POTTER
The Symbol of Protection

IPA-60
Battery & Voltage Drop Calculations

Project Name:		**Standby Hours:**	24
		Alarm Mins:	5
Installed By:		**Batt Efficiency:**	80%
Designed By:		**SLC Type:**	Class B
Date:		**NAC Source Voltage:**	20.4

Model #: IPA-60 **Max Panel Current (amps):** 5

Panel ID:

Location:

User assumes all responsibility to ensure the quantities and current draw values in this worksheet are accurate prior to submittal.

Qty	FACP Part #	Description	Standby (amps) Each	Standby (amps) Total	Alarm (amps) Each	Alarm (amps) Total
1	IPA-60	Analog Addressable FACP	0.130	0.130	0.220	0.220
			Panel Standby:	**0.130**	**Panel Alarm:**	**0.220**

	P-LINK (RS-485)		Standby		Alarm	
	MC-1000	Multi-Connect Expander	0.010		0.010	
1	UD-1000	DACT Card	0.016	0.016	0.023	0.023
	RA-6075R	LCD Annunciator	0.020		0.025	
	RA-6500R(F)	Flush Mount LCD Annunciator	0.020		0.050	
	LED-16(F)	Flush Mount LED Annunciator	0.025		0.025	
	LED-16	LED Annunciator LED Power*	0.015		0.210	
	CA-6075	Class A Module	0.012		0.044	
	PSN-1000(E)	Power Expander	0.015		0.015	
	PAD100-SLCE-127	SLC Expander	0.060		0.060	
	NOHMI-SLCE-127*	SLC Expander	0.060		0.060	
	RLY-5	Relay Expander	0.025		0.035	
	RLY-5	Relay Expander Power*	0.010		0.135	
	DRV-50	LED Driver Module	0.025		0.025	
	DRV-50	LED Driver Module LED Power*	0.010		0.215	
	FCB-1000	Fire Communications Bridge	0.025		0.025	
	FIB-1000	Fiber Interface Board	0.030		0.030	
	SPG-1000	Serial Parallel Gateway	0.040		0.040	

*** REQUIRED IF USING NOHMI PROTOCOL SLC DEVICES**

(Maximum current draw on P-Link limited to 1 Amp) **P-LINK Standby:** **0.016** **P-LINK Alarm:** **0.023**

****Only enter quantity if PLINK power is being used to power devices***

	SLC Devices		Standby		Alarm	
1	PAD100-PD	Analog Photo Smoke	0.000300	0.000300	0.000300	0.000300
	PAD100-PHD	Analog Photo Smoke/Heat	0.000300		0.000300	
	PAD100-HD	Analog Fixed Temp Heat	0.000300		0.000300	
	PAD100-CD	Analog Carbon Monoxide Detector	0.000300		0.000300	
	PAD100-DUCT	Addressable Duct Detector	0.000300		0.000300	
	PAD100-DRTS	Duct Remote Test Switch	0.010000		0.015000	
	PAD100-DUCTR*	Addressable Duct Detector w/Relay	0.000500		0.000500	
1	PAD100-PSSA/PSDA	Addressable Pull Station Single/Dual Action	0.000200	0.000200	0.000200	0.000200
	PAD100-MIM	Micro Input Module	0.000200		0.000200	
	PAD100-SIM	Single Input Module	0.000240		0.000240	
1	PAD100-DIM	Dual Input Module	0.000240	0.000240	0.000240	0.000240
	PAD100-RM	Relay Module	0.000240		0.000240	
	PAD100-OROI	One Relay One Input Module	0.000240		0.000240	
	PAD100-TRTI	Two Relay Two Input Module	0.000240		0.000240	
	PAD100-ZM*	Conventional Zone Module	0.000240		0.000240	
	PAD100-NAC*	Notification Appliance Circuit	0.000200		0.000200	
	PAD100-SM	Speaker Module	0.000240		0.000240	
	PAD100-IM	Isolator Module	0.000150		0.000150	
	PAD100-LED	LED Module	0.000240		0.000240	
	PAD100-LEDK	Addressable LED w/ Key Switch	0.000200		0.000200	
	PAD100-SB*	Addressable Sounder Base	0.000200		0.000200	
	PAD100-RB	Addressable Relay Base	0.000200		0.000200	
	PAD100-IB	Addressable Isolator Base	0.000150		0.000150	
	PSA	Analog Photo Smoke	0.000325		0.000325	
	PSHA	Analog Photo Smoke/Heat	0.000325		0.000325	
	RHA	Analog Rate of Rise Heat	0.000325		0.000325	
	FHA	Analog Fixed Temp Heat	0.000325		0.000325	
	DDA	Addressable Duct Detector	0.000325		0.000325	
	APS-SA/APS-DA	Addressable Pull Station Single/Dual Action	0.000325		0.000325	
	MCM	Mini Contact Input Module	0.000325		0.000325	
	SCM-4	Single Contact Input Module	0.000325		0.001000	
	DCM-4	Dual Contact Input Module	0.000325		0.001000	
	TRM-4	Twin Relay Output Module	0.000325		0.001000	
	CIZM-4 *	Conventional Zone Input Mod	0.000325		0.001000	
	MOM-4 *	Monitored Output Module	0.000325		0.001000	
	ARB *	Detector Base w/Relay	0.000325		0.000325	
	ASB *	Detector Base w/Sounder	0.000325		0.000325	
	SCI **	Short Circuit Isolator (Class A)	0.000325		0.002340	
	AIB **	Detector Base w/Isolator (Class A)	0.000325		0.002340	

	IM/IB/SCI/AIB Class B **	Current Draw from Install Manual				
		SLC Loop Alarm LED Current	0.000000	0.000000	0.036000	0.036000
*	Requires Aux Power (Configure Below)		**SLC Standby:**	**0.000740**	**SLC Alarm:**	**0.036740**

** See the installation manual for special considerations when installing AIB, SCI devices on Class B loops.

NAC Circuits (See NAC Configuration below) Ckt	Use	Description	Standby (amps) Total		Alarm (amps) Total
1			0.00000		3.00000
2			0.00000		1.50000
		NAC Standby:	**0.00000**	**NAC Alarm:**	**4.50000**

I/O Circuits (See I/O Configuration below) Ckt	Use	Description	Standby (amps) Total		Alarm (amps) Total
1			0.00000		0.00000
2			0.00000		0.00000
		I/O Standby:	**0.00000**	**I/O Alarm:**	**0.00000**

Battery Calculation Summary

	Standby (amps)		Alarm (amps)
Panel Current:	0.13000		0.22000
P-Link Current:	0.01600		0.02300
SLC Device Current:	0.00074		0.03674
NAC Circuit Current:	0.00000		4.50000
I/O Circuit Current:	0.00000		0.00000
Total Standby:	**0.146740**	**Total Alarm:**	**4.77974**
Standby Hours:	24	**Alarm Mins:**	5
AH Required:	**3.53**	**AH Required:**	**0.40**

SLC Loop Type: Class B

Device Addresses Used: **3**

Device Addresses Available: **60**

Total Combined Standby & Alarm AmpHours Required:	3.93
Efficiency Factor:	80%
Required Battery AmpHours:	**4.91**
Battery AmpHours Provided:	

Note: The cabinet will house two 8 AH or 18 AH batteries. The charging circuit is rated for up to two 55 AH batteries.

NAC Circuit Configuration & Voltage Drop

NAC 1

MAX Circuit Current (amps): 3 **Source Voltage Used (VDC): 20.4**

Usage: **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps	Volts @ EOL	Min Volts Req'd
#14 Solid	2.5		0.000	3.000	20.40	16

Qty	Lookup Type	Circuit Devices Desc	Standby (amps) Each	Standby (amps) Total	Alarm (amps) Each	Alarm (amps) Total
1		Maximum amount			3.000000	3.000000
		to these bottom 5 rows				
		(No lookup function)				
				Total Standby:	**0.00000**	**Total Alarm:** **3.00000**

NAC 2

MAX Circuit Current (amps): 3 **Source Voltage Used (VDC): 20.4**

Usage: **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps	Volts @ EOL	Min Volts Req'd
#14 Solid	2.5		0.000	1.500	20.40	16

Qty	Lookup Type	Circuit Devices Desc	Standby (amps) Each	Standby (amps) Total	Alarm (amps) Each	Alarm (amps) Total
		User can add devices on the fly				
		to these bottom 5 rows				
		(No lookup function)				
1		Maximum			1.500000	1.500000
				Total Standby:	**0.00000**	**Total Alarm:** **1.50000**

I/O Circuit Configuration & Voltage Drop

I/O 1

MAX Circuit Current (amps): 1 **Source Voltage Used (VDC): 20.4**

Usage: **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps	Volts @ EOL	Min Volts Req'd
#14 Solid	2.5		0.000	0.000	20.40	16

Qty	Circuit Devices Lookup Type	Desc	Standby (amps) Each	Standby (amps) Total	Alarm (amps) Each	Alarm (amps) Total
		User can add devices on the fly				
		to these bottom 5 rows				
		(No lookup function)				
			Total Standby:	**0.00000**	**Total Alarm:**	**0.00000**

I/O 2

MAX Circuit Current (amps): 1 **Source Voltage Used (VDC): 20.4**

Usage: **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps	Volts @ EOL	Min Volts Req'd
#14 Solid	2.5		0.000	0.000	20.40	16

Qty	Circuit Devices Lookup Type	Desc	Standby (amps) Each	Standby (amps) Total	Alarm (amps) Each	Alarm (amps) Total
		User can add devices on the fly				
		to these bottom 5 rows				
		(No lookup function)				
			Total Standby:	**0.00000**	**Total Alarm:**	**0.00000**