



Standby Battery Calculation Firelite ES-200X Fire Alarm Control Panel

Protected Premises: Angier & Black River Fire Department **Date:** 9/2/2021

Address: _____

City: Angier **State:** NC **Zip:** _____

Prepared By: WACO Fire Alarm, LLC **Phone:** (919) 772-1745

City: Raleigh **State:** NC

Panel ID: FACP **Location:** _____

System Device	Qty	Standby Current Draw		Alarm Current Draw	
		Draw	Standby	Draw	Alarm
ES-200X	1	0.141000	0.141000	0.257000	0.257000
PWRMOD24	1	0.007000	0.007000	0.008000	0.008000
IPOTS-COM Communicator	1	0.040000	0.040000	0.041000	0.041000
SD365 Photo Detector	43	0.000200	0.008600	0.004500	0.193500
H365R Heat Detector w/Rate of Rise	1	0.000200	0.000200	0.004500	0.004500
DNR Duct Housing w/SD365R	4	0.000200	0.000800	0.004500	0.018000
BG-12LX Manual Pull Station	11	0.000300	0.003300	0.005000	0.055000
MMF-300 Monitor Module	2	0.000375	0.000750	0.005000	0.010000
MDF-301 Mini-Monitor Module	2	0.000350	0.000700	0.000600	0.001200
CRF-300 Relay Module	4	0.000255	0.001020	0.006500	0.026000
RA100Z Remote Alarm Indicator	4	0.000000	0.000000	0.012000	0.048000
CO1224T Carbon Monoxide Detector	2	0.020000	0.040000	0.040000	0.000000
NAC #1 Current Draw	1	0.000000	0.000000	1.281000	1.281000
NAC #2 Current Draw	1	0.000000	0.000000	0.923000	0.923000
NAC #3 Current Draw	1	0.000000	0.000000	1.621000	1.621000
NAC #4 Current Draw	1	0.000000	0.000000	0.660000	0.660000
Total Standby:		0.243		Total Alarm:	5.147

Secondary Load Requirements **7.53** **Amp Hours**

Total Secondary Load from the calculation table below.

Current Draw (Amps)		Time (Hours)	Total (AH)
Secondary Standby Load 0.243		Required Standby Time	
		24	5.84
Secondary Alarm Load 5.147		Required Alarm Time	
		0.084	0.43
Total Secondary Load			6.27
Derating Factor			1.20
Secondary Load Requirements			7.53

Battery Selection **12** **Amp Hours**



Point to Point Voltage Drop Analysis
ES-200X Fire Alarm Control Panel
Source Voltage: 20.4 Nominal System Voltage

Project Name: Angier & Black River Fire Dept.

Date: _____

Circuit No: N1

Minimum Voltage: 16

Area Covered: Ground Floor

Wire Gauge: 14

Ohm's per 1,000 ft.: 3.14

Device Number	Part Number	Current (amps)	Distance (Feet)		Voltage at Device
			Between	Total	
1	PC2WL115	0.187	110	110	19.52
2	PC2WL115	0.187	45	155	19.21
3	PC2WL115	0.187	60	215	18.86
4	PC2WL115	0.187	45	260	18.66
5	P2WL15	0.054	50	310	18.49
6	SWL15	0.043	30	340	18.40
7	SWL15	0.043	45	385	18.28
8	P2WL15	0.054	60	445	18.13
9	P2WL15	0.054	40	485	18.05
10	P2WL75	0.121	40	525	17.98
11	SWL15	0.043	15	540	17.96
12	P2WL75	0.121	45	585	17.93
Total Power:		1.281	% Voltage Drop:		-12.13%

NOTE: Wire resistance is doubled in the calculations for two wires. The voltage shown at the last device must not be lower than the manufacturer's listed minimum voltage.

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Point to Point Voltage Drop Analysis
ES-200X Fire Alarm Control Panel
Source Voltage: 20.4 Nominal System Voltage

Project Name: Angier & Black River Fire Dept.

Date: _____

Circuit No: N2

Minimum Voltage: 16

Area Covered: Ground Floor

Wire Gauge: 14

Ohm's per 1,000 ft.: 3.14

Device Number	Part Number	Current (amps)	Distance (Feet)		Voltage at Device
			Between	Total	
1	P2WL15	0.054	35	35	20.20
2	P2WL-LF185	0.266	40	75	19.98
3	SWL15	0.043	35	110	19.85
4	SWL15	0.043	25	135	19.76
5	SWL15	0.043	30	165	19.66
6	SWL15	0.043	30	195	19.57
7	P2WL15	0.054	30	225	19.49
8	SWL15	0.043	15	240	19.45
9	SWL15	0.043	50	290	19.35
10	P2WL15	0.054	15	305	19.32
11	SWL15	0.043	25	330	19.29
12	P2WL15	0.054	45	375	19.23
13	SWL15	0.043	40	415	19.20
14	SWL15	0.043	35	450	19.17
15	P2WL15	0.054	25	475	19.17

Total Power: 0.923

% Voltage Drop: -6.05%

NOTE: Wire resistance is doubled in the calculations for two wires. The voltage shown at the last device must not be lower than the manufacturer's listed minimum voltage.

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Point to Point Voltage Drop Analysis
ES-200X Fire Alarm Control Panel
Source Voltage: 20.4 Nominal System Voltage

Project Name: Angier & Black River Fire Dept.

Date: _____

Circuit No: N3

Minimum Voltage: 16

Area Covered: Ground Floor

Wire Gauge: 14

Ohm's per 1,000 ft.: 3.14

Device Number	Part Number	Current (amps)	Distance (Feet)		Voltage at Device
			Between	Total	
1	SWL15	0.043	35	35	20.04
2	SWL15	0.043	35	70	19.70
3	P2WL-LF185	0.266	30	100	19.41
4	P2WL-LF185	0.266	30	130	19.17
5	P2WL-LF185	0.266	30	160	18.98
6	P2WL15	0.054	25	185	18.86
7	P2WL15	0.054	45	230	18.67
8	P2WL15	0.054	45	275	18.49
9	SWL15	0.043	25	300	18.40
10	P2WL-LF185	0.266	45	345	18.25
11	P2WL-LF185	0.266	25	370	18.21

Total Power: 1.621

% Voltage Drop: -10.73%

NOTE: Wire resistance is doubled in the calculations for two wires. The voltage shown at the last device must not be lower than the manufacturer's listed minimum voltage.

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Point to Point Voltage Drop Analysis
ES-200X Fire Alarm Control Panel
Source Voltage: 20.4 Nominal System Voltage

Project Name: Angier & Black River Fire Dept.

Date: _____

Circuit No: N4

Minimum Voltage: 16

Area Covered: Ground Floor

Wire Gauge: 14

Ohm's per 1,000 ft.: 3.14

Device Number	Part Number	Current (amps)	Distance (Feet)		Voltage at Device
			Between	Total	
1	SWL15	0.043	35	35	20.25
2	SWL15	0.043	25	60	20.16
3	P2WL15	0.054	15	75	20.10
4	SWL30	0.063	25	100	20.02
5	SWL75	0.107	45	145	19.89
6	P2WL15	0.054	40	185	19.81
7	P2WL15	0.054	30	215	19.75
8	P2WL75	0.121	50	265	19.67
9	P2WL75	0.121	45	310	19.64
Total Power:		0.660	% Voltage Drop:		-3.73%

NOTE: Wire resistance is doubled in the calculations for two wires. The voltage shown at the last device must not be lower than the manufacturer's listed minimum voltage.

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