POTTER
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IPA-60
Battery & Voltage Drop Calculations

Project Name:	Midwest Avaition Hangar	**Standby Hours:**	24
		Alarm Mins:	5
Installed By:	Fire Alarm Solutions	**Efficiency Factor:**	20%
Designed By:	Fire Alarm Solutions	**SLC Type:**	Class B
Date:	9/30/2025	**NAC Source Voltage:**	24

Model #: IPA-60
Panel ID:
Location:

Max Panel Current (amps): 5

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

Qty	Addressable Fire Panel Part #	Description	Standby (amps) Each	Total	Alarm (amps) Each	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	
1	UD-2000 / UD-1000	DACT Card	0.016	0.016	0.023	0.023
	RA-6075/R	LCD Annunciator	0.020		0.025	
	RA-6500 (R/F)	Flush Mount LCD Annunciator	0.020		0.050	
	LED-16 (F)	Flush Mount LED Annunciator	0.025		0.025	
	LED-16 (F)*	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	
	IDC-6	Initating Zone Expander	0.020		0.020	
	IDC-6	Initating Zone Expander Power*	0.030		0.270	
	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	
	MC-1000	Multi-Connect Expander	0.010		0.010	
	SPG-1000	Serial Parallel Gateway	0.040		0.040	
	NCE-1000	Network Card Ethernet	0.050		0.050	
	NCF-1000	Network Card Fiber	0.095		0.095	
	PSK-1000	Programmable Soft Key	0.018		0.019	
	SCUI-1000	Smoke Control User Interface	0.018		0.019	

** **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	
		AFC / ARC / IPA Series - PAD100/200				
	PAD-PD	Analog Photo Smoke	0.000300		0.000300	
	PAD-PHD	Analog Photo Smoke/Heat	0.000300		0.000300	
	PAD-HD	Analog Fixed Temp Heat	0.000300		0.000300	
	PAD-CD	Analog Carbon Monoxide Detector	0.000300		0.000300	
	PAD-PCD	Analog Smoke/Carbon Monoxide Detector	0.000300		0.000300	
	PAD-PHCD	Analog Smoke/Heat/Carbon Detector	0.000300		0.000300	
	PAD100-DRTS	Duct Remote Test Switch	0.010000		0.015000	
	PAD-DUCT	Addressable Duct Detector	0.000300		0.000300	
	PAD-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	
2	PAD100-SIM	Single Input Module	0.000240	0.000480	0.000240	0.000480
	PAD100-DIM	Dual Input Module	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	0.000200		0.000200	
	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-LFSB***	Addressable Low Frequency Sounder Base	0.000200		0.000200	
	PAD100-RB*	Addressable Relay Base	0.000200		0.000200	
	PAD100-IB	Addressable Isolator Base	0.000150		0.000150	

		AFC / ARC / IPA Series - PAD300				
1	PAD300-PD	Analog Photo Smoke	0.000300	0.000300	0.000300	0.000300
	PAD300-PD-I	Analog Photo Smoke W/ Isolator	0.000300		0.000300	
	PAD300-PHD	Analog Photo Smoke/Heat	0.000300		0.000300	
	PAD300-PHD-I	Analog Photo Smoke/Heat/Isolater	0.000300		0.000300	
	PAD300-HD	Analog Fixed Temp Heat	0.000300		0.000300	
	PAD300-HD-I	Analog Fixed Temp Heat W/ Isolator	0.000300		0.000300	
	PAD300-CD	Analog CO Detector	0.000300		0.000300	
	PAD300-CD-I	Analog CO Detector W/Isolater	0.000300		0.000300	
	PAD300-PCD-I	Analog Smoke/CO Detector	0.000300		0.000300	
	PAD300-PCD	Analog Smoke/CO Detector W/Isolater	0.000300		0.000300	
	PAD300-PHCD	Analog Smoke/Heat/CO Detector	0.000300		0.000300	
	PAD300-PHCD-I	Analog Smoke/Heat/CO Detector W/ Isolater	0.000300		0.000300	
	PAD300-DD	Addressable Duct Detector	0.000300		0.000300	
	PAD300-SB***	Addressable Sounder Base	0.000200		0.000200	
	PAD300-LFSB***	Addressable Low Frequency Sounder Base	0.000200		0.000200	
	PAD300-RB*	Addressable Relay Base	0.000200		0.000200	
	PAD300-IB	Addressable Isolator Base	0.000150		0.000150	
		PFC-6000 / P Series				
	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
				SLC Standby:	**0.000980**	**SLC Alarm:**	**0.036980**

* Requires Aux Power (Configure Below)

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

*** Requires Aux Sounder Base Power (Configure Below)

NAC Circuits (See NAC Configuration below)			Standby (amps)		Alarm (amps)
Ckt	Use	Description	Total		Total
1	Notification		0.00000		0.50100
2	Notification		0.00000		0.18900
		NAC Standby:	**0.00000**	**NAC Alarm:**	**0.69000**

I/O Circuits (See I/O Configuration below)			Standby (amps)		Alarm (amps)
Ckt	Use	Description	Total		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:	0.00098		0.03698
NAC Circuit Current:	0.00000		0.69000
I/O Circuit Current:	0.00000		0.00000
Total Standby:	**0.146980**	**Total Alarm:**	**0.96998**
Standby Hours:	24	**Alarm Mins:**	5
AH Required:	**3.53**	**AH Required:**	**0.09**

SLC Loop Type: Class B

Device Addresses Used: 4

Device Addresses Available: 60

Total Combined Standby & Alarm AmpHours Required: 3.62

Efficiency Factor: **20%**

Required Battery AmpHours: **4.34**

Battery AmpHours Provided: **7ah**

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

10/22/2025

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NAC Circuit Configuration & Voltage Drop *Midwest Avaition Hangar* *9/30/2025*

NAC 1 **MAX Circuit Current (amps): 3** **Source Voltage Used (VDC): 24**

Usage: Notification **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps)	Volts @ EOL	Min Volts Req'd
#14 Stranded	3.26	275	1.793	0.501	23.10	16

Circuit Devices			Standby (amps)		Alarm (amps)	
Qty	Lookup Type	Description	Each	Total	Each	Total
3	User Defined	System Sensor SL (95cd)	0.000000	0.000000	0.075000	0.225000
3	User Defined	System Sensor P2L (95cd)	0.000000	0.000000	0.092000	0.276000
			Total Standby:	**0.00000**	**Total Alarm:**	**0.50100**

NAC 2 **MAX Circuit Current (amps): 3** **Source Voltage Used (VDC): 24**

Usage: Notification **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps)	Volts @ EOL	Min Volts Req'd
#14 Solid	3.19	130	0.829	0.189	23.84	16

Circuit Devices			Standby (amps)		Alarm (amps)	
Qty	Lookup Type	Descrption	Each	Total	Each	Total
1	User Defined	System Sensor P2L (135cd)	0.000000	0.000000	0.189000	0.189000
			Total Standby:	**0.00000**	**Total Alarm:**	**0.18900**

I/O Circuit Configuration & Voltage Drop *Midwest Avaition Hangar* *9/30/2025*

I/O 1 **MAX Circuit Current (amps): 1** **Source Voltage Used (VDC): 24**

Usage: **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps)	Volts @ EOL	Min Volts Req'd
#12 Solid	2.01		0.000	0.000	24.00	16

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

I/O 2 **MAX Circuit Current (amps): 1** **Source Voltage Used (VDC): 24**

Usage: **Description:**

Wire Type	Ohms/1000ft	Length 1-Way	Actual Ohms	Max Load (amps)	Volts @ EOL	Min Volts Req'd
#12 Solid	2.01		0.000	0.000	24.00	16

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