Permit: 2019-1578110-CT
RSN: 1346364
1 of 10

1444 SOUTH POTOMAC STREET

FIRE ALARM SYSTEM SHOP DRAWINGS FOR:

BUILDING CLASSIFICATIONS AND CODES

OCCUPANCY GROUP:	B
USE:	OFFICE
CONSTRUCTION TYPE:	TYPE–II
STORIES:	3 FLOORS
SPRINKLERED:	FULLY
REQUIREMENTS:	REQUIRED PER 2016 DBC
CODES:	2015 IFC, 2015 IBC, 2015 IMC, 2016 NFPA 72, 2017 NFPA 70, 2016 DENVER AMENDMENTS

SYSTEM TYPE AND MONITORING

SYSTEM CLASSIFICATION:	(NFPA 72, CHAPTER 26), REMOTE STATION
SYSTEM TYPE:	ADDRESSABLE
WIRING CLASSIFICATION:	NAC – CLASS B SLC – CLASS B COMMUNICATION RISER – CLASS B
NOTIFICATION TYPE:	TEMPORAL PATTERN
MONITORING:	THIS SYSTEM IS AND WILL CONTINUE TO BE MONITORED BY A REMOTE SUPERVISING STATION, PER NFPA 72 CHAPTER 26, SECTION 3.
MONITORING COMPANY:	TMS (800) 662–1711
ACCOUNT:	A21–0952

SCOPE OF WORK

PROVIDE THE FOLLOWING FIRE ALARM SYSTEM MODIFICATIONS FOR THE CARDIOVASCULAR AND THORACIC SURGEONS PROJECT OF SUITE 200 AT 1444 S POTOMAC ST:

1. RELOCATE ONE (1) EXISTING HORN/STROBE
2. PROVIDE AND INSTALL SEVEN (7) NEW HORN/STROBES
3. RELOCATE ONE (1) EXISTING STROBE

INDEX

- FA–00 COVER PAGE
  SCOPE OF WORK
  GENERAL INFORMATION
  BUILDING REQUIREMENTS AND CODES
- FA–01 FIRE ALARM PLAN
  LEGEND
  KEY MAP
  GENERAL NOTES
  WIRE CODE CHART
  MOUNTING HEIGHTS
- FA–02 CALCULATIONS
  VOLT DROP
  BOOSTER CALCULATIONS
  ONE–LINE RISER DIAGRAM
  MATRIX – SEQUENCE OF OPS

PROJECT:

CADIOVASCULAR AND THORACIC SURGEONS
1444 S POTOMAC ST, SUITE 200
DENVER, CO 80012

OWNER/GC:

BRYAN CONSTRUCTION
5575 DTC PARKWAY, SUITE 240
GREENWOOD VILLAGE, CO 80111
PH:(720)974–2566
FAX:(719)632–0672
RYLAN MILLER

FIRE ALARM CONTRACTOR

FIRE ALARM SERVICES, INC.
4800 W. 60TH AVENUE
ARVADA, CO 80003
PH:(303)466–8800
FAX:(303)466–8820
SHANNON SMITH

ARCHITECT

TENANT PLANNING SERVICES INC.
1660 LINCOLN STREET, SUITE 100
DENVER, CO 80264
PH:(303)861–4800
FAX:(303)861–1621

FIRE ALARM DESIGNER:

FIRE ALARM SERVICES, INC.
4800 W. 60TH AVENUE
ARVADA, CO 80003
PH:(303)466–8800
FAX:(303)466–8820
BRITAINY COWDEN

Fire Alarm SERVICES, INC.

Fire Alarm Services, Inc.
4800 W. 60th Avenue
Arvada, CO 80003

(303)466–8800 (Phone)
(303)466–8820 (Fax)
contactus@fasonline.cc (E–Mail)
www.fasonline.cc

City of Aurora Building Division
Counter Permit intake by: GAR
Date: Jan 31, 2019
RSN: 1346364
Permit: 2019-1578110-CT

Ray Breeland
NICET Fire Alarm Systems
Level III
Certification #111006
Date: 1/31/2019

Fire Alarm SERVICES, INC.
4800 W. 60TH AVENUE
ARVADA, CO 80003
phone: 303–466–8800
fax: 303–466–8820
www.fasonline.cc email: contactus@fasonline.cc

REVISIONS

NO.	DATE	
1	1/31/2019	Revision 1

DRAWN BY: B.COWDEN
DATE: 1/28/2019
APPR. BY:
DATE:

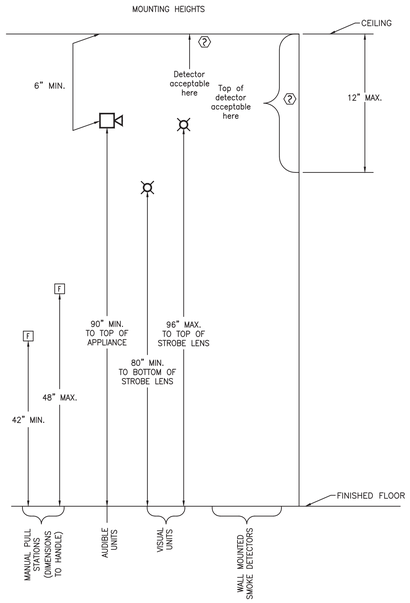
FIRE ALARM SYSTEM TENANT FINISH FOR: CARDIOVASCULAR AND THORACIC SURGEONS, SUITE 200

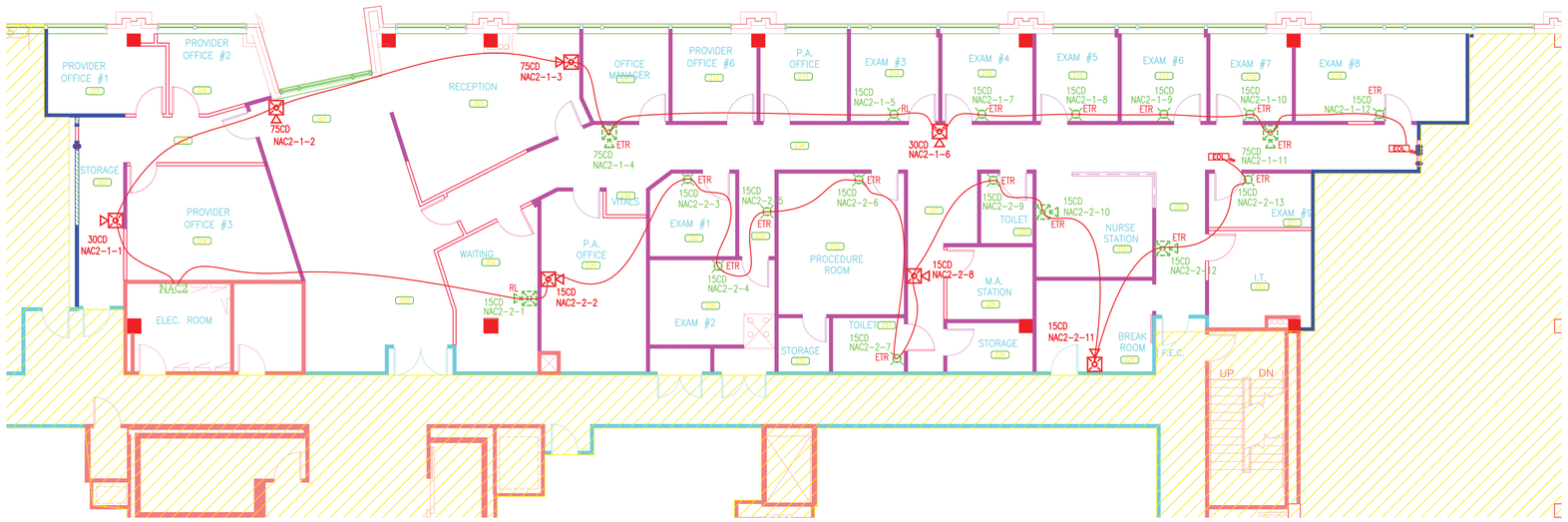
PROJECT TITLE
BUILDING NAME & ADDRESS: 1444 S POTOMAC STREET, DENVER, CO 80012
PROJECT NUMBER: 1814253

FIRE ALARM & DETECTION SYSTEM
DRAWING TITLE: SUITE 200 COVER PAGE
SCALE: N/A

PROJECT SHEET TITLE
FA–00

Permit: 2019-1578110-CT
RSN: 1346364
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FIRE ALARM PLAN

SCALE:
1/8" = 1'-0"

NORTH 0 5 10 15 30 FEET

FIRE ALARM SYMBOLS LEGEND

EXISTING	DESCRIPTION	PROPOSED
	STROBE – Wall Mount or CM = Ceiling Mount	
	SMOKE DETECTOR – x = photo, ion	
	Speaker/strobe – Wall Mount or Ceiling Mount	
	Speaker only = Wall Mount or CM = Ceiling Mount	
	Horn/strobe – Wall Mount or Ceiling Mount	
	Horn only = Wall Mount or CM = Ceiling Mount	
	REMOTE LED	
	END OF LINE RESISTOR	
	BOOSTER PANEL	
	PULL STATION	
	FIREMAN'S PHONE JACK	
	HEAT DETECTOR – x =135, 200, ROR	
	FLOW SWITCH	
	TAMPER SWITCH	
	DUCT DETECTOR – x = photo, ion	
	MONITOR MODULE	

NOTIFICATION APPLIANCE CIRCUIT NUMBER
NOTIFICATION APPLIANCE PANEL NUMBER
DEVICE NUMBER
NAC1-2-3

POWER EXPANDER NUMBERING

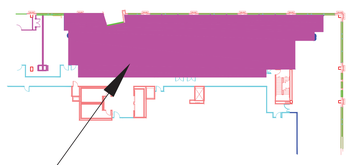
	SPEAKER LINE "A"	SPEAKER LINE "B"	

RL = RELOCATED DEVICES
RR = REMOVE AND REINSTALL
RPL = REMOVE AND REPLACE
J = J-BOX

FIRE ALARM WIRE COLOR CODE CHART				
Code	Description	Wire Type	Color (+)	Color (–)
AC	120VAC Power Wiring	3#12 AWG Solid (w/ Green Ground)	Black (hot)	White (neu)
A	Annunciator Wiring	#18 AWG Twisted/Shielded Pair	Red	Black
D	Door Holder Wiring	2#14 AWG Solid	Red	Black
L	SLC Wiring (Signaling Line Circuit)	2#18 AWG Solid	Red	Black
P	24VDC Power Wiring	2#16 AWG Solid	Red	Black
R	Remote Light/Test Wiring	2#18 AWG Solid	Red	Black
S	Notification Appliance (Horns) Wiring	2 or 4#14 AWG Solid	Red	Black
S	Notification Appliance (Speaker) Wiring	2#16 AWG Twisted/Shielded Pair	Red	Black
T	Telephone Circuit Wiring	2#16 AWG Twisted/Shielded Pair	Red	Black
V	Notification Appliance (Strobe) Wiring	2 or 4#14 AWG Solid	Red	Black
X	Auxiliary Circuit (Relay) Wiring	2#14 AWG Solid	Red	Black
Z	IDC Wiring (Initiating Device Circuit)	2#18 AWG Solid	Red	Black
WIRE TYPE CLASS & STYLE	SLC – CLASS B – STYLE 4	NAC – CLASS B		

GENERAL NOTES:

1. THE CEILING IS A TYPICAL 9' A.F.F. DROPPED CEILING WITH NO SLOPES.



KEY MAP
SCALE: NOT TO SCALE
NORTH

Fire Alarm SERVICES, INC.
4800 W. 60TH AVENUE
ARVADA, CO 80003
phone: 303-466-8800
fax: 303-466-8820
www.fasonline.cc email: contactus@fasonline.cc

REVISIONS			
NO.	DATE		
1	1/31/2019	Revision 1	

DRAWN BY: B.COWDEN DATE: 1/28/2019
APPR. BY: DATE:

FIRE ALARM SYSTEM TENANT FINISH FOR: CARDIOVASCULAR AND THORACIC SURGEONS, SUITE 200

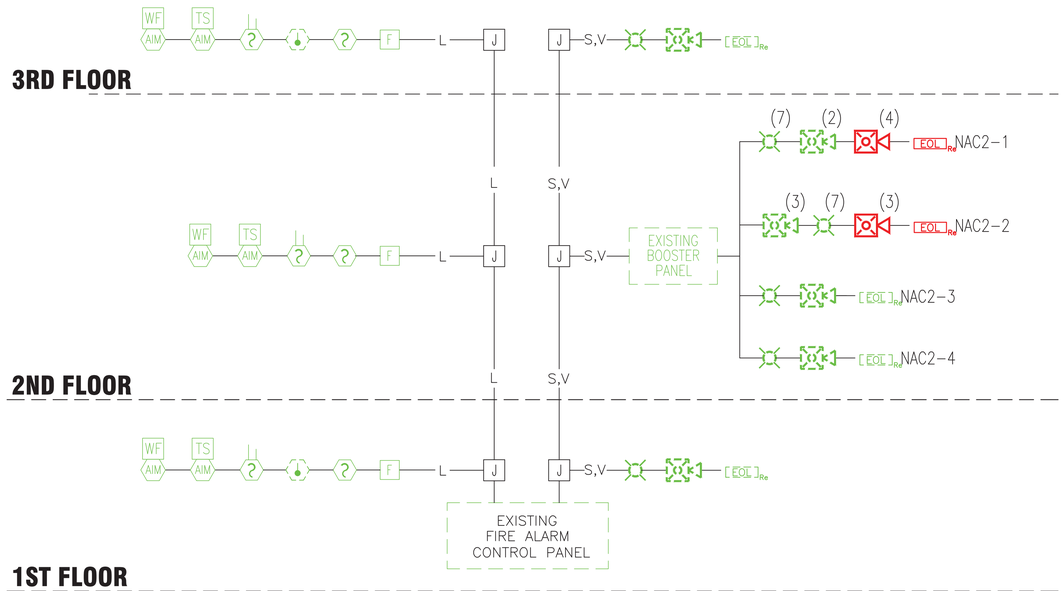
PROJECT TITLE
BUILDING NAME & ADDRESS: 1444 S POTOMAC STREET DENVER, CO 80012
PROJECT NUMBER: 1814253

FIRE ALARM & DETECTION SYSTEM
DRAWING TITLE: SUITE 200 FIRE ALARM PLAN
SCALE: N/A

Ray Breeland
NICET Fire Alarm Systems
Level III
Certification #111006
Date: 1/31/2019

PROJECT SHEET TITLE
FA-01

Permit: 2019-1578110-CT
RSN: 1346364
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ONE-LINE RISER DIAGRAM

BOOSTER CALCULATIONS

FOR: Medical Center of Aurora
1444 S. Potomac St.

HOURS OF SUPERVISION: 24 HOURS
MINUTES OF ALARM: 5 MINUTES

PANEL: EST BPS-10A

ITEM	QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	1	EXISTING	Notification Booster Panel	0.070000	0.190000	0.070000	0.190000
			TOTAL:			0.070000	0.190000

PERIPHERAL:

ITEM	QTY	PART NUMBER	DESCRIPTION	Device Supervisory Current	Device Alarm Current	Total Supervisory Current	Total Alarm Current
1	14	EXISTING	15cd Strobe	0.000000	0.055000	0.000000	0.770000
2	1	EXISTING	30cd Strobe	0.000000	0.080000	0.000000	0.080000
3	3	EXISTING	75cd Strobe	0.000000	0.150000	0.000000	0.450000
4	6	EXISTING	15cd Horn/Strobe	0.000000	0.071000	0.000000	0.426000
5	3	EXISTING	30cd Horn/Strobe	0.000000	0.090000	0.000000	0.270000
6	5	EXISTING	75cd Horn/Strobe	0.000000	0.158000	0.000000	0.790000
7	1	EXISTING	110cd Horn/Strobe	0.000000	0.200000	0.000000	0.200000
8	1	EXISTING	75cd Ceiling Mt. Horn/Strobe	0.000000	0.150000	0.000000	0.150000
9	4	EXISTING	95cd Ceiling Mt. Horn/Strobe	0.000000	0.372000	0.000000	1.488000
10	3	G1RF-HDVM	15cd Horn/Strobe	0.000000	0.071000	0.000000	0.213000
11	3	G1RF-HDVM	30cd Horn/Strobe	0.000000	0.090000	0.000000	0.270000
12	1	G1RF-HDVM	75cd Horn/Strobe	0.000000	0.158000	0.000000	0.158000
			TOTAL:			0.000000	5.265000

SUPERVISORY:		
PANEL:	0.070000	AMPS
PERIPHERAL	0.000000	AMPS
SUB-TOTAL:	0.070000	AMPS
X HOURS OF SUPERVISORY:	24.0000	HOURS
SUB-TOTAL:	1.680000	AMP HOURS
ALARM:		
PANEL:	0.190000	AMPS
PERIPHERAL:	5.265000	AMPS
SUB-TOTAL:	5.455000	AMPS
X MINUTES OF ALARM:	0.08333	HOURS
SUB-TOTAL:	0.454583	AMP HOURS
TOTALS:		
TOTAL SUPERVISORY:	1.680000	AMP HOURS
TOTAL ALARM:	0.454583	AMP HOURS
TOTAL:	2.134583	AMP HOURS
TOTAL PLUS SAFETY FACTOR(20%)	2.56150	AMP HOURS
Batteries Supplied - 1 Set of:	7.00000	AMP HOURS

1444 S. POTOMAC BUILDING SEQUENCE OF OPERATIONS

SYSTEM OUTPUTS

SYSTEM INPUTS

		FACP Annunciation							Notification					Fire Safety Ctrl.				Monitoring				
		Actuate Common Alarm Signal Indicator	Actuate Audible Alarm Signal	Actuate Common Supervisory Signal Indicator	Actuate Audible Supervisory Signal	Actuate Common Trouble Signal Indicator	Actuate Audible Common Trouble Signal	Display Change of Status	Actuate 1st Floor Evacuation Signals (Horn/Strobes)	Actuate 2nd Floor Evacuation Signals (Horn/Strobes)	Actuate 3rd Floor Evacuation Signals (Horn/Strobes)	Actuate Exterior Horn/Strobe	Silence Audible Signal (Horns)	Release Magnetically Held Smoke Doors	Recall Elevator(s) to 1st Floor - Primary Recall	Recall Elevator(s) to 2nd Floor - Alternate Recall	Shut Down Air Handling Units	Transmit Fire Alarm Signal to Supervising Station	Transmit Trouble Signal to Supervising Station	Transmit Supervisory Signal to Supervising Station	Transmit Waterflow Signal to Supervising Station	
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
1	Manual Pull Station - 1st Floor	X	X					X	X	X	X			X				X				1
2	Manual Pull Station - 2nd Floor	X	X					X	X	X	X			X				X				2
3	Manual Pull Station - 3rd Floor	X	X					X	X	X	X			X				X				3
4	Smoke Sensor - 1st Floor Elev Machine	X	X					X	X	X	X			X	X			X				4
5	Smoke Sensor - 1st Floor Elev Lobby	X	X					X	X	X	X			X		X		X				5
6	Smoke Sensor - 2nd Floor Elev Lobby	X	X					X	X	X	X			X	X			X				6
7	Smoke Sensor - 3rd Floor Elev Lobby	X	X					X	X	X	X			X	X			X				7
8	Smoke Sensor - All Other Locations	X	X					X	X	X	X			X				X				8
9	Duct Smoke Sensor - 1st Floor			X	X			X									X			X		9
10	Duct Smoke Sensor - 3rd Floor			X	X			X									X			X		10
11	Heat Sensors - 1st Floor Elevator Machine	X	X					X	X	X	X			X	X			X				11
12	Heat Sensors - 1st Floor	X	X					X	X	X	X			X				X				12
13	Sprinkler Waterflow - 1st Floor	X	X					X	X	X	X	X		X				X			X	13
14	Sprinkler Waterflow - 2nd Floor	X	X					X	X	X	X	X		X				X			X	14
15	Sprinkler Waterflow - 3rd Floor	X	X					X	X	X	X	X		X				X			X	15
16	Sprinkler Control Valve			X	X			X												X		16
17	FACP AC Power Failure					X	X	X						X				X				17
18	FACP Low Battery					X	X	X										X				18
19	Open Circuit					X	X	X										X				19
20	Ground Fault					X	X	X										X				20
21	Notification Appliance Circuit Short					X	X	X										X				21
22	Alarm Signal Silence												X									22
		A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS
MINIMUM UL RATED VOLTAGE: 16 VOLTS
Device current shown in calculations is RMS current at 16 volts.

Resistance:		
	12 Guage	2.01
	14 Guage	3.19
	16 Guage	5.08

Circut Number: NAC2-1
Location: Floor 2 Booster Panel (EST BPS10A) — Input Voltage = 19.7

Notification Circuit	Current (in Amps)	Wire Distance (in Feet)	Total Distance (in Feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
Horn Strobe 30CD	0.1670	30	30	14	0.1914	0.3975	20.0025
Horn Strobe 75CD	0.2810	40	70	14	0.2552	0.4874	19.5150
Horn Strobe 75CD	0.2810	48	118	14	0.3062	0.4989	19.0162
Horn Strobe 75CD	0.2810	20	138	14	0.1276	0.1720	18.8442
Strobe 15CD	0.1030	42	180	14	0.2680	0.2859	18.5582
Horn Strobe 30CD	0.1670	15	195	14	0.0957	0.0923	18.4660
Strobe 15CD	0.1030	15	210	14	0.0957	0.0763	18.3897
Strobe 15CD	0.1030	20	230	14	0.1276	0.0886	18.3012
Strobe 15CD	0.1030	19	249	14	0.1212	0.0716	18.2295
Strobe 15CD	0.1030	19	268	14	0.1212	0.0592	18.1704
Horn Strobe 75CD	0.2810	12	280	14	0.0766	0.0295	18.1409
Strobe 15CD	0.1030	22	302	14	0.1404	0.0146	18.1263
End of Line Resistor	0.0010	0	302	14	0.0000	0.0000	18.1263
Total:	2.0770	302			2.0671	2.2737	18.1263
Total Devices:	12						

INCREMENTAL VOLTAGE DROP CALCULATIONS FOR AUDIBLE/ VISUAL CIRCUITS
MINIMUM UL RATED VOLTAGE: 16 VOLTS
Device current shown in calculations is RMS current at 16 volts.

Resistance:		
	12 Guage	2.01
	14 Guage	3.19
	16 Guage	5.08

Circut Number: NAC2-2
Location: Floor 2 Booster Panel (EST BPS10A) — Input Voltage = 20.4

Notification Circuit	Current (in Amps)	Wire Distance (in Feet)	Total Distance (in Feet)	Wire Size (AWG)	Resistance (Ohms)	Voltage Drop	From Baseline Voltage
Horn Strobe 15CD	0.1290	40	40	14	0.2552	0.3818	20.0182
Horn Strobe 15CD	0.1290	12	52	14	0.0766	0.1047	19.9136
Strobe 15CD	0.1030	38	90	14	0.2424	0.3001	19.6134
Strobe 15CD	0.1030	23	113	14	0.1467	0.1665	19.4469
Strobe 15CD	0.1030	21	134	14	0.1340	0.1383	19.3086
Strobe 15CD	0.1030	23	157	14	0.1467	0.1363	19.1723
Strobe 15CD	0.1030	35	192	14	0.2233	0.1844	18.9878
Horn Strobe 15CD	0.1290	19	211	14	0.1212	0.0876	18.9002
Strobe 15CD	0.1030	31	242	14	0.1978	0.1175	18.7827
Horn Strobe 15CD	0.1290	19	261	14	0.1212	0.0595	18.7232
Horn Strobe 15CD	0.1290	34	295	14	0.2169	0.0785	18.6447
Horn Strobe 15CD	0.1290	30	325	14	0.1914	0.0446	18.6001
Strobe 15CD	0.1030	28	353	14	0.1786	0.0186	18.5815
End of Line Resistor	0.0010	0	353	14	0.0000	0.0000	18.5815
Total:	1.4960	353			2.4308	1.8185	18.5815
Total Devices:	13						

Ray Breeland
NICET Fire Alarm Systems
Level III
Certification #111006
Date: 1/31/2019

Fire Alarm SERVICES, INC.
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ARVADA, CO 80003
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phone: 303-466-8800
fax: 303-466-8820
email: contactus@fasonline.cc

REVISIONS

NO.	DATE	
1	1/31/2019	Revision 1

DRAWN BY: B.COWDEN
DATE: 1/28/2019
APPR. BY:
DATE:

FIRE ALARM SYSTEM TENANT FINISH FOR:
CARDIOVASCULAR AND THORACIC SURGEONS, SUITE 200

PROJECT TITLE
BUILDING NAME & ADDRESS: 1444 S POTOMAC STREET DENVER, CO 80012
PROJECT NUMBER: 1814253

FIRE ALARM & DETECTION SYSTEM
DRAWING TITLE: SUITE 200 CALCULATIONS
SCALE: N/A

PROJECT SHEET TITLE
FA-02

Fire Alarm Services, Inc.
4800 West 60th Avenue
Arvada, CO 80003

Phone (303) 466-8800
Fax (303) 466-8820
contactus@fasonline.cc

Fire Alarm System Addition at:

Cardiovascular & Thoracic Surgeons
1444 South Potomac St.
Denver, CO 80012

Scope of Work:

1. REMOVE AND REINSTALL FOUR (4) EXISITNG REMOTE TEST SWITCHES
2. RELOCATE ONE (1) EXISTING HORN/STROBE
3. PROVIDE AND INSTALL SEVEN (7) NEW HORN/STROBES
4. RELOCATE ONE (1) EXISTING STROBE

Permit: 2019-1578110-CT
RSN: 1346364
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Overview

The Genesis line of signals are among the smallest, most compact audible-visible emergency signaling devices in the world. About the size of a deck of playing cards, these devices are designed to blend with any decor.

Thanks to patented breakthrough technology, GE Security Genesis strobes do not require bulky specular reflectors and lenses. Instead, an exclusive cavity design conditions light to produce a highly controlled distribution pattern. Significant development efforts employing this new technology have given rise to a new benchmark in strobe performance – FullLight technology.

FullLight strobe technology produces a smooth light distribution pattern without the spikes and voids characteristic of specular reflectors. This ensures the entire coverage area receives consistent illumination from the strobe flash. As a result, Genesis strobes with FullLight technology go well beyond the minimum UL-required "T" pattern, significantly exceeding UL-1971 and ULC-S526 light distribution requirements.

Genesis strobes and horn-strobes offer 15 to 110 candela output, which is selectable with a conveniently-located switch on the side of the device. Models are also available that offer fixed 15/75 cd output. The candela output setting remains clearly visible even after final installation, yet it stays locked in place to prevent unauthorized tampering.

Genesis signals feature textured housings in architecturally neutral white or traditional fire red. An ingenious iconographic symbol indicates the purpose of the device. This universal symbol is code-compliant and is easily recognized by all building occupants regardless of what language they speak. Models with "FIRE" markings are also available.

Standard Features

- **Unique low-profile design**
  - The most compact UL-1971/ULC-S526 listed strobe available
  - Ultra-slim – protrudes less than one inch
  - Attractive appearance
  - No visible mounting screws
- **Four field-configurable options in one device**
  - Select 15, 30, 75, or 110 cd strobe output
  - Select high (default) or low dB horn output
  - Select temporal (default) or steady horn output
  - Select public mode flash rate (default) or private mode temporal flash
- **Fixed 15/75 cd model available**
- **Easy to install**
  - Fits standard 1-gang electrical boxes – no trim plate needed
  - Optional trim plate accommodates oversized openings
  - Pre-assembled with captive hardware
  - #12 AWG terminals – ideal for long runs or existing wiring
- **Unparalleled performance**
  - Industry's most even light distribution
  - Meets tough synchronizing standards for strobes
  - Single microprocessor controls both horn and strobe
  - Low current draw minimizes system overhead
  - Independent horn control over a single pair of wires
  - Highly regulated in-rush current
  - Multiple frequency tone improves sound penetration
  - Industry's first temporal strobe output

Field Configurable Horns and Strobes

Genesis Series



Permit: 2019-1578110-CT
RSN: 1346364
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Application

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed 105 dBA (87dBA in Canada), where occupants use hearing protection, and in areas of public accommodation as defined in the *Americans with Disabilities Act (see application notes – USA)*.

Combination horn-strobe signals must be installed in accordance with guidelines established for strobe devices.

Strobes

Genesis strobes are UL 1971-listed for use indoors as wall-mounted public-mode notification appliances for the hearing impaired. Prevailing codes require strobes to be used where ambient noise conditions exceed specified levels, where occupants use hearing protection, and in areas of public accommodation. Consult with your Authority Having Jurisdiction for details.

All Genesis strobes exceed UL synchronization requirements (within 10 milliseconds other over a two-hour period) when used with a synchronization source. Synchronization is important in order to avoid epileptic sensitivity.

NOTE: The flash intensity of some visible signals may not be adequate to alert or waken occupants in the protected area. Research indicates that the intensity of strobe needed to awaken 90% of sleeping persons is approximately 100 cd. GE Security recommends that strobes in sleeping rooms be rated at at least 110 cd.

WARNING: These devices will not operate without electrical power. As fires frequently cause power interruptions, further safeguards such as backup power supplies may be required.

Horns

Genesis horn output reaches as high as 99 dB and features a unique multiple frequency tone that results in excellent sound penetration and an unmistakable warning of danger. Horns may be configured for either coded or non-coded signal circuits. They can also be set for low dB output with a jumper cut that reduces horn output by about 5 dB. Horn-only models may be ceiling-mounted or wall-mounted.

The suggested sound pressure level for each signaling zone used with alert or alarm signals is at least 15 dB above the average ambient sound level, or 5 dB above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 feet (1.5 m) above the floor. The average ambient sound level is, A-weighted sound pressure measured over a 24-hour period.

Doubling the distance from the signal to the ear will theoretically result in a 6 dB reduction of the received sound pressure level. The actual effect depends on the acoustic properties of materials in the space. A 3 dBA difference represents a barely noticeable change in volume.

Installation

Genesis horns and strobes mount to any standard one-gang surface or flush electrical box. Matching optional trim plates are used to cover oversized openings and can accommodate one-gang, two-gang, four-inch square, or octagonal boxes, and European 100 mm square.



Genesis Horn/Strobe with optional trim plate

All Genesis signals come pre-assembled with captive mounting screws for easy installation. Two tabs at the top of the signal unlock the cover to reveal the mounting hardware. The shallow depth of Genesis devices leaves ample room behind the signal for extra wiring. Once installed with the cover in place, no mounting screws are visible.

Field Configuration

Temporal horn and horn-strobe models are factory set to sound in a **three-pulse temporal pattern**. Units may be configured for use with coded systems by cutting a jumper on the circuit board. This results in a **steady output** that can be turned on and off (coded) as the system applies and removes power to the signal circuit. A Genesis Signal Master is required when horn-strobe models are configured for coded systems. Non-temporal, horn-only models sound a steady tone.

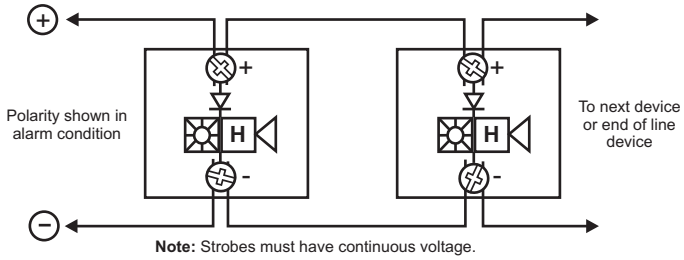
Genesis strobes and horn-strobes are shipped from the factory ready for use as **UL 1971 compliant** signals for public mode operation. These signals may be configured for **temporal flash** by cutting a jumper on the circuit board. This battery-saving feature is intended for private mode signaling only.

Genesis strobes and horn-strobes may be set for **15, 30, 75, or 110 candela output**. The output setting is changed by simply opening the device and sliding the switch to the desired setting. The device does not have to be removed to change the output setting. The setting remains visible through a small window on the side of the device after the cover is closed.

Horns and horn-strobes are factory set for **high dB output**. **Low dB output** may be selected by cutting a jumper on the circuit board. This reduces the output by about 5 dB.

Wiring

Field wiring terminals accommodate #18 to #12 AWG (0.75 mm² to 2.5 mm²) wiring. Horns, strobes, and combination horn-strobes are interconnected with a single pair of wires as shown below.



Note: Strobes must have continuous voltage.

Current Draw

Strobes, Horn-Strobes

Multi-cd Wall Strobes (G1-VM)

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	103	141	152	255	311
16 Vfwr	125	179	224	346	392

*G1-VM multi-cd; **G1F-V1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	85	79	127	124	150	140	245	243	285	283
20 Vdc	71	66	98	96	123	114	188	186	240	238
24 Vdc	59	55	82	80	104	97	152	150	191	190
33 Vdc	46	44	64	63	84	77	112	111	137	136
16 Vfwr	119	64	169	97	223	126	332	203	376	240
20 Vfwr	103	51	143	76	189	100	253	150	331	198
24 Vfwr	94	44	129	65	169	85	218	121	262	152
33 Vfwr	87	37	112	52	148	68	179	89	205	106

Wall Temporal Horn-strobes – High dB Setting

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	129	167	172	281	337
16 Vfwr	176	230	269	397	443

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	102	89	135	129	160	152	246	242	309	305
20 Vdc	88	77	109	104	137	129	193	190	248	243
24 Vdc	81	71	94	90	122	114	161	158	203	200
33 Vdc	74	64	72	74	106	98	124	121	154	151
16 Vfwr	144	77	182	106	247	143	352	212	393	249
20 Vfwr	141	68	162	87	220	120	274	158	362	210
24 Vfwr	136	65	152	76	203	106	235	133	282	165
33 Vfwr	125	54	144	65	196	94	201	101	232	123

Wall Temporal Horn-strobes – Low dB Setting

UL Rating	15 cd*	30 cd*	15/75 cd**	75 cd*	110 cd*
	RMS	RMS	RMS	RMS	RMS
16 Vdc	122	160	146	274	330
16 Vfwr	162	216	231	383	429

*G1-HDVM multi-cd
**G1F-HDV1575 fixed 15/75 cd

Typical Current	15 cd		30 cd		15/75		75 cd		110 cd	
	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean	RMS	Mean
16 Vdc	96	84	130	124	158	149	243	240	302	297
20 Vdc	79	70	104	99	133	124	189	186	241	237
24 Vdc	68	61	88	84	119	110	156	154	197	193
33 Vdc	56	52	71	68	100	93	118	116	146	143
16 Vfwr	128	69	180	104	241	139	344	204	389	244
20 Vfwr	118	60	157	84	213	115	266	156	343	200
24 Vfwr	113	54	144	74	195	101	230	128	279	161
33 Vfwr	112	48	137	64	182	87	197	99	226	117

Horns

Wall or Ceiling Mounted Temporal Horns (G1-HD)

UL Rating	High dB (RMS)	Low dB (RMS)
16 Vdc	26	19
24 Vdc	36	27
33 Vdc	41	33
16 Vfwr	51	37
24 Vfwr	69	52
33 Vfwr	76	70

Typical Current	High dB		Low dB	
	RMS	Mean	RMS	Mean
16 Vdc	22	17	17	14
20 Vdc	24	19	19	16
24 Vdc	27	21	22	18
33 Vdc	32	25	26	22
16 Vfwr	34	15	30	14
20 Vfwr	40	19	34	16
24 Vfwr	45	21	38	18
33 Vfwr	52	24	47	22

Wall or Ceiling Mounted Horns (G1-P)

UL Designation	Voltage Range	Max. Current, RMS
Regulated 24 Vdc	16 - 33 Vdc	13 mA
24 fwr	16 - 33 Vfwr	11 mA

Typical Current	RMS	Mean
24 Vdc	10	10
24 Vdc	11	11
31 Vdc	12	12
20 Vfwr	9	8
24 Vfwr	10	9

Notes and Comments

1. Current values are shown in mA.
2. UL Nameplate Rating can vary from Typical Current due to measurement methods and instruments used.
3. GE Security recommends using the Typical Current for system design including NAC and Power Supply loading and voltage drop calculations.
4. Use the Vdc RMS current ratings for filtered power supply and battery AH calculations. Use the Vfwr RMS current ratings for unfiltered power supply calculations.
5. Fuses, circuit breakers and other overcurrent protection devices are typically rated for current in RMS values. Most of these devices operate based upon the heating affect of the current flowing through the device. The RMS current (not the mean current) determines the heating affect and therefore, the trip and hold threshold for those devices.
6. Our industry has used 'mean' currents over the years. However, UL will direct the industry to use the 2004 RMS values in the future.

dBA output

Temporal Horns, Horn-strobes (G1-HD, G1-HDVM series)

High dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	81.4	85.5	91.4	94.2
24 Vdc	84.4	88.6	94.5	97.6
33 Vdc	86.3	90.4	96.9	99.5

Low dB Setting	UL464		Average	Peak
	Temporal	Steady	Temporal/ Steady	Temporal/ Steady
16 Vdc	76.0	80.1	86.3	89.2
24 Vdc	79.4	83.5	89.8	92.5
33 Vdc	82.1	86.5	92.5	95.3

Steady Tone Horns (G1-P series)

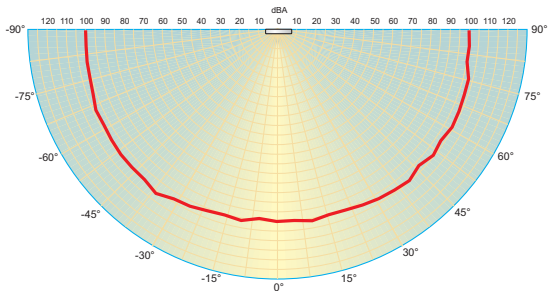
	UL464	Average	Peak
16 Vdc	77 dBA, min	85 dBA	91 dBA
16 Vfwr	77 dBA, min	85 dBA	91 dBA

Notes

1. All values shown are dBA measured at 10 feet (3.01m).
2. UL464 values measured in reverberation room.
3. Average and Peak values are measured in anechoic chamber.

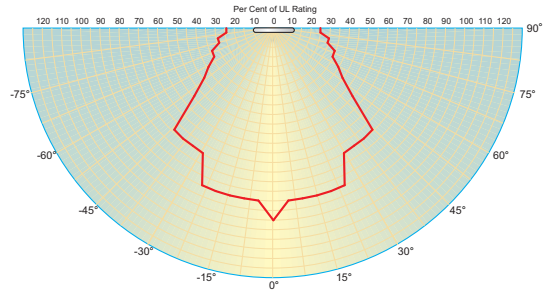
Average Sound Output (dBA)

(High dB setting, anechoic, 24V, measured at 10ft)



Light output - (effective cd)

Percent of UL rating versus angle



Specifications

Housing	Red or white textured UV stabilized, color impregnated engineered plastic. Exceeds 94V-0 UL flammability rating.
Lens	Optical grade polycarbonate (clear)
Mounting (indoor only)	Strobes and horn-strobes are for wall-mount installation only. Horn-only models may be ceiling- or wall-mounted. Flush mount: 2½ inch (64 mm) deep one-gang box Surface mount: Model 27193 surface mount box, wiremold box, or equivalent surface-mount box With optional trim plate: One-gang, two-gang, four-inch square, octagonal, or European single-gang box
Wire connections	Screw terminals: single input for both horn and strobe. #18 to #12 AWG (0.75 mm² to 2.5 mm²) wire size
Operating environment	Indoor only: 32-120°F (0-49°C) ambient temperature. 93% relative humidity
Agency listings/approvals	UL 1971, UL 1638, UL 464, ULC S525, ULC S526, CSFM, CE, FCC, MEA (FM pending). (All models comply with ADA Code of Federal Regulation Chapter 28 Part 36 Final Rule.)
Dimensions (HxWxD)	Signal: 4-1/2" x 2-3/4" x 13/16" (113 mm x 68 mm x 21 mm) Trimplate: 5" (127 mm); Height – 5-7/8" (149 mm); Depth – ½" (13 mm)
Operating voltage	G1-HD series temporal-tone horns: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded when horn set to steady tone) G1-HDVM series temporal-tone horn-strobes: non-coded, filtered 16-33 Vdc or unfiltered 16-33 Vdc FWR (or coded (audible NAC only) when used with optional G1M Genesis Signal Master) G1-VM series strobes: non-coded, filtered 16 - 33 Vdc or unfiltered 16-33 Vdc FWR G1-P series steady-tone horns: coded or non-coded, filtered 20-31 Vdc or unfiltered 20-27 Vfwr
Strobe output rating	UL 1971, UL 1638, ULC S526: selectable 15 cd, 30 cd, 75 cd, or 110 cd output UL 1971: 15 cd (fixed 15/75 cd models) UL 1638, ULCS526: 75 cd (fixed 15/75 cd models)
Strobe flash rate	G1-VM strobes and G1-HDVM series temporal-tone horn-strobes: one flash per second synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) Temporal setting (private mode only): synchronized to temporal output of horns on same circuit
Synchronization Sources	G1M-RM, SIGA-CC1S, SIGA-MCC1S, BPS6A, BPS10A
Horn pulse rate	G1-HD temporal-tone horns and G1-HDVM series temporal-tone horn-strobes: temporal rate synchronized with optional G1M Genesis Signal Master indefinitely within 10 milliseconds (or self-synchronized within 200 milliseconds over thirty minutes on a common circuit without G1M Genesis Signal Master) G1-P steady-tone horns: continuous, steady tone only
Temporal audible pattern	½ sec ON, ½ sec OFF, ½ sec ON, ½ sec OFF, ½ sec ON, 1½ sec OFF, then repeat cycle

Ordering Information

Catalog Number		Description	Ship Wt. lbs (kg)
White Finish	Red Finish		
G1-HDVM	G1R-HDVM	Genesis Horn-Strobe (selectable 15, 30, 75, or 110 cd output, selectable high/low dB output)	0.25 (0.11)
G1-VM	G1R-VM	Genesis Strobe (selectable 15, 30, 75, or 110 cd output)	
G1-HD	G1R-HD	Genesis Temporal Horn (selectable high/low dB output)	
G1-P	G1R-P	Genesis Steady Horn (not compatible with Genesis Signal Master)	
G1F-HDVM	G1RF-HDVM	Genesis Horn-Strobe (selectable 15, 30, 75, or 110 cd output, selectable high/low dB output) – with "FIRE" marking	
G1F-VM	G1RF-VM	Genesis Strobe (selectable 15, 30, 75, or 110 cd output) – with "FIRE" marking	
G1F-HD	G1RF-HD	Genesis Temporal Horn (selectable high/low dB output) – with "FIRE" marking	
G1F-P	G1RF-P	Genesis Steady Horn with "FIRE" marking (not compatible with Genesis Signal Master)	
G1F-HDV1575	G1RF-HDV1575	15/75 cd temporal horn-strobe, hi/lo dB-24V – with "FIRE" marking (see note 1)	
G1F-V1575	G1RF-V1575	15/75 cd strobe – with "FIRE" marking (see note 1)	
Mounting Accessories			
G1T	G1RT	Genesis Trim Plate (for two-gang or 4" square boxes)	0.15 (0.7)
G1T-FIRE	G1RT-FIRE	Genesis Trim Plate (for two-gang or 4" square boxes) with "FIRE" markings	0.15 (0.7)
27193-16	27193-11	One-gang surface mount box	1 (0.4)
Synchronization Modules			
G1M		Genesis Signal Master – Snap-on Mount	0.2 (0.1)
G1M-RM		Genesis Signal Master – Remote Mount (1-gang)	
SIGA-CC1S		Intelligent Synchronization Output Module (2-gang)	0.5 (0.23)
SIGA-MCC1S		Intelligent Synchronization Output Module (Plug-in UIO)	0.18 (0.08)

Note 1: These 15/75 cd models provide fixed output and are not multi-candela devices. The 15 cd output component complies with UL1971, while the 75 cd output component complies with UL 1638.





Genesis Horn-Strobes may be ordered in red or white, with or without 'FIRE' marking. Order matching trim plates separately.

GE
Security

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F 866-503-3996

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T 519 376 2430
F 519 376 7258

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T 61 3 9259 4700
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