#14 Solid	3.07	125	0.77	19.92	2.37%
NAC / Output # 2	0.631	#14 Solid	3.07	125	0.77	19.92	2.37%
NAC / Output # 3	0.847	#14 Solid	3.07	150	0.92	19.62	3.82%
NAC / Output # 4	0.847	#14 Solid	3.07	150	0.92	19.62	3.82%
NAC / Output # 5	0.631	#14 Solid	3.07	150	0.92	19.82	2.85%
NAC / Output # 6	0.631	#14 Solid	3.07	150	0.92	19.82	2.85%
NAC / Output # 7	0.000	#14 Solid	3.07	0	0.00	20.40	0.00%