



## **Lowes #2734**

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Puyallup, WA 98374

### **Fire Alarm System**

Equipment Datasheets  
Certifications

### **E2 JOB # D1373**

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FIRE ALARM  
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*TAB 1*

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SCOPE OF WORK



## **SCOPE OF WORK**

This project scope of work consists of installing a new Silent Knight 6820 to replace an outdated Silent Knight 5820XL.

All other field devices are to remain.



*TAB 2*

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FIRE ALARM CONTROL PANEL



## 6820

### Addressable Fire Alarm Control Panel

The 6820 is an addressable fire alarm control panel (FACP) and is a direct replacement for the 5820XL FACP. The 6820 can be configured to achieve a point capacity of 1110 points and connect up to 17 panels in a single communications link.

The 6820 has one built-in signaling line circuit (SLC), which can support 159 (SK) System Sensor® sensors and 159 SK modules or 127 (SD) Hochiki® devices per loop. To increase point capabilities, additional SLC loops can be added using the 6815 SLC expander for SK devices or the 5815XL expander for SD devices, increasing the point capacity to a maximum of 1110 points for SK devices and 635 points for SD devices. Three additional SLCs are needed to reach 1110 points (SK devices). Four additional SLCs are needed to reach 635 points (SD devices).

A common communications and annunciation link allows up to 17 panels to be connected via copper or fiber optic cable. A designated panel is configured as the communicator for all panels in the link for convenient single-point communications. It also has a built-in, dual-line POTS and IP communicator with additional cellular options available.

The 6820 system can be enhanced by adding modules such as the 6860 remote annunciator which also has four programmable function buttons to help automate tasks and reduce time spent at the panel.

SWIFT® wireless compatibility provides options for wireless detection through a Class A mesh network. It is ideal for hard-to-wire locations, buildings where new wiring is not allowed, or to provide an easy install fire system for new construction projects. SWIFT devices can be combined with other hard-wired 6820 compatible devices.



6820

The 6820 also has a form-C trouble relay, two programmable form-C relays, along with powerful features such as drift compensation, pre-trouble maintenance alert, a built-in sensor test to comply with NFPA 72 calibration testing requirements, and calibration trouble alert.

The 6820 supports a variety of devices, including the 6860, 5860, and 6855 remote annunciators, 5824 serial parallel printer interface module (for printing system reports), the 5496 NAC expander, 5895XL power module, and SK or SD devices.

## FEATURES & BENEFITS

- Capable of providing up to 1110 points for enhanced design flexibility. Additional Signal Line Circuits can be added until maximum point levels are reached
- Built-in USB interface for convenient and quick programming
- Connect up to 17 panels on one site with convenient single-point access using the SK-NIC Network Interface Card. Connected panels can have mixed compatible FACP models
- Convenient field-upgradeable firmware
- Built-in dual path POTS and IP communications with optional cellular models available for reliable backup reporting
- 6860 annunciator with a 4 x 40 large display
- JumpStart® auto programming reduces installation time
- Programmable date setting for automatic and convenient Daylight Saving Time changes
- Four user-programmable buttons minimize time spent executing complex or routine tasks
- Flexput® circuits can be individually programmed to function as notification circuits, auxiliary power outputs, or initiating circuits that support both 2- and 4-wire smoke detectors

## **SIGNAL LINE CIRCUIT (SLC)**

The 6815 signal line circuit (SLC) supports multiple device types of SK protocol, while the 5815XL signal line circuit (SLC) supports multiple device types of SD protocol. You cannot mix SD and SK SLC devices on a FACP.

The 6820 has one built-in signaling line circuit (SLC) which supports multiple devices. Additional points can be added using the 6815 SLC expanders to increase overall capacity to 1,110 maximum points (SK devices) or by adding up to four 5815XL SLC expanders to reach 635 maximum points (SD devices). The number of SLCs which can be used within one system is limited by point count. (See the Manual for additional information.)

The 6820 SLC loops support multiple device types, maintenance alerts, and a built-in sensor test to comply with NFPA 72 calibration testing requirements.

## **INDICATOR LIGHTS**

- **General Alarm (Red):** Flashes if in alarm; solid when alarm is silenced
- **Supervisory (Yellow):** Flashes if a supervisory condition exists; solid when supervisory is silenced
- **System Troubles (Yellow):** Flashes if a trouble condition exists; solid when trouble is silenced
- **System Silenced (Yellow):** On when an alarm, trouble or supervisory condition has been silenced but not yet cleared
- **System Power (Green):** Flashes for AC failure; solid when power systems are normal

## **USER INTERFACE**

The 6820 built-in 4 x 20 annunciator with 80 character LCD display and large easy-to-use tactile touchpad can be used for system operation, programming and maintenance. It has five LEDs for alarm, supervisory, system trouble,

system silenced and system power.

System operations include silencing alarms and troubles, resetting alarms and the display of alarm troubles and memory. The system's non-volatile event history buffer stores 1,000 events for viewing from the built-in or remote annunciator. System operations can be initiated with a mechanical firefighter's key or a valid 4- to 7-digit operator's code.

## **PROGRAMMING**

The 6820 system offers several options to simplify and speed-up programming. JumpStart® AutoProgramming minimizes programming required to start a new system. The built-in keypad, or the 6860, 5860 or 6855 remote annunciators give you on-site access to current system programming. Programming can also be accomplished using the Windows®-based Honeywell Fire Software Suite (HFSS) program.

## **SOFTWARE TOOLS**

**SKST:** Silent Knight Selection Tool provides the installer or design architect with a Windows® software system configuration tool to create a detailed Bill of Material (BOM) and battery calculations.

**HFSS:** Honeywell Fire Software Suite provides communication and panel programming, detector status, event history and additional data. Requires a PC running Microsoft® Windows®.

## **ADDITIONAL INFORMATION**

Twisted-unshielded pair wire is recommended. The 6820 also has 13 preset notification cadence patterns (including ANSI 3.41).

## **AGENCY LISTINGS AND APPROVALS**

**NFPA 13, NFPA 15, NFPA 16, NFPA 70, NFPA 72:** Central station; remote Signaling; Local Protective Signaling Systems; Auxiliary Protected Premises Unit; Water Deluge releasing service. Suitable for automatic, manual,

waterflow, sprinkler supervisory (DACT non-coded) signaling services.

- **UL Listed:** S2766
- **CSFM:** 7165-0559:0500
- **FDNY:** COA# 6249
- **FM approved**

## **ORDERING INFORMATION**

6820: Addressable Fire Alarm Control Panel. (Red cabinet).

## **COMPATIBLE ANNUNCIATORS**

**6860:** 4x40 LCD remote fire annunciator (4 lines and up to 160 characters) per system; four programmable buttons

**5860:** 4x20 LCD remote fire annunciator. 5860 is gray; 5860R is red

**6855:** 4x20 LCD remote fire annunciator

**5865-3 or 5865-4:** LED annunciators can display up to 30 LEDs (15 red and 15 yellow). The 5865-4 has key switches for silence and reset, and a system trouble LED.

**5880:** The 5880 LED / IO module has 40 programmable LED outputs and eight supervised dry contact inputs which are useful for custom applications. You can use up to eight 5880 modules on one control panel for maximum flexibility. Its compact size allows mounting inside the annunciator, or in an accessory cabinet.

## **6820 COMPATIBLE DEVICES AND ACCESSORIES**

See the data sheets listed below for a complete listing of the SK, SD or SWIFT devices.

53623: SK Devices Data Sheet

53624: SD Devices Data Sheet

350614, 350616 & 350618: SWIFT wireless devices

For a complete and current listing of compatible devices and accessories, visit [www.silentknight.com](http://www.silentknight.com)

**Important:** You cannot mix SK and SD devices in the same fire alarm system.

## **SK COMPATIBLE ADDRESSABLE DEVICES**

**SK-ACCLIMATE:** Multi criteria photoelectric smoke detector with thermal 135°F fixed temperature  
**SK-BEAM:** Reflected beam smoke detector without test feature  
**SK-BEAM-T:** Reflected beam smoke detector with test feature  
**SK-CONTROL:** Supervised control module  
**SK-CONTROL-6:** Six circuit supervised control module  
**SK-DUCT:** Photoelectric duct smoke detector with extended air speed range  
**SK-FIRE-CO:** Four criteria fire and carbon monoxide detector  
**SK-HEAT:** Fixed thermal detector (135°F)  
**SK-HEAT-W:** Fixed thermal detector (135°F), white  
**SK-HEAT-ROR:** Fixed rate of rise detector (135°F)  
**SK-HEAT-ROR-W:** Fixed rate of rise detector (135°F), white  
**SK-HEAT-HT:** Fixed high temperature thermal detector (190°F)  
**SK-HEAT-HT-W:** Fixed high temperature thermal detector (190°F), white  
**SK-ISO:** Fault isolator module  
**SK-MINIMON:** Mini monitor module  
**SK-MONITOR:** Monitor module  
**SK-MONITOR-2:** Dual input monitor module  
**SK-MON-10:** 10 input monitor module  
**SK-PHOTO:** Photoelectric smoke detector  
**SK-PHOTO-W:** Photoelectric smoke detector, white  
**SK-PHOTO-T:** Photoelectric smoke detector with thermal (135°F fixed temperature)  
**SK-PHOTO-T-W:** Photoelectric smoke detector with thermal (135°F fixed temperature), white  
**SK-PHOTOR:** Photoelectric detector with remote test capability  
**SK-PHOTO-R-W:** Photoelectric detector with remote test capability, white  
**SK-PULL-SA:** Addressable single action pull station  
**SK-PULL-DA:** Addressable dual action pull station  
**SK-RELAY:** Addressable relay module  
**SK-RELAY-6:** Addressable Six relay control module  
**SK-RELAYMON-2:** Addressable Dual relay/monitor module  
**SK-ZONE:** Addressable zone interface module  
**SK-ZONE-6:** Six zone interface module  
**B300-6(-IV):** 6" base for SK-W Series  
**B210LP:** 6" mounting base  
**B501(-WHITE, -IV, -BL):** 4" Flangeless base  
**B501:** 4" Flangeless mounting base  
**B200S(-IV, -WH):** Intelligent sounder base  
**B200S:** Intelligent sounder base  
**B200S-LF(-IV, -WH):** Low-frequency intelligent sounder base.

**B200S-LF:** Low-frequency intelligent sounder base  
**B224RB(-IV, -WH):** Relay base  
**B224RB:** Relay base  
**B224BI(-IV, -WH):** Isolator base  
**B224BI:** Isolator base

## **SD COMPATIBLE ADDRESSABLE DEVICES**

**SD505-6AB:** Addressable 6" base  
**SD505-6IB:** Addressable 6" short circuit isolator base  
**SD505-6RB:** Addressable 6" relay base  
**SD505-6SB:** Addressable 6" sounder base  
**SD500-AIM:** Addressable input module (switch input)  
**SD500-ANM:** Addressable notification module  
**SD500-ARM:** Addressable relay module  
**SD505-DTS-K:** Remote test switch and LED indicator for the SD505-DUCTR  
**SD505-DUCT:** Addressable Duct Smoke Detector.  
**SD505-DUCTR:** Addressable Duct Detector housing with relay base.  
**SD505-HEAT:** Absolute temperature heat detector. Trip point range from 135°F–150°F (0°C–37°C).  
**SD500-LIM:** Addressable Line isolator module  
**SD500-MIM:** Addressable Mini input monitor module (switch input)  
**SD505-PHOTO:** Photoelectric smoke detector  
**SD500-PS/-PSDA:** Addressable Single or dual action pull station  
**SD500-SDM:** Addressable smoke detector module

## **AUDIBLE/VISIBLE DEVICES**

These AV devices are all 2-wire. Color: "R" indicates red; "W" denotes white. For a complete listing of Silent Knight AV devices go to [www.silentknight.com](http://www.silentknight.com).

**CHSRL/CHSWL:** Wall chime/strobe  
**CHSRL/CHSCWL:** Ceiling chime/strobe  
**CHRL/CHWL:** Wall chime  
**HRL/HWL:** Wall horn  
**P2RL/P2WL:** Wall horn/strobe  
**PC2RL/PC2WL:** Ceiling horn/strobe  
**SRL/SWL:** Wall strobe  
**SCRL/SCWL:** Ceiling strobe  
**SPSRL/SPSCWL:** Ceiling speaker/strobe  
**SPSRL/SPSWL:** Wall speaker/strobe  
**SPRL/SPWL:** Wall speaker  
**SPCRL/SPCWL:** Ceiling speaker

## **SWIFT WIRELESS DEVICES**

*SWIFT is only compatible with System Sensor (SK) devices. It is not compatible with Hochiki (SD) devices.*

**WSK-WGI:** Wireless Gateway  
**WSK-PHOTO:** Wireless Photoelectric smoke detector

**WSK-PHOTO-T:** Wireless Multi-criteria photoelectric smoke detector with thermal detection (135°F fixed temperature) and B510W 4" base

**WSK-HEAT:** Wireless Heat, (135°F fixed temperature) and B510W 4" base

**WSK-HEAT-ROR:** Wireless heat, ROR (135°F fixed temperature) and B510W 4" base

**WSK-MONITOR:** Wireless monitor module  
**WSK-RELAY:** Wireless relay module  
**W-USB:** SWIFT Tools USB transceiver used for communication with SWIFT devices

## **SBUS ACCESSORIES**

**6815:** Each Single Line Circuit allows for an additional 159 SK modules and 159 SK sensors to be added to the system—up to 1,110 total points. Supports System Sensor SK devices only.

**5815XL:** Each Single Line Circuit provides an additional 127 SD devices to be added to the system—for a maximum of 635 points. Supports SD devices only.

**5496:** A 6 amp notification power expander with four power-limited notification appliance circuit outputs.

**5883:** Relay Interface. Provides 10 Form C relays.

**5824:** Serial/Parallel Printer Interface Module for printer connection.

**5895XL:** Power Supply with six Flexput™ circuits, and two Form C relays. Max. 16 per system.

**5815RMK:** Remote mounting kit. Dimensions 10 3/8"W x 10-3/16"H x 3"D

## **COMMUNICATION OPTIONS**

**CELL-CAB-SK:** Cellular communicator, metal enclosure with lock/key\*

**CELL-MOD:** Cellular communicator, plastic enclosure\*

\*Sole path, powered by panel.

**IPGSM-4G:** Dual path fire alarm communicator, cellular and/or IP (primary or backup, selectable)

**SK-IP-2:** Remote reporting via the Internet. Requires a VisorAlarm® receiver at the central station

## **MISC. ACCESSORIES**

**SK-NIC:** Network Interface Card. Provides a common communications link for the 6820.

**SK-NIC-KIT:** Installation Accessory Kit

**SK-FML:** Fiber-Optic Multi Mode, transmitter and receiver

**SK-FSL:** Fiber-Optic Single Mode

**RBB:** Remote battery box accessory cabinet for batteries that are too large to fit in the FACP cabinet. Dimensions: 16" W x 10" H x 6" D (406mm W x 254mm H x 152mm D).

**SK-SCK:** Seismic Compliance Kit used to securely fasten batteries to the fire panel.



# 6820 Technical Specifications

## PHYSICAL

**Overall Dimensions:** 16.36" W x 26.37" H x 3.91" D  
**Shipping Weight:** 32 lbs  
**Color:** Red

## ENVIRONMENTAL

**Operating Temperature:** 32°F to 120°F (0°C to 49°C)  
**Humidity:** 0 to 93% relative humidity (non-condensing)

## ELECTRICAL

**6820 Primary AC:** 120AC @ 60Hz, 3.3A Total  
Accessory Load: 6A @ 27.4VDC power-limited  
**Standby Current:** 190mA  
**Alarm Current:** 250mA  
**Battery Charging Capacity:** 7 to 35AH  
**Battery Size:** 18AH max. allowed in control panel cabinet. Larger capacity batteries can be housed in RBB accessory cabinet.

## FLEXPOT CIRCUITS

**Six programmable circuits which can be programmed individually as:**

**Notification Appliance Circuits:** 3A @ 27.4VDC per circuit, power-limited (with a panel maximum current of 6A)

**Auxiliary power circuits:** 3A @ 27.4VDC per circuit, power-limited

**Initiating Circuits (Circuits 5 and 6 Only):** 100mA @ 27.4VDC per circuit, power limited

Supports Class B (Style 4) and Class A (Style 6) configuration for SLC, SBUS, and Flexput circuits

**WIRING:** See the product manual for wiring details

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This document is not intended to be used for installation purposes. We try to keep our product information up-to date and accurate. We cannot cover all specific applications or anticipate all requirements. All specifications are subject to change without notice.

For Technical Support, call 800-446-6444.

## Honeywell Silent Knight

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www.silentknight.com

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*TAB 3*

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SYSTEM BATTERIES

# DURACELL® Security Alarm Batteries

## ULTRA

Duracell® Ultra SLA technology offers high-density power that out-performs traditional lead acid batteries. The Absorbed Glass Mat (AGM) construction is designed for efficient gas recombination and allows for maintenance-free operation. Every Duracell® Ultra SLA battery is inspected to ensure the highest standards in materials and fabrication.



### Features:

- Duracell® Ultra batteries contain a proprietary grid alloy formula. This formula combined with the advanced plate curing techniques offer improved performance.
- A computer manages the advanced tank formation technique. Formation temperature is strictly controlled to improve service life of Duracell® Ultra batteries.
- The unique construction and sealing techniques of the Duracell® Ultra battery guarantee leak-proof operation regardless of the battery's position with no adverse effect to capacity or service life.
- Quality Assurance Engineers monitor and control the production process.
- More than 1,000 discharge/recharge cycles can be realized from Duracell® Ultra batteries, given average depth of discharge.
- Duracell® Ultra batteries are manufactured in compliance with the quality management system standard of ISO 9001.

### ACCOUNT BENEFITS



Delivery Available



Recycling Available

## SEALED LEAD ACID



Maintenance Free



Spill Proof Design




1 Year Warranty




Stringent Quality Control

Battery	Volts	Capacity Ah (20Hrs)	Dimensions (LxWxH Inches)			Terminal Type	Battery Type
DURA12-2.9F	12V	2.9	3.11	2.2	3.9	F1, T1	General Purpose
DURA12-5F	12V	5	3.54	2.76	4.21	F1, T1	General Purpose
DURA12-7F	12V	7	5.94	2.56	3.94	F1, T1	General Purpose
DURA12-8F	12V	8	5.94	2.56	3.94	F1, T1	General Purpose
DURA12-9F2	12V	9	5.95	2.56	3.94	F2, T2	General Purpose
DURA12-10F2	12V	10	5.95	2.54	4.38	F2, T2	General Purpose
DURA12-12F2	12V	12	5.94	3.9	3.98	F2, T2	General Purpose
DURA12-18F2	12V	18	7.13	3.03	6.57	F2, T2	General Purpose
DURA6-5F	6V	5	2.76	1.85	4.21	F1, T1	General Purpose
DURA6-7.2F	6V	7.2	5.94	1.34	3.68	F1, T1	General Purpose
DURA6-10F	6V	10	5.94	1.97	3.98	F1, T1	General Purpose
DURA6-12F	6V	12	5.94	1.97	3.98	F1, T1	General Purpose


## Charging, Maintenance, and Storage Tips




Recharge after each use and store battery fully charged.




Do not store in a discharged state. Charge batteries every couple months.




Overcharging kills batteries.




Undercharging shortens battery life.




Disconnect charger once fully charged.



Use charger that provides proper voltage for the battery. **GEL** batteries are charged at **13.8 - 14.1V**.



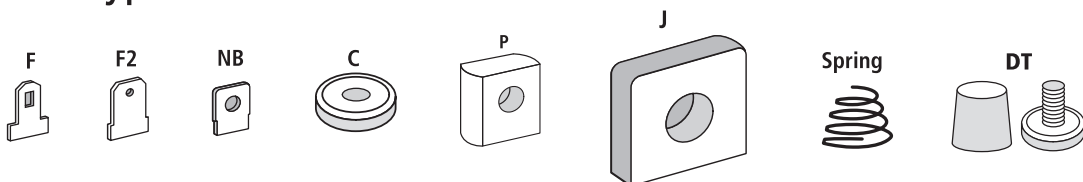
Check battery for corrosion or deformation.



Store in cool, dry place (68°F is best).

*All tips do not apply to all batteries. See battery packaging for specific information.*

## SLA Terminal Types



Visit [batteriesplus.com](http://batteriesplus.com) for warranty information



*TAB 4*

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BATTERY CALCULATIONS




# IntelliKnight 6820 Battery Calculation

## Secondary Power Source Requirements

Device Type	Standby Current (amps)				Secondary Alarm Current (amps)					
	Qty		Current Draw	Total	Qty		Current Draw	Total		
<b>1. Control Panel</b>										
6820 Control Panel	1	x	0.190000	=	0.190000	1	x	0.250000	=	0.250000
<b>2. Addressable SLC Devices</b>										
SD500-AIM	61	x	0.000550	=	0.033550	61	x	0.000550	=	0.033550
SD500-MIM		x	0.000550	=			x	0.000550	=	
SD500-ARM	21	x	0.000550	=	0.011550	21	x	0.000550	=	0.011550
SD500-PS	20	x	0.000550	=	0.011000	20	x	0.000550	=	0.011000
SD500-PSDA		x	0.000550	=			x	0.000550	=	
SD505-HEAT		x	0.000550	=			x	0.000550	=	
SD505-PHOTO		x	0.000550	=			x	0.000550	=	
SD505-DTS-K		x	0.000000	=			x	0.000000	=	
SD500-ANM		x	0.000550	=			x	0.000550	=	
SD500-SDM		x	0.000550	=			x	0.000550	=	
SD505-DUCT		x	0.000550	=			x	0.000550	=	
SD505-DUCTR		x	0.000500	=			x	0.000550	=	
<b>3. SLC Accessory Bases</b>										
SD505-4AB		x	0.000000	=			x	0.000000	=	
SD505-6AB		x	0.000000	=			x	0.000000	=	
SD505-6RB	7	x	0.000082	=	0.000574	7	x	0.000082	=	0.000574
SD505-6SB		x	0.000082	=			x	0.000082	=	
<b>4. SLC Isolator Devices</b>										
SD500-LIM	1	x	0.000092	=	0.000092	1	x	0.000092	=	0.000092
SD505-6IB		x	0.000092	=			x	0.000092	=	
<b>5. Auxiliary Power Draw - SLC Devices</b>										
SD500-ANM (Aux. Power)		x	0.008000	=			x	0.060000	=	
SD500-SDM (Aux. Power)		x	0.020000	=			x	0.106000	=	
SD500-LED (Aux. Power)		x	0.010000	=			x	0.220000	=	
SD505-6SB (Aux. Power)		x	0.001000	=			x	0.032000	=	
<b>6. Accessory Modules</b>										
5815XL	2	x	0.055000	=	0.110000	2	x	0.055000	=	0.110000
5860		x	0.020000	=			x	0.025000	=	
5860R		x	0.020000	=			x	0.025000	=	
5824		x	0.045000	=			x	0.045000	=	
5496		x	0.010000	=			x	0.010000	=	
5895XL		x	0.010000	=			x	0.010000	=	
5865-4		x	0.035000	=			x	0.145000	=	
5865-3		x	0.035000	=			x	0.145000	=	
5880		x	0.035000	=			x	0.200000	=	
5883		x	0.000000	=			x	0.220000	=	
SK-IP-2		x	0.093000	=			x	0.136000	=	
SK-IP-2UD		x	0.098000	=			x	0.155000	=	
CELL-MOD		x	0.055000	=			x	0.100000	=	
CELL-CAB-SK		x	0.055000	=			x	0.100000	=	
SK-NIC		x	0.021000	=			x	0.021000	=	
SK-NIC-KIT		x	0.021000	=			x	0.021000	=	
SK-FSL		x	0.079000	=			x	0.079000	=	
SK-FML		x	0.053000	=			x	0.053000	=	
SK-NIC		x	0.021000	=			x	0.021000	=	
SK-NIC-KIT		x	0.021000	=			x	0.021000	=	
SK-FSL		x	0.079000	=			x	0.079000	=	
SK-FML		x	0.053000	=			x	0.053000	=	
SK-FFT		x	0.120000	=			x	0.230000	=	

7. Miscellaneous Devices										
Conventional Detectors		x	0.000000	=		x	0.000000	=		
6860	2	x	0.025000	=	0.050000	2	x	0.050000	=	0.100000
TG-7FS-LTE-V	1	x	0.040000	=	0.040000	1	x	0.160000	=	0.160000
SD505-APS	169	x	0.000055	=	0.009295	169	x	0.000055	=	0.009295
Miscellaneous Device 4		x	0.000000	=			x	0.000000	=	
Miscellaneous Device 5		x	0.000000	=			x	0.000000	=	
Miscellaneous Device 6		x	0.000000	=			x	0.000000	=	
8. Output Circuits										
PGM-I/O #1 (NAC)	1		0.080000	=	0.080000	1		0.080000	=	0.080000
PGM-I/O #2 (NAC)	1		0.000000	=		1		0.155000	=	0.155000
PGM-I/O #3 (AUX)			0.000000	=				0.000000	=	
PGM-I/O #4 (NAC)			0.000000	=				0.000000	=	
PGM-I/O #5 (Initiating Dev. CK)	1		0.040000	=	0.040000	1		0.040000	=	0.040000
PGM-I/O #6 (NAC)			0.000000	=				0.000000	=	
<b>Total Standby Load</b>					<b>0.576061</b>	<b>Total Alarm Load</b>				<b>0.961061</b>

	<b>IntelliKnight 6820 Battery Calculation</b>	
	Note 1: You are fully responsible for verifying these calculations. Note 2: Use the dropdowns in the <b>yellow</b> cells to enter values.	
<b>Calculation in Total Sheet</b>		
	<b>Required Standby Time in Hours</b>	
	24 Hours	
<b>Standby Load Current</b>	<b>0.57606 Amps</b>	x 24 = 13.825 AH
		<b>Required Alarm Time in Minutes</b>
		5 Minutes
<b>Alarm Load Current (Amps)</b>	<b>0.96106 Amps</b>	x 0.084 = 0.081 AH
<b>Total Current Load</b>		<b>13.906 AH</b>
Multiply by the Derating Factor		1.2 = x 1.20
<b>Total Ampere Hours Required</b>		<b>16.69 AH</b>
<b>Recommended Batteries:</b>		<b>6914 - 18AH Batteries</b>

**Battery Check**

The batteries can be charged by the 6820 Charger.

The batteries can be housed in the 6820 Cabinet.

**Current Draw Check**

Circuit#1 current is within the limitations of the circuit.

Circuit#2 current is within the limitations of the circuit.

Circuit#3 current is within the limitations of the circuit.

Circuit#4 current is within the limitations of the circuit.

Circuit#5 current is within the limitations of the circuit.

Circuit#6 current is within the limitations of the circuit.

6820 Control Panel:  
The output current is within the panel's limitations.



## IntelliKnight 6820 Circuit Detail

### PGM-I/O# 1: Notification Appliance Circuit

Device	Qty	x	Non-Alarm Draw	=	Total	Qty	x	Alarm Draw	=	Total	
BOSCH FPP-RNAC-8A-4C Po	8	x	0.010000	=	0.080000	8	x	0.010000	=	0.080000	
		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	=		
<b>Total Standby Load</b>					<b>0.080000</b>	<b>Total Alarm Load</b>					<b>0.080000</b>

### PGM-I/O# 2: Notification Appliance Circuit

Device	Qty	x	Non-Alarm Draw	=	Total	Qty	x	Alarm Draw	=	Total	
Wheelock ASWP-2475W-FR W	1	x	0.000000	=	0.000000	1	x	0.155000	=	0.155000	
		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	=		
<b>Total Standby Load</b>					<b>0.000000</b>	<b>Total Alarm Load</b>					<b>0.155000</b>

### PGM-I/O# 3: AUX Power Circuit

Device	Qty	x	Non-Alarm Draw	=	Total	Qty	x	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	=		
<b>Total Standby Load</b>					<b>0.000000</b>	<b>Total Alarm Load</b>					<b>0.000000</b>



PGM-I/O# 4: Notification Appliance Circuit						
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	=
<b>Total Standby Load</b>			<b>0.000000</b>	<b>Total Alarm Load</b>		<b>0.000000</b>

PGM-I/O# 5: Notification Appliance Circuit						
Device	Qty	Non-Alarm Draw	Total	Qty	Alarm Draw	Total
Bosch FPP-RNAC-8A-4C POW	4	x 0.010000	= 0.040000	4	x 0.010000	= 0.040000
		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	=
<b>Total Standby Load</b>			<b>0.040000</b>	<b>Total Alarm Load</b>		<b>0.040000</b>

PGM-I/O# 6: Notification Appliance Circuit						
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	=
<b>Total Standby Load</b>			<b>0.000000</b>	<b>Total Alarm Load</b>		<b>0.000000</b>



## IntelliKnight 6820 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
PGM-I/O# 1: Notification Ap	0.080	#14 Solid	3.07	450	2.76	20.18	1.08%
PGM-I/O# 2: Notification Ap	0.155	#14 Solid	3.07	150	0.92	20.26	0.70%
PGM-I/O# 3: AUX Power Ci	0.000	#14 Solid	3.07	0	0.00	20.40	0.00%
PGM-I/O# 4: Notification Ap	0.000	#14 Solid	3.07	0	0.00	20.40	0.00%
PGM-I/O# 5: Notification Ap	0.040	#14 Solid	3.07	30	0.18	20.39	0.04%
PGM-I/O# 6: Notification Ap	0.000	#14 Solid	3.07	0	0.00	20.40	0.00%

Wire Type	Resistance
AWG	Ohms/1000 ft.
#10 Solid	1.21
#10 Stranded	1.24
#12 Solid	1.93
#12 Stranded	1.98
#14 Solid	3.07
#14 Stranded	3.14
#16 Solid	4.89
#16 Stranded	4.99
#18 Solid	7.77
#18 Stranded	7.95

Note: All Resistance values are taken from Table 8 Conductor Properties of the NFPA 70 National Electrical Code. All values are for Direct Current Resistance at 75°C (167°F).



*TAB 5*

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CERTIFICATIONS

# Contractors

## DEER, SANDIFER M

**Owner or tradesperson** DEER, SANDIFER M  
Doing business as  
DEER, SANDIFER M

TENINO, WA 98589  
THURSTON County

WA UBI No.

## License

Verify the contractor's active registration / license / certification (depending on trade) and any past violations.

**Electrician**

**Active**  
Meets current requirements.

License specialties

**LIMITED ENERGY  
HVAC/RFRG**

License no.

**DEER\*SM021PC**

Effective — expiration

**10/03/1998— 03/27/2025**

### License Violations

No license violations during the previous 6 year period.

### Continuing education

Course title

**First Aid CPR**

Completed

**05/18/2022**

Course code

**WA2021-310**

Course Hours

**4.00 FirstAid**

Course title

**2020 Grounding and Bonding**

Completed

**03/22/2022**

Course code

**WA2021-254**

Course Hours

**4.00**

### Affidavit hours

No affidavit hours reported.

## Workplace Safety & Health

Check for any past safety and health violations found on jobsites this business was responsible for.

No inspections during the previous 6 year period.



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**BE IT KNOWN THAT**

# **Sandifer M Deer**

**IS HEREBY AWARDED THE FOLLOWING CERTIFICATION**

## **Fire Alarm Systems Level IV**

Certification Number **129796**

Valid Through **2025-08-01**

**VERIFY ONLINE**

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A DIVISION OF THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

## Firkins, Charles Larrick

Owner or tradesperson Firkins, Charles Larrick

TACOMA, WA 98443  
PIERCE County

WA UBI No.

## License

Verify the contractor's active registration / license / certification (depending on trade) and any past violations.

Electrician

**Active**  
**Meets current requirements.**

License specialties

**LIMITED ENERGY**

License no.

**FIRKICL850BB**

Effective — expiration

**02/18/2015 — 02/01/2024**

License Violations

**No license violations during the previous 6 year period.**

Continuing education

**No continuing education credits have been reported for the next/current renewal.**

## Workplace Safety & Health

Check for any past safety and health violations found on jobsites this business was responsible for.

No inspections during the previous 6 year period.



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# **Charles Larrick Firkins**

**IS HEREBY AWARDED THE FOLLOWING CERTIFICATION**

## **Fire Alarm Systems Level II**

Certification Number **146805**

Valid Through **2024-03-01**

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# Register as a Contractor

**ANGELO, DAVID G**

**Owner or tradesperson ANGELO, DAVID G**  
Doing business as  
**ANGELO, DAVID G**

**PUYALLUP, WA 98375**  
**PIERCE County**

WA UBI No.

**License**

Verify the contractor's active registration / license / certification (depending on trade) and any past violations.

**Electrician**

**Active**  
**Meets current requirements.**

License specialties

**LIMITED ENERGY**

License no.

**ANGELDG942LB**

Effective — expiration

**02/02/2007— 01/08/2025**

**License Violations**

**No license violations during the previous 6 year period.**

**Continuing education**

**No continuing education credits have been reported for the next/current renewal.**

**Affidavit hours**

**No affidavit hours reported.**

**Workplace Safety & Health**

Check for any past safety and health violations found on jobsites this business was responsible for.

No inspections during the previous 6 year period.





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**BE IT KNOWN THAT**

# David G. Angelo

**IS HEREBY AWARDED THE FOLLOWING CERTIFICATION**

## Fire Alarm Systems Level II

Certification Number **104949**

Valid Through **2026-04-01**

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*Linda M. Biernacki*

CHAIR OF THE NICET BOARD OF GOVERNORS

A DIVISION OF THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

# Contractors

## Ruddell, Justin M

**Owner or tradesperson** Ruddell, Justin M  
Doing business as  
**Ruddell, Justin M**

SPANAWAY, WA 98387  
PIERCE County

WA UBI No.

## License

Verify the contractor's active registration / license / certification (depending on trade) and any past violations.

**Electrician**

**Active**  
**Meets current requirements.**

License specialties

**LIMITED ENERGY**

License no.

**RUDEJM864DP**

Effective — expiration

**05/24/2014— 10/27/2025**

**License Violations**

**No license violations during the previous 6 year period.**

**Continuing education**

**No continuing education credits have been reported for the next/current renewal.**

**Affidavit hours**

**No affidavit hours reported.**

## Workplace Safety & Health

Check for any past safety and health violations found on jobsites this business was responsible for.

No inspections during the previous 6 year period.



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**Justin Matthew Ruddell**

**Fire Alarm Systems Level II**

**CERT NO. 145221 VALID THROUGH 07/01/2023**